



VIDYA PRASARAK MANDAL'S
K.G. JOSHI COLLEGE OF ARTS &
N.G. BEDEKAR COLLEGE OF COMMERCE, THANE

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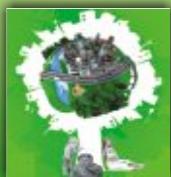
Proceedings of
UGC Sponsored
TWO DAY INTERNATIONAL CONFERENCE

GEOGRAPHY OF CHANGE:
CONTEMPORARY ISSUES IN DEVELOPMENT, ENVIRONMENT AND SOCIETY

January 11-12, 2013

Editors

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Department of Geography

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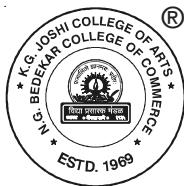
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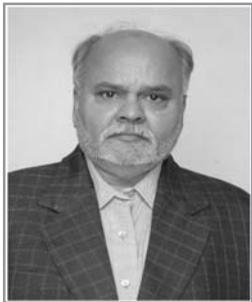
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Chairman's Message



I have a great pleasure in handing over this volume of proceedings to you. The college has been organising seminars, conferences and workshops dealing with relevant themes and issues. These programmes have been playing an important role in enriching not only the knowledge of students and teaching fraternity but also inculcating the spirit of scientific enquiry and research. Such efforts have been instrumental in making the process of education enjoyable and creative.

The theme selected for this year's conference is very relevant. As Geography has been one of the ancient sciences, since long, it has been one of the discourses through which not only natural processes are studied but also the spaces – socio-cultural, economic and political, created by man.

The progression of human civilizations from simpler societies to recent post-modern societies is synonymous with increasing social, cultural and political complexities. These complexities have given rise to disagreements and segregations. Today, the human society is divided; engaged in the hasty rush of profit making; extracting and depleting all the available resources. I believe the modern society is standing at the suicidal end. Our resources are getting deleted at faster rate, economic organizations are busy in making profits, policies are highly politicized and everything is turning - money centered. This becomes more serious when seen at the backdrop of current model of economic development i. e. globalization.

The emerging social, environmental and economic issues, hence, need a balanced perspective – which can promote sustainable development of human societies.

In the coming future, if we have to survive and grow as a society, there is a need to initiate integrated efforts. The Geography conference is certainly taking an initiative towards promoting an integrated approach and sustainable development.

I wish this conference will be able to propagate some constructive step towards achieving the sustenance.

Vijay Bedekar
Chairman
Vidya Prasarak Mandal, Thane

Principal's Message



Creativity and Nature go together. Rich Nature inspires us to be original and creative. Therefore, many of these geniuses have broken the boundaries of closed doors and concrete jungles and went to the Nature to understand the thoughts and to pen down. If you study the human thoughts, we find the great contribution of Nature in it. Whether Rigvedic or Epic write up or Gurukul System, the healthy thought and strong human values are born in the midst of rich Nature.

Geography is the study of Nature. If you are ready to accept this broad definition and allow me to be a little philosophical..... I would say, we are the part of this Nature, we are products of it, and we go back to Nature. We are produced from Earth, Water, Air, Fire and Ether and after our death we become one with these five Basic Elements, PanchMahabhutas. The creation, preservation and destruction..... In this process human beings are, at central point , since everything rotates around him, starts with him and ends in him.

Understanding Nature in this way and respecting it for this reason and handling it accordingly..... I think it is a true understanding of Nature through Geography. Putting it in this perspective, it will be the correct understanding of Nature through Geography.

Wise man said, "Before cleaning your house, you must clean your neighbour's house, because the breeze which is carried to your house comes from your neighbour's house". Let there be dialogue between Geographers and Philosophers. Let every plan of yours be discussed with moralist based on ethics and let there be aesthetic sense to your every theory and construction..... Then only you respect the Nature, Man and Science.

I am sure this conference would be a step towards this perception. I wish you every success.

Dr. (Mrs.) Shakuntala A. Singh

Convener Message

Geography is one the most important leading subjects in providing the integrated approach in understanding, analysing and probably offering better solutions to contemporary problems prevailing in the society and economy. It is interesting to understand how the human spaces get evolved ; which were or/ and are the forces and factors shaping these spaces; what is the nature of resultant social (spatial) structure and most important what is happening to people who have created, inhabited and nurtured these spaces.

Looking back to the history, it can be revealed that since late 1990s, the global forces have become very fundamental in shaping the human spaces ; their economies and societies - not only of those nations which are directly enmeshed in the world economic hierarchy but also those which have been never been part of the this hierarchy. These global processes have inducing complications at various scales - from micro to macro. The integration of national economies into global economic system has, thus, induced infrequent and unpredictable transformations which are now also affecting the everyday living and the immediate environments. Interestingly, even though the benefits of these transformations are far from reaching the 80 per cent of world population, their evils are already at the front door of millions of people.

The present 'style' of bringing economic development, has put tremendous pressure on environmental and human resources as both of them are victims of extreme exploitation and profit maximisation. It is also responsible for inducing harsher contestations, conflicts over resources between nations....between people.....between the family members. Each day now comes with more hardships and stress for common people. Various socio-cultural groups are getting affected in differential manners and in the struggle of coping up with what is happening to them, they are hiring decent – indecent; ethical – unethical practices. Interestingly, with emergence of some 'powerful' social sciences and 'management' studies, in academia it is a fashion to speak always in terms of 'advantages and disadvantages' and reduce all of them to single plane of explanations. This crowd strictly remains either silent on taking any firm stand when it comes to consequences of current pattern of economic development or talks loudly about 'sustainability'.

This conference is organized with the very aim of developing a larger understanding regarding the current issues prevailing in social, environmental and economic realms – issues those are already existing. Some reappearing with different colour and some totally new that have unexpectedly arisen. The conference aims at exploring the problematic of all such issues at the backdrop of process of globalization and its subsidiary processes.

Asst. Prof. Aparna Phadke

Co-Conveners Message

“Some changes look negative on the surface but you will soon realize that space is being created in your life for something new to emerge.” – Eckhart Tolle

Change is a part of life, a continuous process. Nature is also not an exception. Since the first appearance of human being to the present day ‘change’ has been the permanent feature of nature as well as life.

Geography of Change, the current theme of the International Conference, focuses several issues that are threatening the existence of life. The process of change can be entirely natural in origin but due to human interference, it is accelerated. One of the major threats faced by the planet is environmental degradation. The homosapiens – the intelligent humans have ability to alter the environment, but at the same time, the responsibility of inducing positive changes also lies mainly with human beings. If man induces negative changes, there will be irreparable compromises; it could mean the end of human existence.

Through this conference we wish to focus the severity of the problems that are taking place all over the world. The conference focus on the darker side of the development but at the same time, is attempting to prove that the grass is always green on the other side.

**Vaishali N Kurhekar
Shivaji Naik
Co-Convener**

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The Valuable Additions

VALUATION OF ECOSYSTEM

Rajendra Shende, Chairman

TERRE Policy Centre Former Director UNEP, Paris

The world did not end on 21st Dec 2012 as predicted by mysterious calendars and apocalyptic theories. Many, who waited curiously and helplessly for that moment, woke up on 22nd December to find themselves in the world that still existed.

Now we are in a brand new year of 2013 on the fast aging and exhausted planet. Not because the Earth is very old but due to over demands on its healthy natural heritage, it has been sucked by us to the point of enervation and possibly collapse. We do not need Mayavian calendar or some cult-based apocalyptic theories to tell us that the way we are exploiting our ecosystems, the world is on the fatal path leading to unfortunate but certain ‘finish line’. Many pessimists would say that the world in reality has already ended. What we are now enjoying is the feast after the death!

Over the last 500 million years, 20 major extinctions occurred as per the geological historians. Top 5 extinctions were devastating to the point of ‘end of the world’. The last of the five extinction was 65 million years ago when the all dinosaurs and 75% of al other species were wiped out.

Many of us, engaged in our own pursuit of so called modernization forget that we are undergoing sixth extinction called Holocene Extinction that began 13000 years ago when large mammals started disappearing. Nobel Laureate Scientist Paul Crutzen has noted that Holocene- extinction is now accelerating starting from the time of Industrial Revolution. He calls this era of accelerated extinction Antropocene- a man made extinction.

Paul Crutzen is not exaggerating or dramatizing the situation. The biodiversity of million of green-shades

of forests and diverse blue-shades water have already ended. 60 percent of the ecosystems in the word are degraded beyond repairs and rate of the extinction of species is 140,000 per year. Human activities have destroyed six million hectares of primary forest every year since 2006. In the last 20 years the world has lost just more than a third of its mangroves, which provide people with vital “ecosystem services” and products, including food, fuel, fiber and pharmaceutical compounds. Nearly half of amphibian species, such as frogs, a third of our corals, a quarter of mammals, a fifth of all plants, and 13 per cent of the world’s birds are at risk of extinction, according to IUCN. These are the ecosystems consisting of air, water, forests, land, amphibians, birds, mammals, and butterflies, honeybees on which our very life depends.

Humanity has been receiving the wake up calls for long. The first global alarm came in STOCKHOLM CONFERENCE-The UN Conference on the Human Environment was held in Stockholm, Sweden, 40 years back in 1972This wake up call was followed by Energy crisis that was closely connected with the finite fossil fuel resources. But the world snoozed.

UN CONFERENCE ON ENVIRONMENT AND DEVELOPMENT: UNCED, also known as the Earth Summit, was held in 1992 in Rio de Janeiro, Brazil, was the second major call that was loud and globally heard. Convention of Biodiversity (CBD), Nagoya’s conservation targets, United Nations Climate Change Convention, Kyoto Protocol, and host of multilateral environmental agreements followed that alarm. We continued to doze-off.

“Earth provides enough to satisfy every man’s needs, but not every man’s greed.” - Mahatma Gandhi

“Oh Beautiful for smoggy skies, insecticided grain, For strip-mined mountain’s majesty above the asphalt plain. America, America, man sheds his waste on thee, And hides the pines with billboard signs, from sea to oily sea.” - George Carlin

“We do not inherit the earth from our ancestors; we borrow it from our children” - Chief Seattle

Humanity's good intentions were limited to papers, words and speeches. The fact that humanity is crossing the planetary boundaries of the Earth's carrying capacity was never acted upon. We are now 7 billion, having added massive 1.5 billion people over last 20 years since Rio Conference of 1992. That is equivalent to the total global population in 1900. That was not really the event to celebrate. But in 2012, we did not fail to celebrate 20th anniversary of Rio conference 40 the anniversary of the Stockholm conference of 1972. The world of today is light-years from the world that was before industrial revolution geographically, geopolitically, socially, economically and environmentally. The problem lies in the methods we conduct our business through the economy of supply and demand, the way we price the trade, the path we selected our methods of valuing the consumption and production. The fact is that no matter how far and how fast some countries appear to be moving into the sustainability space, it may prove too little too late. We use the same methods to solve the problem that brought us to this situation in the first place.

The good news is that there have been determined initiatives by the United nations Environment Programme for the Green Economies and valuing the ecosystems and treating them not as commodities but as heritage that need to be leveraged for our sustainable living.

Valuing the ecosystem is a far-reaching concept of how to fast track and fast forward 'quality' of life as well as 'quantity' in terms of growth and development in a way that keeps humanity's footprint within ecological or planetary boundaries. In another around 40 years' time there could be nine or ten billion people to share the space on the earth. Would they be able to share the space or tear the space down?

Global attention on the accelerating degradation of the planet's ecological infrastructure has also witnessed growing awareness of the enormous opportunities for lives and livelihoods—including for the poor—in managing it far more intelligently.

The Economics of Ecosystems and Biodiversity study (TEEB), established by the G8 and developing country environment ministers, has done much to bring the attention to such opportunities. The United Nations Environment Programme hosts the study with financial support from several Governments and other partners. TEEB study has presented the most comprehensive and compelling assessment of the vast economic losses being sustained from mismanagement of the planet's natural assets. Using todays 'gadget' language, we need to 're-set' the way we treat and value the services provided by the eco systems. There is compelling case that unless such valuation is internalized in the national and business accounting we would unfortunately advance the sixth extinction.

"We must realize that growth is but an adolescent phase of life which stops when physical maturity is reached. If growth continues in the period of maturity it is called obesity or cancer. Prescribing growth as the cure for the energy crisis has all the logic of prescribing increasing quantities of food as a remedy for obesity." - Albert A. Bartlett

"I think we are too hamstrung by the language of sustainable development. We tend to be thoughtful people who like nothing better than a philosophical debate beginning with the words 'it depends on how you define sustainable development'. This is a total turn-off for people who just like to get on and do things" - Rebecca Willis

DYNAMICS OF HUMAN DEVELOPMENT IN GLOBALISING MEGA CITIES: THE CASE OF MUMBAI

Smita Gandhi

Department of Geography, University of Mumbai

By 2030, the global south is estimated to account for 80 per cent of the world's urban population with the Asian countries claiming the major share, with China followed by India in the lead. In the late 20th century most of the urban growth tended to concentrate in and around mega cities in the low and middle-income countries. During the first decade of the 21st century, however, rapid urban growth is primarily occurring in the second and third ranking metropolitan cities - a feature especially noticeable in the peri-urban areas of the Asian mega cities.

Coming to India, there are 53 million-plus cities in 2011 as compared to 35 in 2001 and 43% of her urban population lives in them. Among these, the three top ranking mega cities - Mumbai, Kolkata and Delhi - account for 15% of the nation's urban population, a trend that has persisted since 2001. Of the three, Mumbai has been the largest of the fastest growing Indian cities in 2001. Despite a slowing of her pace of growth in 2011, her city region, the Mumbai Metropolitan Region (MMR), continues to be the hot destination for migrants in the country and accounts for about a fourth of the Maharashtra State's total population. The overall increase in population in the MMR, excluding Mumbai, has been 54%; and including Mumbai and its adjacent 18 other municipal corporations, the region has grown at a rate 32%, double that of the State (16%) over the past decade. This is evident in the phenomenal growth rates registered by some of the peri-urban towns and cities in MMR in 2011, such as Kharghar (1117%), Vasai-Virar (221%), New Panvel (113%), Kalyan-Dombivli and Mira-Bhayander (50%), Navi Mumbai 48% and Thane City (43%). Even the towns in the peripheral

parts of the districts of Thane and Raigad have recorded growth rates ranging between 20% and 30%.

Mumbai grew as a typical colonial city. The pattern of Mumbai's urban and industrial growth displayed the characteristics of a city of the third world, in its colonial as well as post-colonial stages of expansion and diversification. Remaining at the apex level of the hierarchy of the urban system in the post-independence period in India, Mumbai displayed a relatively greater degree of primacy, compared with its counterparts, both at the national as well as regional levels, reinforcing simultaneously its image as a 'City of Contrast'.

A Spatio-temporal analysis of Mumbai's economic base indicates that the pre-industrial forms of manufacturing that existed in Mumbai since its initial growth, persisted in the later phases of industrial diversification and modernisation, though by adapting to the demands of the prevailing market conditions. At the same time, various traditional as well as modern forms of tiny and small sector manufacturing proliferated in the city, during the colonial as well as the post-independence periods, thereby giving rise to expansion of informal sector on the one hand and proliferation of slums on the other. The intricate patterns of functional relationship between the formal and informal sectors and its manifestation in various forms of spatial affinity subsequently structured the urban space of Mumbai, which evolved in various phases.

Informal manufacturing sector not only provided cheap labour, but also facilitated accumulation of capital in the formal sector. Further, its presence

"The economic downturn is our wake-up call to slow down, consume less, help each other, & live more!"

- Phil Harding

"Nature shrinks as capital grows. The growth of the market cannot solve the very crisis it creates."

- Vandana Shiva

subsidised the cost of living in general in the city. It is no wonder, that its prolific growth was conveniently accommodated by the metropolitan economy both spatially and socially, while the intricacies of the functional linkages and spatial affinities between the formal and informal sectors were nurtured. This resulted into structuring of a domino-dependent, symbiotic relationship between the two sectors manifest in economy, space and society. As the informal sector supported the economies of the hinterland, it simultaneously provided the spatio-social links from where the informal workers could be drawn.

In the post-1990 period, as the city's economic base has been more intensely appended to the global capital region, following the policy of New Economic policy, the city has experienced deindustrialization of its economic base giving rise to increasing tertiarisation. With fifty-five percent of the population staying in slums strewn across its urban-scape, Mumbai, like many of its counterparts in the global south, is characterized by urban poverty and unemployment on one hand and degradation of its natural and socio-cultural environment giving rise to poor quality of living on the other. These structural changes have simultaneously intensified a process of accumulation by dispossession, giving rise to displacement of a large number of urban poor from various sub-sections of the city as well as its peri-urban region.

It is in this context that the human development status of Mumbai can be analysed by adopting a multi-scalar perspective, thereby placing Mumbai vis-vis the other mega cities on the one hand and its city region on the other. By drawing upon the available population and economic census data as well as the findings compiled from various reports using relevant secondary as well as primary data, it is possible to probe into the complexity of the human development status of Mumbai City and unfold the marginal spaces as seen

in its immediate and extended peripheral region.

The analysis of the Economic Census data (1980, 1990 and 1998) suggests that while Mumbai was getting de-industrialised, rendering large workforce, especially the urban poor and the industrial workers, jobless, gains were fewer and especially for the middle and upper classes, who could acquire the knowledgebase and skills as well as an access to information and capital to enter into the expanding and diversifying categories of the Service, Trade or Communication and Information related sectors. Tertiatisation of the economy and noticeable growth of the quaternary sector has paved the way for spatial reorganisation of Mumbai's urban landscape. Consequently, the socio-economic space of the informal manufacturing units and its workers is in flux and for that matter the urban poor is in flux.

As the city is undergoing structural transformation, many core areas of both formal and informal manufacturing along with the workers employed in the units localised in these areas are facing the brunt of either closure or spatial relocation or structural and sectoral reorganisation. It thereby activates a process of gentrification that finally culminates in the displacement of the urban poor. In the Mill lands in Central Mumbai, this process has already gained momentum. Malls and commercial complexes and tower like residential structures are replacing the mills, the chimneys, and the chawls. So is getting replaced the socio-cultural ethos of this part of the city. The mill workers, despite having a sustained movement for survival, have lost their battle. In Dharavi, the largest informal manufacturing hub of Mumbai, and not the second largest of the slums in the world, a similar process is on the anvil. The land-use and economy in Dharavi, being in close proximity of Bandra-Kurla Complex (BKC), the newly developed IT-Sector dominated commercial hub, is

"We got rich by violating one of the central tenets of economics: thou shall not sell off your capital and call it income. And yet over the past 40 years we have clear-cut the forests, fished rivers and oceans to the brink of extinction and siphoned oil from the earth as if it possessed an infinite supply. We've sold off our planet's natural capital and called it income. And now the earth, like the economy, is stripped."

- Kalle Lasn

"The global economy is a doomsday machine that must be stopped and reprogrammed." - Kalle Lasn

to undergo a massive transformation, through implementation of a controversial redevelopment project. Juxtaposition of the post-modern grandeur of the BKC on one hand and the slums and lower middle class housing areas like Bharatnagar and Teacher's Colony, respectively, on the other, represent images of a splintering- fragmented city. Many other areas in the Salsette like the Ramabainagar in Ghatkopar have also been identified as the potential sites for such a transformation.

Given the stakes of the global as well as the national, regional and local capital in such projects, it is not very difficult to predict the future scenario of the peripheral globalising metropolitan economies, such as those like Mumbai. And yet many questions arise that need to be addressed afresh in this context. Given

the regional imbalances within which these economies continue to remain embedded, how would they cope with the pressure of poverty induced migrant workers? Can these service sector dominated metropolitan economies be able to sustain themselves either by doing away with the manufacturing sector and its informal component or displacing it to the distant city-region areas? And finally, would the poor be able to mobilise their resistance and contest for their social and economic space in these transformative cities or to adapt to these pressures and continue to work out the strategies of survival in this situation of a permanent flux? Research papers to be presented and panel discussions to be held in this conference need to address to these questions.

"The extension and use of railroads, steamships, telegraphs, break down nationalities and bring peoples geographically remote into close connection commercially and politically. They make the world one, and capital, like water, tends to a common level." - Theodore Levitt

"Neoliberalization has not been very effective in revitalizing global capital accumulation, but it has succeeded remarkably well in restoring, or in some instances (as in Russia and China) creating, the power of an economic elite. The theoretical utopianism of neoliberal argument has, I conclude, primarily worked as a system of justification and legitimation for whatever needed to be done to achieve this goal." - David Harvey

LE CORBUSIER, HOUSING, AND THE GLOBAL URBAN EXPANSION PROJECT

Anthony Flint

In the United States and around the world, the principles of Jane Jacobs, a self-trained urban expert who wrote the landmark book *The Death and Life of Great American Cities* (Random House, 1961), has dominated the planning and design professions. Jacobs has become a predominant and romantic figure, challenging existing paradigms in post-World War II planning and taking on her greatest foil, the New York master planner Robert Moses, in exposing the folly of urban freeways and indiscriminate slum clearance. Jacobs moved to New York City in 1934 and had trouble finding a job in journalism, so with free time she rode the subway and got off at Christopher Street in Greenwich Village, and fell in love with that neighborhood in lower Manhattan. It became the model urban neighborhood — with buildings only 4 to 5 stories tall, with front porches and eyes on the street, a mix of uses and functions and activity that she celebrated as the “sidewalk ballet” of a thriving local economy and a well-functioning local economy.

Her framework for urbanism – it might be said she created the owner’s manual for citybuilding – has been adopted by municipal planning departments and the movement of New Urbanism and Smart Growth: compact, mixed-use, transit-oriented development, in opposition to the car-dependent, separated-use suburban growth that has characterized American growth patterns for the last half-century. Within that framework we have also seen the regulatory regime of containment and urban growth boundaries, such as those implemented in Portland, Oregon.

At the dawn of the 21st century, however, as you all have been exploring at this conference there are new challenges that call into question how the Jane Jacobs principles can be applied in the rapidly expanding metropolitan regions primarily in the developing world.

Let us review the projections before us. The world population is rising dramatically – and most of the people are migrating or being born in cities. We start with the planet’s population of 7 billion people. Today, over half of that population currently lives in cities. Millions of people are flocking to cities, migrating from rural areas by the millions, in search of a better life.

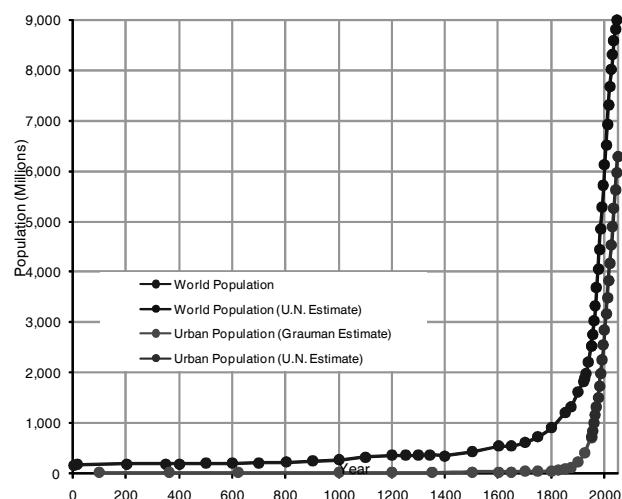


Figure 1 : Comparative Analysis of World Urban Population

The rise of the global mega-city is seen in the current most populous cities: Mexico City with 20 million people and rising, Mumbai, with 19 million people, Jakarta and Sao Paulo with 18 million people, and so on. Some of the most populated cities with their staggering populations can be found in the list below :

- | | | | |
|----|---------------------|---|------|
| 1. | Tokyo, Japan | – | 32.4 |
| 2. | Seoul, South Korea | – | 20.5 |
| 3. | Mexico City, Mexico | – | 20.5 |
| 4. | New York City, USA | – | 19.7 |
| 5. | Mumbai, India | – | 19.2 |

“Burn down your cities and leave our farms, and your cities will spring up again as if by magic; but destroy our farms and the grass will grow in the streets of every city in the country.”

William Jennings Bryan

6.	Jakarta, Indonesia	–	18.9	8.	Dhaka	–	23
7.	São Paulo, Brazil	–	18.8	9.	Beijing, China	–	23
8.	Delhi, India	–	18.6	10.	Karachi, Pakistan	–	20
9.	Ōsaka/Kobe, Japan	–	17.3	11.	Lagos, Nigeria	–	19
10.	Shanghai, China	–	16.6	12.	Kolkata, xxx	–	19
11.	Manila, Philippines	–	16.3	13.	Manila, Philippines	–	16
12.	Los Angeles, USA	–	15.2	14.	Los Angeles, USA	–	16
13.	Calcutta, India	–	15.1	15.	Shenzhen, China	–	16
14.	Moscow, Russia	–	15	16.	Buenos Aires, Argentina	–	16
15.	Cairo, Egypt	–	14.4	17.	Guangzhou, China	–	15
16.	Lagos, Nigeria	–	13.4	18.	Istanbul, Turkey	–	15
17.	Buenos Aires, Argentina	–	13.1	19.	Al-Qahirah, xx	–	15
18.	London, United Kingdom	–	12.8	20.	Kinshasa, xx	–	15
19.	Beijing, China	–	12.5	21.	Congqing, China	–	14
20.	Karachi, Pakistan	–	11.8	22.	Rio de Janeiro, Brazil	–	14

And that's just now. The world's urban population is expected to increase to 6.2 billion in 2050. In the projection of the most populous cities by 2025, the year of the best available projections, some metropolitan areas will have 30 or even 40 million people. And the dramatic growth is overwhelmingly going to occur in the developing world, in Asia and sub-Saharan Africa. Cities in the developing world, from New York to Tokyo to London, will add a total of 160 million people. But developing world cities will have to accommodate 2.6 billion people. This will happen largely in cities without a strong rule of law, and already overwhelmed and slums or informal settlement. The list of cities is given below with the total number of informal settlements present in them:

1.	Tokyo, Japan	–	39
2.	Delhi, India	–	33
3.	Shanghai, China	–	28
4.	Mumbai, India	–	27
5.	Mexico City, Mexico	–	25
6.	New York City, USA	–	24
7.	São Paulo, Brazil	–	23

Informal settlement, as you all know in this part of the world, is a big problem. The widely accepted United Nations estimate that 1 billion people in our cities live in slums and shantytowns, without access to basic services such as sanitation and clean water. There is an urgent need to house all these mostly poor people in decent housing.

How can these cities accommodate these many millions of additional people? Solly Angel, a professor at New York University and a visiting fellow at the Lincoln Institute of Land Policy, has done extensive research on how cities will grow – and finds that there is an urgent need to plan now and make minimal preparations, beginning with a framework for efficient and decent housing. This is the essence of urban planning, and many cities greeted this challenge before. Barcelona saw that new land would be needed beyond a medieval era compact city center. New York did the same thing in the mid-1800s, when settlement was primarily in lower Manhattan. Planners anticipated the population growth and laid down a grid all the way up to 96th Street and beyond. They knew what was coming, and planned for it.

"An architect should live as little in cities as a painter. Send him to our hills, and let him study there what nature understands by a buttress, and what by a dome." - John Ruskin

In the book *Planet of Cities*, published last year, Solly Angel identifies four key planning priorities for urban expansion:

- Ample urban land vs. containment
- Planning now for parks & open space
- Establishing a grid like New York City's
- Transportation infrastructure

What else might we do to accommodate this explosive growth in urban population? Some lessons might be found in an unlikely figure from the 20th century.

Le Corbusier, born Eduard Jeanerette, is best known as the father of modern architecture and the International Style, making a radical departure from the past.

He saw the home as both artistic expression and a machine for living in — beginning in the 1920s with buildings like this – Villa Savoye, just outside Paris – essentially an architectural version of the iPhone

When he was asked to design a chapel not far from his hometown in Switzerland, he produced this – Ronchamp – not so much a cathedral but an experience, set in nature.

Another masterpiece, the monastery at La Tourette near Lyon; and the ministry of education in Rio de Janeiro, a precursor to the United Nations building in New York, the design for which he was responsible for before being excised from the development team.

The Carpenter Center for the Visual Arts – which by opened exactly 50 years ago in November 2012 – rose between two very traditional buildings, the Harvard Faculty Club and the Busch-Reisinger and Fogg museums. The sweeping ramps, the gentle curve of a series of angled windows series shaped like a nautilus shell, the entire structure hoisted by pillars called pilotis, was clearly a new way of looking at design, with an interplay of indoor and outdoor space, new ways of ushering in light inside a building, efficiency and art all rolled into one.

And then of course here in India there is Chandigarh, an entire city he designed and built from scratch to mark the arrival of this country in the modern world.

He was a painter as well, a friend of Picasso. He designed a car 80 years before the Mini, and furniture and interior design, that is clearly the precursor to what we find in the IKEA catalog today

In the US, the better known modern architect is Frank Lloyd Wright, who executed many more buildings in America, including the Guggenheim museum in New York City.

If there is anything Le Corbusier is known for in America, it is his ideas about urban planning. His proposal for a city of three million people in Paris was a response to how urban areas had become cluttered and messy, with substandard housing and overwhelmed transportation systems. The idea of bulldozing a large section of Paris was controversial; it never happened there, but it did happen in the US.

His influence is all over the American landscape — the model for towers in the park that became a standard for public housing; in slum clearance and urban renewal, inner city freeways and ill-advised public spaces such as City Hall Plaza as part of Government Center in Boston. The execution and interpretation of Le Corbusier's ideas gave him a bad reputation.

What may have been lost, however, is Le Corbusier's extraordinary record of innovation and creativity in density and housing.

His preoccupation fundamentally was figuring out how to accommodate many millions of people moving into cities – operating at a much larger scale, efficiently and with decent housing for all.

What I believe is worth revisiting is Le Corbusier's Ville Radieuse, and the prototype apartment building, Unité D'Habitation in Marseille. The vertical city, with smaller apartments and access to a gym and open recreation space on the roof, included the world's first supermarket and a school.

"We are in danger of making our cities places where business goes on but where life, in its real sense, is lost." - Hubert H. Humphrey

To accommodate the growing numbers of city dwellers, the emphasis was on super-efficient rooms, much like the staterooms of the ocean liners Le Corbusier traveled on. The model for the living areas is similar to the monastic cells is at La Tourette. Part of Unite D'Habitation has been turned into a hotel, and the manager told me she puts the question to those couples wanting to stay in the smallest rooms – are you in love?

Efficency and density will be the hallmarks of the 21st century city, in stark contrast to the 3,000-square-foot McMansions of the sprawling suburbs of America. The world's demographics are changing. There will be many renters, and single households, who will need less space. The recognition of this is seen the work of innovative architects such as BjarkeIngels from Denmark, whose 8 House is arguably a modern-day version of Unite d'Habitation.

New York recently launched its “micro housing” or small-apartment initiative to address the rampant doubling- and tripling up in existing housing stock there, to accommodate almost 2 million one- and two-person households.

The need for well-designed density and efficiency in housing has prompted some interesting ideas, such as living units on a parking lot in New York.

Japan, which has been in the forefront of building super-efficient housing, has recognized that with green building and co-generation and access to transit, this kind of city building results in a lower carbon footprint, for a more sustainable urban future.

All of this is part of the incredibly challenging work that today's planners and architects are undertaking – designing at a much larger scale, a regional scale, and planning the transportation infrastructure as well that must serve the 21st century city, in the context of planning for the inevitable impacts of climate change.

Make no little plans, the Chicago planner Daniel Burnham famously said at the turn of the 20th century. Jane Jacobs dismissed that statement, and the planning

profession has reigned in its ambitions accordingly. But cities do need to make big plans. The urban expansion project before them — accommodating these millions and millions of people — is simply too outsized and towering. The response argues for thinking big, and coming up with innovations for density and efficiency.

Over the last 50 years or so it's been fashionable to ask, WWJS – alongside what would Jesus say, what would Jane say? But as the urban population explodes, the moral imperative of accommodating these many millions of people cries out for creativity and innovation and looking at problems in new ways.

I'd like to suggest that looking back at Le Corbusier unlocks secrets about design and planning today urban planning today – and about the process of innovation and disruption. The romantic ideal of Greenwich Villageis simply not up to the task.

Le Corbusier imagined different perspectives. He was the essence of disruption and new ideas, dedicated to designing housing and urban form that would be repeatable. So it may be time instead to ask: what would Le Corbusier say?

Anthony Flint is a fellow at the Lincoln Institute of Land Policy, and author of Wrestling with Moses: How Jane Jacobs Took on New York's Master Builder and Transformed the American City (Random House, 2009); This Land: The Battle over Sprawl and the Future of America (Johns Hopkins University Press 2006); and co-author of Smart Growth Policies: An Evaluation of Programs and Outcomes (Lincoln Institute, 2009). He has been a journalist, primarily at The Boston Globe, a policy advisor on smart growth for the Commonwealth of Massachusetts, and a visiting scholar and Loeb Fellow at Harvard University's Graduate School of Design. He is a regular contributor to The Atlantic Monthly's The Atlantic Cities. His next book, The Raven: The Life of Le Corbusier, Maker of the Modern, will be published by Amazon in 2014.

GEOGRAPHY OF ANTHROPOGENIC CHANGES AND ECORESTORATION THROUGH TREE PLANTATION

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ABSTRACT:

Human beings, Homo sapiens being the very adaptive and intelligent animal started affecting the ecology of the planet since the beginning of agriculture. The virgin forests and grassland ecosystems were adversely affected and even completely destroyed. With the advent of Industrial revolution and techno-scientific progress the process of devastation was accelerated. Population explosion, industrialisation, green revolution, mining, thermal power stations all drastically changed the ecology and geography since the beginning of 20th century. The development achieved in this manner is not sustainable. Nature conservation and ecological restoration can only save the earth from catastrophe. Geography of change may thus be suitably modified. Large scale tree plantation programmes are necessary for greening the planet. Only indigenous and eco-friendly tree species should be selected for plantation activities.

Key words :- *Homo sapien, Virgin forest, Grassland ecosystem, Industrial revolution, Techno-scientific progress, Green revolution, Sustainable development, Catastrophe, Ecological restoration, Indigenous species, Anthropocentric, Anthropogenic, Ecological degradation.*

The single most powerful force that affects and modifies nature is the numerical and intellectual strength of human beings. Human civilization is supposed to have been commenced when the Human animal – *Homo sapien sapien*, established settlements and started agricultural practices, about 10,000 years ago. It is interesting as well as alarming the ever accelerating change in the Geography of the planet during this period. It is realistic though unfortunate that ‘environment declines when civilization advances’!

It is estimated that about 60% of the terrestrial area was covered with forests and about 20% by grassland ecosystems, when Man started migrating from Africa to Europe and Asia. Due to continued migration and ever-spreading habitations more and more areas were occupied by pre-historic Man. As a result of increasing populations and domestication of cattle, sheep, goats and horses, large areas were required. This caused destruction of forests by burning or cutting and felling of trees. One ecologist has said ‘Man follows forest and desert follows him’! This is

particularly true in area in which shifting cultivation is practiced, resulting in exposure and erosion of the surface soil. This change continues even today, with ever-receding forests and ever expanding open, barren areas and human settlements.

Vast areas of land where once forests stood are under monoculture of one or few crops. Extensive grassland ecosystems also have brought under agriculture, horticulture and floriculture, thus exterminating the original flora and fauna. Many wildlife species like lion, cheetah, rhinoceros and tiger have become almost extinct, locally extinct or atleast critically endangered. We have, thus, lost about 50% of the pristine forests and original grasslands. The trend of devastation due to human interference is continued and even accelerated in modern age. The landscape was thus completely transformed.

The early human habitations were established along the rivers and water bodies. Due to extensive agricultural practices resulting in increasing food

“Energy efficiency is just as important as unconstrained energy supply, and increased action on efficiency can serve as a unifying energy policy that brings multiple benefits” - Maria van der Hoeven

“We need the tonic of wildness...At the same time that we are earnest to explore and learn all things, we require that all things be mysterious and unexplorable, that land and sea be indefinitely wild, unsurveyed and unfathomed by us because unfathomable. We can never have enough of nature.”

- Henry David Thoreau

security human population started increasing and spreading all over the globe. This caused multiplication of domestic animals. Their competition made the wild animals retreat leading to the extinction of many of the ancestors of our domestic animals. All these changes induced soil, water and air pollution. For a long time man's influence was negligible because populations were small and technical equipment modest.

The dawn of Industrial revolution in Europe in the eighteenth century triggered the techno-scientific revolution. This after first spreading in America became globalised. Coupled the religion-based anthropocentric view, the industrial development proliferated tremendously. The result was unbelievable proportion of exploitation of natural resources literally changing the topography and even geography. Excessive mining of mineral and fossil-fuels penetrated the earth's crust and even periplaneted hills and hillocks at places.

The devastation is not only confined to land but spread to the sea. Thousands of ships and cargo-liners traverse the oceans and seas, spilling millions of tons of oil in marine waters every year. Most species of whale, the seal, the sea cow, the sea otter and the dugong have become endangered or extinct.

The population explosion during the twentieth century demanded more and more space for agriculture and habitation. The 'Green Revolution', particularly based on chemical fertilizers as well as pesticides spoiled the soil in vast areas. Demand for more and more supply of water for agriculture, urban areas and industries led to the construction of gigantic dams. The huge reservoirs thus formed have altered the rivers and submerged the forest and fertile land. The flow of upstream rivers converted into oligotrophic lakes while the downstream rivers turned almost dry!

Below the soil, the use of man-made chemicals for fertilising crops drove away the earthworm, once dubbed by Charles Darwin as the 'builder of civilisation'.

The thermal power stations emit tremendous quantity of smoke and noxious gases, besides producing gigantic heaps of fly ash. Automobile vehicles increasing in geometric proportions give out emission of green house gases in enormous proportions. Coupled with industrial and domestic release of such gases not only increased air pollution but also created serious problems by forming ozone hole and inducing global warming. Till the boost of modern technology, sky was the limit to the over exploitation of the natural resources. But now the booming industry of air travel and explosive weaponry Man has started dabbling the upper atmosphere. Not only that but the space travel and thousands of man-made satellites encircling the earth has altered the very geography in the recent past.

The alarming speed and universal trend of urbanisation has created many geographical, social and ecological problems. Most of the rivers have been converted simply into sewage disposed drainage channels. Garbage disposal has become a herculean task.

These and many other anthropogenic changes are based on the false notions of progress and development. The western model of development is not sustainable. Unfortunately the developing countries all over the world have joined the rat race of the anthropocentric model of economic progress based on consumerism. For attaining these (unattainable) goals, they will require five more Earths! Mahatma Gandhi had said that 'the Earth is capable to provide the 'needs' of everybody, not the greeds of anybody'. But today the *Homo sapiens* are aiming at fulfilling the greeds of everybody! This is absurd. The ecologists, geographers and thinkers the world over have understood the dark side and the gloomy picture of this futile human endeavour.

Albert Schweitzer has sadly and pessimistically written that 'Man has lost the capacity to foresee and forestall. He will end by destroying the Earth'! Rachel

"We're in a giant car heading towards a brick wall and everyone's arguing over where they're going to sit" - David Suzuki

"In nature there are neither rewards nor punishments; there are consequences.
-Robert Green Ingersoll, lawyer and orator (1833-1899)" - Robert G. Ingersoll

Carson, in her epoch-making book ‘Silent Spring’ mentioned under deadly mirage of ‘green revolution’ as under – ‘The control of nature is phrase conceived in arrogance born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for convenience of Man’.

Human beings with their extraordinary and unparalleled intelligence as well as adaptive capacity have ruthlessly overexploited the planet’s natural resources. The blue-green Earth is being converted into a brown-black planet. The natural ecosystems have been altered, modified, degraded and even completely destroyed. The optimistic workers, thinkers and planners are of the opinion that the Geography of change can be restored by nature conservation and Ecological restoration.

Since the last two-three centuries the forest departments of many countries including India have started tree plantation programmes for developing the lost forests. The activity, though commendable is not based on sound ecological principles. In India, for example, the greening of extensive areas was attempted by plantation of exotic tree species like Eucalyptus, Australian Acacia (*Acacia auriculiformis*), Suru (*Casuarina equisetifolia*) and Silver Oak (*Grevillea robusta*) all introduced from Australia. Moreover the xerophytic species were planted recklessly over different bio-geographical regions. Subabul (*Leucena leucocephala*) and Gliricidia (*Gliricidia sepium*) from South America were used for afforestation indiscriminately in the nook and corner of the sub-continent. Stands of Pine (*Pinus longifolia*) and Ceder (*Cedrus deodara*) though indigenous are a common place occurrence in Mid-himalayan region where Oak forests once stood.

It is now universally accepted that only ecologically suitable indigenous species of trees should be planted in mixed plantations, avoiding monocultures. If such eco-plantations are coupled with energy plantation or even commercial plantation,

restoration of eco-geographical conditions may be achieved in due course. Many other techniques of conservation and restoration, judicious and moderate exploitation of natural resources and change in the life style can only bring about the reversal process necessary for saving the Earth from a Catastrophe.

A list of some important Tree species for Eco-plantation :

<u>Marathi Name</u>	<u>Botanical Name</u>
1. Aain	<i>Terminalia elleptica</i>
2. Bahawa	<i>Cassia fistula</i>
3. Bamboo	<i>Dendrocalamus strictus</i>
4. Beeja	<i>Pterocarpus marsupium</i>
5. Beheda	<i>Terminalia bellerica</i>
6. Bhokar	<i>Cordia dichotoma</i>
7. Jangli Badam	<i>Sterculia foetida</i>
8. Kalam	<i>Mitragyna parviflora</i>
9. Kalak	<i>Bambusa arundinacea</i>
10. Katesawar	<i>Bombax ceiba</i>
11. Kinai	<i>Albizzia procera</i>
12. Koshimb	<i>Schleichera oleosa</i>
13. Moha	<i>Madhuka longifolia</i>
14. Nana	<i>Lagerstroemia microcarpa</i>
15. Palas	<i>Butea monospern</i>
16. Paras Pimpal	<i>Thespesia populnea</i>
17. Pangara	<i>Erythrina variegata</i>
18. Phanashi	<i>Dalbergia paniculata</i>
19. Raktakanchan	<i>Bauhinia purpurea</i>
20. Rohitaka	<i>Aphanamixis polystachya</i>
21. Shirish	<i>Albizzia lebbeck</i>
22. Shivan	<i>Gmelina arborea</i>
23. Tokphal	<i>Acrocarpus fraxinifolius</i>
24. Waras	<i>Heterophragma roxburghii</i>

DEVELOPMENT, ENVIRONMENT AND SOCIETY: CONCEPTUAL BACKGROUND

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Changing Concept of Development

The concept of development has a long antiquity; the roots of the term could be traced back to the period of agricultural revolution that made it possible for man to settle in fertile river valleys. In these earlier years it was termed as progress (Tacitus, 1473). The view that development is the realisation of production potential is more recent, but the germ of the idea of economic and social progress still goes back to classical times (Brookfield, 1975). Despite such a long history, one is not very sure, even now, as to what the term ‘development’ really means with respect to different countries (W.B., 1980). It is, therefore, difficult to determine the level of development of countries, i.e. which countries are more developed and which are less. The richness and poverty of the countries is rather easier to decide; it is given by indicators of wealth reflecting on the ‘quantity of resources’ available to the society. But they do not provide any information about the allocation of those resources to people. For instance, they neither indicate the distribution of income among social groups nor do they talk about the share of resources used to provide free health and education services. Moreover, they do not suggest the availability of even square meal to all citizens. Further, they do not throw any light on the effects of production and consumption on people’s environment. The term development should thus take into consideration all the three aspects, viz. economics, society and environment. Ethically, development should neither harm the society nor its environment.

The prevailing view looks at economic development as antithetic to environmental quality. One finds two extreme uncompromising stands among the thinkers, viz. economic development at any cost –

technocentrism – or protection of the environment at the cost of even lack of development – bioethics (O’Riordan, 1977; 1981). One has to critically evaluate these two extreme, irreconcilable positions. For this, there is a need to understand the meaning of development.

The Concept of ‘development’ has changed over years (Pandey, 1977). Initially, it was equated with economic growth (Smith, 1776); here, it was rather extensive and the focus was on increase in production, irrespective of level of capital invested or labour employed or working conditions of employees. Later, it was thought that mere growth cannot be considered as development unless we relate production to capital invested or labour employed that would indicate efficiency in production either with respect to capital or labour; it was, in a way, an attempt to relate production to structural change (Clark, 1940). The concept tended to be intensive to take into consideration increase in productivity rather than simply volume of production. Later economists focused on distribution of production and this incorporated distributive justice as an important dimension reflecting on social equity (Ricardo, 1817; Marx, 1867; Pigou, 1961). Political economists later emphasised on participatory approach that provided opportunity for decision making by the concerned people. With the realisation of the exploitation of both nature and workers, the relationships between man and man or nature and man came to the fore to add ethical or moral dimension to the concept of development (Clifford and Osmond, 1971; Colman and Nixon, 1978). Environmental quality also became an important consideration that added aesthetic dimension (Dahmen, 1971; Hronski, 1971; Meadows *et al*, 1972). Thus,

“Why should we tolerate a diet of weak poisons, a home in insipid surroundings, a circle of acquaintances who are not quite our enemies, the noise of motors with just enough relief to prevent insanity? Who would want to live in a world which is just not quite fatal?” - Rachel Carson

when social and environmental considerations become a part and parcel of development, there cannot be a conflict between development, society and environment

Current Development Focus

Development today thus incorporates both the quantitative as well as qualitative aspects (Drewnowski, 1970; 1974). It talks of quality of life that can be expressed with the help of following equation:

$$\text{Quality of Life} = \text{Consumption} + \text{Social Security} \\ + \text{Leisure} + \text{Physical Environmental Quality}$$

The first term on the Right Hand Side in the above equation represents ‘quantitative’ aspect of development while the remaining three terms focus on ‘qualitative’ aspects. There is inverse relationship, particularly in later stages, between quantitative and qualitative aspects and this is indicated by the ‘opportunity cost curve’; optimum point on the curve would depend on value judgment with regard to consumption and environmental quality (Fig. 1).

Opportunity Cost Curve

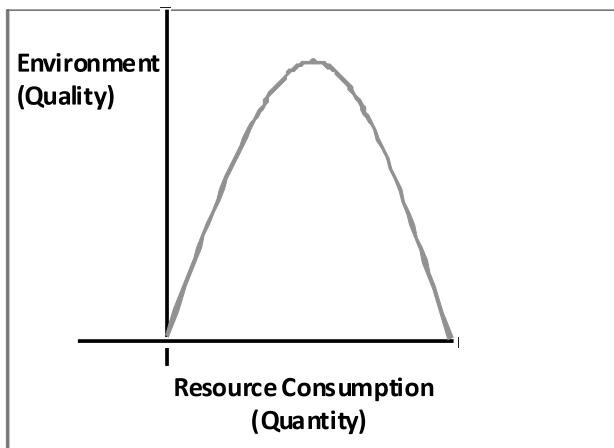


Fig. 1

There are perceived differences in emphasis by economists and environmentalists, and this has given

rise to some misconceptions. It is often believed that economics is concerned only with material utilities but this is not always the case; there are welfare considerations too. It is also assumed that human behaviour is always rational but this is not always so. One finds many instances of perceptions which considerably differ from the norm; while surveying in the village of Nagle it was found that one of the households preferred distant town of Bhiwandi (14 Km) for purchasing provisions when others were purchasing them from a nearby place, Kaman (5 Km). It is also thought that market prices reflect the real cost of production, but this is not always true. It is seen that environmental costs are often ignored. Really speaking the price should reflect collectively on cost of production and transport, profits of the entrepreneur and cost to community due to lost opportunities which is a negative externality. The last aspect is rarely ever attended.

Perceived differences are also related to price of the market failure. Consumers place a premium on wrong goods while going in for low priced commodities without paying proper attention to their being harmful; many people go in for duplicate products rather than originals in cosmetics, electronics etc. This helps to manage economy but society nor environment are at a loss. Many a times even the government policy places wrong emphases; in many developing countries there are disincentives for production or research on right goods e.g. there is more emphasis on thermal rather than solar power despite the fact that the latter is more environment friendly. Very little attention is paid to recycling of residues, such as, waste water or paper or even scrap. While aping the West, the volume of wastes increase due to replacement of parts rather than repairs e.g. LCDs, TVs; this saves efforts and, surprisingly, consumers are ready to pay. The attitude leads to unnecessary strain on natural capacity to absorb or decompose; it also places extra burden on resources. It is, therefore, urged that there should be proper costing.

"We're handing them [young people & future generations] a climate system which is potentially out of their control. We're in an emergency: you can see what's on the horizon over the next few decades with the effects it will have on ecosystems, sea level and species extinction - Prof Jim Hansen"

Advantages of Proper Costing

There are several advantages when the cost to community and environment are given due consideration. In the first place, it would act as deterrence on degrading activities. Secondly, it would encourage research and development on environment friendly processes. The above benefits will automatically lead to improvement in the quality of environment. Where then does lie the conflict between development and environment? Several experiments can be made in this direction. Many a times one finds electric cable reels thrown as wastes; they can be used as a central table in place of separate tea poi or even dining table depending on size, of both the family and cable. Since waste treatment is regular practice these days it is advisable to use cheap source of energy. The energy that is often used is electricity produced from thermal or hydel sources; use of solar energy for waste treatment will be a more efficient option. Reduction of waste generation is perhaps the best alternative.

Role of Environment in Development

Environment has two important functions in the development process. In the first place it is the repository of raw materials or resources; these may be in the form of fund or flow resources. The former are exhaustible while the latter are renewable. Environment also acts as a dustbin for disposal of wastes. Forests and oceans, for example, are the sinks for absorbing carbon dioxide. Both the above mentioned roles are valuable and environmental health needs due care. Economic development that involves production, distribution and consumption can be achieved by taking '*hard*' i.e. exploitative or '*soft*' i.e. utilitarian approach. Since '*hard*' approach is inimical to environment, it is necessary to follow the '*soft*' approach.

Working pattern of a soft developer places development on a sound footing. He seeks *compatibility* with environment, e.g. he will grow less water intensive crops like cotton or bajra in finely

textured regur soil that is susceptible to water logging rather than growing sugarcane. If for considerations of demand, quality, price etc. he grows sugarcane in such soils, he will take adequate care for drainage of water while providing irrigation to ensure that negative externalities do not crop up. He would also take precautionary measures while applying inputs for higher production. It is well known that Punjab is on the forefront of '*green revolution*' but it is also reported that the same state is sending a large number of cancer patients especially from its southern parts. This is due to overemphasis on increasing production and calls for periodic monitoring; environmental damages occur very slowly. The case of poisoned Noyyal River in Tirupur is also worth noting in this respect. The basic focus of development should be on maximization of human well-being without jeopardizing life support system; this is not happening at our newly developed industrial locations like Finolex at Golap. The plant has destroyed agricultural economy of Vaingani in its immediate vicinity. Preservation of unique, non-reproducible ecosystems is another important consideration and for this reason Silent Valley Movement had served the right cause. Undue exposure of the Andamans to tourists from mainland or other countries will destroy their environment and tribal society. It is necessary to develop some yardstick to monitor impact and also take precaution for future gene reserves. This is sustainable development.

Goals of Development

Development has three different goals to fulfill. In the first place, it should ensure availability of resources not only for the current generation but also for the generations to come. This is necessary for the survival of the human species and hence it calls for ecosystem stability. It is not merely sufficient to maintain the current carrying capacity of the environment but also to enhance it. This requires prudent resource use rather than converting comforts and luxuries into need. If one understands this, the conflict between need and greed will be totally eliminated. Apart from resource capacity, it is also advisable to sustain absorbing

"When the last tree is cut and the last fish killed, the last river poisoned, then you will see that you can't eat money." - John May

capacity of atmosphere, oceans and microbes. Today, too much of load on them is adversely affecting their function. Progress that meets the needs of the present without compromising the ability of future generations to meet their own needs is the real development that will ensure harmonious functioning of environment, economy and society; this is the concept behind sustainable development.

Basic Characteristics of Development

If the development is to help both the environment and society to survive, it should possess the following attributes. To begin with, there should be democratisation of development process, i.e. no one should be denied an opportunity or a right to development. Here, this aspect should be considered in a wider context of society, space as well as time; this would ensure smooth sailing to all the segments, regions and generations. It requires long term view of at least next 75-100 years. This could be done only by taking a systems approach to development that would understand interrelationship between different facets of the environment as also between environment, economy and society. As mentioned earlier, one should also pay attention to both the sources and sinks. There are thus three pillars of development, viz. economy, environment and society.

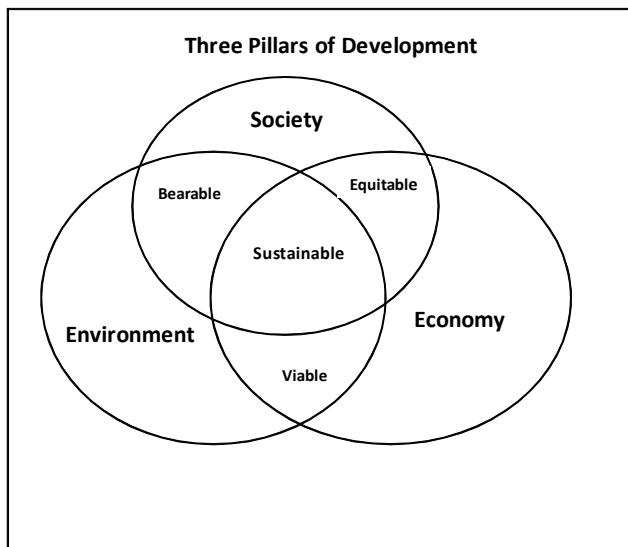


Fig. 2

Economics and Development

Economics is the ‘engine’ that determines the relation between resources and human needs. If this engine is to fulfill the aspirations mentioned above, then the development should follow a ‘soft’ course. Resources should be used with such a care; it must involve reuse and recycling wherever possible. Substitution of the products as well as processes through innovation and technological development is another right step in this direction. This calls for investment in innovative and green technology. There should be a fair price mechanism that would need the division of receipts into *current* consumption and *capital* investment in research for renewable substitutes. One can use the following indicators to ensure the same. Share of environmental friendly capital goods produced or imported in total production is a useful ingredient. Proportion of clean energy sources in total energy consumption is another measure that one can rely. A significant portion of investment in environmentally sound R&D is yet another yardstick. The last but not the least in importance is an indirect indication given by environmental protection expenditure as a percentage of GDP.

Development and Environmental Quality

Development is expected to give fair treatment to society, space and time. This could be done by following certain desirable practices. Minimum use of non-renewable resources is the first priority in this direction. So many measures, such as, pooling of cars, use of public transport, levying of deterrent parking charges in urban areas, use of bicycles, or even own feet, for short distance travel is ideal (Bhatia, 2009); this would also insure health by reducing chances of obesity, diabetes and other related diseases caused by sedentary life style. Extravagant use of building materials in rural areas also needs to be curbed. Rational use of renewable resources like water, soil or fisheries is also an urgent need as there are limits to rates of their regeneration. Water is going to be a key factor in future development as global resources of usable water are limited. This requires conservation

"In a conflicting world of poverty, greed and over-consumption, we still don't know what it is to share - unattributable"

of this resource through techniques like water harvesting. It is also necessary to reduce production of toxic materials which is possible only by use of clean technologies and practices like organic farming.

Several indicators could be considered to assess sustainability of development in environmental perspective. Proportion of land contaminated by hazardous wastes is an important measure in this respect. Withdrawal/recharge ratio for ground water is another important consideration for sustainable use of this resource which is going to be an important concern in the near future. Emissions of GHGs per capita become valuable to asses the position related to climate change. Threatened species to total native species becomes significant to confirm the status related to level of their endangerment. Change in energy use in agriculture would bring out the level of inputs used to improve yields that threaten the structure of soil as well as the health of soil microbes. Household wastes disposed per capita provide an idea of the level of waste generation at the individual level giving indication about the extent to which it should be reduced. Change in forest area to geographical area becomes an important indicator of environmental health because forests serve so many imponderable purposes from the viewpoint of environment and society. Protected forest as a proportion of the total forest would be an important supplementary. Expenditure on hazardous waste treatment will throw light on green policy adoption for environmental protection.

Society and Development

Development is expected to bring about improvement in people's well-being. Any increase in production or income that leads to adverse impact on health is not development in a real sense. Moreover, mere increase in total production or income is of no use unless all the sections of the society are benefitted. Proportion of people with access to resources and economic opportunities is an important consideration

in this respect. Level of People's participation in decision making is yet another important supplementary. Social justice would call for fair distribution of benefits, incentives, rights and responsibilities. Equitable distribution of benefits across generations is equally important and this requires sacrifice by the present generation. It would also ensure involvement of people in environmental protection. All this would ensure quality of life.

Social aspects of sustainable development can be judged by a few selected indicators. While rate of employment gives an indication of the work that has been provided to eligible hands, change in employment rate is a good measure of new employment creation; change in proportion of females in labour force would, in addition, reflect on change in attitude or modernisation. With increase in employment, reduction in proportion of people below poverty line is obvious fallout; this proportion is, therefore, another important yardstick of social development. Temporal change in per capita expenditure on social infrastructure, such as, health, education or housing is important, but this will give only provision and its utilisation will be revealed by improvement in adult literacy rate and increased school life expectancy. This would also be brought out by change in nutritional status of children and improved access to safe drinking water.

Concluding Remarks

The concept of development has changed over years as social scientists have realised the dangers of taking one sided view. However, the developers are still interested in maximisation of profit and hence concepts are not turned into practice. The above discussion not only gives the conceptual discussion but also the relevant indicators to monitor the developments in different spheres like economics, society and environment. If all the fronts mentioned above are well attended there cannot be any discordance among development, environment and society which would automatically ensure sustainability.

"Positive deviance means doing the right thing for sustainability, despite being surrounded by the wrong institutional structures, the wrong processes and stubbornly uncooperative people. That is what sustainability-literate leadership means today. Surrounded by evidence of rampant unsustainability it is not possible to say 'I did not know' - Sarah Parkin,"

References

- Bhatia, G. (2009), “A Streetcar Named Disaster”, TOI Daily, 25th December, 18.
- Brookfield, H. (ed) (1975), ‘Preface and From the Beginning’, “Interdependent Development: Perspectives on Development”, UNESCO, London, i-22.
- Clark, C. (1940), ‘The Conditions of Economic Progress’, Macmillan, London.
- Clifford, J. and Osmond, G. (1971) . ‘World Development Handbook’, Overseas Development Institute, Charles Knight and Company, London.
- Colman, D. and Nixon, F. (1978). ‘Economics of Change in Less Developed Countries’, Phillip Allen, Oxford.
- Dahmen, E. (1971), “Problems of Environmental Policy in Relation to General Economic Policy”, in U.N. (ed), ‘ECE Symposium on Problems Relating to Environment’, New York, 263-9.
- Drewnowski, J. (1970), ‘Studies in the Measurement of Levels of Living and Welfare’, UNRISD, Geneva.
- (1974), ‘On Measuring and Planning the Quality of Life’, Mouton, The Hague.
- Hronska, F. (1971), “The Relationship between Environmental Quality and the Socio-economic Development of Society”, in U.N. (ed), ‘ECE Symposium on Problems Relating to Environment’, New York, 297-301.
- Marx, K. (1867), ‘Das Capital’, Vol. 1, Progress, Moscow.
- Meadows, D.H. *et al*, (1972), ‘The Limits to Growth’, Potomac Associates/Universe Books, New York
- O’Riordan, T. (1977), ‘Environmental Ideologies’, Environmental Planning 9, 3-14.
- O’Riordan, T. (1981), ‘Environmentalism’, Second Edition, Pion Ltd. London, 1-36.
- Pandey, G. (1977), ‘Development : A Social Science View’, Development Policy and Administration Review, III(1), 16-26.
- Pigou, A.C. (1961), ‘The Economics of Welfare’, ELBS & Macmillan, London (4th Edition). Original, 1920.
- Ricardo, D. C. (1817), ‘The Principles of Political Economy and Taxation’,
- Smith, A.C. (1776), ‘An Enquiry into the Nature and Causes of the Wealth of Nations’, Modern Library, North Canon.
- Tacitus, C. (1473), ‘Nationalist Interpretations of Germania’, Quoted in Brookfield (1975), *op.cit*.
- World Bank (1980), ‘Beyond Development’, New York.

ECO-FRIENDLY GARDEN

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Due to fast growing urbanization, green cover of cities is reducing. Many big old trees are being cut down for constructions, road widening, public utility spaces etc. Therefore the role of gardens in any city became more important. Apart from aesthetic & recreational value gardens are important for their environmental values. It is always said that gardens are lungs of the city.

A common understanding is that a Garden itself is an improver of eco-system and therefore all gardening activities are eco-friendly activities. We will see how MODERN GARDEN is damaging the total eco-system.

HISTORICAL PERSPECTIVE

Garden Development is our ancient art. There are many references of this effect in our Sanskrut literature. Many sculptures also depict this art. Tulsi vrundavan is the best example of pot culture (Basil plant in a decorative pot for worship). There was a mention of Bahawa tree (*Cassia fistula*) as a Royal tree in Rugwed.

Maharshi (Saint) Vatsyayan (A.D. 300-400) narrates 4 types of gardens.

1. Pramadodyan – As the name suggests it must be Garden for flirts
2. Udyan – Common garden
3. Vruksha Vatika – Garden with clusters of trees for resting
4. Nandanvan – Superior pleasure garden.

It means God Indra's 'Nandanvan' was not only garden named 'Nandanvan' but it was a type of garden.

Gardening was one beautiful art amongst the 64 ancient arts. Narration of Ashokvan in Ramayan, description of different layouts of gardens and lakes in Indraprastha city in Mahabharat (Sabha-Parva) prove this. The association of Lord Krishna with the

Kadamba Tree (*Anthocephalus indicus*) is well known.

The poet Asvaghosa (A.D. 100) described the 'Nandanvan' in which Siddhartha saw flowering trees and lotuses. During the Buddhist period gardens were laid out around the monasteries and *stupas*. There were beautiful gardens in Nalanda and Takshashila. Shudrak (100 B.C.) has also given an account of gardens and flowers in the *Mruchhakatikum*. The great poet Mahakavi Kalidas (about 57 B.C.) mentioned the pleasure-garden having a bower of *Madhavi* creeper (*Hiptage madablota*) and several beautiful trees like Ashoka (*Saraca indica*) Kadamba (*Anthocephalus indicus*) Palasha (*Butea monosperma*), Parijatak (*Nyctanthes arbo-tristis*), and Kovidar (Kanchan) (*Bauhinia variegata*). The art of gardening has been described by Sarangadhar (A.D. 1800) in his *Upavana Vinoda* and *Sarangadhar Paddhati*.

According to Mr. B.S. Bhattacharji, pioneer rose grower of Bharat, roses have been cultivated in Bharat from ancient times. He says that, in our Sanskrut literature the rose is mentioned as "Atimanjula , Taruni Pushpa & Semantika ".

Recent example is of Swami Ramdas who had knowledge of more than 300 species of trees, climbers etc.

Today we have lost our art and since we have no knowledge of our '**Bio-Geography**', we are blindly following garden practices of western countries.

HOW CURRENT GARDEN ACTIVITIES ARE HAZARDOUS TO ENVIRONMENT

Basic requirements of a garden are Land-Soil, Vegetation and Water.

I. LAND

At present, land form, soil layer and character of soil is not taken into account where the garden is to be developed. Soil is very important factor. It takes

hundreds of years to get one inch layer of soil from rocks. Tons of soil is now being imported from the place miles away from development site for making a garden.

It affects eco-system of that area from where the soil is being excavated. It also involves unnecessary heavy transportation which means more fuel consumption and air pollution. There is a loss of habitat when garden soil is excavated.

Heavy transportation of soil means displacement of soil. It means character of soil of a particular region is lost. You also get weeds, insects, pests etc. alongwith this imported soil. In Pune metropolitan area there are more than a dozen garden soil suppliers and they supply 4000 to 5000 (min. average) brass garden soil per year (1 Brass = 10' x 10' x 1'). Total consumption of soil becomes 60,000 brass. Since garden soil is not available across the banks of the rivers, they have to flow upto 50 km.radius around Pune. i.e. Mulshi, Lonavala, Ashtapur etc.

Plant nursery business is also a major activity in the displacement of soil. Saplings in polybags (containing garden soil) are being transported in all corners of the country. In agriculture, there is no need of transporting soil.

There is a loss of agricultural land because of floriculture industry and plant nursery business.

Heavy consumption of garden soil for the maintenance and renovation of an existing garden is another impact.

Now-a-days there are soil mafias stealing tons of soil in a single night with the help of bulldozers.

Making a garden after cutting a hill slope or after large scale soil filling to create a plain surface (reclamation) is also not an eco-friendly activity.

II. WATER

In a garden, water is required for irrigation, beautification, micro-climatic effect and for drinking purpose.

Apart from this, water is the basic need of life. But gardens are being developed by narrowing rivers, nallas and water streams. Some times streams are totally filled up by filling debris. Many nallas in Pune have disappeared. Same is the case in many cities.

Examples :

1. Behr – India – MIDC, Chakan near Pune, multinational company. Factory has been erected at the bottom of a natural lake admeasuring about 6 acres. Lake is no more there. Total eco-system has been destroyed due to dried lake. Micro-climatic effect is lost. A garden is developed around the slopes of the lake and water supply to this garden is carried out by hiring water tankers.
2. Nala Park in Sahakarnagar, Pune.
3. Encroachment in Ram Nadi (small river) in Pune.

Consumption of water and source of water is also to be considered while assessing eco-friendly garden. Purified drinking water is being used for gardens. Excess use of water is misuse of water. It also adversely affects plants.

III. TREES AND GARDEN PLANTS

Another basic and visible element of a garden is vegetation i.e. trees, shrubs, climbers, grasses etc.

At present about 90% of garden varieties are exotic (i.e. foreign species) whether they are trees, shrubs, climbers or herbs, which are available in the market and being planted by a common man or a house-wife, who normally looks after garden. They do not know what is exotic and what is native/local. Landscape architects, horticulturists and garden developers also do not bother about this aspect.

Many foreign species are re-named in local languages and therefore people assume that these varieties are originally from our land.

e.g.	Gulmohor	<i>Delonix regia</i>	Madagascar (Africa)
	Niligiri	<i>Eucalyptus sp.</i>	Australia
	Pandhara Chapha	<i>Plumeria sp.</i>	S. America
	Shankasur	<i>Caesalpinia pulcherima</i>	West Indies
	Shewanti	<i>Crysanthemum sp.</i>	China

There are some indigenous species being used in garden landscaping since long, not because these are native species and keeping this aspect in mind while planting, but only because extra-ordinary characters of those varieties.

For example –

Fish-tail palm (Bherli Maad)	<i>caryota urens</i>	Special profile
Phoenix palm (Shindi)	<i>Phoenix sylvestris</i>	Special profile
Kamini (Kunti)	<i>Murraya exotica</i>	Evergreen with fragrant flowers.
Kanchan	<i>Bauhinia variegata</i>	Attractive flowers.
Elephant apple tree (Karmal)	<i>Dillenia indica</i>	Natural shape.
Bakul	<i>Mimusops elengi</i>	Evergreen, can be trimmed to give artistic shapes
Putranjiva	<i>Putranjiva roxburghii</i>	Evergreen, can be trimmed to give artistic shapes
Coleus varieties	—	Beautiful foliage with different colours.
Various ferns	—	Beautiful green foliage
Lotus / Water lily	—	Beautiful flowering water plants

Foreign species can disturb the ecological cycle, may be even destroy them later. They can cause local extinction of original, native species.

Examples :

1. Su-babhol (Leucaena leucocephala) – A tree imported from South America. The aggressive growth and leaves are unsuitable as fodder to cattle due to the toxic effect is well known fact.
2. Jalparni – Ubiquitous water hyacinth. One army officer brought it to Bharat from Brazil. It is now an uncontrollable water weed in rivers and lakes.
3. Lantana – It is a major weed in forests. It is a garden variety.

Plant Nursery business is flourishing well. City people are crazy to buy new exotic varieties. Since spending power increased, farm houses, resorts, eco-villages and eco-towns have emerged. They have encroached on agricultural lands, open spaces of villages and forest land also. Gardens with many exotic and invasive garden species are being developed in

their campus. There are many resorts on the borders of National Parks. It is a direct threat to our forests that these garden species will definitely enter into core regions.

Exotic species, especially seasonals require utmost attention. They consume more fertilizers, require chemical fertilizers. Spraying of pesticides / fungicides is also often required. Exotics also consume more water compared to local species. Exotic plants are costly.

At some places existing trees are cut and then new garden is laid but it is not an eco friendly activity. In some cases big trees are transplanted. However heavy consumption of energy & man power is involved in this process and this too is not eco friendly. Moreover there is no guarantee of successful transplantation.

LAWNS

Lawn is an important element of a garden. It adds beauty to the garden. It gives you soothing effect. It

works as a background for many ornamental trees and plants. It increases the green area of the garden. It is important from utility point also. People come on the lawns for relaxation. Children enjoy playing on the lawns.

Inspite of all these aspects, a lawn is not mandatory for making a garden. Except for a few regions, Indian climate is not suitable for lawns. Therefore lawn means too much consumption of water, heavy maintenance and excessive use of chemicals and red soil. In may corporate offices, factories, resorts huge lawns are seen. It is very odd when problem of water scarcity is everywhere.

After some years you have to remove old grass and replace it by new grass.

IV. OTHER ELEMENTS OF THE GARDEN

4.1 Civil Construction - Fencing or compound wall, entrance gate, paths, steps, flower beds, borders, sitouts, water tank, artificial streams, watchman cabins, are some of the requirements of a garden. Heavy cementing, use of marbles, granite and glazed tiles is seen in many gardens. There are some people who are changing the garden design every now and then, scraping existing structure. In all these activities basic purpose of garden is defeated.

4.2 Garden Furniture and other material – Excess use of steel, plastic, FRP is observed everywhere. Garden benches, Garden implements of bright colours become eyesore in the garden. Transparent glass windows and glass cladding is also harmful.

Birds



4.3 Use of chemical fertilizers, toxic chemical pesticides, fungicides or weedicides –

The **environmental impact of pesticides** is often greater than what is intended by those who use them. Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, including nontarget species, air, water, bottom sediments, and food.^[1] Though there can be benefits using pesticides, inappropriate use can counter productively increase pest resistance and kill the natural enemies of pests. Many users are inadequately informed about potential short and long-term risks, and the necessary precautions in the correct application of such toxic chemicals are not always made.^[2] Pesticides can contaminate unintended land and water when they are sprayed aerially or allowed to run off fields, or when they escape from production sites and storage tanks or are inappropriately discarded.^[3]

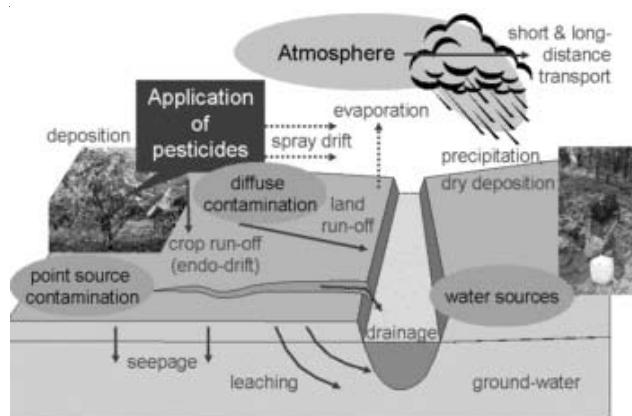
The amount of pesticide that migrates from the intended application area is influenced by the particular chemical's properties: its propensity for binding to soil, its vapor pressure, its water solubility, and its resistance to being broken down over time.^[4] Factors in the soil, such as its texture, its ability to retain water, and the amount of organic matter contained in it, also affect the amount of pesticide that will leave the area.^[4] Some pesticides contribute to global warming and the depletion of the ozone layer.^[5]



In England, the use of pesticides in gardens and farmland has seen a reduction in the number of Common Chaffinches

The Fish and Wildlife Service estimates that 72 million birds are killed by pesticides in the United States each year. Bald eagles are common examples of nontarget organisms that are impacted by pesticide use. Rachel Carson's landmark book *Silent Spring* dealt with the loss of bird species due to bioaccumulation of pesticides in their tissues. There is evidence that birds are continuing to be harmed by pesticide use. In the farmland of Britain, populations of ten different bird species declined by 10 million breeding individuals between 1979 and 1999, a phenomenon thought to have resulted from loss of plant and invertebrate species on which the birds feed. Throughout Europe, 116 species of birds are now threatened. Reductions in bird populations have been found to be associated with times and areas in which pesticides are used.

Fig. 1 Water Pollution



Pesticide pathways

In the United States, pesticides were found to pollute every stream and over 90% of wells sampled in a study by the US Geological Survey.^[13] Pesticide residues have also been found in rain and groundwater.^[4] Studies by the UK government showed that pesticide concentrations exceeded those allowable for drinking water in some samples of river water and groundwater.^[14]

Since garden activities in Bharat are increasing, use of pesticides is also on rise which is very harmful. In garden centres and garden shops marketing of

hazardous chemicals is observed. Books also refer chemical remedies and experts too recommend chemical formulae.

Roses and chemical fertilizers & pesticides –

Constant care and attention are needed to grow modern cultivated roses. This is more so in relation to diseases and pest. There is a very high consumption of chemical fertilizers and pesticides in rose fields, rose export units, rose gardens and individual rose growers.

WHAT IS ECO-FRIENDLY GARDEN

A garden developed by avoiding various hazards of present garden practices is eco-friendly garden. Eco-friendly garden will maintain the balance of eco-system.

HOW TO ACHIEVE

I. LAND

Selection of a site i.e. a piece of land for a garden is the most important factor. Soil on the site should be suitable for garden plants. Soil is a very important source / medium of life. If soil layer is thin on the site, you are not supposed to pour tons of soil on the site by transporting it from some other place miles away from your site.

Select trees and plants which are suitable in that particular area.

There is no need of fresh soil each and every time. Texture and character of the soil can be improved by adding manures.

When selecting a site, even if you feel that the land is barren, carefully study the site. There may be a unique eco-system, which is not to be disturbed. e.g. plateau of Kaas, Satara, Maharashtra State.

II. WATER

Study carefully natural water sources available on the site. Preserve them and try to improve which will be beneficial for your garden. Use water resources judiciously. Try to reuse water for irrigating the garden. Study the requirement of each variety of tree and other plants. While planting make different sections as per requirement of water. Drip irrigation is suggested. Wherever bore wells are there, imply the recharging system.

III. TREES & GARDEN PLANTS

IMPORTANCE OF NATIVE/ LOCAL SPECIES

Native means which are originally from that particular geographical area. Plant species which are seen in forests are ideal for local plantation. They

Some indigenous garden trees, shrubs and herbs -

Trees

	Area where suitable	
Mango – <i>Mangifera indica</i>	Through out Country	Evergreen
Neem- <i>Azadiracta indica</i>	Through out Country	Evergreen
Bakul – <i>Mimusops elengi</i>	West Coast	Evergreen
Putranjiva – <i>Putranjiva roxburghii</i>	West Coast	Evergreen
Taman – <i>Lagerstroemia reginae</i>	Through out Country	Deciduous
Bahawa – <i>Cassia fistula</i>	Through out Country	Deciduous
Coconut – <i>Cocos nucifera</i>	Costal regions	Evergreen
Phoenix Palm – <i>Phoenix sylvestris</i>	Through out Country Except coastal & Far East	Evergreen
Fishtail Palm – <i>Caryota urens</i>	West Coast & Himalaya slopes	Evergreen
Cycas – <i>Cycas circinalis</i>	S. Western Ghats	Evergreen
Bamboo sp. -		Evergreen
Karmal - <i>Dillenia indica</i>	In heavy rain fall area from east Himalaya to Kerala	Evergreen
Sita Ashok - <i>Saraca indica</i>	Central & East Himalayan slopes, South Bharat, Konkan	Evergreen
Kanchan - <i>Bauhinia variegata</i>	Throughout Country except extreme regions	Deciduous

Small Trees / Shrubs

Kamini (Kunti) – <i>Murraya exotica</i>	thro'out Country especially good rainfall area	Evergreen
Supari (Beetel nut) – <i>Areca catechu</i>	Costal regions	Evergreen
Mogra – <i>Jasmine sambac</i>	Throughout Country	Evergreen
Paras Pimpal - <i>Thespesia populnea</i>	West Costs	Evergreen
Kadhipatta - <i>Murraya Koenigii</i>	Western Ghats	Evergreen
Jaswand – Hibiscus varieties	throughout Country	Evergreen
Ixora Red – <i>Ixora coccinea</i>	Costal regions	Evergreen
Ixora White – <i>Ixora parviflora</i>	Western Ghats	Evergreen
Kanher – <i>Nerium indicum</i>	Throughout Country	Evergreen

Small Shrubs / Herbs

Chitrak – <i>Plumbago zeylanica</i>	Throughout Country
Balsam – <i>Impatiens basamina</i>	Throughout Country
Sadaphuli – <i>Vinca rosia</i>	Throughout Country

maintain the eco-logical balance. They provide habitat and food for various birds, animals and insects.

Therefore, considering the ecological aspect and also economics and convenience, local species are always suitable in gardens.

Coleus varieties	Throughout Country
Begonias	W. Ghats / cold humid regions
Dianthus / Pink	Cold humid regions
Geranium sp.	Temperate regions
Various Ferns	Throughout Country

Climbers

Thunbergia alata	Humid regions
Thunbergia fragrans	Humid regions
Thunbergia mysorensis	Humid regions
Mogra (climbing sp.)	Throughout Country
Clematis	Throughout Country

IV. LAWNS

A garden can be without any patch of lawn. However a small patch of a lawn in the garden will be appropriate. ‘Ground covers’ is a good option for lawn.

V. OTHER ELEMENTS OF THE GARDEN

5.1 Civil Construction - There should be minimum required civil work. Please avoid heavy cementing, use of marbles, granite & glazed tiles. Also avoid glass work & heavy colours to civil work.

5.2 Garden furniture & implements - Use eco-friendly material. Mild colours are to be used.

5.3 Use of chemical fertilizers, poisonous chemical pesticides, fungicides or weedicides – It has no scope in an eco-friendly garden. There are many simple methods to control plant diseases, weeds and pests by using

- Cow urine,
- Neem oil,
- Kerosene,
- Soap water,
- Physical traps,
- Physical control,
- Wavding, (*Embelia rives*)
- Tobacco etc.

Cleanliness is the best way of preventing diseases & pests.

VI. SOME OTHER IMPORTANT FACTORS

6.1 Non conventional energy source.

6.2 Rain water harvesting

6.3 Use of indigenous material.

6.4 No. of fruit trees, flowering trees and shrubs which attract Birds and Insects.

6.5 Creation of natural habitat.

6.6 Pollution free area.

6.7 Composting.

There are few gardens in Pune which can be considered as eco friendly gardens, viz. Empress Botanical Garden Chittaranjan Vatika Lakaki Lake garden

It is very difficult to develop 100 % eco friendly garden. Availability of indigenous / local plants is a major problem. It is also not practical to suggest destruction of existing garden to make an eco friendly garden. You can make a plan and stop purchasing exotic species. When any existing plant dies please prefer local plants in its place. After some period you will find that proportion of local plants is increased. Avoid putting new garden soil. Use leaf mold, vermicompost etc. to improve soil condition. Stop chemicals totally. Make a small pond or put a bird’s bath in the garden for birds and insects. Within a short span of time you will enjoy transformation of your garden.

You will be satisfied seeing that your garden is not hazard to environment but it contributes in maintaining the balance of eco system.

Gardens come alive with chirping of birds and fluttering of butterflies.

**Plates : Photographs of Some of the Gardens- Empress Botanical Garden & Terrace Garden
Developed by the author**



Compiled by –

Dr. Parag Mahajan
Shri Ravindra Bhide

References –

- Prof. Mahajan S.D. Aapple Vruksha, Nature Walk Pune, 2009
- Prof. Mahajan S.D. Deshi Vruksha, Nature Walk Pune, 2010
- Prof. Mahajan S.D. , Dr. Mahajan P.S., Dr. Mahajan S.P., Green Heritage, Let's Act Publication, Pune, 2011
- Dr. Vishnu Swarup , Garden Flowers , NBT, Delhi 1988 (4th Edn.)
- Amitabha Mukhopadhyay, Roses, NBT, Delhi, 1990
- Various lectures of eminent speakers
- News papers
- Personal observations

Technical Session I

Contemporary Societal Transformations

IMPACT OF GLOBALIZATION ON CHILDREN (POSITIVE OR NEGATIVE) WITH REFERENCE TO MEDIA (TV)

Sangita S. Mohanty & Sneha Singh Roy

ABSTRACT:

Globalization is a powerful phenomenon that empowers every individual to be a true Global Citizen with access across various cross-geography products and services. It is believed that global market, global technology, global ideas and global solidarity would enrich the lives of people world over. The era of globalization is opening many opportunities for millions of people around the world.

With the advent of electronic media particularly television the cultural impact has transcended all barriers and everybody (particularly children) is becoming more homogeneous with regard to cultural perception. This trend of cultural globalization led to different profiles of upbringing the existing society in general and children in particular.

This paper attempts to find out cultural impact of globalization on children due to exposure through electronic media like T.V. It tries to find out positivity of the impact and also the critical aspect of borderline issues of cultural degeneration. The researchers are interested in finding out how the process of globalization is affecting family lives and parent-children relationship. They also want to understand the development of a hybrid multicultural identity as a phase of transition from traditional cultural practices and belief to a diffused global culture which is all inclusive.

With this backdrop the authors aim to produce a study of primary data collected by using interview method of 50 random samples with the children of age group 5-14yrs and their parents. The researcher will make use of qualitative & comparative analysis on collected information.

Key words: *Globalisation and culture, Children consumer socialization*

1. Introduction

The term **Globalization** has been widely used in the last fifteen years. It is a controversial term and has been defined in several different ways. Globalization indicates that the world today is more interconnected than before. Globalization in its basic economic sense refers to the adoption of open and unfettered trading markets (through lowering of trade barriers, removal of capital controls, and liberalization of foreign exchange restrictions). Large volumes of money movement, increased volumes of trade, changes in information technology and communication are all integral to a global world. There is also a significant movement of people from one country to another for trade and work. Such increases in the movement of goods, labor, and services have weakened national

barriers and restrictions that are imposed by a nation state. Some identify a new emergence of a “global village.” In the past two decades, economic globalization has been the driving force behind the overall process of globalization.

Rise of Information Communication Technology and rampant proliferation of broadcasting system has developed the concept of global window. With advent of liberalized economy and with emergence of trans National Corporation, paradigm shift in public relation strategy leading to a uniform global behavior pattern.

Cultural Globalization refers to the transmission of ideas, meanings and values across national borders. This process is marked by the spread of commodities and ideologies, which become standardized around the world. Mass consumption serves as a facilitator

“Our lack of community is intensely painful. A TV talk show is not community. A couple of hours in a church pew each Sabbath is not community. A multinational corporation is neither a human nor a community, and in the sweatshops, defiled agribusiness fields, genetic mutation labs, ecological dead zones, the inhumanity is showing. Without genuine spiritual community, life becomes a struggle so lonely and grim that even Hillary Clinton has admitted “it takes a village”. - David James Duncan

between different people and cultures around the globe as a result of the exponential growth of the human population. Through technological advancement, culture has been moving beyond borders and boundaries, transforming through locations the shared meanings of culture. Through the process of sharing the ideas and values of one culture to another ultimately leads to interconnectedness between various populations from diverse cultures.

The impact of globalization in the cultural sphere has, most generally, been viewed in a pessimistic light. Typically, it has been associated with the destruction of cultural identities, victims of the accelerating encroachment of a homogenized, westernized, consumer culture. The perspectives of globalization, asserts that this is a process of the transfiguration of worldwide diversity into a pandemic westernized consumer culture.

The global influence of American products, businesses and culture upon other countries around the world has been referred to as Americanization. This influence is represented through that of American-based Television programs which are rebroadcast throughout the world. Major American companies such as McDonalds and Coca-Cola have played a major role in the spread of American culture across the globe. Terms such as Cocacolonization have been coined to refer to the dominance of American products in foreign countries, which some critics of globalization view as a threat to the cultural identity of such foreign nations. Another perspective, regards globalization as a process of hybridization on which cultural mixture and adaptation continuously transform and renew cultural forms.

Through this process of globalization, consumerism (i.e. a social and economic order that encourages the purchase of goods and services in ever-greater amounts) has permeated and changed the fabric of contemporary Indian society. Western fashions are coming to India: the traditional Indian dress is increasingly being displaced by western dresses especially in urban areas. Indian MTV, soap television, and films set a stage for patterns of behavior, dress codes and jargon. In this sense, consumerism is usually considered a part of media culture.

For developing an understanding of globalization, it requires in beginning to have a fair idea about the function and meaning of glocalization. Glocalization (a portmanteau of globalization and localization) is business jargon for the adaptation of a product or service specifically to each locality or culture in which it is sold. It is similar to internationalization. The increasing presence of McDonald's restaurants worldwide is an example of globalization, while the restaurant chain's menu changes in an attempt to appeal to local palates are an example of glocalization.

2. Background of Present Study

“The end of geography”, “The borderless world”; are the two provocative phrases used to describe the process of globalization which underpins the world economy and culture . This underpinning though affects all age group and strata of society but the maximum impact is felt in case of children. They are being imploded with multiple source of information, thereby personality being shaped in divergent manner leading to a multicultural or perhaps a hybrid identity. Media such as television, which facilitates for instant information about any place in the world, play an important part in developing this type of global (hybrid) identity.

With this backdrop the researchers make an attempt to understand and analyze the impact of media (vis. a vis. television) on children. The present study is based on the theory of post modernism that is dominated by the new media which take us out of our past..

The post modernism theory observed that the postmodern world is not destined, as Marx hoped to be a socialist one. Instead it is the one dominated by the new media which take us out of our past. Post modern society is highly pluralistic a diverse in countless films, videos, TV programmers and websites, images circulates around the world. We come into contact with many ideas and values but these have little connection with the history of the areas in which we live or indeed with our own personal histories. Everything seems constantly in flux. Our world is being remade. Mass production, the mass consumer, the big city, big brother state, the sprawling housing estate and the nation state are in decline, flexibility, diversity,

differentiation and mobility, communication, decentralisation and internationalization are in ascendant. In the process our identities, our sense of self and our own subjectivities are being transformed. We are in transition to a new era.

French author Joan Baudrillard (the important theorist of post modernity) believes that the electronic media have destroyed our relationship to our past and created a chaotic, empty world. However he argues, the spread of electronic communication and the mass media has reversed the Marxist theorem that economic forces shape society. Instead social life is influenced above all by signs and images. In a media dominated age Baudrillard says meaning is created by flow of images, as in TV programmes. Much of our world has become a sort of make believe universe in which we are responding to media images rather than to real or places.

3. Objectives

1. To study the children's consumer socialization and parent child interaction
2. To understand the parent's perception about children's TV viewing pattern
3. To find out over all effect of TV viewing on children's personality

4. Scope of Research:

This research has covered various elements like what is globalisation, how has globalisation affected the cultural aspect, what is the role of media in influencing the children, viewing hours of TV and its effect on children's personality including pattern of consumption.

5. Research Methodology

The research was conducted using interview and questionnaire method. Two sets of questionnaire were prepared one for parents and one for children. The

questions were of absolute in nature with scope of giving more than one alternative answer to each question. In the research the population includes housewives, working parents and

children aged between 5 to 14 years. Hence this research does not include define population of interest. The method of selecting the sample is random, as it assures an apt way for the researcher to gather opinion from every kind of sample.

The study has been conducted in the cluster of middle and upper middle class population of thane city. This research has been conducted using interview type survey as it is far more personal form of research than questionnaire.

Qualitative as well as relative nature of information were collected. Each attribute were quantified with some standard logic and relativity.

6. The review of literature

The global children's market holds tremendous potential. U.S advertisers spent \$894 million on children's television in 1996 an increase of 11 percent over the 1995 expenditure (crowe 1997). Children five to fourteen years of age in Japan, South Korea and people's republic of China alone represent a total market of 223,327,000 people (MCNEAL 1992). By the year 2001 21.6 percent of the total Indian population was in the age group of 4to 14 years. The reason why this segment has become so powerful is that children market is growing immensely in size. Further many Asians purchase high-priced clothing and toys for their children. Japanese families spend more than 3.1 billion U.S dollar a year on Children's shoes and clothing (Abdoolcarim 1994).

Chinese children's overall index of influence on family spending on 25 items is around 68% (Mcneal and yeh 1997). Overall, the global children's market holds tremendous potential and marketers all over the

"The paramount doctrine of the economic and technological euphoria of recent decades has been that everything depends on innovation. It was understood as desirable, and even necessary, that we should go on and on from one technological innovation to the next, which would cause the economy to "grow" and make everything better and better. This of course implied at every point a hatred of the past, of all things inherited and free. All things superceded in our progress of innovations, whatever their value might have been, were discounted as of no value at all." - Wendell Berry

world have attempted to influence the consumer socialization of the research.

7. Attitudes towards television advertising :

In India children are considered vulnerable and susceptible to the influence of television advertising since parents believe that they do not have the skills and experience required to process advertising messages in the context of their reality and needs. This gives advertiser an unfair advantage in persuading children to buy various products.

The economic dimensions in contrast include favorable beliefs about television advertising such as beliefs that advertising provides information or raises the standard of living. (Andrews 1989)

8. Parent-child Interaction and Influence of television advertising :

“In case of children’s advertising, the purpose is to use the child as a surrogate salesman to pressure the parents into buying the product. This is unfair to the child and to the parent and can be damaging to the parent-child relationship.” Some members of the marketing community however hold a positive interaction between the parents and the child teaching the later intelligent habits of purchase and consumption. They can teach them price and the quality relationship, including experiences with the use of money and the ways to shop for quality products. They can even influence the child’s brand preference and help to distinguish fact from exaggeration in TV ads.

The referred literature has indicated parental responses to purchase request (word et al 1986) and advertising induced family conflict in USA, Britain and Japan (Robertson et al 1989). However research has not related family communication patterns to attitudes towards television advertising in general or examined advertising related parental practices in a cross cultural context. Extending family communication research to a cultural setting should increase our understanding of family processes our study examined family communication pattern and general altitude towards television programmer and advertising among parents of children 5 to 14 years in Thane city.

Our study concentrated on children socialization process in a globalized environment with reference to

television advertising. Thus we discussed the concept of children’s consumer socialization and parent- child interaction relation to it.

9. Children’s consumer socialization

Children’s Consumer Socialization, according to Scotward et all, refers to the process by which young people acquire skills, knowledge and attitudes relevant to their functioning as consumer in the marketplace. It is based upon three components-background factors, socialization agents and the learning mechanism. The background factors include the socio-economic status, social class and religious background of the family, the sex of the child. The socialization agents are those individuals who are directly involved with the child and have influence on them because of there frequency of contact and importance. These agents includes the parents, siblings, peers, teachers, the media and the media personalities such as sports stars and famous television or movie stars. The learning mechanism emphasis on modeling and reinforcement which implies the certain aspects of consumption behaviour are transmitted from parents to the child and those aspects that are learnt early in life tend to persists into adulthood.

The study attempts to investigate the impact of the background factors, socialising agents, childhood consumption experiences and training on children’s buying response. The study focuses on the influence of television programmes, advertising and of parents and other family members.

10. Observation:

As indicated the study was carried out among the middle and upper middle class family of Thane city mostly exposed to a typical urban lifestyle. The data or feedback regarding impact of electronic media i.e TV was collected separately from parents as well as children. Average ages of parents are in late thirties to early forties. The children age varies from 7 years to 13 years. Sixty percent parents are having single kid and forty percent parents are having more than one kid. Following observations were made in different perspective of parents association with children and impact of electronic media on overall personality growth of a child.

i. Time Spent with Kids

In atypical Indian family structure kids are taken care by many people other than parents. The study shows that 40% of kids are being taken care by relatives and remaining 60% kids are looked after by maid(20%) or at crèche(20%) or may be independent(20%) to look after themselves.(Fig.1)

Though there is no significant variation in time spent by parents with kids but kids staying independently or at creche are finding more time with parents. (Fig.2)

Fig.1 Caretaker of Kids in addition to parents

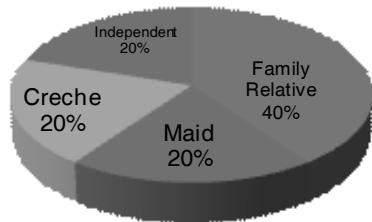


Fig.2 Time spent by parents with kids being looked after by caretaker

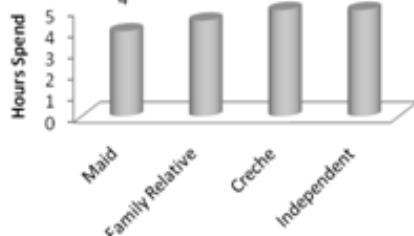
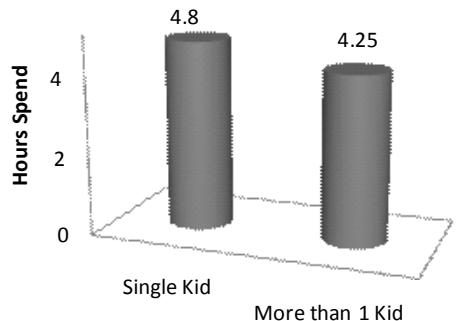
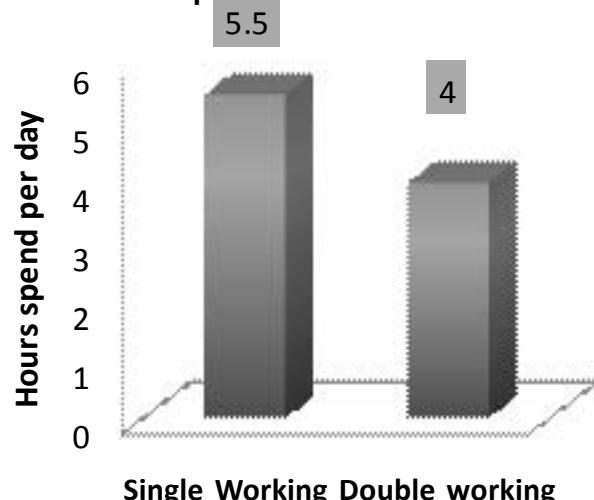


Fig 3.Number of Kids and hours spend with kids



Parents those are having one kid spend relatively more time with kid than those parents have more than one kid. (Fig3).There is a significant difference of time being spent by parents where both are working to that of the case when one is working. Kid(s) of single working parent is fortunate to spend more time with parents than that of double working parents. (Fig.4)

Fig.4 Working of Parents and Time Spend with Children

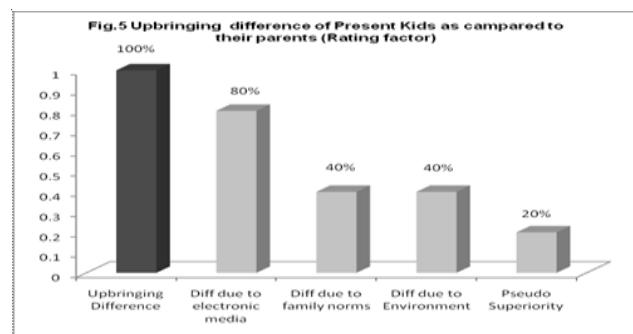


Single Working Double working

ii. Parents perception about upbringing of kids

All parents are having one opinion that there is marked change in the scenario of upbringing of children as compared to their time.Maximum impact on upbringing is due to electronic media(i.e. TV) followed by changing scenario of family norms and equally responsible is environment.Parents have also observed that children are developing an illogical pseudo superiority complex.(Fig.5)

Fig.5 Upbringing difference of Present Kids as compared to their parents (Rating factor)

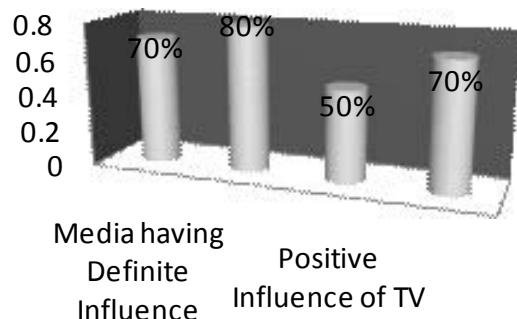


An attitude to life which seeks fulfilment in the single-minded pursuit of wealth - in short, materialism - does not fit into this world, because it contains within itself no limiting principle, while the environment in which it is placed is strictly limited." - E.F. Schumacher,

iii. Parent's view on influence of TV/Media

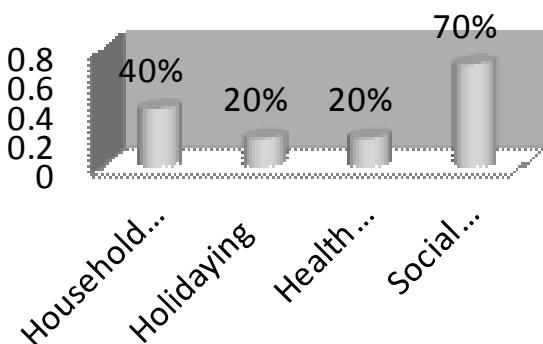
As far as impact is concerned maximum impact perception is on TV which is also affecting the life style. Media is having a definite impact as a whole so also it is affecting the culture. However still a reasonable percentage of parents feel that TV do have a positive impact. (Fig.6)

Fig.6 Over all Effect of Media



Now observing influence of TV it has been found that there is a positive aspect of influence in the form of awakening people on social hazards. The second important factor of TV's influence in shaping the household buying pattern. It also moderately influences people in holidaying habit as well as imparting health awareness.(Fig.7)

Fig 7.Influence of TV



iv. Children's preference of viewing and its effect

As far as viewing is concerned maximum children prefers to view sports programme followed by daily soaps mostly comedy. Science fiction follows the next. Very small percentage children are interested for educative programme (Fig.8). Their preference primarily due to likeness of typical programme or character followed by sense of pure entertainment.Very

few really see off beat programme. Time convenience is criteria for a minuscule percentage of children (Fig.9).

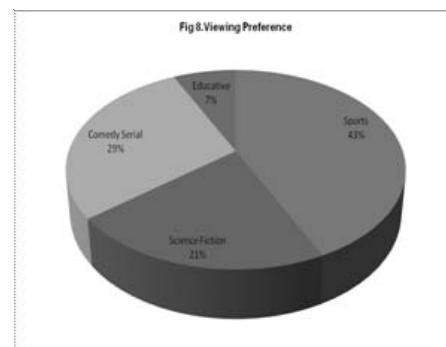
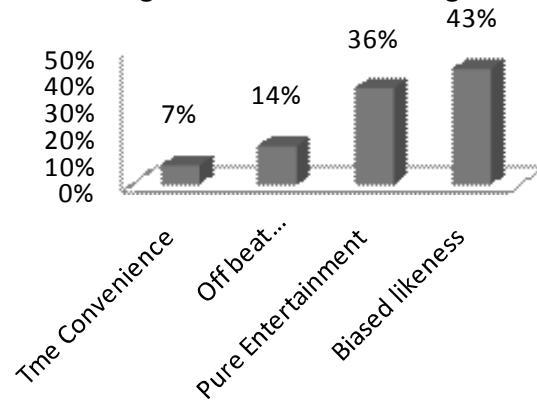


Fig.9 Likeness of Viewing



Most children likes sports person as their favourite character. Very small percent of children likes the characters from cartoon and equally small percentage of children like sci-fiction character. A minuscule percentage of children like entertainer or artist(Fig.10). Most of the likeness of character is based on blind fan following. However a substantial percentage of children also make a critical assessment of a character. Small section of kids are biased by fictional hero worshiping so also an equal level for pure entertainment (Fig.11).

Fig. 10. Favourite Character.

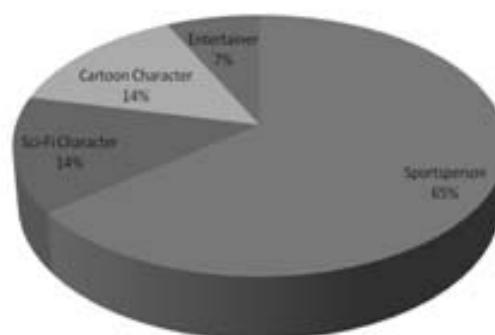
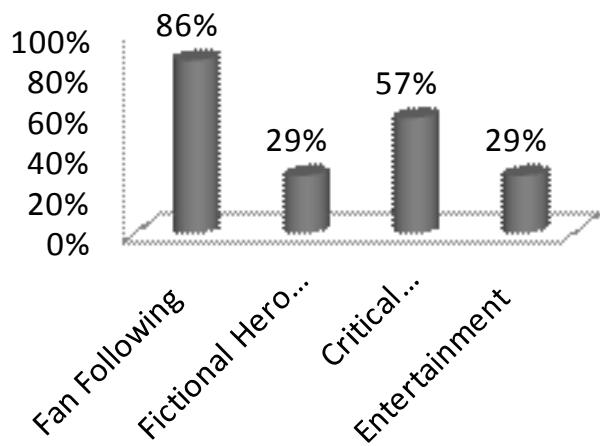


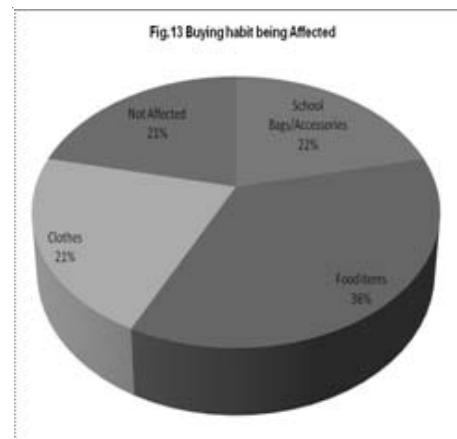
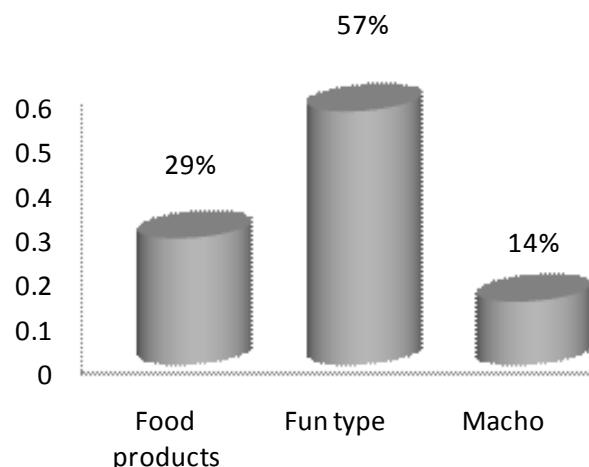
Fig .11 Likeness for Character



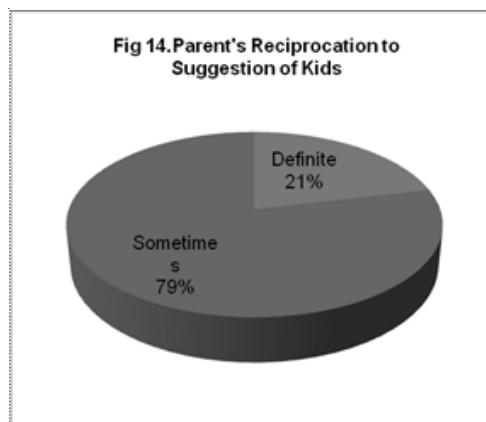
v. Kids' likeness for advertising and buying behavior

Most of the kids (around 60%) are liking advertisement those are of fun type. Half of that likes advertisement of food products. A small section (14%) likes macho type advertisement(Fig.12). However as far as buying is concerned TV has affected maximum children in their preference of food items(36%). Equitable percentage(i.e 22%) children's preference changes with regard to school accessories and clothes and an equal percentage of children are not affected by TV in their buying behavior(Fig.13).

Fig.12 Likeness to advertisement



It has been further observed that impact of media indirectly affect the parents in their buying behavior. The research indicates that 79% of parents gives a sympathetic consideration to their kids' view in purchasing products. Remaining 29% parents definitely consider their children's view before purchasing. (Fig.14)



vi. Ambition of Life(Children's Perception)

Media has definitely changed the glamour perception of children. 25% of children think to become a sportsperson in life. Another 25% wants to become engineer vis a vis software professional.14% finds it more glamorous to become civil servant and 12% wants to take off beat track like merchant navy or becoming astronaut. Art and culture is the least number preferred percentage. The erstwhile glamorous profession like doctor, college teacher and defence do not have any taker (Fig.15).

"Shouldn't we also ask ourselves what the consequences are of scrambling to provide the "most" of everything to our children in a world of fast dwindling resources? " - John Taylor Gatto

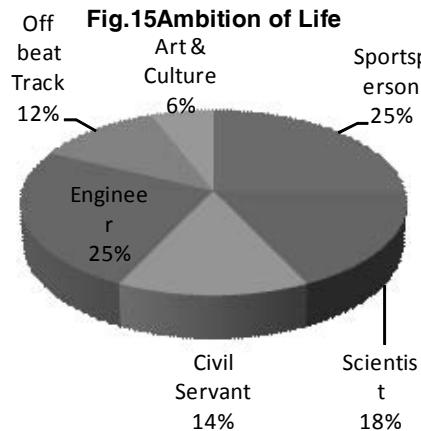


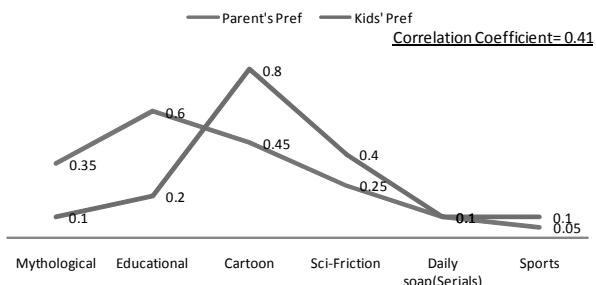
Fig.15 Ambition of Life

11. Analysis

Based on all the observation the researcher tried to find out the different aspect of viewing preference of TV programmes. There seems to be a mild positive correlation between viewing preference of programme between parent and children. However the emphasis of weightage for different programme appears to be substantial. While parents wants their kids to see programmes on education and mythology; children prefer to watch programmes related to cartoon and science fiction.

Surprisingly sports appears to be least preferred in both the case though it seems to be most glamorous as per perception of children as observed earlier. It means though sports may not be a wholesome entertainment but it has a high impact factor. Further analyzing the correlation it can be inferred that if some educative programme based on cartoon can be made it would become a popular choice (Fig.16).

Fig.16 Parent's Preference to Children's Preference in viewing a Programme



There is hardly any relationship between children viewing pattern to any of the parameter. In case of age (Fig.17) and being with parent does not show any significant relationship(Fig.18).

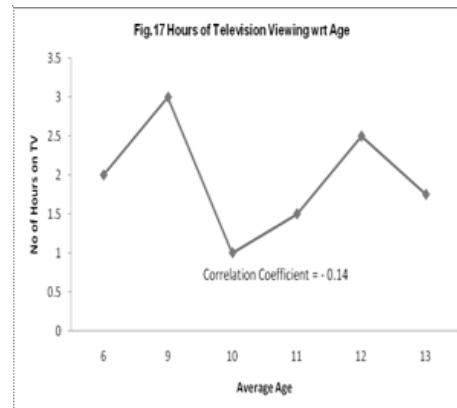


Fig.17 Hours of Television Viewing wrt Age

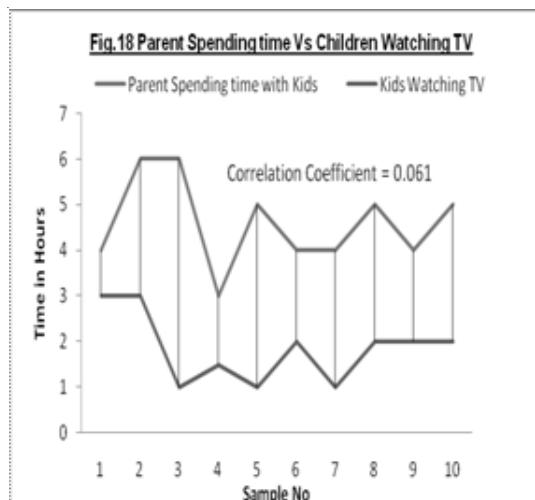


Fig.18 Parent Spending time Vs Children Watching TV

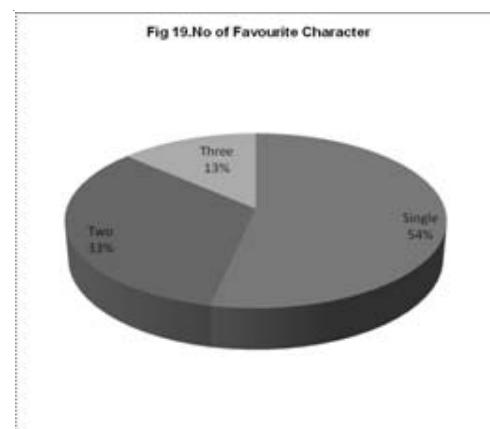


Fig.19.No of Favourite Character

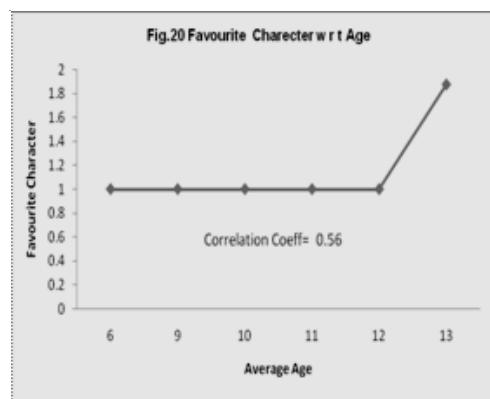


Fig.20 Favourite Character wrt Age

It means every child will be having his own choice of viewing TV. The criterion of one cannot be applicable to other. As observed 54% of children are fan of one character and 33% children are fan of two characters and remaining 13% are fan of three characters (Fig .19).And there happens to be a reasonable positive correlation between age and becoming fan of number of characters. Fig. 20 indicates that during age span of 12 to 13 there happens to be major influence of different personality and they are having more than one ideal personality in their mind. Those children having one ideal personality in mind is more focused than those having more than one idol (Fig.21). But there is no relation between age and aim of life(Fig.22). It means children at a higher age are more vulnerable to deviation from a single goal.

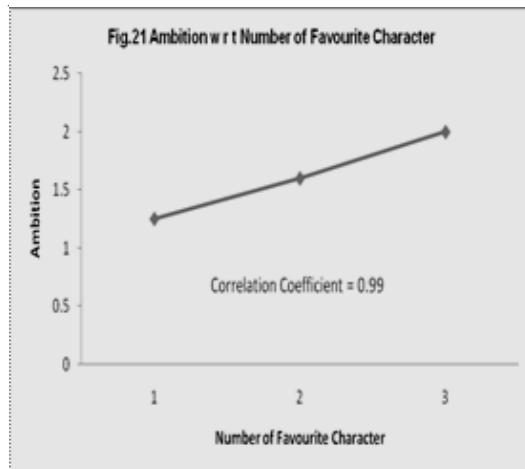
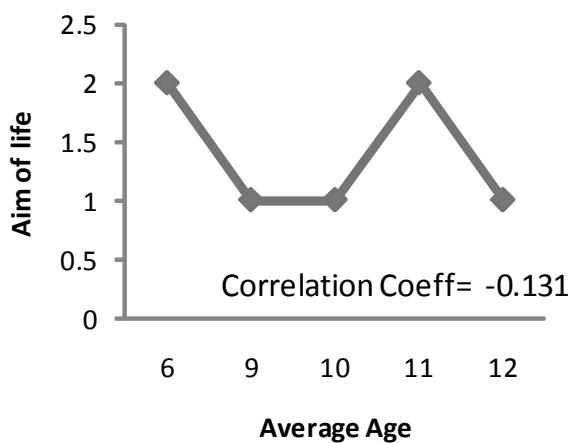


Fig.22 Aim of life w r t Age



As far as buying behavior of children are concerned the trend goes like this. Those see less TV (avg. 1.5 hrs per day) do not have specific preference to any product. Little bit more exposure to TV (avg. 1.66 hrs per day) get influenced in purchasing school accessories. Still more exposure (avg.1.8 hrs per day) prefers in purchasing food products. Children exposed more than 2.5 hours prefer to purchase clothes (Fig.23).Age factor influences the purchasing of school accessories in case of small children gradually showing the trend of food products and clothes and at a upper age the children do not have any preference(Fig.24). It means grown up children those who sees TV less frequently do not have any inhibition for any product.

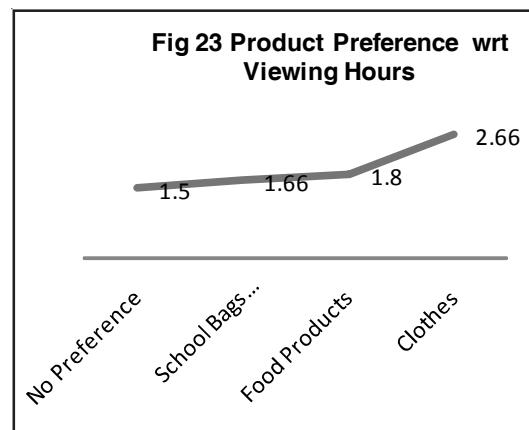


Fig 24 Product Preference wrt Age



12. Conclusion

Consequent upon the elaborate interaction with the parents and their children the researchers realized that the globalisation has widely affected the local culture imprinting both positive and negative impact on children's attitude and behavior patterns.

"...one cannot but wonder how an environment can make people despair and sit idle and then, by changing the conditions, one can transform the same people into matchless performers."

- Muhammad Yunus

In the positive side of impact they(children) are being exposed to various cultures. They have developed broader outlook and diversified life style particularly in urban area. There is more degree of individual freedom and children are mostly focused to goal oriented growth. The interconnectivity has made the world short. With easy flow of information and dissemination of thought new ideas are developing.

In the negative side of impact it has been observed that children are drifting away from Indian core values. Consumerism has given to mechanical growth. Personal interaction among family members has significantly reduced and emotion has taken a back seat. Sometimes too much information creates a noise in the mind of children. Children not getting right signal falls the prey of biased information and develop a casual attitude with pseudo superiority complex.

With this truth of cultural globalization the parents and media have to take key responsibilities to channelize the potentials of future generation.

The authors are working as assistant Professars at Joshi Bedekar College, Thene

Bibliography

1. Action for Children's Television, *Testimony before the Federal Trade Commission*, November 1971.
2. Belch, Raymond A. and Stephen A. Greyser, "Advertising and Promotion: An Integrated Marketing Communication Marketing Communications Perspective," 4th Ed., Boston, Irwin/McGraw Hill, 1998.
3. Bill Crowe, "Advertisers See Big Guys in Little Eyes," *Broadcasting and Cable*, July 28 1997, pp. 47
4. Carlson, Lee and Sanford Grossbart, "Parental Styles and Consumer Socialisation of Children," *Journal of Consumer Research*, June 15, 1988, pp. 77-94.
5. George P. Moschis, "The Role of Family Communication in Consumer Socialisation of Children and Adolescents," *Journals of Consumer Research*, Vol. 11, March 1985, pp. 893-913.
6. Giddens Anthony "Sociology' Wiley India Pvt.Ltd,5th edn,2006.
7. Gregory M. Rose, Victoria D. Bush and Lynn Kahle, "The Influence of Family Communication Patterns on Parental Reactions toward Advertising: A Cross-National Examination," *Journal of Advertising*, Vol. 27 (Winter 1998), pp. 72-84.
8. James U. McNeal, *Kids as Customers*, Lexington: Lexington Books, 1992.
9. James U. McNeal and Mindy F. Ji, "Children's Influence on Chinese Families Newfound Leisure Time and its Marketing Implications," *Asia Pacific Journal of Marketing and Logistics*, Vol. 8, 1996, pp. 32-57.
10. Ken Wells, "Selling to the World: Global Ad Campaigns, After Many Missteps, Finally Pay Dividends," *The Wall Street Journals*, August 27, 1992, pp.A1.
11. Leonard N. Reid, "The Impact of Family Group Interaction on Children's Understanding of Television Advertising," *Journal of advertising*, Vol. 8, March 1979,pp. 13-19.
12. Les Carlson, Sanford Grossbart and Ann Walsh, "Mothers' Communication Orientation and Consumer-Socialisation Tendencies," *Journal of Marketing*, July 1993, pp.99-114.
13. M. Vijayanunni, *Census Atlas, India*, New Delhi, Registrar General and Census Commissioner, 2001, pp. 11.
14. Nielson Media Research, National Audience Demographic Report, September 1997, New York.
15. "Pressure growing to Ban Ads Aimed at Children", *The Times of India, New Delhi, January 17,2001*, pp.6.
16. Santa Barbara, "Chinese Children as Consumers: an Analysis of their New Product Information Sources," *The Journal of Consumer Marketing*, Vol.16, No. 4, 1999, pp.345-365.
17. Scotward Wackman, D. B. Ronald and Lesser Gerald, *Effects of Television Advertising on Consumer Socialisation*, Working Paper, Marketing Science Institute, Cambridge, Mass, 1974
18. http://en.wikipedia.org/wiki/Cultural_globalization
19. Zoher Abdoolecarim, "Consumer Kids Get Star Billing," *Asian Business* October, 1994,pp. 22-26.

"Globalization is not just about changing relations between the 'inside' of the nation-state and the 'outside' of the international system. It cuts across received categories, creating myriad multilayered intersections, overlapping playing fields, and actors skilled at working across these boundaries. People are at once rooted and rootless, local producers and global consumers, threatened in their identities yet continually remaking those identities." - Philip G. Cerny

A METAMORPHOSED TRIBAL SOCIETY

Udhav Zarekar

ABSTRACT:

Communities around the world are grappling with major socio-economic change. Tribes are on the cusp of the crisis in sustainable development. The impact of change is strong on tribal society as these communities are marginalized and are therefore easily swept aside by the invisible hand of the market and its proponents. This phase of change is a multi-pronged attack on their existence and livelihoods. Deprivation of land and forests are the oppression that these people experience. It has resulted in the breakdown of community life and a steady cultural death. The tribal people are exterminated by a process of attrition.

There is a diverse social and cultural trait among the tribes of Maharashtra. Problems related to health, nutrition, education and other related issues are acute and they vary considerably. Poverty and backwardness are the major issues confronting tribal communities especially in Maharashtra.

The present research paper would be an attempt to analyse the problems related to socio-economic and demographic factors of change of tribal society in Vidarbha region of Maharashtra.

Keywords: Tribe, socio-economic and demographic factors, tribal society

1. Introduction

The word ‘Tribe’ is generally used for a “socially cohesive unit, associated with a territory, the member of which regards them as politically autonomous”. Often a tribe possesses a distinct dialect and distinct cultural traits. The idea of ‘indigenous people’ is an issue of considerable contention in India today. This was hardly so till a few years ago. In fact, social workers, administrators, politicians and even scholars widely used the term to refer to a certain category of people. They hardly felt any unease in the use of native equivalent of this term, viz., and ‘adivasi.’ Ghurye (1963) has some reservation to the use of such terms. The expression he used was ‘so-called aborigines.’ That is how the identity of adivasis has entered into the consciousness of the tribal people. The identity that was forced upon them from outside, precisely to mark out differences from the dominant community, has now been internalised by the people themselves. Not only has it become an important mark of social differentiation and identity assertion but also an important tool of articulation for empowerment. They were the first amongst those who resisted British colonial interests much before the independence

movement - a contribution that despite a few rare accounts of historic movements in a few regions remains largely unrecognized.

India has the largest number of tribes compared to any other single country of the world. According to many thinkers the development and spread of the Hindu society is nothing but a gigantic special process of absorbing the tribal population of India into the original Hindu caste system. Some of them go to the extent of asserting that the present tribes are the relics which have remained un-assimilated into the Hindu society because of the British intervention. Considerable anthropological literature regarding tribes and their cultures has emerged. Tribes have been also studied from a number of angles. The categorising of tribes as criminals, the massive conversion of a number of them by missionaries, the impact of administrative and economic policies of British government on the tribes and the numerous studies of tribes from the point of view of elaborating the history of the complexity and diversity of Indian culture—all this have stimulated controversies regarding the fate of tribal groups in India. After Independence, the tribal people are subjected to conscious and elaborate influence by

"We are being made aware that the organization of society on the principle of private profit, as well as public destruction, is leading both to the deformation of humanity by unregulated industrialism, and to the exhaustion of natural resources, and that a good deal of our material progress is a progress for which succeeding generations may have to pay dearly." - T.S. Eliot

various agencies. The tribes are in transition and are being absorbed into the matrix of a social order which is being created by political, economic and cultural forces actively inaugurated by the Government of Independent India.

Kosambi (1956) viewed that the tribes had migrated to the plain areas at a much later date only after the vegetation had thinned out and wild animals became less numerous—making the area less dangerous for human habitation and fit for settled cultivation. As per the 2001 census, Maharashtra has 8.9 percent of scheduled tribe population. The scheduled tribe population of the state constitutes 5.1 percent of the country's Scheduled Tribe population. The growth rate of scheduled tribe of Maharashtra in the decade 1991-2001 is 17.2 percent which is lower in comparison to the overall 22.7 percent out of the state population as a whole. There is a need for spatial studies at regional and micro levels in order to understand the present status of Scheduled tribes and their society.

The Scheduled Area, notified by the Government of India, consists of 5809 villages and 16 towns in 12 districts in Maharashtra, covering an area of 46,531 sq.kms, which is about 15.1 percent of the area of the state. These districts are Thane, Pune, Nashik, Dhule, Nandurbar, Jalgaon, Ahmednagar, Nanded, Amravati, Yeotmal, Gadchiroli and Chandrapur. The Tribal Sub-Plan (TSP) area covers the scheduled area. The autochthon status of the tribes in their present habitats in different parts of the country can be easily contested as in case of the tribes of Maharashtra. One of major pockets of concentration of tribes is Gadchiroli district.

Gadchiroli district was carved out on the 26th of August 1982 by the division of erstwhile Chandrapur district. Earlier, it was a part of Chandrapur District and only two places namely Gadchiroli and Sironcha were tahsils of Chandrapur District before the formation of Gadchiroli District.

Gadchiroli tahsil was created in 1905 by transfer of Zamindari Estate from Brahmapuri and Chandrapur tahsils. Gadchiroli district was created on August 26, 1982 by bifurcating the Chandrapur district in the place of Brahmapuri, which is part of the Vidarbha region of Maharashtra. In ancient times the region was ruled

by the Rashtrakutas, the Chalukyas, the Yadavas of Deogiri and later the Gonds of Gadchiroli. In the 13th century Khandkya Ballal Shah founded Chandrapur. He shifted his capital from Sirpur to Chandrapur. Chandrapur subsequently came under Maratha rule. In 1853, Berar, of which Chandrapur (then called Chanda until 1964) was part, was ceded to the British East India Company.

In 1854, Chandrapur became an independent district of Berar. In 1905, the British created the tahsils of Gadchiroli by transfer of Zamindari Estate from Chandrapur and Brahmapuri. It was part of the Central Provinces till 1956, when with the reorganisation of the states; Chandrapur was transferred to Bombay state. In 1960, when the new state of Maharashtra was created, Chandrapur became a district of the state. In 1982 Chandrapur was divided, with Gadchiroli becoming an independent district in the place of Brahmapuri.

Gadchiroli district is situated on the North-Eastern side of Maharashtra State and has state borders of Andhra Pradesh and Chhattisgarh. Total population of the district is 9,70,294. Male and female population is 4,91,101 and 4,79,193 respectively (as per Census 2001). SC and ST population in the district is 1,08,824 and 3,71,696 (as per 2001 Census). The literacy rate of district is 60.1 percent (as per census 2001). The Tribal Community population that resides in the district is 38.3 percent (as per Census 2001).

The district is categorized as Tribal and undeveloped district and most of the land is covered with forest and hills. Forests cover more than 75.96 % of the geographical area of the district. This district is famous for Bamboo and Tendu leaves. Paddy is the main agriculture produce in this district. The other Agriculture Produce in the district is Jawar, Linseed, Tur, and Wheat. The main profession of the people is farming.

There are no large scale Industry in the entire district except the paper mill at Ashti in Chamorshi Taluka and Paper Pulp Factory at Desaiganj. Due to this, the district is economically backward. There are many Rice Mills in the district as the Paddy is the main agriculture produce here. The Tussar Silk Worm

Centre exists in Armori taluka of the district. Only, 18.5 kilometres Railway route passes through the district.

The district is divided into six Sub-Divisions i.e. Gadchiroli, Chamorshi, Aheri, Etapalli, Desaiganj and Kurkheda respectively and each sub-division has two talukas. 467 Gram Panchayats and 1, 688 Revenue Villages. The district has three Legislative Assembly Constituencies namely Gadchiroli, Armori and Aheri. Basically, the district is distributed into 12 talukas and 12 Panchayat Samitis. Only, two Municipalities exist in the district i.e. at Gadchiroli and Wadsa.

The main river basin of the district is Godavari which borders the southern boundary of the district, flows from West to East. The major sub-basins of the Godavari are Pranhita sub-basin, which is named after the confluence of two major sub-basins ie Wainganga and Wardha River near Chaprala village of Chamorshi Taluka; and Indravati sub-basin.

The eastern part of district ie, Dhanora, Etappali, Aheri and Sironcha talukas; are covered by the forest. Hills are located in the areas of Bhamaragad, Tipagad, Palasgad and Surjagad in the district.

2.Objectives of Sample Study of Tribal Pockets:

The study is an attempt to analyse the problems related to socio-economic and demographic factors of change of tribal society in Vidarbha region of Maharashtra where tribal societies known for their backwardness with extremely slow process of socio-economic change. Participation in non-primary activities by the tribes is confined mainly to rural industries or urban service sectors. This has not helped create an urban culture.

3. Sources of the Data:

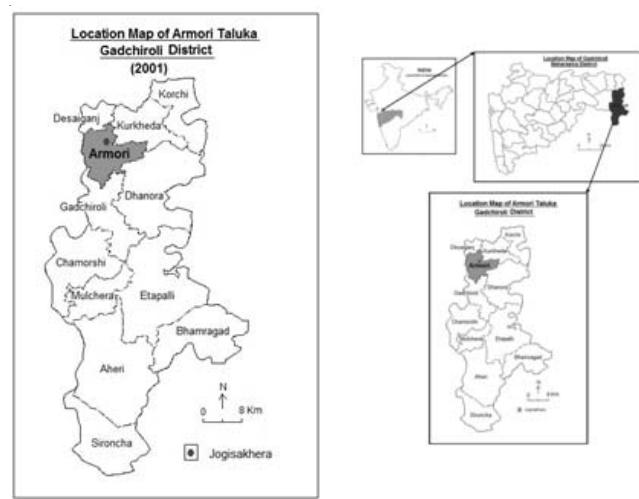
The following samples from various districts of Maharashtra have been studied, but the said research paper focus on Jogiskara village in Armori taluka of Gadchiroli district in Vidarbha region of Maharashtra.

Village /Taluka /District	No. of Household	Males	Females	Accessibility
Jogisakra Armori,Gadchiroli	15	15	00	Remote
Gidraipada,Vasai.Thane	07	07	00	Accessible
Bamanpada.Bhivandi,Thane	06	06	00	Remote
Korawadi,Panvel,Raigad	08	07	01	Remote
Khairatwadi,Panvel,Raigad	05	02	03	Accessible

The area surveyed for the current research paper is Jogisakra village in Armori taluka of Gadchiroli district. Study comprised of 100 sample households. Random sample technique was adopted for selection of the sample households.

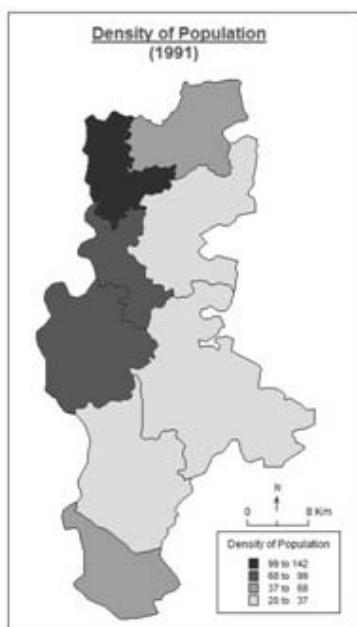
The Jogisakra village is mainly inhabited by Gonds with few tribes of Warli and Katkari. Jogisakra and its vicinity is mainly forested areas or devoted to mining. 46% are landowners and rest do not own the land. Few of them are tenants. This is because of the land which still belongs to tribes due to tribal development programme. Garvi River flowing nearby Jogisakra, is a seasonal river. The arid natural environment has an impact on their economic activity. As Aromiri, the taluka headquarter is 10 kms away, the Gonds migrate to the urban area. Migration to urban centre for employment is a general feature. Many of the rural areas with predominant tribal population cannot remain left out of this process of migration. Poverty and backwardness are the major issues confronting tribal communities especially in Maharashtra.

Map1: Location of the Study Area- Jogiskara village, Armori taluka, Gadchiroli district

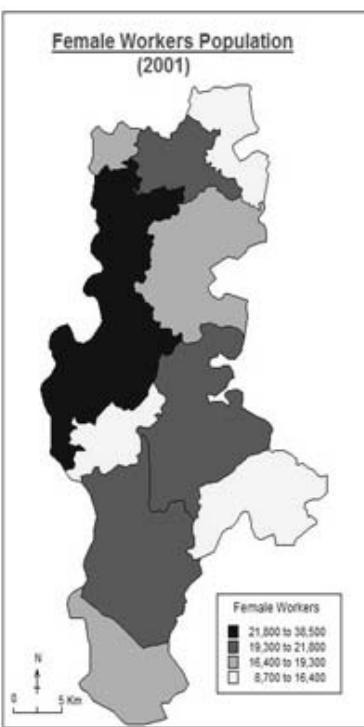


"For tribal man space was the uncontrollable mystery. For technological man it is time that occupies the same role." - Marshall McLuhan

Map 2: Density of the population (1991)



Map3: Female workers Population(2001)

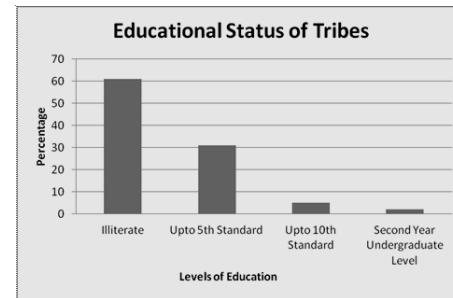


Distribution of Area of District

- Tribal Area of the District - 14107.00 Sq.Km.
- Non-Tribal Area of the District - 1327.00 Sq. Km.
- Forest Area of the District - 13200.00 Sq. Km.

The road in length 6222.32 Km and 2107.44 Km is spread over Tribal area and Non-Tribal area respectively.

Fig 1: Educational Status of Tribes of the Study Area



On the basis of data collected for the sample population it is revealed that tribes in Jogisakra are the marginalised people and there is lack of awareness among them about provision of education. It is also the fact that this tribal village pocket is inaccessible and there is no provision of infrastructure for education. Also there is certain social pressure and thereby they are forced to manual labour at a very young age. It is observed that about 60% of them are illiterate which indicates the isolation of the tribes from the main society. (Fig 1)

The survey result unveil that the tribes who inhabit this area are mainly engaged in agriculture. The land is given to them and they practice agriculture. They are not the owner of the land but they are carrying out this activity on a long term basis. In this tribal pocket the second category of occupation is marginal labour. This is because they live in the vicinity of the small market centre or mining areas especially Armori. Often they are engaged in the activities which are not full time. Therefore they work as marginal labour. Due to their low education level the percentage of tribes working as company helpers are few. Also in these areas major establishments are few and thereby less opportunity for them.

Fig 2: Occupational Structure

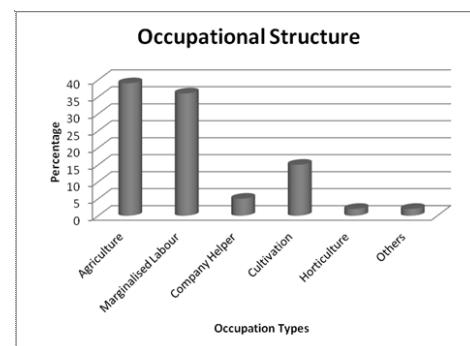
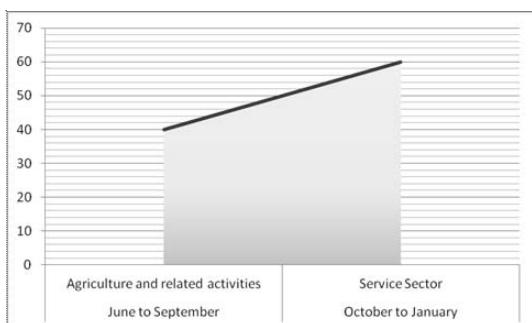


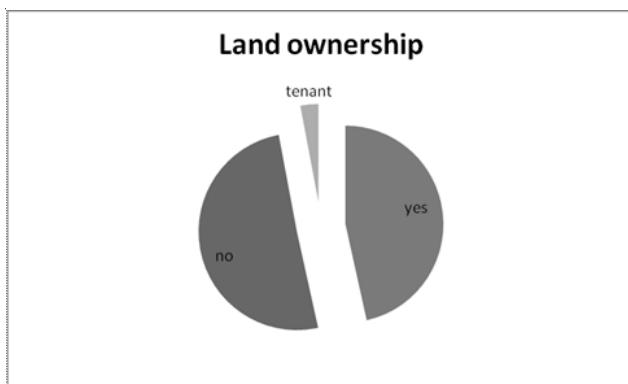
Fig 3: Seasonal Activities of the Tribes



From October to January about 60 percent of them work as labourer in tertiary sectors as marginal labourers. This is revealed by the trendline.

The tribes of the village studied are mainly temporary workers. This is due to their lack of opportunity and inaccessibility of the area. They seasonal working pattern also adds to this. From June to September about 40 percent of the workers are agriculture and related activities. This is the sowing season. During this period opportunity in other sectors are also minimum. During the lean season few of them return to their village and are engaged in *tendu* leaf collection and cutting. 2% of them prefer to commute everyday from Jogisakra to Armori. The Gonds in the village have better living status. Many of them own T.V. Though telephonic connections are rare many of them own mobile phone. The reason is to be in touch with the family. This is also the indicator of social development.

Fig 4. Land ownership



Majority in the village do not own land while few of them are tenants.

Fig.5 North-South Tranzact

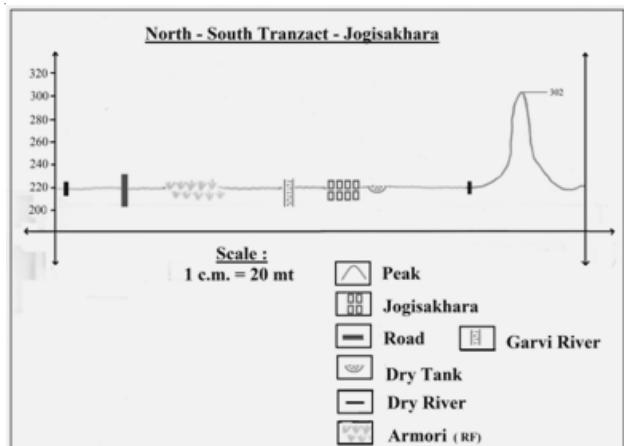


Fig.6: East-West Tranzact

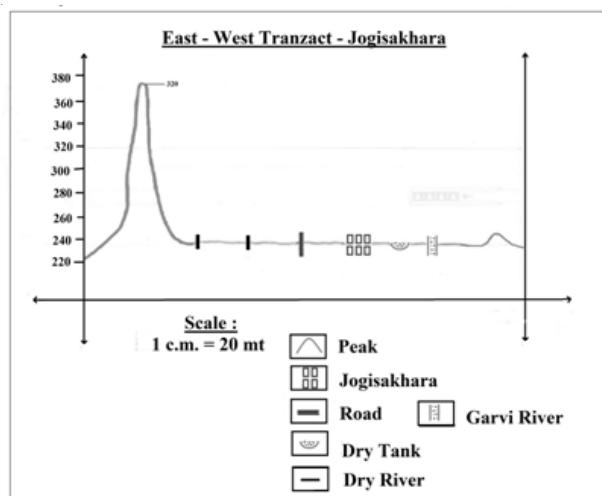
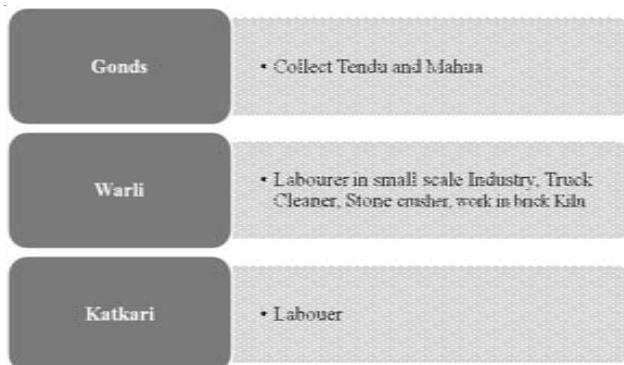


Fig.7: Tribes and the activities



"When resources are degraded, we start competing for them, whether it is at the local level in Kenya, where we had tribal clashes over land and water, or at the global level, where we are fighting over water, oil, and minerals. So one way to promote peace is to promote sustainable management and equitable distribution of resources." - Wangari Maathai

It was observed that few Warli tribes are basically marginal labourers and work in industries. Katkari tribes are not upto the level of Warli and they work as labourer with small payments. Gonds are isolated tribes.

Tribal communities in India are pushed to the margins of society as a result of various historical and developmental factors. Tribal communities in India have been alienated not only from the development processes, but even from their own dwellings. As mainstream development processes tended to create social spaces of inequality, Dalit and tribal communities face marginalisation virtually in every sphere of social life. Insofar as the marginalised groups sustain a unique point of view shaped by their long-standing social position, the question of their 'self-representation' has become relevant in social research.

The major thrust of the study is to research the transition of the tribes of this area into peasants and the process of transfer of technology. The colonial administration built a hierarchy of tenures for the upper crust of the tribal society which consisted of the tribal chiefs and recognised the occupancy rights of tribal peasants. The colonial system followed the policy of reclaiming the tribes to civilisation through the adoption of plough culture and integration into market. The survey and settlement operations introduced in unsurveyed tribal regions acted as an instrument for the transformation of tribes into peasants. They identified different categories of land, determined tribals rights in land, fixed rent and thus grafted the concept of private property in land on to the tribal system. Transition to settled agriculture was also helped by the conservation of forests resources for commercial exploitation, which pushed the tribals off their land in reserved forests. Since Independence this process of transformation has intensified. Pressure of tribal population on land has grown as the carrying capacity of land has diminished. There has been diffusion of improved agricultural technology by government agency. Another important fact is the economy was integrated with the market system. With introduction of new technology, the nomadism is reduced in a different form. Gonds became the seasonal migrants

Capsulisation

Tribes of Armori district have their own cultures-dialects, life styles, social structures, rituals, values, etc., differing somewhat from those of the dominant non-tribal peasant social groups. The forest occupies a central position in tribal culture and economy. The tribal way of life is very much dictated by the forest right from birth to death. Historically they have been pushed to corners owing to economic interests of various dominant groups. The wonderful equation between man and nature was demolished after independence with the encroachment of rapacious contractors on tribal land and the indiscriminate destruction of forest in the name of development.

The fulcrum of rural life continues to rest on land. Land is the major economic aspect in any tribal society. Land is not only a source of livelihood for the tribals; it is also connected with their sense of history and is a symbol of social prestige (Elwin 1963: 50). The ownership of land or the assured possession of a few acres is not only the means of economic subsistence but is also a symbol of status and dignity (Merillat 1970: 1). Tribal people and their communities have historical relationship with their lands and are generally descendants of the original inhabitants of such lands. They have developed over many generations a holistic traditional knowledge of their lands, natural resources and environment. The entire tribal life process was centred and built upon two major means of production, that is, the forest and the land, which are described as twin pillars of tribal economy.

Land has always been associated with social status with tribes and has historically remained in the control of certain social groups. Some groups are not included under this banner, especially the tribal groups with limited access to productive resources. So the history of the tribes has been one of deprivation, dispossession and marginalisation. It is in this broader context of land disparities that exist in Indian society that the land problem in the tribal areas assumes much importance.

Development induced displacement, involuntary migration and resettlement has caused marginalization of tribals and presented enormous problems to them. The new economic regime has led to privatization and

marketisation of economy and thus it has been treated as powerful threat to the survival of tribal communities (Singh, 2008). Land as a prime resource has been a source of problem in Gond tribal life because of two related reasons, first, dependency, i.e. tribal dependency on land and second, improper planning. In Maharashtra, tribes can be classified on the basis of their economic pursuits such as pastoralists, agriculturists, labourers in different sectors of economy which involve direct or indirect dependency on land. But land rights and changes rules and go unnoticed. The Tribal groups are unaware or are made unaware about the rules which govern India's land rights. The tribes of the region do not have access to land records, not even the Record of Rights. This lends them to a higher probability of getting exploited by the non-tribal groups and in some cases by the local officials. Wherever lands are given yet the pattas are not given, or pattas handed over yet the land is not shown. Land restoration and issuing title deeds to tribals as per Land Transfer Regulation (LTR) Act should be implemented in all these areas. Land alienation is very serious problem for administration and implementation. Land disputes could be solved.

Gonds face problems, typical of tribal peoples throughout South Asia and much of the world. They suffer exploitation and discrimination, and often are forced to live on less productive lands in remote areas. They are experiencing increasing pressure on their land, a rise in the number of landless labourers, and high levels of poverty. Lack of education and low levels of literacy further reduce economic opportunity.

The Gonds' practice of frequently shifting their fields and sometimes also their settlements was appropriate to a situation in which they were virtually the only inhabitants of large expanses of cultivable land and forest, and there were no other claimants to land temporarily abandoned by Gond cultivators. But as soon as agricultural populations from neighbouring areas moved into the Gonds' habit of cultivating their land in rotation became a source of weakness, for fields left fallow with the intention of resuming cultivation after a number of years could easily be

occupied by new settlers, who then managed to obtain title deeds for the occupied land. At the turn of the century, it was government policy to open up the district and to encourage the influx of new settlers, and to grant them *patta* free of charge for as much land as they could make arable.

Tribal people, especially the Gonds, are increasingly threatened in today's world. Dangers come in many forms in the name of economic growth and development. Mining and logging companies have destroyed whole landscapes jeopardised tribal lifestyles. As their land is appropriated and their environment destroyed, indigenous people's knowledge and identity are at risk.

The Gonds pushed into marginal lands have been using the unproductive hilly lands to grow some dry crops like maize or millet which sustain them only partially. As such they are heavily dependent upon the forests to supplement their diet and to collect and sell forest produce like timber, herbs, *mahua* flowers, *tendu* leaves, etc. They also seasonally migrate to the plains to harvest the fields of high caste landowners. Land ownership is not equal but highly unequal among them. However, given the fact that the land is unproductive and usually bears one crop in two years or so, both ownership of land and unequal ownership of land retain only a limited significance. All members of the tribe are critically dependent upon the use and sale of forest produce and seasonal wage labour. Access to the use of the forest is necessarily regulated collectively and this reinforces the 'tribal' character of the society. Likewise migration for labour is done in large kin groups for mutual protection and better bargaining power. This too reinforces the tribal character of Gonds. Given the fact that in marginal lands access to forest resources is a major means of livelihood, establishment of the control of the government and its forest department over the forests constitutes a major blow to the tribal peoples.

Remarks

The issue of tribal land has always been a matter of great concern to planners, policy-makers,

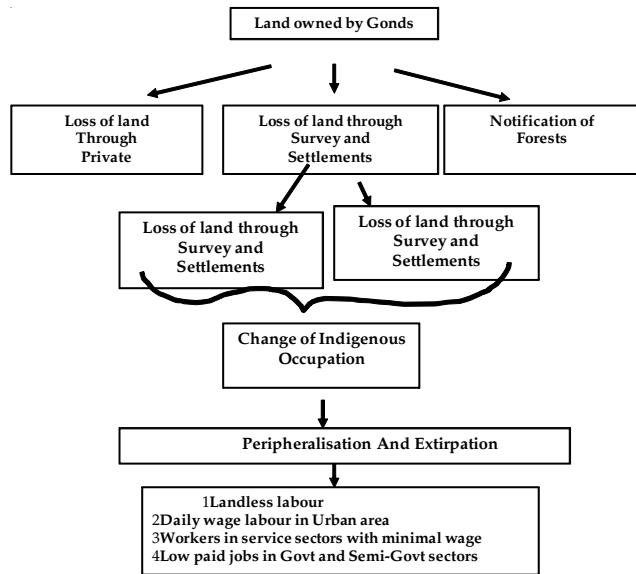
"I'm not afraid of a world with less consumerism, less 'stuff' and no economic growth. I'm far more frightened of the opposite" - Rob Hopkins

academicians and activists. This is so because, despite progressive and protective legislations, tribal people all over the country are perpetually threatened over their land rights. This is no exception to the tribes of Maharashtra, especially Gadchiroli district. The process of alienation of tribal land began with the stabilisation of the British rule in India. This process was accelerated by the development of transport, establishment of individual rights over agricultural lands, commercialisation of agriculture and the spread of English judicial system (Kulkarni 1985: 1171). At present, the threat has become more compounded than ever due to the onslaught of industrialisation, urbanisation, commercialisation and infrastructure development. The traditional mode of securing their livelihood is seriously threatened without any appropriate alternatives in sight.

Christoph Von Furer - Harnedart (1988) has discussed the pattern and causes of disintegration of the traditional tribal system, failure of welfare programmes. Buddadeb Chaudhuri, (ed.) (1992) " 'Tribal Transformation in India', in five volumes, is a collaborative effort of Indian scholars to capture the changing tribal scenario and a whole diversity of issues related to tribal economy, politics, ethnicity, ecology, education, technology transfer, social political movements, religious faiths and rituals in an indigenized, yet more articulate framework, with both diagnostic and remedial models. With the latest concepts and research tools in anthropology and related disciplines, there is a need to explore micro and macro level dynamics of the tribal situation in India vis-a-vis the socio-cultural relations.

There is urgent need for protection of tribal society. The social and economic changes appear to have led to the declining importance of local customs and culture which in turn has led to further progress through the adoption of modern techniques. But there is a great need to reduce exploitation on an intra-tribal as well so that class segregation can be avoided within the tribal society.

Fig 8 : Process of metamorphosis of Tribes in Jogisakra village



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References:

1. Verrier, Elwin, (1963), *The Tribal World Of Verrier Elwin: An Autobiography*, Oxford University Press, USA
2. Bose Nirmal Kumar, (1977), *Tribal Life in India*, National Book Trust, New Delhi
3. Von Furer-Haimendorf, Christoph, (1988), *Tribes of India: The Struggle for Survival*, Berkeley, University of California Press
4. Merillat, H C L (1970), *Land and the Constitution in India*, New York and London, Columbia University Press.
5. Chaudhuri, Buddadeb,(1992), *Tribal Transformation in India: Economy and Agrarian issues*, (ed), Inter-India Publications, New Delhi.
6. Kulkarni, S, (1985), *Adivasi, Law and Social Justice*, Economic and Political Weekly, 20(28), July, pp 1171-1174.
7. Koambi, D. D., (1956), *An Introduction to the Study of Indian History*, Popular Book Depot, Bombay.
8. Singh K.S., (1994), *The Scheduled Tribes*, Anthropological Survey Of India, Oxford University Press, New Delhi.
9. Ghurye G.S., (1943) *The Scheduled Tribes*, 1stpublished as the *Aborigines so called and their future*, Popular Prakashan, Bombay.
10. Census of India, (2001), Government of India

"Forget about making poverty history. Climate change will make poverty permanent"
- Nazmul Chowdhury,

PERSPECTIVES OF SOCIETY TOWARDS RELIGION

Akshay Tarfe, Nisha Jacob, Vaidehi Bhujbal

ABSTRACT:

In a society there are lot of factors that determine the working and quality of life of a society. There are economic, political, social as well as cultural elements which help society to stick together and raise the standard of living. There is lot of stress upon the socio-economic and political elements of a society, and the cultural aspect is generally not brought into the larger picture. The cultural aspect plays a major hidden in all the other aspects. Hence the given research paper will try to focus on the cultural aspect esp Religion which otherwise influence the other aspects directly or indirectly.

Keywords: Religion, beliefs, westernization

1. INTRODUCTION

The word religion is derived from Latin word ‘Ligare’ which means ‘to link’, ‘to bind’. The prefix ‘re’ means “back” or “again”. Hence religion could be literally translated as “binding back”, or as “re-linking” or “re-joining”. Religion is also viewed as ‘A system of beliefs based on humanity’s attempt to explain the universe and natural phenomenon, often involving one or more deities or other supernatural forces and also requiring or binding adherents to follow prescribed religious obligation’¹. Religion is understood in the contemporary world to mean the reconnection of human and the alleged divine¹. Today most people follow monotheistic religion and henotheistic religion². Monotheism is a belief of one god. Foundation of monotheism is of Judaism-Islam-Christian line which began with Abraham in 2000BC. Henotheism is the belief of single god while accepting the existence of other deities that may also be worshipped.

India is a land where four major religions took birth- Hinduism, Buddhism, Jainism, Sikhism. Apart from these, various sects were developed. These religious sects arose because they actively/ passively denied the validity of Vedic rituals and observances. It is out of protest against anti-social features that these sects arose. Jainism although comprising only 0.4% of population it survived in India for the same reasons that prevented its spread outside the country i.e. it soon came to terms with rituals and caste which Buddhism did not. Hinduism is not a pure religion. It is basically group of religious practices. It is believed to be originated from the lifestyle of the people from Indus Valley Civilization of India. Since it was among

the three original religions in India it spread rapidly. Anyone who was born in India and followed this lifestyle was considered a Hindu; it did not need a specific process of conversion to be Hindu. It got a religious shape after the addition of various rituals, customs by the Brahmin class. They were considered as the class of highest order after the Aryans arrived, who created this class system.

Other Non-Indian religions like Islam and Christianity also entered India and now comprise huge population under its wing. Judaism is considered as the oldest religion and Christianity and Islam emerged from it later. Islam was brought by the Arab traders to South Western India and it was made popular by the Mughal rulers. It is the second largest religion in India now. Christianity has its roots in India in the apostolic times when Jesus’ disciple Thomas propagated in south eastern India. The Zoroastrian religion was brought to India when Zoroastrians fled from Iran to escape persecution. They have only 0.01% population in India but have made a mark in India’s history and economy. There are only a few 1000 Jews in India. In such a way India has a mixed society if Indian as well as Non-Indian religions. The religious composition of India is as follows: Hindus- 80.5%, Muslims- 13.5%, Christians- 2.3%, Sikhs- 1.9%, Buddhists- 0.8%, Jains- 0.4%, other- 0.6%, Not stated- 0.1%.

Religion plays an important role in the daily routine, education and politics of the average Indian. Based on region and caste, and controlled linguistic differences it is interpreted differently in different areas of the country, giving rise to varied range of rites (rituals), tradition and folklore. There is, however, a

sharing of celebration and a mingling amongst all the communities during the many Indian religious festivals that are marked by rituals, dance, music and feasting. In spite of the numerous religious concepts ingrained in the very being of each Indian, our society has chosen to define itself as a secular state. The government officially remains detached from any one particular religion thus reinforcing India's policy of religious tolerance. (Article 25-28, Fundamental Rights, Indian constitution.)

When it comes to religion, believing in it is considered very important to have peace and serenity in the Indian culture religious factor of the culture and how society perceives its role play.

It is a fact that India is very diverse in terms of religion. This is due to the basic nature of Indian state which is democratic, socialist, republic, secular. The Constitution of India has basically created a religious friendly environment by being secular and not theocratic. It has given fundamental rights to the citizen wherein PART III it has been clearly mentioned about **RIGHT TO FREEDOM OF RELIGION, UNDER ARTICLE 25, 26, 27, 28.** Article 14 of the Indian Constitution supports that no discrimination will be done on the basis of caste, creed, sex, colour, religion, or place of birth. Inter-religious marriages are protected by law.

Though significant amount of people are supporting religion wise reservation in the surveys conducted, Andhra Pradesh high court judgment on 4.5% sub quota for Muslims, court has said religion wise reservations are unconstitutional. So religion is not only parameter for reservation in India (on 28th May 2012). Also some anti-social practices such as dowry and untouchability have been abolished by strict laws such as Dowry Prohibition Act, 1961, also Untouchability Act 1955, to protect right of minorities and make their social life normal.

Majority of people in the survey conducted say that one should follow their own natural religion, significant number of people believe that religion should be given as choice at the age of maturity. According to right to freedom of religion Indian laws support religious conversion but Indian laws are strictly against force full conversions (Madhya Pradesh Freedom of

Religion Act of 1968, Tamil Nadu Prohibition of Forcible Conversion of Religion Bill 2002, The Gujarat Freedom of Religion Act 2003).

2. METHODOLOGY:

In order to have first-hand information regarding what exactly in today's world people think about their religion as well as other's a religious practice, the method of a questionnaire survey was undertaken. A survey of 100 people belonging to different age-groups and religious background were asked with few questions pertaining to religion. A random sampling method is used which would cover the dominant religions in India such as Hinduism, Islam, Christianity and Buddhism. The focus would be on the areas where these religions are dominant so as to study the varying attitude of the people.

3. QUESTIONAIRRE SURVEY- RESULTS INTERPRETATION:

With the help of questionnaire and random sampling a first-hand information regarding the changing perspective of people about religion today, could be easily derived.

BUDDHISTS

Maximum number of Buddhist said that they do not believe in religion. Only 1% of Buddhist said they do believe in religion. 100% Buddhists in our survey said that they would support religion-wise reservation. Equal number of Buddhists supported and was against inter-religious marriage. Maximum people do not ask for any changes in the present Buddhist ideals. 99% Buddhist do not believe that terrorist belong to any religion.

CATHOLICS/CHRISTIANS

Most people are aware about their religious present happenings. 32% do not believe in religion. All the people who filled up our survey were of the opinion that they know more than 4 religions but 60% of them could not give the correct answer regarding their religious leader. 0.5% said they are restrained to follow any other religion. 1% said that they would support inter-religious marriage but not in their case. But maximum said that they are not restrained from following any religion and do not face any difficulty at

any place. 5/14 believe that terrorists belong to Islamic/Muslim religion. Only 1/14 said that they want democratic election of leaders to be the change and others restrained from any kind of change. 6/14 said that religion is more important to them over nationality.

MUSLIMS:

As per the survey conducted all the Muslims believe in Islam and propagate it. They do not think that their religion is inferior or superior. Maximum said that they were not restrained to follow other religion. Only 1 percent was not allowed to follow religion of their wish. Almost 80 percent of the people support inter-religious marriage but when asked in their case as well there was denial. Only 20 percent support it in their case as well. 98 percent said that one must follow one's natural religion. Maximum supported religion wise reservation and denied that their religion poses any problem in their social or job life. 100 percent said that they do not need to update their religious laws. People gave equal importance to religion and nationality.

HINDUS:

A somewhat similar perspective could be seen by the Hindus as well. Only more Hindus supported inter-religious marriage even in their case and said that their religious laws need an update with passing time.

ALL RELIGIONS TOGETHER:

Almost 50 percent of the people filling our survey believed in religion. Almost 50 percent of the people believe that their religion is either inferior or superior to others. 52 percent are not restrained from following their own religion. Very few supported inter-religious marriages in their case. Only 20 percent said that their religion causes problems in their social/job life and very few supported religion wise reservation. Equal number of people said that one should follow one's religion to one should not follow religion without their choice. Maximum did not support democratically election of their priest and said that there wasn't any need for updating their religious laws. 40 percent believed that terrorists belong to Islam. Almost everyone part of the survey said that both religion and nationality are equally important. Only 2 percent believed that their religion encourages violence.

4. EVALUATION OF THE SURVEY:

Through this study conclusion can be drawn that not all the people surveyed, are believers in religion. About 48 percent do not believe in religion, and maximum non-believers are females. This could be due to practices prevailing in the past considering women to be of low strata and making them weaker section today.

Considering the facts about religions, many from the youth consider that they know more than four religions and also take the help of family and friends to understand religion. Very few got the information about the religion they follow and also the other religions from sources like books, newspaper, audio-visual media etc.

Due to heavy westernization it can be concluded that we are forgetting our culture. But the samples surveyed showed us a brighter perspective. Westernization has resulted into open mindedness of youth towards both language and religion. Maximum people surveyed, their religious inclination do not pose a threat to them anywhere. Also people now believe in celebrating all the religious festivals and customs without refraining from various practices. Accepting people from different culture and language has always been a part of cosmopolitan city. People have also started accepting inter-religious marriage. Though the acceptance is less if given in their case it counts to development in the ideology of people of various religious backgrounds.

People displayed an example of ignorant attitude as they could not even name their religious leaders. Complexes pertaining to religion are starting to disappear whether it is inferior complex or superior complex. But even today people are not readily accepting the idea of change in their old, traditional value structure with the changing time. Almost equal number said that we should and should not have a choice of religion. This shows that we are on a stage for better tomorrow and being tolerant to any religion even when it isn't what we follow. Very few people have the perception left that terrorists belong to one particular religion. This shows the open minded attitude developing in Indian minds. Though so much is done to remove cultural disparity still people feel the need

to have protection at their religious places. This can pertain due to lack of confidence in oneself and vulnerability factor. According to the survey conducted almost everyone said that they do not elect a person because of his religion.

An evaluation from the survey indicates that Indian minds are slowly developing. Though there are some fanatics still present who believe that terrorism belongs to one religion or we should not change any of our ancient practices like dowry etc. a ray of hope can be seen when people say that change is necessary and that we should all contribute to this change rather than refuting it. People who were surveyed gave equal status to religion and nationality. This shows that yet people are to understand and adapt the idea that nationality is our first religion and this is the actual sign of development. A lot is achieved pertaining to religion but a lot is yet to be done.

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5. CONCLUSION:

The survey conducted has proved to be fruitful but there are still many spheres to work ahead and change the persisting views of certain fanatics still prevailing in our world in order to eradicate religious riots and orthodox beliefs about one's religion. Also there's a need to widen the vision and look at the whole country and its citizen as belonging to the religion of HUMANITY and NATIONALITY of the person than Hindu, Muslim etc. Any discrimination seen or done on the basis of religion should be refuted and worked to eradicate instead of fighting against each other. The narrow beliefs regarding terrorism should be widened and people should look at it as a problem faced by all the religions and not a particular sect. We should join hands together in order to stand as a strong country in the world and work for the betterment in one direction.

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REFERENCES:

1. Mahmood S.(2012), Introduction to World History, Published by Dorling Kindersley India Pt. Ltd., Year James D., 'The Perils of Religion, "St John's Episcopal Church,
2. Dasa S., A Hindu Primer

3. Daniel A, Beginning of the caste system,
4. Constitution of India , Part 3 Fundamental Rights
5. Domenic Marbaniang, Secularism in India ,
6. Sunder Raj,The Confusion called Conversion Websites referred:
<http://adaniel.tripod.com/origin.html>
7. <http://www.sanskrit.org/www/Hindu%20Primer/induscivilization.html>
8. http://wssww.religioustolerance.org/rel_theory1.html

APPENDIX:

The questionnaire survey comprised of the following questions:

- What is your religion?
- Do you believe in religion?
- Do you think your religion is inferior/superior? If yes, why?
- How many religions do you know including some facts about them?
- What are the sources from which you get the information about your religion?
- Name any religious leader from your religion?
- Are you restrained from following any other religion? eg. festivals or customs?
- Do you support inter-religious marriages?
- Also if given in your case?
- Does your religion make it difficult for you to handle your job life/social life?
- Do you support religion-wise reservation?
- Do you think one can avoid one's natural religion and follow someone else's religion? If no. why?
- Do you think that religion should not be determined by birth but should be given as a choice at a certain age of maturity? If no, why?
- Do you think your priest should be elected democratically?
- Do you think your religious laws need to be updated?
- What changes do you want?
- Does your religion encourage violence?
- What is more important to you- religion or nationality?
- Should police protection be given to religious places on special occasions?
- According to you what religion the terrorists in the world belong to?
- Do you elect a politician/representative on the basis of religion?

TRAILING THE FENCE: DALIT EMANVIPATION AND GLOBAL CONSTRAINTS

Yash Thakoor - Student Presenter

ABSTRACT:

This paper probes into the margins and marginalized communities in the urban space; attempting to create an understanding of them, not merely as literally identifiable geopolitical regions but also as conceptual spaces of consciousness and contestation. For the purpose of close investigation of the working of these differentials, this paper will consider the spatial and infrastructural subsistence of the Dalit community and how the aforementioned socio-spatial stratification of this community in urban spaces, intended to serve as strong developmental zones for their self and the culture(s) they belong to, has primarily served to marginalize them further. With a specific focus on the discourse based analysis of global processes and theoretical observations of the marginalized identity and community, aims to investigate the fundamental incapability of global mechanisms to address the contribution of modernities, border thinking, geopolitics of knowledge, subalternity and Pre-Occidentalism in making us think “with, against and beyond the legacy of Western epistemology.” Largely through literary survey and secondary research, this paper aims to envisage the process of marginalization and the fate of marginalized communities (Dalits) in shadow of global urban infrastructures. In principle, this paper aims to theorize on the artificial construction of margins, while also evaluating the demands of modernity in the creation of these margins, with a focus on the travails of Dalit community, as a microcosm for most marginalization processes in a global society.

Key Words: Marginalization, Education Problematic, Dalitization and Migration, Globalization

1. Introduction: Globalization and the Marginalized: The Global Constraints

If the marginalized of a country aspire to a level of development which will integrate them with the regional society, one must argue whether they are insured their prior cultures which provide them with identity. However, in the 21st century with the globalization of culture and the influence of a hegemonic West, the cultural processes shape the marginalized experience have transitioned into a space of contestation. The process of internationalization, as facilitated by the global processes world have encouraged the marginalized in doing away with their pristine character, and have been largely subsumed in the minds of many, under the dominant mainline social structure.

After independence the Indian constitution abolished untouchability in law. The contemporary Dalit politics largely focuses on the principle of just dispensation of the affirmative action benefits (in employment, education and electoral representation) granted to them under the constitution. However, the Protection of Civil Rights Act 1955/1976 and the Scheduled Caste and Scheduled tribes (Prevention

of Atrocities) Act 1989, both derived from the constitution, remain largely ineffective in their implementation.

2. Objectives of the Paper:

Of the several fundamental shortcomings that are equipped to describe the symptoms of this unequal socio-cultural reality, including a lack of political will on the part of both central and state governments, a lack of commitment of upper-caste and class bureaucrats to social justice, the absence of vigilance committees of citizens to monitor the implementation process, this paper evaluates the demands of modernity in the creation of these margins that weigh distinctively on the intent of selfish exploitation of the already marginalized, with a focus on the travails of Dalit community, as a microcosm for most marginalization processes in a global society. Affirmative government action, with regard to Dalits, is all directed at amelioration of their economic status, without liberating them from the dehumanizing effects of caste and ‘untouchability’.

This paper also considers the Dalit community’s new consciousness to show how their perception and understanding of and as a caste group has been the

result of historical processes, which is relatively similar to the modern globalization processes interested/invested in the reifying of it. In principle, the paper aims to theorize how globalization, though it gives space to Dalit identity the space for modernization of its social standing, it is primarily restrictive and hypocritical in allowing them full access, thus reinstating the social divide.

Several transnational and international spaces have pushed for the regional entities to dismantle the entire discourse of traditional definition for the social classes, as they provide for a regime for representation. It is an imposition on the marginalized spaces of the country in the form of articulation of their identity, also providing them with importance and rethinking of the top-down strategy and several bottom-up approaches through active participation of the people at grassroots level in the alternate articulation. It only evolves to affirm the ‘colonial perspective’ of the marginalized as a dominated group, reeling under the pressure of difference in gender, age, class, affinity to religion etc.

3. Competing Inequalities: Caste in Indian Society

Dr. Ambedkar’s¹ thesis on the origin of untouchability perhaps, as expounded in his book *The Untouchables*², originates where he alludes to the ancient distinction between tribals and the *broken men* from alien tribes. Dr. Ambedkar explains what he means by *broken men*; when primitive society transitioned to settling survival systems and to cultivate, certain tribes remained nomadic and warlike. They continued to attack the settled tribes who were defenseless, and arguably ‘less savage’. The settlers then employed the defeated nomads, and stray individuals who needed protection and shelter, the *broken men* as the mercenaries to the settlers. They were systematically excluded from the common civil society, treated with disrespect and charged with

accusations for being cowardly and uncivilized. This would go on to initiate a continuous trend of exploitation and subjugation of these ‘ambiguous and broken’ tribals, as relegated and oppressed instruments of a social mechanism, and as it has into our current realities.

Thus, the subject of caste and an inevitable notion of Dalit assertion has always been a contentious one in India and they have lent itself to a more pernicious debate in the context of global constraints, because its traditional hegemony is directly contested and challenged by a more influential one, with the setting in of global processes of classification. It has created and sustained an unequal opportunity structure, which goes against the idea of a modern, globalized society on the principle of equal human rights. Thus, in the contextual experience with the Dalit scenario, one cannot help but observe the solid economic foundation on which the process of discrimination now bases itself. And yet, despite a historical documentation of such severe injustice to the community, there has often been a tendency to negate any new, revised consciousness of the Dalits in the socio-political spheres of India, a tendency to sweep it all under the rug. This culture of silence among the disempowered in a situation, in which critical awareness and response are practically impossible, needs to be destroyed.

According to Trinh T. Minh Ha³, the status of Dalits in India exposes power politics in its most primitive form, the ruthlessness of major powers, the brutality of nation states, the avarice and the prejudice of people of a Globalized world. The social consequences associated with Globalization conferred upon the marginalized communities, much like the Dalits in India are pervasive: on the one hand they remain privy to increasing pauperization and on the other hand they have to compete with the multitude of people on the globalized forum. The Dalit identity can be best identified through their thriving desire to assert

¹ Dr. B. R. Ambedkar was the first highly educated, politically prominent leader of the ‘Untouchable’ caste and he fought against social and political injustice done to the Dalits.

²In a compelling account of the lives of those at the bottom of Indian society, the authors explore the construction of the Untouchables as a social and political category, the historical background that led to such a definition and their position in India today.

³Trinh T. Minh-ha (born 1952) is a filmmaker, writer, academic and composer, and teaches cultural politics, post-Coloniality, contemporary critical theory and the arts.

themselves as the conscious members of the society that they always have been, by a directed demonstration of their lived experience. The most useful way to thematize lived experience in a globalized structure then, is to recognize that there is no element of choice or freedom associated with it. A peculiar observation can be made of the Dalit autobiography today, in the context of the new approach to comprehension. It is here that the paper must identify the problematic that is the physical/literal concept of community.

4. The Dalit Education Problematic: Regime for Representation

Forces of globalization today are exerting their influence on the caste system, resulting in changes within the institutions of caste as well as the rest of society on the grounds of homogenizing an economic space. The evolutionary theory model⁴ saw the global, industrial processes as the locus of a new industrial society and as ushering in a new period in history when urban growth could continue at a vastly expanded level, which, through the presence of capital would stimulate equitable development across all of the country indefinitely. Modernity and development, in this sense, is understood only in one way—the product of certain overwhelmingly capitalist economic procedures and achievements.

The EU-India Summit⁵ of 2010 presents glaring reflections of the oppressive caste structure in India, as follows: “More than a eighth of India’s population, the Dalits - approximately 160 million people - live at the bottom of the caste structure: denied access to land, clean water, and education, left out by the recent modernization process and surging economic growth, forced to work in degrading conditions, and routinely abused at the hands of police and higher caste groups.”

This further justifies the consciousness that the Dalits have been able to create for themselves, despite

the global processes available for their upliftment of their subjugated past is worn away by the market ethos. Yet, in the years since the 1990’s when the LPG measures⁶ asserted themselves, the social disparities transformed by de-industrialization, the rise of services has led to the inequitable allocation of development guided by capitalist motivations of profit maximization.

For instance, the reforms that allowed for reservations in the educational institutions and the financial assistance in the form of scholarships for what is probably the most crucial structural developmental mechanism for the Dalits. Dalit children, being disproportionately poor, most heavily suffer the ills of an inequitable and ineffective education system in India. The Indian constitution has struggled since its pledge to provide for free and compulsory education for all children in the country, compounded by the constraints of globally established standards of access and consumption for it. Likewise in the conquest for Dalit education and upliftment, in 1993 only 16.2% of primary school age Dalit children were enrolled in school as compared to 83.8% of primary aged children from non-scheduled castes. This demonstrates that the Indian sentiment on reservations for exploited classes however, has been strictly populist since its inception, as a policy for remedying opportunity deficits among the poorly defined underprivileged classes. Hierarchies among castes persist in India according to one body of opinion, and are perpetuated by schemes for selecting beneficiaries of reservations that embrace the indigenous tradition of the caste-based discrimination in society of communities from highest to lowest. Once enrolled, discrimination continues to obstruct the access of Dalit children to schooling as well as to affect the quality of education they receive. In the case of the Dalits, in addition to economic backwardness, social disabilities such as untouchability become obstacles to their educational development, and thus further segregated, they live in separate marginalized

⁴It is understood as the process by which structural reorganization is affected through time, eventually producing a form or structure which is qualitatively different from the ancestral form.

⁵The European Union and the Republic of India benefit from a longstanding relationship going back to the early 1960s. The summit’s agenda is thus to cover bilateral, regional and global issues.

⁶LPG model of development emphasize a bigger role for the private sector and aims at higher quantum of FDI to supplement nation’s growth process. However, it works by the medium of ascribed socio-structural values and in that, demolishes the founding philosophy for such decentralization of economic authority.

urban spaces away from the main infrastructure of urban India. Furthermore, the corporatization of primary education has transformed education into an enterprise for profits, leaving the majority of children from the villages disadvantaged in the competitive long-run. This establishes a social context for such concessions and benefits, it accessorises the product of ‘reservations’ with a critical value of ‘collective social compromise’ that is not effectively explained in the scheme of Globalized economic policies. An effective mitigation of the potential social mutiny in the course of globalization processes is left out from the legislative narrative, insulating the Dalits from any comprehensive social integration. Thus, the caste system can no longer singularly serve as a social certainty that determines occupational preferences or lifestyles, and then marginalization becomes a process of subconscious exclusion, interpellated on a necessarily psychological level through repressive ideological instruments. However, it does not take into consideration the limitations of an unequal social dynamic and its potential in obstructing the access of many to the benefits of globalization.

The Dalits, it is feared may never successfully overcome oppression of the caste system, because like the caste system, the process of Globalization has initiated an exclusive space for inequality on a continuum that stands unaddressed and aggressive, egregious of the Dalit’s exploited past. The famous observation by Appadurai that “caste system and poverty are inseparably joined together” and are at the root of the Dalit socioeconomic predicament provide incentive for further exploration of its impact on the constraints of a global system to adapt to it. In a discussion of the use of caste in designating Backward Classes there are two related, easily confusing but distinguishable questions. First, may castes or communities be used as the units or classes that are designated as backward? Second, may the rank, or prestige of a caste group be used as a measure or criterion of its backwardness? To supplement this is the fact that Dalit children are held back from educational benefits because of their

responsibilities in their family systems, sometimes as a compromise for survival of the financially stable, as a complimentary economic supplement to the household’s economy. They are restricted to the poor and lower classes in the inner city spaces and fostered as a ‘respectable, middle class, conducive to the nuclear family unit’ image for themselves. Intentionally then, the process of Globalization initiates a strong feeling of alienation, to further the dependence of these individuals, and by extension of the community due to their traditional tangible identity.

5. The Ethnographic Narrative of Urban Dalits: Margins, Migration and Globalization

A global process like migration can prove fundamental to demonstrate the dialectical influence and the theoretical and practical conflict in the conception of a marginal identity in the premise of global constraints, as they are superimposed on the larger context of global processes and modernity. For instance, the inter-regional process of Migration, the large scale movement of labour are rampant along the sovereign states within the framework of caste-based coexistence not only to put it into the global perspective but primarily because it is more effective to contextualize them within those processes, and delineate them from the several other fundamental ones that determine their overlapped existence.

Economically, those migrating or being trafficked are nationally identified and identify themselves as marginalized, since their national identity itself is rooted in the challenges of being constituted as the destitute. One can point that out those marginalized are engaged in a culmination of global capitalism⁷, and the inter-regional movement occurs in the hope of finding lucrative employment or sometimes merely subsistence along with the freedom from their imposed regional identities, in the process of internalizing the conflict of physical spaces and their limitations that these people engage themselves in. The global capitalism may on one level seek to obliterate border distinctions by legitimizing movement from one place to another, using the need for labour as justification, but largely it works

⁷ Global Capitalism is the integration of global markets by the reduction trade barriers, improved communication, foreign direct investment, and presents an original and polemic account of economic globalization as the reproduction of the capitalist system, in terms of production, class and state, on a transnational level.

to generalize the encroachment of identity that the marginalized have to go through in their daily struggle for livelihood. It serves in a repressive context, as a mechanism of border control through hegemonic state apparatus as well as repressive ideological one within the consciousness of the non-marginalized inhabitants of space, which renders these migrants susceptible to allegiance with intangible constraints of their conceptual border imaginations. In the interaction of the literal and the conceptual borders, there often is a transgression of mutual boundaries of coexistence and tolerance.

An anthropological interpretation of this situation, exposes the marginalized as most intimate victims of conflicting identity experience, not merely because they are on the border of two definitely opposing regions with one significantly dominant, but rather because the movement required them to constant reconfigure their identities. Fundamentally so, the borders in emerging as sites of contestation, or where conflict is continually manifested, often erase the distinction between the literal and the conceptual, with the former sometimes being identified as the latter. This dichotomous contestation of identities is an effective setting for conflict of interest and intent: economically, the marginalized must abide by the intent of assimilating with the larger mainstream cultures, but their interest in groping with the moorings of their own cultural history makes marginalization inevitable. The cultural allegiance is an almost inevitable resignation to a pre-marginalized identity which takes away the possibilities of a cultural, global hybrid, perhaps the point to note is that despite speaking of the personal and National identity as mutually exclusive, except for those living on the border, they are not. It is possible to link this with the traditional political-economy discourse's idea of the core and periphery. The processes of marginalization and global capitalism or globalization are processes that occur simultaneously and affect both regions in relatively equal measure. Although it is possible to recognize the periphery as incessantly marginalized, it cannot remain isolated from global trans-economic processes on which the core thrives, quite like in the case of migrants, because not only are the exposed to either cultures, but the cross border contact is bound to serve as a catalyst for some degree

of hybridization, however minimal. They must be understood as products of a burgeoning border culture, as well as of the active assimilation of cultures through internationalization and macro-cultural processes.

These observations are constituted in review of the ethnography conducted in the rural-tribal and urban-cosmopolitan spaces of the Mumbai constituency, within the interaction of the migrating Dalit and non-Dalit inhabitants of the region. They are a conglomeration of opinions expressed by the Dalit inhabitants in response to their own experiences along with the narratives they were exposed to during the ethnographic exercises. They are also inclusive of the reflections obtained from the discussions with the substantially well-placed non-Dalits and their preconceptions about the notion of Dalit living. A characteristic observation in the collected responses includes the disparate and almost dichotomous assumption about their existence that both the Dalits and the non-Dalits abide by, in their narrative about each other and their territorial background influenced extensively their perception about their social standing as well. Another observation includes the unprepared anxiety that both the sections feel about each other's preparedness to confront the global challenges with the spirit of consenting the other with equal and significant opportunity in the processes of subsistence. It is imperative to the discourse on marginalization in global contexts to identify the transcendence of such altered consciousness affecting the large scale physical and infrastructural realities, that a psychological notion of space and capacity informs our physical utilization and modern execution of it.

6. Emancipation of Margins: Regional Concerns, Global Possibilities

Jean-Luc Racine and Josiane Racine put forth a number of suggestions whereby genuine emancipation of Dalits can become a reality, the most applicable under a globalized context being that of economic reorganization. The practice of constructing, negotiating and renegotiating identities is pertinent to the cause of Dalit emancipation. Likewise, most contemporary Dalit thinkers believe in the objective of freeing Dalits from the dominant Hindu paradigm. Primarily, their political concerns and growing public participation has

been commended as a definite upward task among the various possible avenues for ascertaining a positive change for the community, and Globalization has been credited duly for it.

However, the time of rapid global socio-economic and cultural changes is a time of late capitalism. It is often thought that colonialism had a ‘dissolving’ effect on the traditional village feudal order, that by opening up new avenues of employment and education to people of all castes it provided an opportunity ‘for advance and for breaking traditional restrictions. In reality, the situation is much more complex, and the general effect was to maintain the feudal hierarchy. The main reason for this has been the co-option of the Dalit agenda into that of the mainstream political parties, which are usually led by upper-caste men, with a consequent neglect of the primary demands of Dalits. In the last few years the rise of the Bahujan Samaj Party has for the first time given Dalits a vehicle for bringing Dalit issues into the wider political arena. The success of this party in the northern states especially has given rise to hopes that the old upper-caste domination of Indian politics may finally be on the verge of giving way. This trend, if repeated in other states, and if eventually transferred to the national scene, would bring Dalit politics and the Dalit agenda for social transformation into the national mainstream. Amid these transitional transformations however, the significance for identity formation and assertion has gathered preponderance as a powerful category of analysis. Thus, the question that returns to debate is whether an alternative culture and activism enough of does Dalit emancipation also require a change in the mainstream culture. Kanchalliah believes that Dalitization i.e. emancipation of the caste centered prejudice will require all of the Indian society to consciously accept the Dalits, in order to acquire a new consciousness about them, which accepts and incorporates the Dalit past into the way their present and future take shape as an extension of the collective Indian reality.

The process of emancipation therefore becomes vital for the formation and assertion of the Dalit identity.

It integrates a process of liberation of the self from the old internalized prejudices. The model for emancipation unfortunately is often constructed by the resourcefully, and structurally superior, in which respect the emancipation is equivalent to imbibing a mainstream behavior. The Globalization hereby, works to dissolve the ‘Dalitness’ which is seemingly the same as that of Dalits freeing themselves from the traditional bonds of granted survival and entering free labor market, as a valid component of the globalized world system. Perhaps, the integration of Dalits into the social mainstream allows for the Dalits to avail of the opportunities empowers them to compete equally, if not participate, with the rest of the ‘normal social entities’.

Must the Dalits always place themselves behind the blue standard of their tradition and refuse a place in the larger society without abandoning their sense of belonging? Should their experiences, the history of millions of Dalits simply be abandoned to join the mainstream of global benefits? In the context of the discussion in this paper regarding the acculturation and even absorption of such marginalized groups, concerns have been registered with their assimilation into the mainline society without distinctive social status. Professor Eunice de Souza⁸ suspects a degeneration of identities in this process: “the harm of such race-oriented discrimination is so fundamental, that more often than not the residue of racism becomes an integral part of their identity.” There exists an underlying ambition to assert themselves as not merely equal candidates for economic benefits, but as an independent culture, one that is applicable and relevant to the current scenario. It is just not sufficient to limit one’s participation up to making policies and programmes for the restoration of the disadvantaged sections trailing by the fence, but it necessitates the creation of awareness among those not disadvantaged and at the other end of the fence. The critics have conceived the process of religious conversion, as a desperate compromise to attain that ambition, of receiving the agency of a structure that does not just provide them with enfranchisement, but empowers their existence with substantial bargaining strength.

⁸Eunice de Souza is a contemporary Indian English language poet, literary critic and novelist. De Souza's poems trace her successive alienation from both her orthodox religious upbringing as well as an equally puritanical Hindu India.

Conclusion

The aforementioned ideas of a Dalit society have not been entirely devoid of alterations that are in force on a level that can be physically legislated upon, but rest excessively on the identities conceived as well, through the internalized notions of a traditional social order. Dalit emancipation remains a challenge as it raises formidable issues and challenges on not just the fates of the Dalits, but also of the Indian society in a globalized world system, and the predicament remains an unresolved, far-fetched dream. It highlights how in particular ways; the caste structure will always be about the community rather than the individual, and that will always restrict any progress of the community on a cognizable level.

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References

1. Sarukkai, Sunil. (2007): 'Dalit Experience and Theory'. *Economic and Political Weekly*, pp. 4043-48.
2. Sarukkai, Sundar (1997): 'The 'Other' in Anthropology and Philosophy', *Economic and Political Weekly*, pp. 1406-09.
3. Racine, Jean-Luc and Racine, Josiane. (1998): 'Dalit Identities and the Dialectics of Oppression and Emancipation in a Changing India: The Tamil Case and Beyond', *Comparative Studies of South Asia, Africa and Middle East*, pp. 5-19.
4. Gopal, Guru. (1999). 'The Dalit Movement in Mainstream Sociology', in *Dalits in Modern India: Visions and Values*. S.M Michael (ed.)
5. Moliner, Christine. (2004): 'Between Invisibility and Dignity: India's Dalit and Globalization' in *Dalits in Modern India: Visions and Values*. S.M Michael (ed.)
6. Pushpendra. (1999): 'Dalit Assertion Through Electoral Politics' *Economic Political Weekly*, pp. 2609-2618
7. Pai, Sudha. (2001): 'From Harijan to Dalits: Identity Formation, Political Consciousness and Electoral Mobilization of the Scheduled Castes in Uttar Pradesh', in a book edited by Ghanshyam Shah.
8. Rajawat, Mamta (2004). 'Encyclopedia of Dalits in India'. Anmol Publications.

GLOBALISATION AND THE CHANGING LIVES OF THE FISHERWOMEN IN MUMBAI: A CASE IN THE GEOGRAPHY OF GENDER

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ABSTRACT:

Gender, as a theme of investigation in Geography, emerged in early 1980s. The approach of social constructionism focuses on the socially constructed gender roles of women and men. Differences in these gender roles carve the distinct functional spaces. These gendered spaces vary not only as per the socio-economic status of the communities but also as per the changing external economic condition, such as in case of the pro-globalisation urban-centric economic restructuration. At this backdrop, the present paper attempts to examine the impact of globalisation on the changing geographies of fisherwomen in Mumbai, as reflected in their public and private spaces.

Keywords : globalisation, gender geography, public space, private space, gendered spaces

"The fact remains that markets are not the leveller and gendered constructions continue to play hide and seek games location-specifically"

- **Saraswati Raju,**
Gender and Geography in India, 2004

1. Introduction

Gender was not a part of geography's subject matter till recently and so women have remained invisible to geography for a long time. Monk and Hanson (2009) argue that we have just studied and understood 'half the human' in human geography. The collective work of Women and Geography Study Group (WGSG) of the Institute of British Geographers, in 1984, entitled *Geography and Gender: An Introduction to Feminist Geography*, marked the beginning of gender (feminine and masculine) concerns in geography. Geographers, then, borrowed various feminist strands in other disciplines and formulations such as liberal feminism, social feminism, Marxist feminism and so on (Raju, 2004). Subsequently, gender issues gained currency in geography literature since late 1980s onwards. In the process, geographers have attempted to render theoretical basis to the geographical understanding of gender. Essentialist perspective, for instance, believes that the role of women and men are determined by their sex, so it is just the nature or the biological differences that separate women from men. Such a biological distinction of women and men, helped in mapping gender differences at various spatial scales.

Challenging essentialism, post-structuralism emphasises gender as 'socially produced through what we do' (Browne, 2006). So, individuals '*become*' women and men not because of their biological or pre-determined sexual differences but because of the specific roles assigned to the specific 'sexes'. Thus, rather than the 'biology making the social, what we do and our relations with each other (re)make the biological' (Browne, 2006). The flexibility or dynamism involved in assigning roles to 'sexes' due to spatio-temporal variations, enables us to understand how our gendered bodies and gendered spaces are constituted (Browne, 2006). These dichotomised identities also assist us to know 'how these are (re)formed in and (re)make space and place' (Browne, 2006). Unlike these two approaches (essentialism and post-structuralism), which separates the 'sex/body' from the 'gender/roles', social constructionism believes that sex and gender are inseparable and are cemented with certain sets of social beliefs. Thus, it understands the gender as the underpinning of biological sex. Accordingly, individuals '*become*' women and men by the socially constructed gender roles, either feminine or masculine. The process of '*becoming*' women and/or men takes place through the ways of nurturing and socialisation and it also determines the nature of

"Society is happier when the gap between rich and poor is reduced" - Michael Wood, historian

relationship between socially constructed women and men. With these debates and discussions, gender became the part of geographical discourse and gender geography got established, by late-1990s, as a vital area of human geography. Space and gender are indivisible and both are the social products. Gender geography, thus, not only analyses how socially structured gender roles produces a distinct spatial pattern of women and men but also understands how these spatial patterns, in turn, defines gender-based social structures. Engendering of spaces and spacing of gender, thus, have been the essentials of gender geography.

With ‘work domains’ as one of the concerns and research area, gender perspective has contributed significantly to Economic Geography. Social norms and beliefs, which have their source in patriarchy, assign certain roles to women and men. These roles have defined the spatial limits, of women and men, which further reproduce the private and public spaces (domains). Gender constructions perceive that women have ‘nimble fingers’ (Mullings, 2006) and ‘by nature’ are soft and delicate. Such constructions ascribes women the role of mothers, caretakers and home-makers. Subsequently, the gender roles of women confine them to the private (domain) space of home and its immediate surroundings (Raju, 2004). Similarly, the conception that men ‘by nature’ are physically stronger leads to the definition of their roles as bread-earners. So their ‘activity spaces are seen as located in the public domain’ (Raju, 2004). It should be noted, however, that though private domains are feminine in nature, they are, like public domains, are subjugated by the patriarchy. This subjugation is materialised through patriarchal legitimisation of the social institutions of inheritance, marriages and reproductive roles (Raju, 2004). The patriarchal domination of private domains identifies women’s roles as ‘reproductive’ (‘unproductive’), and so is invisible and undervalued. In contrast men’s role in the economy has been indentified as ‘productive’ and is so visible and highly valued. Patriarchy, thus, not only controls

and denies access to women to public spaces, but also en-slaves her status within the public spaces. So, even for working women, a journey from home to work and back to home is a journey from private patriarchy to public patriarchy and back.

Economic geographers have always shown a very keen interest in the study of globalisation, mainly to understand how a shift of production system from local to global level has reorganised the regions (with respect to the locations of the factors of production). The process of globalisation can be understood as the process of internationalisation of capital. It does not mean just export of money, but the export of capitalist relations of production. The complex process is actually facilitated through the internationalisation of production (for instance, TNCs), finance (international banking), market (integrated, cohesive market with all barriers removed) and labour. The need for internationalisation of labour brought forward specific demands. It required labour that is virtually inexhaustible, extremely cheap, easily mobilized and easily replaced. IN addition, with a fragmentation of production process, it was necessary to have a labour force that can carry a repetitive task with minimal skills. Gendered construction of women’s role played a very vital role in this context. At home (private domains), women daily carry out same types of jobs (cooking, washing, etc.) and that too, performed with a ‘desired quality’ (i.e. as per the expected level of satisfaction set by the respective family patriarchs) and ‘without raising the voice’. Thus, the gendered construction of women satisfied the conditions of internationalised production by showing their expertise in carrying out repetitive tasks without hampering quality, which is so essential for the fragmented modes of production. Women were highly taken for granted that they can work with cheap wages (as they do unpaid job at home), normally would not be unionised easily (as they are supposed to very ‘loyal’ an ‘disciplined’), need not be contracted (as at home women carry out jobs with discipline without any signed agreement) and so can be easily replaced. Thus, it is argued that ‘the skills

“Moving into the safe and just space for humanity means eradicating poverty to bring everyone above the social foundation, and reducing global resource use, to bring it back within planetary boundaries - ‘A Safe and Just Space for Humanity’, Oxfam”

needed for production (in globalised systems) are perceived to be extensions of the (feminine) skills used for unpaid work in the home' (Mullings, 2006). On one hand, men (often better-paid) were thrown out of employment with the closure of public sector enterprises and shutting down of organised sector and on the other hand, women (often less-paid) were getting absorbed in the jobs, but in the unorganised / informal sector. This has led to the feminisation of labour in the less developed countries in the globalisation era. Globalisation and incorporation of women in the new economic structure, thus, has brought the overlapping of private (home) and public (workplace) spaces at varied degrees. In fact, at a family level, it is a journey from security and certainty to insecurity and uncertainty.

In such an uncertain and insecure era, the degree of vulnerability varies as per the socio-economic status of the communities. In this context, it is observed that the condition of indigenous communities, esp. in the globalising cities is precarious and more vulnerable. The global 'hyper-urbanising' cities (Harvey, 2000) have played a very important role in the process of globalisation by acting as spatial nodes in the transnational flow of capital. As the 'theatres of (capital) accumulation' at global level, they have experienced the internationalisation of their economies. As a result, the urban space of such cities has got restructured with a massive upgradation of the physical infrastructure, such as transport and communication, banking and finance, electricity, water supply, etc. with a real motive to facilitate efficiency in the process of capital appropriation, accumulation and transfer. It is observed that various socio-economic groups and indigenous communities have become vulnerable as a result of the massive urban restructuration. Indigenous communities, like fishermen, salt-pan workers, farmers, tribals engaged in forest-based activities, etc., especially those located in and around the global city, are no exception to it. Their subsistence livelihoods are historically-evolved and region-specific. In the new market-driven economic framework of globalisation, the traditional subsistence economic systems of these indigenous communities have proved to be unfit. In simple terms, their livelihoods have a very negligible or no role to play in the complex global economy.

Thus, Lutz and Nonini (1999) notes that in the contemporary global economy 'they have a small role to play in labour markets (as workers), capital markets (as investors), commodity markets (as consumers) or even in debt markets (as tax payers paying for bonds)'. In the same tune, Hannik (2003) also observes that the 'the decline, and even disappearance, of settlements (of indigenous communities) with natural resource-based economies seems almost inevitable. Local ore quality declines as the best is used first, raising costs of exploitation, and even so-called renewable resources such as fisheries and forests are often depleted to a point where their products can no longer support a local economy and population'. Along with this economic marginalisation, they have been politically and culturally marginalised as well (Nathan and Kelkar, 2004). As a result, their livelihoods have been threatened by globalisation and, in turn, they have been displaced, marginalised and finally excluded from the development process and landscape. Status and role of women in the indigenous communities is very different from that of their non-indigenous counterpart. They are the most vulnerable group among the indigenous communities. Women in indigenous communities face triple discrimination, on the basis of their gender for being women, on the basis of their ethnicity for being indigenous and on the basis of their economic status for being poor (Roy, 2004). It is also observed that the nature of women's vulnerability and discrimination varies from one livelihood to another.

2. OBJECTIVE AND METHODOLOGY

At the above backdrop, the present paper aims to understand the impact of globalisation on the changing lives of fisherwomen in Mumbai. Mumbai was selected as a study area primarily for two reasons, firstly, as the city explicitly reveals the deep influence of globalisation and secondly, as Mumbai harbours the aboriginal fishing community since ancient past. The present paper achieves the set objective within a theoretical framework of Gender Geography, for which it draws the theoretical grounding from the work of Swaraswati Raju (2004). The paper adopts qualitative methodology with a functional mode of geographic explanation (Harvey, 2003). For the purpose of data collection, instead of the strict questionnaire survey, the authors undertook interviews

of the fisherwomen in various fishing colonies across the Mumbai Metropolitan Region, including Versova, Mahim, Worli, Colaba, Ferry Wharf, Vasai, Uttan and Uran. A close observation of the changing fisherwomen's life since last few years has also acted as an important source of information. By collating the inputs from the interviews, primary observations and the theoretical understanding, the present paper attempts to review the changing gendered spaces of fisherwomen in Mumbai, as reflected in their public and private arenas.

3. GENDER GEOGRAPHY OF FISHER WOMEN IN MUMBAI

Indigenous fishing community, known as the *Koli* community in the local language, in the Mumbai Metropolitan Region, especially, coastal Thane and Raigad districts is facing the brunt of globalisation. Their region-specific, traditional socio-cultural attributes and ways of practising fishing have become redundant in the emerging neo-liberal urban patterns (Karmarkar, 2012). They are being dispossessed of their livelihood due to a number of international policies, especially, those of the United Nations' Organisation and the World Trade Organisation (WTO), as well as the policies and plans of the central and state governments (Karmarkar, 2011). Large multinational and national trawlers, seawater pollution [due to dumping of industrial and domestic waste, oil exploration by the Oil and Natural Gas Corporation (ONGC) in the northern Arabian Sea, Mumbai High and very recent Vasai-High], a plan to take away the precious and the most expensive coastal land in the impression of rehabilitation of *gaonthan* (rural core) by fabricating the Floor Space Index (FSI), relaxation of the Coastal Regulation Zone (CRZ) norms and neo-urban residential expansion in the 'corridors' of Vasai-Virar, Kalyan-Dombivli-Bhiwandi and Thane-Ghodbunder (MMRDA, 1995) have threatened the fishing environment. Along with these factors, the market-driven decisions regarding Special Economic Zone (SEZ) and Exclusive Economic Zone (EEZ) as well as the specific urban projects like the Bandra-Worli Sea Link, Amusement Park (Essel World) at

Gorai and an upcoming International Airport in Uran have thoroughly challenged the livelihoods of indigenous fishing community. All such projects and infrastructural change has resulted in the sharp decline in the fish catch and subsequent reduction in the income of the fisher-family. Globalisation and associated changes, in and around Mumbai, are, thus, redrawing the contours of the lives of fishing community in Mumbai (Karmarkar, 2012).

Table 1: Sex-wise Work Participation of Fishing Community in Mumbai (2003)

Fishing Practices	Males	Females	Total
Fish Catching	5566	00	5566
Fish Marketing	200	8579	8779
Net Making	572	33	605
Fish Processing	188	949	1137
Other	1295	924	2219
Total Population in Active Fishing	7821	10485	18306

Source: GoM (2003)

The financial crisis of indigenous fishers (which has resulted directly and indirectly by globalisation) has led to major economic shifts within the community. The Marine Census of 2003 (after a decade of modern globalisation) shows that 51% of fisher population have deserted fishing and shifted to other sources of earning (though by origin they are fishers). [In the earlier Marine Census of 1997, the data on male and female is not gathered and so not available. It shows the apathy towards the gender related issues at government level.] This economic shift in the post-globalisation era has changed the demographic structure of the fishers, who are actually in fishing. With the sex ratio 1341 females per 1000 males, the actual fishing activity in Mumbai is dominated by the participation of fisherwomen. The activity-wise participation figures, however, provide a skewed picture (Table 1). About 71% fishermen (out of total active fishermen) are involved in the fish-catching stage, with no female contribution at all. Sea, thus, becomes exclusively masculine part of the activity space. 7% of the total

"Development which has no regard for whom or what it harms is not development. It is the opposite of progress, damaging the Earth's capacity to support us and the rest of its living systems" - George Monbiot

fishermen and 0.3% of the total fisherwomen are involved in net-making. In contrast, only 3% and 2.4% fishermen (out of total active fishermen) are engaged in the fish-marketing and fish-processing stages respectively, with 82% and 9% fisherwomen involved at these stages. This data shows a strong dominance of fisherwomen in fish-marketing and fish-processing stages. So, beach, the exteriors of the house, nearby market-places and the wholesale markets in the city makes up the feminine parts of the activity space.

From the above table, it is observed that the gender roles of fisherman and fisherwomen are more or less sharply connected with distinct segments of the fishing activity. Fishermen deal exclusively with the fish production (or actual catch or extraction), in turn, directly with natural resource. It is because of the gendered construction of fishermen's primary role of fish-catcher; that comes from the social beliefs that as the men are stronger, they are fit for fish-catching job, which contains a lot of risk and requires strength and spirit to fight. Though fisherwomen's involvement is nil in fish-catching, they play a crucial role in arranging the household resources for their husbands. So their role cooking the food for the sea-trip, packaging the grocery, putting kerosene in stove and keeping it ready for the trip, packing the clothes for husbands, etc. cannot be neglected. Thus, the domestic work carried out by fisherwomen in this regard is essential for actual fishing. This role, however, remains invisible and highly undervalued as it is carried out in private domain and not associated with money-earning. Fisherwomen, on the other hand, are engaged more in fish processing, i.e. sorting, preserving, slating, drying, etc. and also in fish-marketing, i.e. buying and selling, both. It can be argued that women's involvement in post-fishing operations helps fishermen save money as they do not require paying any wages. Here again, the tasks of preparing the product for market (fish-processing) are not seen as they are carried out on beach or exterior of the house, which is considered as an extension of their private spaces. Fish-marketing is the part of the feminine activity space, which falls in public domain. Though these tasks are 'non-productive', they should be considered as 'reproductive' in the context of the preparing the product (fish) for the market. In spite of this, it is observed that in most cases their participation

is neither socially acknowledged nor economically remunerated. Paré (1989) points out that this is primarily due to the fact that the stages of fishing at which women become involved (*except fish-marketing*), are not the most visible ones (Aguilar, 2001) [*Emphasis added*].

4. CHANGING GENDER GEOGRAPHY OF FISHERWOMEN IN MUMBAI

Destruction of fishing livelihood in Mumbai due to globalisation and associated urban restructuring, as discussed in earlier section, has reduced the fish-catch and subsequently income of fisher families. Actual fishing has become less profitable for fishers and so fishing trips have also declined. The financial crisis, thus evolved, has led to major economic shifts within the community. The Marine Census of 2003 (after a decade of modern globalisation) shows that 51% of fisher population have left fishing livelihood and shifted to some other sources of earning. Younger generation has preferred to shift from fishing to non-fishing activity, thus, making indigenous fishing a middle-aged or higher-aged activity. Karmarkar (2012) has shown through survey that the fishermen have shifted to services and self employment. Many of them have taken jobs at offices, call centres, shipping corporations, construction companies, contractors, ONGC, etc. Some of them have shifted to self-employment or business like small retail shops, real estate agencies, insurance agency, music bands, etc. Some of them have also started renting single rooms in their homes. It shows the strategies adopted by the fisher population to cope with the devastation of fishing activity. Marine Census (2003) also reveals that out of total fishermen population, 42% fishermen have deserted fishing; while out of total fisherwomen population; only 20% fisherwomen have deserted fishing. The economic marginalisation, in general, and the financial crisis at family level, in particular, has resulted in tremendous pressure on the role and functions performed by the fisherwomen in Mumbai. So, how and why most of fisherwomen remained in fishing, despite the fall out of globalisation? As globalisation directly affects the market and fisherwomen are directly and more exclusively connected with the market, how are they coping with it? How far these questions have altered their

geographies? All are important questions raised by globalisation. There is a need, therefore, to understand the nature of changing gender geography of fisherwomen in Mumbai. The impact of globalisation on the lives of the fisherwomen needs to be understood in two ways. Globalisation has more direct and visible impacts on markets and so the public domain of fisherwomen (fish-markets) needs to be seen first. Then, the impact on their private domains (home and beach) needs to be understood.

5. Changing Public Spaces of Fisherwomen

Globalisation has a major impact on fish-markets in Mumbai that has terribly affected the fisherwomen in a variety of ways:

1. The current spree of redevelopment and gentrification along with other policy mechanisms such as CRZ, CMZ, Gaothan Redevelopment Scheme, etc. fisherwomen are losing their market places. Municipal Corporation of Greater Mumbai (MCGM) runs civic markets in different parts of the city and suburbs. These are one of the major market places where fisherwomen sell their fish. Fisherwomen from all the localities informed that MCGM has never maintained the building structures and as a result these markets are in a dilapidated condition. In the real estate redevelopment policy, the single story dilapidated civic markets on prime land is an enormous waste of property. As a result, fisherwomen are being thrown out of these markets. MCGM has redeveloped about 108 dilapidated markets in the city. MCGM asked that vendors with a valid licence and who have formed a co-operative society in these markets would have the right to select a developer of their choice. Some fisherwomen do not have licenses and most of them are not a part of cooperative society. Gendered constructed image of women, in which they are found fit for some physical labour, but not the intellectual one, is also responsible for the lack of organisational representation. Fishing cooperatives, it is found, are dominated by fishermen and fisherwomen have no role to play in it. They are kept away from all the decision-

making, political negotiations and other financial transactions of the cooperatives. Fisherwomen from Sion informed they pay Rs. 10 to Rs. 20 every day towards the service charges to the civic body and now the MCGM is asking for licenses from the fisherwomen, who have been selling fish in the localities from more than hundred years. As a result of the evacuation, fisherwomen are compelled to sell their fish in the open space with an uncertainty that the MCGM authorities may come anytime and drive them out. Many fisherwomen informed that they have to bribe the contractors or authorities Rs. 50 or so for allowing them to sell fish in the open space. It is also found during the interview that the urban restructuration, esp. the closure of textile mills in post-1990s as affected the fish sale. Fisherwomen from Worli and Mahim informed that the mill workers were their major customers. But due to financial crisis of the mill-workers, the demand for fish has declined.

2. Fisherwomen, during the interviews, informed that the fish markets are so unhygienic that many of them suffer from health problems. Fishermen are saved from this problem as they are not involved in marketing. Absence of enough space and lack of water are some of the problems. The big problem is the absence of toilets. Fisherwomen informed that they spent 6 to 7 hours in the market and the absence of toilets leads to a number of health problems. They feel that urinating in an open public space is a biggest freedom; this gendered society has conferred to men. Thus, though the players in the fish-market are females, the market infrastructure remains masculine.

3. The fish markets of indigenous fisherwomen have been a victim of increasing competition from large trawlers and corporations that export fish. It has been observed that fish catch is declined due to seawater pollution, mangrove destruction, uncontrolled fishing by trawlers and so on. Due to less fish-catch, fisherwomen do not get adequate quantity for the market. As a result, many fisherwomen travel a long distance to the wholesale market at Ferry Warf or *Bhaucha Dhakka*. They wake up at 2 or 3 am and

"No matter how many toys we amass we leave them behind when we die, just as we leave a broken environment, an economy that only benefits the richest, and a legacy of empowering greed over goodness. It is now time to commit to following a new path." - John Perkins

travel through suburban locals to south Mumbai, they bargain with the wholesalers (men), arrange for the porters (men) and hand-pulled cart to carry the loads of fish from wholesale market to Mumbai CST and then from suburban railway station to the local retail market. They return back at around 10 am and then do the sorting and preserving procedures and then sell the fish in the late afternoon, i.e. after 3 pm. Some fisherwomen from Vasai, Versova reach at 2 to 3 am at the Ferry Warf with their fish, bargains with the wholesalers to sell fish to them and return in the morning with cash. The competitive fish markets have expanded the area of their public domain, increasing the time and distance of travel for fisherwomen.

4. In the last decade, due to changing nature of fish-markets, the new categories of traders (men), such as commission agents, financier-traders, exporters, etc. have come up (Salagrama, 2002). As a result, recently, fisherwomen are getting marginalised in the process. It is found in Mumbai that fishermen often prefer to sell their fish directly to traders and exporters for ready-cash, bypassing the fisherwomen. Many fishermen catch the more expensive varieties of fish, so as to get quick exporter. The prices of such varieties of fish are so high that fisherwomen, who are exclusively in fish-processing activity, cannot buy them.

5. The image of Mumbai as a ‘city of opportunities’ is enhanced in the globalisation era with overall makeover of the urban space. This image and the rising rural-urban gaps lead to increasing immigration in Mumbai from all parts of the country. Increasing competition from North Indian male (from UP and Bihar) fish-sellers has been a big issue from last five to seven years. Though, it is found that the new migrant fish sellers have also come from Thane, Vasai, Ahmednagar and other regions of Maharashtra. Unlike the indigenous fisherwomen, who sit in a fixed place in the fishing markets, the ‘stronger male migrants’ carry the fish on their heads and sell from door to door. This has led to a stiff competition for the indigenous fisherwomen. It is found during the interview that there is a feeling of encroachment by North Indian male fish-sellers in the minds of the fisherwomen. An observation at Colaba shows that there are some migrant women from Rajasthan, who are engaged in sorting of *Kolambi* (Prawns), *Javla*, etc. at the Colaba

fish market. They informed that they receive meagre wages like Rs. 20 per kilogram for sorting. The conflict is actually between more organised feminine sector of fisherwomen and the unorganised masculine sector of the new migrants.

6. There is one more facet to rising competition in fish-market, and that is, by the malls and some MNCs that have entered in the sell of fish-food. Fisherwomen from Versova complained that the fish sell in the local and municipal fish markets has been affected by the nearby malls, such as the Hypercity Mall at Malad. It is observed that the Pomfrets are sold at the rate of rupees 490 per kg in the Malls, while its rate in local or municipal market is around rupees 300 per kg. In spite of this gap in prices, consumers prefer to buy fish from the ‘cool and hygienic’ ambience of the Mall instead of the stinking local fish markets. It is also found that a few corporates are engaged in the home delivery of fish. It may affect the local fish sale. Castlerock Fisheries, at Napean Sea Road and Pali Hill in Mumbai, delivers frozen seafood and under the brand, Marina, offers ready-to-cook meals and seafood snacks, such as, prawns, momos and seafood spring rolls. Similarly, Pesca Fresh, a seafood distribution company, at Lower Parel, Mumbai also provides home delivery facility of fish (Karmarkar, 2012). This increasing competition is affecting the fish-sale at local fish markets, esp. those that are allocated close to malls.

7. Dwindling fish-catch has affected the supplies on one hand and increasing competition in the fish-market has affected the demand, on the other. As a result, the price of fish has also become highly competitive. So daily verbal conflicts with the customers during the price-bargain has become a regular feature in the near past. Fisherwomen informed that the noisy fish-markets lead to tremendous stress and tension. They said that the little mental peace that was left has also been taken away by the competition.

8. Fisherwomen need to deal and negotiate with a large number of men that make the fish-markets highly masculine. Fisherwomen informed that they need to bring an attitudinal change to come at par to deal in masculine market. The identity of fisherwomen in Mumbai as ‘foul-mouthed’ is a result of the same.

Fisherwomen are used to abusive words (that are basically masculine with feminine targets) and they use it freely. Sexual harassment of fisherwomen is a controversial issue as fisherwomen do not speak openly about the same. During the interview, fisherwomen informed that the verbal abuses and teasing is very common.

6. Changing Private Spaces of Fisherwomen

Globalisation has a major impact at the domestic level as well. It has also transformed beaches which are the part of an extended private space of fisherwomen.

1. Highly competitive markets and dwindling demand on one side and declining fish-catch and household income, on the other, has made fisherwomen's private spaces, the spaces of tension. As family income has declined, managing the house has become a major problem. It is mentioned earlier that fishermen shifted smoothly from fishing to non-fishing occupations, but fisherwomen could not do so easily. It is their involvement in private spaces, which are subjugated by the patriarchy, which obstructs them from such a shift. Like in case of fishermen, it is found, young fisherwomen with some education at hand could shift to an office job or starting a beauty parlour. Some fisherwomen Worli and Mahim have informed that many illiterate or less educated middle-aged fisherwomen have taken up jobs of domestic servants, fall-bidding, or running a mess. Fisherwomen in the city in suburbs, thus, could go beyond the private spaces and venture in a public domain with a different role. However, the case is different for the fisherwomen staying in the periphery with a more rural background. In Vasai, for instance, fisherwomen are not in a position to shift from fishing to non-fishing. Fishermen, during the interviews, said that it is against the customs and status of the fishing community that fisherwomen are working as a domestic worker. It is revealed during the interviews of fisherwomen in Vasai that though they are facing financial problems, they cannot go out in public domain with a renewed identity. But they can do some work at home (i.e. they can remain in private domain) to support the family. So many fisherwomen in Vasai and even in some other localities are engaged in taking school tuitions, running a small crèche,

stitching, selling food-tiffins, etc. These are the jobs having some status, if they are done within a house. But a traditional fisherman cannot accept his mother, sister, wife or daughter going out of home as a servant; it is derogatory for him. Thus, the patriarchal traditions and beliefs have confined fisherwomen's shift from private to public spaces with a renewed identity.

2. Rising competition and stress in the public domains of fisherwomen, as mentioned in the above section, has made their lives very busy, tiring and exhaustive. So while trying to cope up with the uncertain markets on one hand, they wake up before their male counterpart, cook food and do all arrangements for husbands' fishing trip, buy the household necessities while returning from the market, and at the end they are the last to go to bed at night. Most of the active fisherwomen wake up very early, they play their role in the wholesale market often in the dark of the dawn, spent their early afternoon ion the beach to receive and unload the fish, spent the entire afternoon in processing related activity, then they go to the local market in the evenings and remain engaged throughout the day in the household tasks. As one of the fisherwomen from Versova said during an interview, 'sleep is a luxury for fisherwomen.'

3. Now-a-days, many fishermen in large colonies like Colaba and Versova sell their fish directly to exporters or traders without giving the fish to the fisherwomen of their families. Due to this process, fisherwomen do not receive any money in their hands for running family chores. Fisherwomen said that fishermen spent most of the money on boat maintenance and repairing, fuel costs, etc. and the remaining amount is spent on drinking liquor or other habits like *gutkha*. According to them, alcoholism and *gutkha* habit of fishermen are the biggest problem they face at home front.

4. Beach is used for a number of activities like unloading, sorting, drying of fish, making and repairing nets, anchoring and maintenance of the boats, etc. As in most of these activities fisherwomen are involved, beach becomes a part of their extended private spaces. However, in recent times, beaches are suffering from erosion, pollution and most importantly shrinking. Karmarkar (2012) has elaborately discussed the

factors responsible for this problem. The major factors are the urban planning policies of the MMRDA and CIDCO, urban encroachments, CRZ/CMZ regulations (that clearly show vested political economic interest rather than serious environmental concerns) fabrication of FSI rules through Gaonthan Redevelopment Program, coastal projects like the Bandra-Worli Sea Link and associated reclamation activities, sand dredging, creek and seawater pollution due to industrial and domestic waste, mangrove destruction, etc. Fisherwomen are loosing their functional space through beach erosion. In Vasai, for instance, beach has become very narrow. It can be observed that fisherwomen have a very restricted space in the form of narrow masonry embankments (raised to control tidal water intrusion) for activities like fish-drying. In certain areas like Versova and Uran, there are no jetties available. It makes fish unloading a difficult and laborious task.

7. TOWARDS THE GEOGRAPHY OF CHANGE: CONTESTING CLAIMS OVER FEMININE SPACES

The lives of fisherwomen till recently were the product of patriarchal hegemony and socially constructed gender identities. It can be argued that fisherwomen displayed an extraordinary capacity to internalise these controls and were successful in carving their own gendered space within the fishing community with their active, untiring and unparalleled role in public and private domains both. Globalisation, however, has challenged their status by making their public spaces highly fragmented and the private spaces highly uncertain. At this juncture, the status of fisherwomen today is a product of a complex interrelationship among patriarchal hegemonies, social constructivism and the forces of globalisation. It is true that in the past fisherwomen had never challenged the deterministic control of patriarchy or socially constructed gender roles.

With their own spaces slipping under their feet in the era of globalisation, fisherwomen in Mumbai are on the verge of challenging the Geography of Change. They are now, contesting for their feminine spaces. Fisherwomen are getting organised off-late and installing the formidable struggle for their survival. It

can be observed in the recent agitation by the *Koli Mahila Sangharsh Samiti* (KMSS), wherein they fought against the encroachment of their functional spaces by male migrants from ‘outside’ Mumbai. Fisherwomen are also found participating in large numbers in the agitations organised by various organisations like Maharashtra Machhimar Kriti Samiti, National Fishworkers’ Forum, National Alliance of Peoples’ Movements, etc. Though, their active participation is a welcome step, it is necessary that fisherwomen should lead their own movements. Many of these organisations, including the *Koli Mahila Sangharsh Samiti*, are led by men! Similarly, there is always a chance that these agitations would be exploited for the political motives of the parties. Fisherwomen’s agitation against North Indian migrants, for example, was high-jacked over by the Shiv Sena and Maharashtra Navnirman Sena (MNS) for serving their political motives. As a consequence, instead of a struggle between feminine and masculine labour and organised and unorganised / informal labour, this agitation ended up with a communal or regional clash. So, there is an urgent need for fisherwomen to be more aware and conscious about the way they wish to contest their claims on the feminine spaces.

In addition to the above, another interesting fact is that fisherwomen have wedged their fight and raised their voices about the problems in the public domain; they have been silent about their issues in the private domain. This silence, it seems, is a part of the traditional feminine wisdom, by which they choose not to publicise their internal or family-related problems. It is due to this wisdom, that most of the fisherwomen remained silent during the interviews while talking about their problems at home front. However, globalisation has intertwined the public (workplace or markets) and private (homes) spaces of fisherwomen in a complex manner making their gendered spaces more chaotic. Thus, whether to contest the public and private spaces separately or to contest both of them simultaneously as a product of a common patriarchal hegemony are the important questions. The practical solution (though difficult to arrive at) to this question would decide the future direction of the feminist struggle.

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REFERENCES:

- Raju, S (2004): ‘Gender and Geography in India – Why the Two Shall Meet’, in S. Banerjee-Guha (ed), ‘Space, Society and Geography’, Rawat Publications, Jaipur
- Monk, J. and Hanson, S. (2009): ‘On Not Excluding Half of the Human in Human Geography by Geographic Thought - A Praxis Perspective’, Rutledge, USA
- Women and Geography Study Group of the Institute of British Geographers (1984): Geography and Gender: An Introduction to Feminist Geography, Hutchinson and Explorations in Feminism, Collective, London
- Browne, K. (2006): ‘Gender and Geography’, in B. Warf (ed), ‘Encyclopedia of Human Geography’, Sage Publications, USA
- Mullings, B. (2006): ‘New International Division of Labour’, in B. Warf (ed), ‘Encyclopedia of Human Geography’, Sage Publications, USA
- Lutz, C. and Nonini, D. (1999): ‘The Economics of Violence (and Vice Versa)’, in H. Moore (ed), ‘Anthropological Theory Today’, Polity Press.
- Hannik, D. (2003): ‘Resources’, in E. Sheppard and T. Barnes (eds), ‘A Companion to Economic Geography’, Blackwell Publishing, Oxford, UK, pp. 227-241.
- Nathan, D and Kelkar, G (2004): ‘Introduction’, in D. Nathan, G. Kelkar and P. Walter (eds), ‘Globalisation and Indigenous Peoples in Asia: Changing the Local-Global Interface’, Sage Publications, New Delhi.
- Roy, C. (2004): ‘Indigenous Women: A Gender Perspective’, A Monograph, Resource Centre for the Rights of Indigenous Peoples, Norway.
- Harvey, D. (2003): ‘Explanation in Geography’, Rawat Publications, Jaipur (Indian Reprint)
- Karmarkar, D. (2012): ‘Fishy Spaces: Globalisation and Livelihood of Indigenous Fishermen – A Case of Mumbai’, LAP LAMBERT Academic Publishing, Saarbrucken, Germany.
- Karmarkar, D. (2011): ‘Globalisation of Policy-Making and Environmental Sustainability: A Case of Fishing Policies with Reference to Mumbai’, Unpublished Paper, Inter-Disciplinary Regional Conference on ‘Development, Environment and Sustainability’, Smt. C. H. M. College, Ulhasnagar.
- MMRDA (1995): ‘Draft Regional Plan for Bombay Metropolitan Region’, MMRDA, Mumbai.
- GoM (2003): ‘Maharashtra: Fishery Census - 2003’, Department of Animal Husbandry, Dairying & Fisheries, Government of Maharashtra, Mumbai.
- GoM (1997): ‘Maharashtra: Fishery Census - 1997’, Department of Animal Husbandry, Dairying & Fisheries, Government of Maharashtra, Mumbai.
- Paré, L. (1989): ‘Los Pescadores de Chapala’, ITESO, México, Taken from L. Aguilar, ‘About Fishermen, Fisherwomen, Oceans and Tides: A Gender Perspective in Marine-Coastal Zones’, World Conservation Union, San Jose, Costa Rica, 2001
- Aguilar, L. (2001): ‘About Fishermen, Fisherwomen, Oceans and Tides: A Gender Perspective in Marine-Coastal Zones’, World Conservation Union, San Jose, Costa Rica
- Salagrama, V. (2002): ‘Fish Out of Water: The Story of Globalization, Modernization and the Artisanal Fisheries of India’, in ‘Proceedings of Asian Fisherfolk Conference, 2002’, Prince of Songkhla University, Hat Yai, Thailand.

Technical Session II

The Silent Killing

VARIATION OF TEMPERATURE PROFILE WITH GROWTH OF THE CITY: STUDY OVER INDIAN CITIES

Hemant Bherwani^{*1}, R. S. Patil² and Rakesh Kumar³

ABSTRACT:

Increase in population is a basic indicator representing the growth of the city and urbanization. Temperature profile is adversely affected due to urbanization. In this paper, a relationship between temperature of the city and population is determined. Major cities of India like Mumbai, Chennai and Kolkata are studied. Further analysis of relationship between population and change in temperature profile of the city suggest that the major Indian cities follow a similar trend. Time series analysis on temperature profile of cities is carried out and forecasted. This was used to validate the model which was developed by method of curve fitting.

Key Words: City Size, Urbanization, Temperature Change.

1. Introduction

Urbanization is one of the major social and scientific changes spreading around the globe at a rapid pace, especially in developing countries. Soon, a majority of the world's people will be living in urban environment which is quite unlike to the rural settings (Tayanc *et.al.*, 1997). The ability of human species to manage this phenomenon and also preserve the environment both globally and locally is in serious doubt and a challenge which is to be faced not only by human race but by all the species of living beings across the globe.

In India, in 2011, the population living in urban areas was 37.7 crore (31.16 percent of total population in 2011) which was around 6.7 crore (17.3 percent of total population in 1951) in 1951. Out of this 37.7 crore, 13.5 percent of the population lives in Maharashtra, making it as the most urbanized state of India. Currently, more than 52 percent of the total population of Maharashtra lives in urban area (Pandey, 2011).

The positive effects of urbanization involves many things like reduced transportation costs, exchange of ideas, sharing of natural resources, provide higher standard of living, provide better opportunities for growth and development.

On the other hand, urbanization shows us a very different picture, it has many adverse effects

also. Some of them include: (URL-01 and URL-02) public health concerns, unemployment, overcrowding, loss of privacy, increase in criminal activities and so on. Apart from this, urbanization has decisive negative impact on environment and climate.

Urban development, land-use changes, industrialization and other anthropogenic disturbances exert strong pressures and pose numerous challenges to the natural environment in urban. Some of the major indicators marking the environmental deterioration can be industrial, commercial and residential waste disposal, inland and coastal water quality deterioration, coastal eutrophication, toxic pollution, and harmful algal bloom (HAB) outbreaks, temperature changes in streams and near-shore waters, air pollution effects on human and ecosystem health, urban heat island and climate change. These direct and indirect impacts of urbanization on land, air and water processes pose serious risks to human health (Sherbinin *et. al.*, 2011).

2. Objectives

The research paper aims at developing an understanding towards the relationship between urbanisation and temperature of the cities. Major cities of India like Mumbai, Chennai and Kolkata are studied extensively for the same. A special emphasis

"They all say 'Save The Climate'. If the climate was a bank, they would have saved it already!"

- Hugo Chávez

is also given to the relationship between the population and temperature of cities.

3. Data Sources and Research Methodology

Population data for each of the Indian city is taken from the census which is collected by Government of India in every 10 years. The temperature data for each city is taken from Goddard Institute of Space Studies (GISS) Website which is maintained by National Aeronautics and Space Administration (NASA). The temperature data is available for almost all major cities of India. The temperature data is collected by surface measurement devices and is uploaded on the website which is available to all free of cost. Further analysis of relationship between population and change in temperature profile of the city suggest that the major Indian cities follow a similar trend. Time series analysis on temperature profile of cities is carried out and forecasted. This is used to validate the model which was developed by method of curve fitting.

4. Impact of Urbanization on Climate

Climate change is not just a global phenomena, it has adverse effects on both regional and local scale also. Studies suggest that climate change is taking place on a local scale as a result of urbanization. The nature of surface characteristics in an urban environment differ greatly from those in non-urban areas, and can lead to changes in the energy budget within the urban boundary layer. It is important to gain a better understanding of the nature and magnitude of urban climate modification, in order to assess the contribution of urban areas to climate change and also what impact climate change may have on urban areas (Hughes, 2006). The growing interest in urbanization problems is stimulating detailed studies of their effects on local climate change in the developed world while in the developing nations; hardly any research is carried out on this aspect (Tayanc *et. al.*, 1997).

The effect of urbanization on temperature profile of the city will be analysed with special

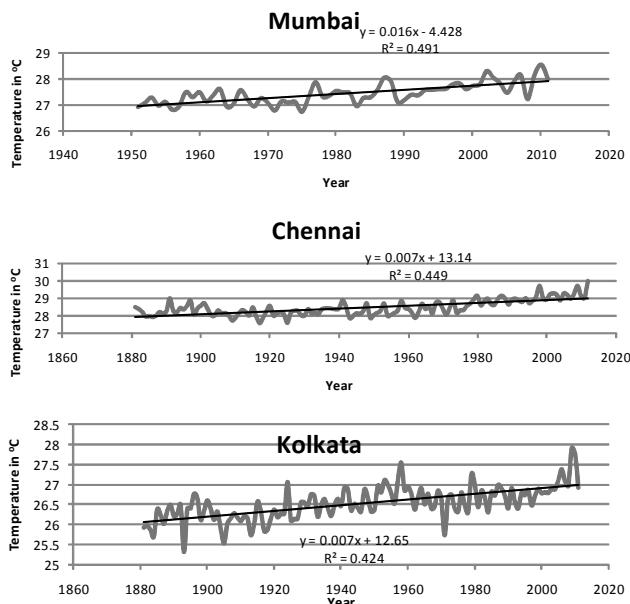
reference to Mumbai in detail in the upcoming sections. The general impact observed can be summarised under the following broad heads.

4.1 Urban Warming

One of the best known urban effects of urbanization is urban warming; globally cities are almost always warmer than the surrounding rural area. The magnitude of urban warming is highly variable over both time and space. On an average, urban temperatures may be 1–3°C warmer, but under appropriate meteorological conditions (calm, cloudless nights in winter) air temperatures can be more than 10°C warmer than surrounding rural environments. However, in some regional settings, for example in arid environments, cities with large amounts of irrigated green space (parks, suburban vegetation) may actually be cooler than the surrounding dry areas (Grimmond, 2007). The underlying physical causes of the urban heat island are complex. Some of the causes are summarized along with their mitigation measures are summarized in the following Table 2.1. For any neighborhood in any city, the relative balance of controls depends on the nature of the urban environment, human activity, and meteorological conditions (Oke, 1973). The basis of the effect is the existence of a steep atmospheric temperature gradient between the urban centre and rural surroundings, characteristic of a ‘dome’ of warmer air above the urban area (Huges, 2006).

Considering the case of India, urbanization has been very rapid in the three major cities of India i.e. in Mumbai, Kolkata and Chennai. There has been an exponential growth in the population of Mumbai after the independence of India and so is in the temperature (Dhorde *et.al.*, 2009). The following graphs as shown in Figure 1 give the temperature change of these three major cities of India. This was the preliminary work which was carried out in order to see the temperature profile of the cities. It is clearly visible from the graphs that the cities show a positive trend in temperature profile.

Figure 1 : Variation of Annual Mean Temperature with Time for Three Major Cities of India: Mumbai, Kolkata and Chennai



Source : GISS Surface Temperature Data, URL-03

4.2 Reasons for Urban Warming

The main reason for urban warming is that buildings block surface heat from radiating into the relatively cold night sky. This results in trapping of heat at the surface and nearby areas resulting into warming. Two other reasons are changes in the thermal properties of surface materials and lack of evapo-transpiration (for example through lack of vegetation) in urban areas. This basically results in reduction of latent cooling (Nottrott, 2010). Materials commonly used in urban areas for pavement and roofs, such as concrete, have significantly different thermal bulk properties, including heat capacity and thermal conductivity, and surface radiative properties like albedo and emissivity than the surrounding rural areas. This causes a change in the energy balance of the urban area, often leading to higher temperatures than surrounding rural areas.

The tall buildings within many urban areas provide multiple surfaces for the reflection and absorption of sunlight, increasing the efficiency

with which urban areas are heated. This is called the “urban canyon effect” (Nunez *et.al.*, 1976). Blocking of wind by the buildings again alters the advection resulting in lowering of cooling effect. Waste heat from automobiles, air conditioning, industry, and other sources also contributes to the Urban Heat Index (UHI). High levels of pollution in urban areas can also increase the UHI, as many forms of pollution change the radiative properties of the atmosphere.

4.3 Effects of Urban Warming

Electricity demand increases about 2-4% for every 1°C rise in air since cooling required will be more. This leads to higher energy demand (Nottrott, 2010).

Mortality increases during heat waves. In 1995, extreme heat wave in Chicago, Illinois resulted in 700 heat related death (Nottrott, 2010). Within the United States alone, an average of 1,000 people die each year due to extreme heat. In India, in 2003, southern heat waves lead to the death of 1500 people. While in May 2010, in Ahmadabad, around 100 people died because of heat waves (NRDC, 2012). As UHIs are characterized by increased temperature, they can potentially increase the magnitude and duration of heat waves within cities (URL-04).

UHIs can produce secondary effects on local meteorology, including the altering of local wind patterns, the development of clouds and fog, the humidity, and the rates of precipitation. Production of some green house gasses increases with temperature (e.g. smog results in ozone) (Nottrott, 2010).

5. Analysis on Mumbai City

5.1 Trend Analysis

Mumbai city has experienced an enormous growth in the population since independence. Also the temperature has been rising in these years. The temperature data obtained is the surface

"In a climate where people don't understand the numbers, newspapers, campaigners, companies, and politicians can get away with murder" - Prof. David JC MacKay

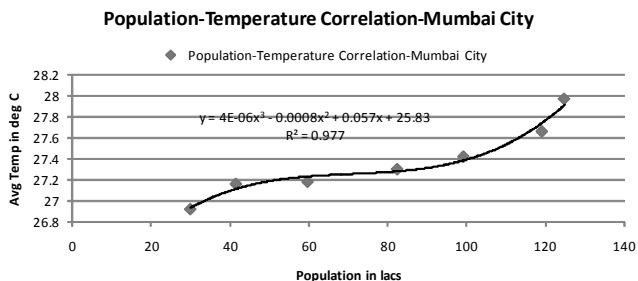
temperature data of Colaba station located in Mumbai. The website gives monthly data right from 1890 to 2011 and is regularly updated. We have taken an average of the annual data over a period of 10 years so as to compare it with the population rise in the city as the census data is available at every 10 years.

Table 4.1 indicates the population and temperature change over the decades for Mumbai city. It is evident from the table that both population and temperature increase with time. A graph between temperature and population is plotted over a period from 1951-2011 to understand the trend and relationship between the population. This is shown in Figure 2.

Table 1 : Decadal Population and Temperature Rise

Year	Population in Lacs	Temperature (°C)
1951	29.94	26.92
1961	41.52	27.16
1971	59.71	27.18
1981	82.43	27.3
1991	99.26	27.42
2001	119.14	27.66
2011	124.79	27.97

Figure 2 Correlation between Population and Temperature of Mumbai

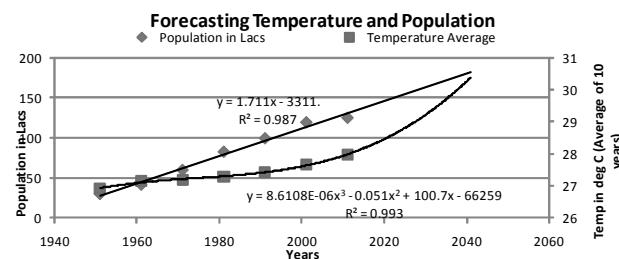


The above graph and equation can be used to predict the average decadal temperature of Mumbai, if the population is known. There are many models available for the prediction population. It is to be researched that what is trend of

Mumbai's population growth and that corresponding model can be used which follows the trend.

Further analysis of temperature of Mumbai can be done so as to see the forecasted temperature of the city. The following graph, shown in Figure 4.3, gives the forecasted temperature and population of Mumbai till 2041. The equations generated can be used to predict the population and hence the temperature from the equation displayed in the Figure 2 or it can be directly read from the Figure 3. Either ways the value of temperature comes out to be same.

Figure 3 : Forecasting Mumbai Population and Temperature



5.2 Time Series Analysis for Mumbai City

There are many free softwares available for time series analysis. Gretl, Jmulti and Zaitun Time Series are some of the softwares which can be used for data and time series analysis. Here, Zaitun Time Series software is used for the analysis and forecasting of temperature.

We will be using exponential smoothing technique in order to fit temperature data and to forecast it. Exponential smoothing is a particular type of moving average technique applied to time series data, used to produce smoothed data for presentation, or to make forecasts. The exponential smoothing method weights past observations by exponentially decreasing weights to forecast future values. In other words, recent observations are given relatively more weight in forecasting than the older observations. We can go single, double or triple smoothing equations depending upon the requirement. Since our data contains seasonality so we need to incorporate the parameter to include the seasonality of the time series data. Therefore, we will be going for triple smoothed

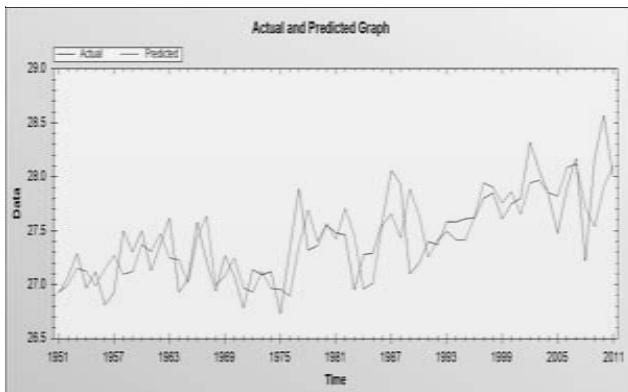
exponential equations. The resulting set of equations is called the “Holt-Winters” (H-W) method after the names of the inventors.

The following result was obtained after running the Zaitun time series. The seasonal length was taken to be 20 years starting from 1951.

Table 2 : Model Output

Variable	Temperature in Deg C
Model Type	Multiplicative
Included Observation	61
Seasonal Length	30
Smoothing Constant	
Alpha, α (for data)	0.412
Gamma, γ (for trend)	0.21
Beta, β (for seasonal)	0.101
Accuracy Measures	
Mean Squared Error (MSE)	0.082
Mean Percentage Error (MPE)	0.034
Mean Absolute Percentage Error (MAPE)	0.823

Figure 4 : Actual and Predicted Temperature Scenario Generated by Triple Exponential Smoothed Technique



The values generated by the model are given in Appendix-1. The following graph shown in

Figure 4 gives the actual and predicted temperature scenario for the fitted model. Actual values Vs predicted values fit is shown in Figure 5. Figure 6 gives the forecasting of temperature till 2041. The values obtained for each year are shown in Table 3.

Figure 5 : Actual and Forecasted Graph for Temperature of Mumbai

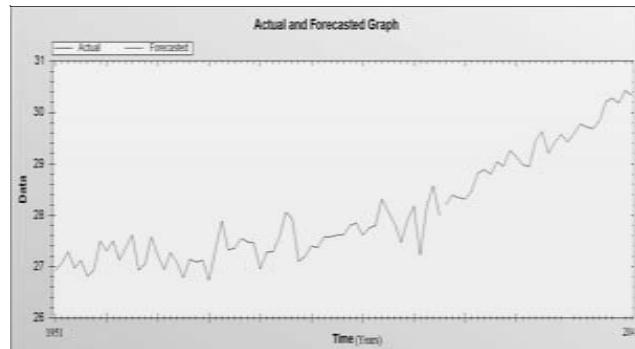


Table 3 : Forecasted Values of Temperature (°C)

Year	Temperature	Year	Temperature	Year	Temperature
2012	28.22	2022	29.21	2032	29.59
2013	28.40	2023	29.2	2033	29.77
2014	28.3	2024	29.0	2034	29.72
2015	28.32	2025	28.95	2035	29.69
2016	28.47	2026	29.48	2036	29.9
2017	28.82	2027	29.65	2037	30.21
2018	28.9	2028	29.22	2038	30.278
2019	28.7	2029	29.42	2039	30.184
2020	29.1	2030	29.58	2040	30.431
2021	28.97	2031	29.5	2041	30.34
Average	28.71		29.561		30.02

It should be noted that the average values of temperature obtained by fitting triple exponential smoothed equation to the data series is same as the temperature obtained by the graphs shown in Figure 3 and so Figure 2. Thus it validates the time series model fitted by the triple exponential method.

6. Analysis of Kolkata and Chennai City

Using similar logic applied in case of Mumbai, other major cities of India like Kolkata and Chennai were analyzed. The temperature for both the cities was taken from the GISS website while

“How can we be so arrogant? The planet is, was, and always will be stronger than us. We can't destroy it; if we overstep the mark, the planet will simply erase us from its surface and carry on existing. Why don't they start talking about not letting the planet destroy us?” - Paulo Coelho

the urban agglomeration population data is available with the census of India. The following tables and graphs show the trend followed by population and temperature of Kolkata and Chennai. Both the cities, similar to Mumbai, show a positive trend in temperature with the rise of the respective population.

Table 4 : Temperature and Population Data of Chennai

Chennai-Data		
Year	Population in Lacs	Temperature (°C)
1951	14.27	28.17
1961	17.49	28.344
1971	24.69	28.381
1981	32.85	28.611
1991	38.43	28.88
2001	43.44	29.022
2011	46.81	29.27

Source : (URL-03 and URL-05)

Figure 6 : Population and Temperature Trend of Chennai City

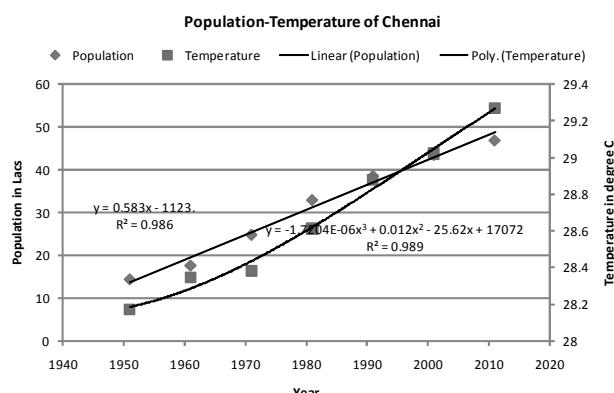
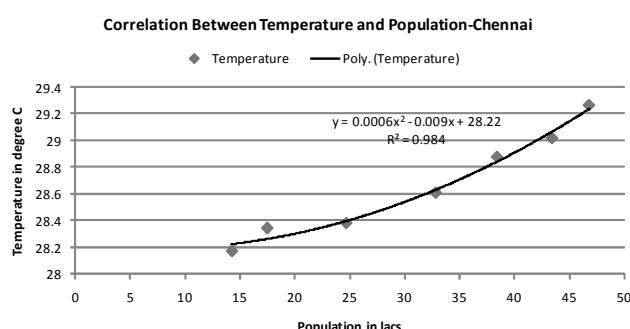


Figure 7 : Correlation between Temperature and Population of Chennai



It can be seen that a similar type of correlation exist between temperature and population of Chennai as it was seen in case of Mumbai.

Table 5 Population and Temperature Data for Kolkata City

Kolkata-Data		
Year	Population in Lacs	Temperature in °C
1951	41.5	26.32
1961	59.8	26.4
1971	74.2	26.536
1981	91.9	26.652
1991	110.3	26.738
2001	132.1	26.882
2011	141.20	27.180

Source :(URL-03 and JNNURM, 2006)

Figure 8 : Population and Temperature Trend of Kolkata City

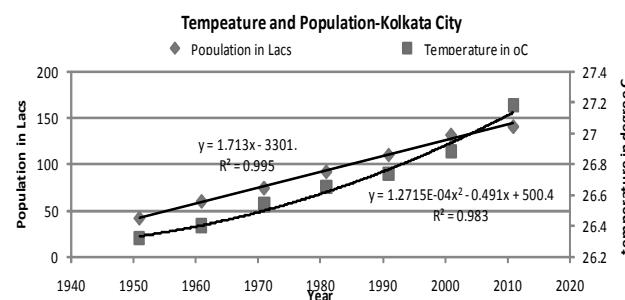
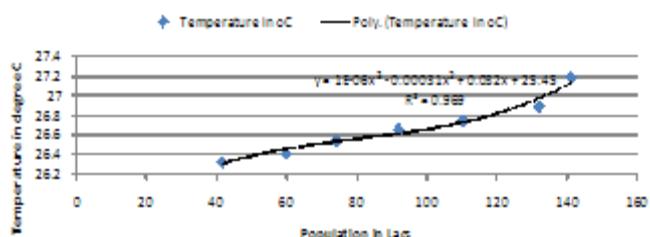


Figure 9 : Correlation between Temperature and Population of Kolkata City

Correlation between Temperature and Population-Kolkata

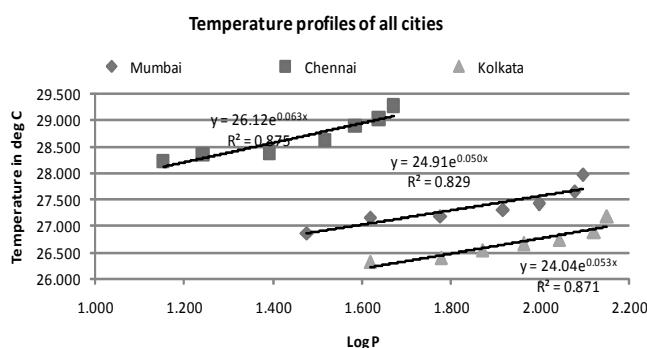


It can be seen that all the major cities of India follow a similar trend. There is a possibility that the equations obtained for individual cities can be coupled in order to develop a common

relationship which can be used to predict the temperature of other major cities of India. Following part of the paper is used to find out the similarity between the correlation obtained between the temperature and population data of the analyzed cities.

The population was converted to log scale in order to analyze the similarity between population and temperature profile of all the observed cities.

Figure 10 : Similarity between Population and Temperature Profile of Major Cities of India



It can be seen from Figure 10 that the population and temperature profile of the observed major cities of India follow a similar trend which is exponential in nature. The variation in the temperature of the cities can be attributed to the local climatic conditions of the region/city. But the nature of rise of temperature with population for each of the observed city is similar and exponential in nature.

If we know the population of the city, which can be predicted by various models available in the literature, the temperature of the city can be calculated. Also, it can be said that all the major cities of India follow a similar exponential trend of temperature with the population considering the case of the three major cities of India which are observed in this paper.

7. Conclusion

Urbanization in India started just after the independence when India started expanding its economy by industrializing. Thus, from that point of time, there has been a continuous growth of urban areas in India. Moreover that has caused detrimental effects on the environment of India which is discussed in the current study. It can be seen from the present study that the temperatures of the major cities of India are continuously increasing. The increase in the temperature of the city is a function of population i.e. city size which is continuously increasing.

The major cities of India follow a similar exponential trend of rise of temperature with city size which is a reason of concern. If the trend goes in a similar manner, the temperature rise will be enormous in the coming few decades. The time series analysis of Mumbai city shows that the average temperature of Mumbai will be touching 30°C by 2041. This will have an aggravated effect on Mumbai city since the extremity of temperature will be still higher and Mumbai being a coastal city shall feel high detrimental effects of this temperature rise. Thus it is necessary to control the temperature rise in city.

Further areas of research include development of common model for temperature prediction for all the cities with population as the feed parameter. Also the effect of growth in city size is to be analyzed on other climatic factors like rainfall and albedo change.

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"All cities do face similar, significant trends in the future... most importantly global warming and climate change." - Cate Blanchett

References :

- Dhorde, A. and Gadgil, A., (2009) Long-term Temperature Trends at Four Largest Cities of India during the Twentieth Century. *Indian Geophysical Union*, Vol. 13.2, 85-97.
- Grimmond, S., (2007) Urbanization and Global Environmental Change: Local Effects of Urban Warming. *Geographical Journal*, Vol. 173, 83-88.
- Hughes, K., (2006) The Impact of Urban Areas on Climate in the UK: A Spatial and Temporal Analysis, with an Emphasis on Temperature and Precipitation Effects. *Earth and Environment*, Vol 2, 54-83.
- Nottrott, A., (2010) Modelling the Urban Energy Balance. International Workshop on Environment and Alternative Energy 2010, La Jolla, CA, USA
- NRDC Report, (2012) Fighting Climate Effects: Protecting People from Extreme Heat in One of India's Fastest-Growing Cities. National Resources Defence Council (NRDC), India.
- Nunez, M. and Oke, T. R., (1977) The Energy Balance of an Urban Canyon. *Atmospheric Environment*, Vol. 19, 11-19.
- Oke, T. K., (1973) City size and the Urban Heat Island. *Atmospheric Environment*, Vol. 7, 769-779.
- Pandey, K. K., (2012) Administration of Urban Development and Urban Service Delivery. Indian Institute of Public Administration, New Delhi.
- Sherbinin, A. D., (2007) Introduction: Population-Development Environment Dynamics In the developing World. Committee for International Cooperation in National Research in Demography, 20-39.
- Tayanc, M. and Toros, H., (1997) Urbanization Effects on Regional Climate Change in the case of Four Large Cities of Turkey. *Climatic Change*, Vol 35, 501–524
- URL-01 : Centre for Ecological Science, IISC, Bangalore <<http://wgbis.ces.iisc.ernet.in/energy/lake2006/programme/programme/proceedings/Presentations/Lake%202006%20-%20Presentations/28%20Dec%202006/Session%20IV/Abijith.pdf>> (accessed on 14.10.2012)
- URL-02 : United Nations, Department of Economic and Social Affairs <http://esa.un.org/unup/Maps/maps_1970_2011.htm> (accessed on 14.10.2012)
- URL-03 : Goddard Institute of Space Studies (GISS), National Aeronautical and Space Administration (NASA) <http://data.giss.nasa.gov/gistemp/station_data/> (accessed on 05.08.2012)
- URL-04 : <http://en.wikipedia.org/wiki/Urban_heat_island> (accessed on 13.10.2012)
- URL-05 : India Online Pages, Chennai Population <<http://www.indiaonlinepages.com/population/chennai-current-population.html>> (accessed on 28.09.2012)

“The dominant culture eats entire biomes. No, that is too generous, because eating implies a natural biological relationship. This culture doesn’t just consume ecosystems, it obliterates them, it murders them, one after another. This culture is an ecological serial killer, and it’s long past time for us to recognize the pattern.” - Aric McBay

CHALLENGES FACED BY SUNDERBAN - ONCE WORLD'S HERITAGE SITE

Prof. Manjusri Ganguly

ABSTRACT:

The “Green Laws “of conservation are making people aware of how man environment can live symbiotically for more time to come and eco tourism is the only way to maximize the economic, environmental and social benefit of tourism. International eco tourism society in 1991 defined eco tourism as responsible travel to natural areas that conserve the environment and sustains the well-being of local people. Eco-tourism a logical component of sustainable tourism development, but on many occasions eco-tourism intersects with conservation and development work. Thus it becomes necessary to identify ways to minimize the losses (threats) to biodiversity and promote eco-tourism. Sundarban provides an unique eco-system and rich wildlife habitat, which is having a great potentialities for development of a beautiful ecotourism destination. The Sunderban is a part of world's largest delta and largest estuary forest made of 54 small islands crisscrossed by several distributaries of Ganga,Megna and Brahmaputra rivers. It is one of the most attractive and alluring place remaining on our planet and it became inscribed as a UNESCO world heritage site in 1997, but this Sunderban the home to the only mangrove tiger(Royal Bengal) has voted out of the race this year(2012) from the new seven natural wonder. It is now the high time to explore Sundarban in the different angle of sustainable ecotourism. The diverse abundance of this National Park has attracted the attention of many Indian and international environmental protection organizations. Everyone is desperately trying to preserve and protect the Sunderban from the effects of climate change, the human-wildlife conflict, deterioration of biodiversity.

Unless immediate action is taken the Sunderban its wildlife and the natural resources that sustain millions of people may disappear within 50 to 90 years. The present paper is an attempt to assess how this once heritage site is facing challenges and how to preserve it.

Key Words ; Heritage site : Biodiversity ;Sustainability ; Mangrove ; Climate Change ; Salinity ; Wild life

1. Introduction

India specially Bengal ,is well known to the entire world because of its glamorous Royal Bengal tiger and Sunderban became most famous as habitat of this majestic animal. Sunderban is also a place where the southern end of Bengal meets the sea and where the entire Indian wild life is embroidered to its perfection. It is one of the most attractive and alluring place remaining on our planet as a truly undiscovered paradise. The name Sunderban can be literally translated as “beautiful jungle” or beautiful forest in the Bengali language. The name have been derived from the “Sundari” trees that are found abundantly in Sunderban.

The Sunderban is a part of world' largest delta and largest estuary forest made of 54 small islands crisscrossed by several distributaries of Ganga, Megna, Brahmaputra rivers Spread over a vast area

of 6526 square miles(including wet lands) the history of the area can be dated back to 200-300 AD. In 1757 proprietary rights of Sunderban were obtained by East India Company from Mughal emperor Alamgir-II. Soon after in 1764 the area was mapped by surveyor General of India. In 1860 this largest mangrove forest was brought under scientific management after the establishment of forest department in the province of Bengal in India. In 1875-76 Sunderban mangrove forest was declared as reserved forest under the forest act(Act viii of 1865) and was placed under the control of the forest department, it became inscribed as a UNESCO world heritage site in 1997, but this Sunderban the home to the only mangrove tiger (Royal Bengal) has voted out of the race this year(2012) from the new seven natural wonder.

The Sunderban provides a unique eco-system and rich wildlife habitat, which is having great

“What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another.” - Mahatma Gandhi

potentialities for development of beautiful ecotourism destination. This can attract people from varied interest ranging from nature lovers, photographers, botanist, zoologist, wildlife lovers and so on. But unfortunately Sunderban still so far has not got that much of importance in the tourism map of India. It is now the high time to explore Sunderban in the different angle of sustainable ecotourism.

In the Sunderban National park, ecological elements are so interdependent on each other that removing any –either the mangrove trees, or the salt water, or the swamps, or the wild life from there, would lead to complete collapse of the ecology. This diverse abundance of the National park has attracted the attention of many Indian and International environmental protection organizations. Everyone is desperately trying to preserve and protect the Sunderban from the damage. The present paper is an attempt to assess how this once a heritage site is facing challenges and tries to make suggestive measures to preserve it.

2. Objectives

The research aims at understanding the overall status of Sundarban at the backdrop of recent climatic changes. It is not only the physical factors affecting the ecological balance of Sunderban but also the human interference. Apart from the common causes of pollution and degradation, tourism is becoming one of the major factors in the degradation of Sunderban in recent years. The study aims at first understanding the bio-diversity of Sundarban followed by the assessment of the impact of sea-level rise on biodiversity. It also tries to assess the threat of physical disaster due to unscientific and excessive tourism development along with human interference.

3. Research methodology

The study is based on extensive surveys and field visits made to various parts of Sunderban. The secondary sources of data in the form of various reports made by forest and tourism departments are also used. The paper is thus culmination of primary

as well as secondary information collected by the researcher.

4. Challenges faced by Sunderban

The rising sea level due to global warming is threatening the deltas of Sunderban and according to the various reports several deltas has already been claimed by the rising sea and many are awaiting submergence. According to the findings of the school oceanographic studies in Jadavpur University, Kolkata the New moor island situated at the mouth of Hariabhangha river, 3.5 km long and 3km wide once a flash point between India and Bangladesh is now history as it has been consumed by the rising sea .The satellite maps of this regions are also showing that the number of islands are about two meters above the sea level. The New Moor Island is not the first to be submerged in 1996, Lochachara which is an inhabited island also has been submerged and Ghoramara is facing the similar threat.

The study by World Wildlife Fund (W.W.F) has warned that the days are also numbered for Sunderban and it has also been predicted that within 60 years, vast tracks of mangrove forests will be inundated by the rising sea.

Apart from this the soil salinity along the coast has increased alarmingly because of construction of Farakka Dam in the river Ganga which has reduced the dry seasonal flow in the rivers of Sunderban drastically. The resultant increase in Stalinization and accretion of sediments may alter vegetation composition, food chain modification and this is directly threatening the living bio-diversity.

Sundarban, the largest estuarine mangrove forest in the world is facing a severe threat due to rising levels of CO₂ in the atmosphere caused by human activities and due to unplanned tourism development. In a survey conducted by the scientists of the South Asian Forum two years ago, it was discovered that the levels of CO₂ in the atmosphere is seven times higher than the possible limits. The main cause of this harmful smoke emission is due to the larger number of illegal machine

"No matter how intently one studies the hundred little dramas of the woods and meadows, one can never learn all the salient facts about any one of them. - Aldo Leopold"

boats used by the fishermen and tourists. These boats mainly run on fuel which is diesel mixed with kerosene that builds up more pollution in the region.

This world heritage site is under threat of physical disaster due to unscientific and excessive tourism development along with human interference. Conservation and environmental management plan for safeguarding this unique coastal ecology is urgently required. As a part of the Man and Biosphere Programme (MABP) the central government had declared the entire 9630 Sq.km. of Sunderban forest as the ‘Sunderban biosphere reserve’ in 1998. It was done to establish a formal mechanism for coordinating and integrating diverse activities for conservation Sunderban. To stop encroachment and reduce pollution level in Sunderban the West Bengal Government has served demolition notice to nine tourist lodges built inside the Sunderban Biosphere reserve area.

According to Mr. Arijit Mitra, BOD of Gosava of South 24 Parganas, the tourist lodges located at Pakhiralay and Dayapur Island have no permission and most of them have been set up in and around the embankment. These could endanger the embankments and lead to flooding in the region. According to Law Officer of the State Pollution Control Board (SPCB) Mr. Biswajit Mukherjee for any construction of building in the Sunderban it is mandatory to get approval from the Coastal Regulatory Management Authority (CRMA). If the buildings have been built without its approval then these should be demolished, however, SPCB will not play any role in the eviction drive. Since the area falls within the forest departments jurisdiction it becomes the duty of the forest department to take necessary action. As a result of above conflict between two Government agencies the nine tourist lodges are carrying out business and more numbers of other tourist lodges are mushrooming and creating problems to the environment.

5. Management of Sunderban

The Sunderban Biosphere Reserve has received effective protection under project “Tiger” since its creation. The core area is free from all human

disturbances like fishing, collection of wood, honey and any other forest products whereas in the buffer zone the disturbances still continue to occur.

Involvement of stake holders in the conservation of the tiger habitat as it could gradually be felt, has been possible by constant motivation, awareness and their involvement in planning process for the implementation of the eco-development program. In this regard ten forest protection committees and fourteen Eco-development Committees have been formed as a participatory management in the fringe of S.B.T.R and the response is positive.

There have been several Eco-friendly practices and activities being conducted in Sunderban for last few years. For instance, development of rain-water harvesting for agricultural production; development of pisciculture reservoir in the buffer zone by the stake holders mainly for prawns, crabs and sweet water fishes; provision for solar power in the villages to reduce pollution from the use of generators; introduction of smokeless chullahs to minimize fuel consumption; afforestation and reforestation of salt tolerant species of the mangrove on the periphery to meet local fuel wood demand.

6. How to meet the Challenges:

For the preservation of Sunderban, there is an urgent need to take concrete steps. There has to be constant monitoring the impact of climate change on flora and fauna of Sunderban. A proper survey has to be conducted for fixing the coastal vulnerability and assessing the resultant risk. In recent years, the number of tourists visiting this place is increasing steadily resulting in the creation of unnecessary nuisances. There is an urgent need to create public awareness through mass media among not only general public but also the tourists. Control of tourism by assessing the carrying capacity for the development of Eco-tourism is another important measure. It is also necessary to assess the economic valuation of resources existing in Sunderban. Sunderban is housing one of the crucial mangrove forests which are highly diverse in nature and support unique life forms. Thus, it becomes mandatory to initiate a strict mechanism

“Man is a complex being: he makes deserts bloom - and lakes die.”

for protecting existing mangroves against encroachments and cutting. Development of community based coastal forestation would also help in protecting and enhancing these mangrove forests. Lastly, there can be establishment of a mechanism to harvest the benefits of mangrove forests from global carbon market.

Unless immediate actions are taken, the Sunderban- its wildlife and the natural resources that sustain millions of people may disappear within 50 to 90 years. The only solution to the problem of Sunderban an ecotourism destination is to have sustainable tourism development. This will not be achieved unless a new approach of tourism is taken, adopting a holistic view point and sustainable practices, hence, generating an equal share of the benefits and costs for all the stakeholders. Thus a new partnership between tourism, local communities and the environment is needed, including necessary changes in attitudes, behavior and management.

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References :

Laskar Muqsudur Rahman ; The Sunderban “ Aunique wilderness of the world “

Hussain Z and G .Acharya ; 1994 ; Mangrove of the Sunderbans , Volume two ; Bangladesh .

Parin D ; 1903 ; The flora of Sunderban : Records of the Botanical Survey of India .

Subir Bhowmik : Fears rise for Sunderban .

Ghosh Amitava ; The Hungry Tide : A Novel , Boson . Houghton Mifflin .

Harish Bhatt & B S Badan , Island Torism – Cresent Pub. Corporation .

Manjusri Ganguly , Jyoti Marwah ; 1995-2008 , Travel &Tourism ; Vipul Publications

“Humankind has not woven the web of life. We are but one thread within it.

Whatever we do to the web, we do to ourselves. All things are bound together. All things connect.”

- Chief Seattle, 1855

“Where do we record the passing of wildlife? Who mourns the silent deaths of the small?” - O.R. Melling

ENVIRONMENTAL AND SOCIAL IMPACTS OF HYDRO-ELECTRIC DAMS IN CHAMBA DISTRICT OF HIMACHAL PRADESH

Mr. Hasrat Arjjumend

ABSTRACT:

Having 4300 large dams already constructed and many more in pipeline, India is one of world's most prolific dam-builders. Large dams in India are estimated to have submerged about 37500 km² land area and displaced tens of millions of people. Himachal Pradesh is proceeding towards power-surplus state and there are as many as 401 projects of different magnitude in different stages of installation on 5 river basins of the state i.e. Satluj, Beas, Ravi, Chenab and Yamuna. State has identified its hydropower generation potential at 23,000 MW. The ecological devastation caused by various projects at lower altitudes of Himachal Pradesh has been alarming; while the prospect of what will happen to the fragile alpine ecosystem is frightening. These projects will change the microclimate that will result in accelerated melting of the snow and glaciers at high altitudes. Like other river basins of the state, hydro-electric power generation in Chamba district was started in 1980s, with 117 mini & micro power projects in different stages of execution at present. Having the special focus on Hul projects the present paper explores the impacts of various dams on environment and local people in Chamba district of Himachal Pradesh. About 6000 local people are being affected by Hul-I project only. The consequences to nature and wildlife will also prove disastrous. As of now, the wildlife such as deer, bear, goat, tiger and peacock do not enter the fields of farmers. Deforestation and soil erosion are even more devastating. Making the situation even more absurd is that the benefits of these power plants do not go to the community suffering the consequences. Gujjar and Gaddi tribes in the state of Himachal Pradesh have been agitating against 4.5 MW hydropower plant from diverting the entire flow of the Hul stream, on which their lives depend. These communities have for more than two decades protected and preserved the forests from which Hul stream originates. The project's pipeline is said to destroy about 2000 of slow-growing oak trees. Livelihood and social impacts of poorly planned mini-hydel projects can be thus devastating, as exemplified in this case.

Keywords: Hydro-electric dam; ecological devastation; livelihood impact; Himachal Pradesh

1. INTRODUCTION

By 1947, there were fewer than 300 large dams in India. By the year 2000 the number had grown to over 4000, more than half of them built between 1971 and 1989. India ranks third in the world in dam building, after US and China (HKSG, undated). Having 4300 large dams already constructed and many more in pipeline, India is one of world's most prolific dam-builders (Thakkar, 2012). While some of these dams were built primarily for flood control, water supply and hydroelectric power generation, the primary purpose of most Indian dams (96%) remains irrigation. In fact, large dam construction has been the main form of investment in irrigation undertaken by the Indian government (HKSG, undated). Between 1951 and 2000, India's production of food grains increased fourfold, from 51 million tones to about 200 million tones. Proponents point to the fact that about two thirds of this increase was in irrigated areas, and that

by the year 2000, areas irrigated by dams constituted 35% of irrigated land in India (HKSG, undated). But it is incorrect to attribute the entire production gains in dam irrigated areas to dams. Indeed, other methods of harvesting water for irrigation, such as ground water and small dykes, remain pervasive in India.

Starting in the 1980s, public investment in large dams in India has been the subject of a sustained controversy - epitomized by the Sardar Sarovar Project - centering on the balance between the social, environmental, and economic costs of dams and their benefits. The losses are suffered disproportionately by people living in the catchment areas. Large dams in India are estimated to have submerged about 37500 km² land area – an area almost the size of Switzerland – and displaced tens of millions of people (Mehta, 2011b). Dam construction and submersion leads to significant loss of arable farmland and forest. Water logging and increased salinity reduce agricultural

"It is horrifying that we have to fight our own government to save the environment." - Ansel Adams

productivity in the vicinity of the reservoir. Policies to ensure adequate flow into the reservoir sometimes prohibit water harvesting in the catchment area, reducing agricultural productivity even more. Large-scale impounding of water increases exposure to vector-borne diseases, such as malaria, schistosomiasis, filariasis, and river blindness. Furthermore, the Indian government's compensation policy towards the displaced families remains insufficient in many cases. In particular, since the compensation is based on the amount of land owned, landless households were typically not compensated whatsoever. Nor were people compensated for loss of income or subsistence derived from communal holdings, such as common grasslands and forests. Although dams may also increase economic activity in the catchment area — through construction and economic activity around the reservoir, such as tourism and fishing — these increases are either temporary or depend on the ability to learn new trades, and often cannot compensate for the loss of familiar livelihood. Because of these impacts, and the inequitable distribution of risks and riches that large dams bring, people in India have been fighting dams for decades (Mehta, 2011a).

Having the special focus on Hul-I project the present paper explores the impacts of various dams on environment and local people in Chamba district of Himachal Pradesh. Mini and micro hydel projects in Himachal Pradesh are the part of Clean Development Mechanism (CDM) propelled by Government of India to achieve the targets of Kyoto Protocol and objectives of United Nations Framework Convention on Climate Change (UNFCCC). The private investors of micro and mini hydropower projects receive 40% subsidy from Ministry of Non-Conventional Energy Sources being financed by Global Environment Facility (GEF).

2. Research Methodology

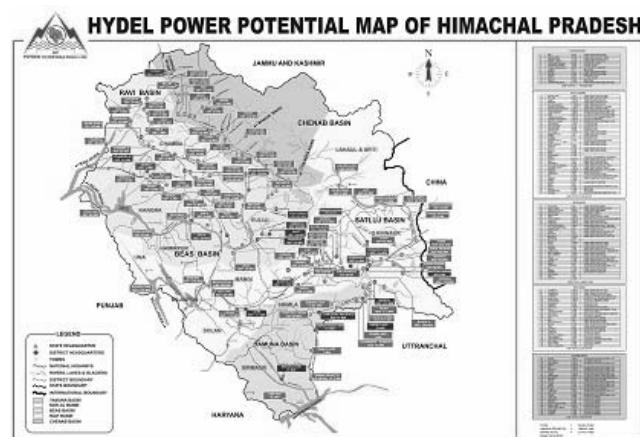
Present paper is based on exploratory study and primary data carried by the researcher with an aim to explore the relationship between installation of power project and its impact on the ecosystem services and lives and livelihood of the people. The participant observation and questionnaire methods have been used to collect data and record the perception of the

affected local people. Jadera and Sillagraht Panchayat of Chamba district were sampled for interviewing 35 respondents from each gram panchayat. Some key respondents belonging to resistance movement were also interviewed, apart from reviewing several recent publications.

Chamba is bordered by Jammu and Kashmir to the north-west and west, the Ladakh area of Jammu and Kashmir and Lahaul and Bara Banghal to the north-east and east, Kangra to the south-east and Gurdaspur district of Punjab to the south. It has an average elevation of 1,006 metres (3,301 ft). The longitude and latitude of the area under study, respectively, are $76^{\circ}12'06''$ E to $76^{\circ}14'52''$ E and $32^{\circ}44'14''$ N to $32^{\circ}45'43''$ N. Chamba is one of the remotest areas not only in the State but also in whole country. Chamba district lies among 55 most backward districts of India (Slariya, 2012).

3. HYDRO-ELECTRIC DAMS IN HIMACHAL PRADESH

Figure 1



Source: Himachal Pradesh Power Corporation Limited (March 2010)

Himachal Pradesh includes 3 main mountain ranges: the Dhauladhar, Pir Panjal and Great Himalayan ranges. The state has identified hydropower as one of its main sources of revenue and pegged its hydropower generation potential at 23,000 MW. Himachal Pradesh is proceeding toward power-surplus state and there are as many as 401 projects of different magnitude are in different stages of installation on 5 river basins of the state i.e. Satluj, Beas, Ravi, Chenab and Yamuna (Slariya, 2012). The present generation is about 7,000 MW. Rivers and streams are being diverted from one valley into

another, with serious impacts. The 800 MW Parbati-II Hydroelectric Project is one such example.

The Parbati River is just one of a number of rivers and streams being diverted through a long tunnel from the Parbati valley into the Sainj valley. A part of the Great Himalayan National Park was denotified under political compulsions to permit the project, despite the fact that the area was a prime nesting site for the rare Western Tragopan bird, for the conservation of which the park has been set up. This project has devastated 35 major groundwater sources fetching the water requirements of farmers of Jiwa Nala and Sainj areas of Great Himalayan National Park (Pers. comm. GHNP communities). Projects are being built and proposed at higher and higher altitudes and closer and closer to the snowline (and the Chinese border). The Kashang projects start around 3,000 m (10,000 feet). The prospect of what will happen to the fragile Alpine ecosystem is frightening. The projects are believed to change the microclimate which will result in accelerated melting of the snow and glaciers. The strategic implications of having these projects so close to the border with China are far serious. Sutlej River originates from Lake Rakshastal in China and enters India in Kinnaur district of the State. Within 7 km of entering India it flows from one tunnel into another. All these projects are so-called run-of-river projects. It is said that the powerhouse of the proposed 261 MW Yangthang-Khab project will be submerged in the reservoir of the proposed 1020 MW Khab-Shaso project (Mehta, 2011a).

4. HYDRO-POWER DEVELOPMENT IN CHAMBA DISTRICT

Chamba district is one of 12 districts of Himachal Pradesh. It is an area of dense forests, green peaks and valleys, snow tipped in the winter, all of which reside around the Ravi river and its tributaries that give life to the people of the area. Hydro-electric power generation in Chamba district was started in 1980s with the installation of first power project owned by National Hydroelectric Power Corporation Ltd (NHPC). At present there are 117 mini/micro power

projects (Annexure.A) of different magnitude and are in different stages of its execution. Out of 117 the Memorandum of Understanding (MoU) has been signed for 22 projects and Implementation Agreement (IA) has been signed for 42 projects, and there are still 53 projects yet to be signed. Additionally, there is an initiative in the district to implement 3 major power projects: Chimera-1, Chimera-2 and Chimera-3. Chimera-3 is in progress along the Ravi basin. In total there are 15 large, medium and small size dams proposed in Chamba district (Annexure.B) (Slariya, 2012).

Hul-I is a micro-hydroelectric project to produce 3.8 MW electricity. However, this identification is debatable as it has been found that many of the micro projects create 5 MW or more, but due to political loopholes they are still considered 'micro'. This project is being constructed on the Hul Nala, a tributary of the river Ravi, by a Hyderabad-based company M/s Hul Hydro Power, a subsidiary of Astha Projects (India) Ltd. The project requires construction of a canal that diverts water from the tributary of Ravi River in Saal Valley into several power stations. These canals will be 6 meters wide and 11 meters deep. With the use of dynamite and extensive human traffic during construction, they will cut into the Saal Valley surrounding the tributary. Hul-II project is still in the planning phase.

5. ENVIRONMENTAL IMPACTS OF HUL-I PROJECT

The total length of Saal River is 28 km, and in this short stretch, 7 mini and micro hydel projects are proposed to be commissioned. Commissioning the power projects will adversely impact the ecology, the geology, the socio-economics and the cultural status of the area. This project will disturb approximately 5 km or $\frac{1}{4}$ th of catchment of Hul stream. Deforestation and soil erosion are even more devastating. The project will destroy the pristine Oak forest and broad leaved forest that have been protected and managed by local communities. These oak forests cater specifically to the area's livestock-rearing communities, the Gujjars

. "We are such spendthrifts with our lives, the trick of living is to slip on and off the planet with the least fuss you can muster. I'm not running for sainthood. I just happen to think that in life we need to be a little like the farmer, who puts back into the soil what he takes out." - Paul Newman

and the Gaddis. These pastoralist communities, known for milk, ghee and honey production, fulfill roughly half of Chamba town's demand for dairy products. Already facing the shortage of green fodder, the livestock of pastoralist communities would suffer once the forests are destroyed. Despite high magnitude impact on the forest ecosystem, the M/s Hul Hydropower Company has managed clearance from H.P. Forest Department to acquire a patch of >2 hectares of forest and to fell its oak trees. The Forest Department officials have estimated that only 243 trees would need to be cut down in order to clear the way for the Hul-I Project, while local people claim that 2000 trees will be cut once the project activity starts. An activist, Khemraj Khanna, disclosed further the impacts, "Once the project starts, labourers from outside will be brought into the area. They will be forced to fell trees for their firewood and other needs. Thus the pressure on the forest will increase manifold." District Forest Officer of Chamba, D. R. Kaushal, recently visited the project site as part of state's new review committee. He not only admitted that the tree felling would be dramatic, but also cautioned that "the digging and dumping would lead to more destruction and landslides in the area".

Plate 1 : HUL - 1 Project



The consequences to nature and wildlife will also prove disastrous. As of now, the wildlife such as deer, bear, goat, tiger and peacock do not enter the fields of farmers. However, it can only be assumed that once the construction commences, the resulting disturbance will influence the wild animals to venture into crop fields causing damages.

The most damaging effect is the diversion of water. The canal takes water out of the river for kilometers at a time in order to move the water in such a way that creates more velocity when entering the power plant to turn the turbines. Needless to say, this creates some serious issues for a population that considers the river its lifeline. Without it, much of their livelihood will be gone. The company has responded to this complaint by promising 15% of the water will remain in the river. However, this does not correct the amount of damage it will continue to cause, not to mention it is difficult to measure and therefore prone to future conflict.

People of Saal Valley are dependent on Hul Nala for drinking water, irrigation, fishery and water mills (gharats). There are many drinking and irrigation water schemes running on this Nala covering more than 10 gram panchayats and one irrigation plan is under construction on the Nala. If this Hul-I project is allowed, it is said that all schemes will become redundant. The discharge of sources of various drinking water supply schemes to villages of Sillagharat, Jadera, Paluhien, Sungal and Kaila Panchayats has been reduced and there is likelihood that these sources would go dry in future. There is a proposal to provide lift water supply scheme to these panchayats. IPH Department proposes to lift water from Hul Nala as there is no other source in the vicinity from where the water could be lifted. The intake point of the proposed water supply scheme falls in the stretch of Hul-I project. Another lift irrigation scheme named Pipeline Irrigation scheme from Silla Khud to Koniki-Behi have been sanctioned under BRGF by Zilla Parishad Chamba (Jadera ward). The proposed lift water supply scheme would not get adequate water in future to provide drinking water irrigation facilities to the inhabitants of above mentioned panchayats if the execution of the project is allowed in the present shape. With phenomenon of climate change, the traditionally used natural water sources are fast drying up in the area and Saal River is the only regular water source for villages of 8 gram panchayats and Chamba town. Due to construction of Him Kailash Micro-hydel project out of 7 natural springs and seepages 6 dried up totally and 1 partially. In this scenario, when glaciers are reducing in size, the construction of Hul-I project

can kill the Hul stream and would put all present and future uses of water in jeopardy.

6. SOCIO-ECONOMIC IMPACTS OF HUL-I PROJECT

About 6000 local people are being affected in total by Hul-I project only. The project is going to impact directly the 1000 households of Jadera and Sillagraht panchayats. Both the panchayats are inhabited by nomadic tribes – Gaddis (sheep and goat herders) and Gujjars (cattle herders). Livelihood and social impacts of poorly planned run-of-the-river mini-hydel projects can be devastating, as exemplified in this case. Amongst the leaders of the communities it is agreed that even if compensation was given, though it has not been as of yet, it could never replace their livelihood.

Plate 2 : People's Resistance



Many families have fishing licenses and rely on the fish from the Saal River for income. Even more unlicensed families also rely on fishing for food. In addition to this there are approximately 50 fishermen whose livelihood is being supported by Hul stream, and the construction of Hul-I project will completely destroy their livelihood.

Once the water of Hul stream will be diverted for the project around 41 watermills will be forced to close down. One watermill supports the livelihood of at least 5 families. The watermills are used for grinding wheat, corn, etc. Without the flow of water the mills will be useless. Not to mention the people who rely on

the mills for grinding their grains will have to go elsewhere. These Gharats are bearer of Haat and Gharat culture of hill community which will be severely impacted by this project. Due to closure of these watermills 500 households will have to pay double the grinding charges for grains like wheat and maize (staple diet of the local population) in electricity-run mills.

Making the situation even more absurd is that the benefits of these power plants will not be going to the community suffering the consequences. Instead, the power is sold to private companies and distributed all over India for an incredible profit (Asher and Bhandari, 2012). People of Chamba feel that they have already contributed to the development of India with other energy projects. They clearly state that they are not against development. But if it were up to them they would much rather contribute more by conserving the natural beauty of the area for tourism. Asher and Bhandari (2012) question, “Are natural resources the property of the local people?” They simply believe the interests of India are better served by preserving its natural beauty instead of destroying it for energy purposes. The project proponents are paying a small amount as one time compensation but which is no answer to sustained regular income over the years.

7. PEOPLE'S RESISTANCE

Plate 3 : People's Movement



Jadera Gram Panhcayat has set forth 4 resolutions to the Central Government denying the

“Environmental degradation is an iatrogenic disease induced by economic physicians who treat the basic malady of unlimited wants by prescribing unlimited growth.... Yet one certainly does not cure a treatment-induced disease by increasing the treatment dosage.” - Herman E. Daly

continuation of Hul-I & II projects. Villagers say that it seems the need for energy in the eyes of the government prevails over any consideration of the consequences it may have on the population it affects. Gujjar and Gaddi tribes have been agitating against 4.5 MW hydropower plant from diverting the entire flow of the Hul stream on which their lives depend. These communities have for more than two decades protected and preserved the forests from which Hul stream originates.

Saal Ghaati Bachao Sangharsh Morcha with the support of Himalaya Niti Abhiyan has been opposing the construction of Hul-I & II hydro-electric projects since 2003 due to its adverse impacts on forests, irrigation, local livelihoods, drinking water supply schemes and environment. Various activities demonstrating people's resistance and struggle against the dam construction are illustrated in Annexure-C chronologically (Himalaya Niti Abhiyan, 2012).

8. CONCLUSION

After independence the number of dams on various rivers of India has grown from 300 to 4300. Large-scale negative impacts of dams and inequitable distribution of risks have caused the mobilization and resistance of affected people in the country especially after 1980. To achieve the targets of Kyoto Protocol and objectives of United Nations Framework Convention on Climate Change (UNFCCC), and also to minimize the negative impacts of medium and large dams, the Government of India devised the Clean Development Mechanism (CDM) in which mini and micro hydel projects have been proposed in sensitive areas such as Himachal Pradesh. But the Clean Development Mechanism (CDM) of Central Government appears not to minimize the environmental and livelihood impacts of even mini & micro hydel projects especially in fragile mountain ecosystems. The micro hydel projects do not seem *de facto* micro because of their adverse effects on the ecosystems and local inhabitants. Serious effects of Hul-I, a micro hydel project, are recorded on the rangelands, forests, water regimes, drinking water schemes, irrigation, fisheries, traditional water mills, livestock-based livelihoods, and so on. Lives and livelihoods of about 6000 belonging to 1000 households of nomadic tribes – Gujjars and Gaddis – are being affected by Hul-I

project in Jadera and Sillagraht panchayats. Commissioning the power project will adversely impact the ecology, the geology, the socio-economics and the cultural status of the area.

Saal Ghaati Bachao Sangharsh Morcha with the support of Himalaya Niti Abhiyan has been opposing the construction of Hul-I & II hydro-electric projects since 2003 due to its adverse impacts on forests, irrigation, local livelihoods, drinking water supply schemes and environment. Himachal Pradesh Government in its cabinet decision in June 2012 passed resolution that all those micro hydro projects having been opposed by local community shall be cancelled. Based on that decision, Jogani Fal micro hydro project in Manali was cancelled. Despite perpetual resistance of nomadic pastoralists led by Saal Ghati Bachao Sangharsh Morcha and Himalaya Niti Abhiyan the state government is adamant to continue the Hul-I Project in Chamba district. People's rights to water use must be recognized and respected on priority basis. State should also review Micro-Hydro-Project Policy giving impetus to the impacts on people's livelihoods, environment, rangelands, irrigation, drinking water and other local/traditional uses of water.

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REFERENCES :

Abid, 2012, 15 biggest dams in India <http://www.binscorner.com/pages/1/15-biggest-dams-in-india.html>, accessed on 01 December 2012

Asher, Manshi and Prakash Bhandari, 2012, *Small but not so beautiful*, Himal

Himalaya Niti Abhiyan, 2012, Press Releases issued between 2005 and 2012.

HKSG (undated), *Large Dams in India*, Harvard Kennedy School of Government, http://www.hks.harvard.edu/fs/rpande/papers/dams_OUP_Nov30.pdf, accessed on 01 December 2012

IANS, 2012, Hydro project will ruin Himachal river catchment: Report, India Abroad News Service, 15 January 2012.

Mehta, S. 2011b, *India's Dam Boom: Small Not Always Beautiful*, International Rivers Network Blog, 07/18/2011, <http://www.internationalrivers.org/blogs/257/india-s-dam-boom-small-not-always-beautiful>

Mehta, S., 2011a, *North India Hydro Boom Leaves Communities High and Dry*, International Rivers Network Blog, 07/18/2011, <http://www.internationalrivers.org/blogs/257/north-india-hydro-boom-leaves-communities-high-and-dry>

Slariya, M.K., 2012, *Viability of CDM Projects in India: A Study of Chanju CDM Project in Chamba District of Himachal Pradesh India*, International Scientific Conference on "Sustainable Land Use and Rural Development in Mountain Areas" Hohenheim, Stuttgart, 16-18 April 2012

Thakkar, Himanshu, 2012. *Objection to Proposed CDM Status for 4.5 MW Hul SHP in Himachal Pradesh, India*, South Asian Network on Dams, Rivers, and People (SANDRP) circulation, 01/08/12

Annexure-A: List of Power Projects (mini and micro) in Chamba district of HP

S. No.	Name of Project	Rivulet/ Stream	Basin	Capacity (MW)
1.	Ajog	Ajog	Chenab	5.00
2.	Mansa	Angred	Ravi	5.00
3.	Baleni Ka Nallah-I	Baleni Ka Nallah	Ravi	2.00
4.	Dunali	Baleni Ka Nallah	Ravi	5.00
5.	Balij-Top	Balij Ka Nallah	Ravi	2.00
6.	Balij Ka Nallah-III	Balij Ka Nallah	Ravi	3.00
7.	Balij Ka Nallah-II	Balij Ka Nallah	Ravi	3.50
8.	Belij	Balij Ka Nallah	Ravi	5.00
9.	Galua	Balsio	Ravi	5.00
10.	Balsio	Balsio	Ravi	4.95
11.	Bhararu	Bhararu	Ravi	2.00
12.	Chakka	Chakka	Ravi	5.00
13.	Chakki Chakran	Chakki	Beas	1.00
14.	Chakki-Dadiara	Chakki	Beas	0.50
15.	Chakka	Chakki	Beas	1.50
16.	Lower Chanju	Chanju	Ravi	4.00
17.	Kunda Sanjoy	Chanju	Ravi	5.00
18.	Upper Chanju	Chanju	Ravi	4.70

19.	Chanju Mehad	Chanju-Mehad	Ravi	5.00
20.	Kalhel Chatri	Chatri	Ravi	2.50
21.	Chatri-I	Chatri	Ravi	5.00
22.	Balsio-Top	Chenni	Ravi	5.00
23.	Chaini Tepa	Chenni	Ravi	5.00
24.	Chate Ka Nalla	Cheta Ka Nallah	Ravi	5.00
25.	Chirchand	Chirchand	Ravi	5.00
26.	Choned-III	Choned	Ravi	5.00
27.	Choned-II	Choned	Ravi	5.00
28.	Choned-I	Choned	Ravi	5.00
29.	Dand	Dand	Ravi	2.00
30.	Daredi	Daredi-Bhour	Ravi	1.20
31.	Dehar-I	Dehar	Beas	5.00
32.	Dhugli	Dehar	Beas	3.50
33.	Dehar-II	Dehar	Beas	1.50
34.	Bhujal	Dehar	Beas	0.60
35.	Kalyana	Dehar	Beas	0.85
36.	Dera	Dera	Ravi	3.00
37.	Dig	Dig	Ravi	0.50
38.	Dug	Dug Nallah	Ravi	3.00
39.	Dukrunda-I	Dukrunda	Ravi	3.00
40.	Dakrunda-II	Dukrunda	Ravi	0.96
41.	Dukrunda-III	Dukrunda	Ravi	3.00
42.	Durghed	Durghed	Ravi	1.10
43.	Gehra	Gehra	Ravi	2.00
44.	Rack	Gharola	Ravi	1.80
45.	Gharwan	Gharwan-Malin	Ravi	3.00
46.	Ghator-1	Ghator	Ravi	2.20
47.	Ghator Top	Ghator	Ravi	2.00
48.	Hal	Hal	Ravi	2.00
49.	Hared	Hared	Ravi	3.00
50.	Holi-II	Holi	Ravi	5.00
51.	Hul-II	Hul	Ravi	3.40
52.	Hul-I	Hul	Ravi	4.50
53.	Upper Joiner	Joiner	Ravi	3.00
54.	Joiner-I	Joiner	Ravi	3.00
55.	Joiner-II	Joiner	Ravi	3.00
56.	Lamyali	Kalm	Beas	0.60
57.	Kalm	Kalm	Beas	2.00
58.	Lower Kalm	Kalm	Beas	3.44

"The schedules are crammed with shows urging us to travel further, drive faster, build bigger, buy more, yet none of them are deemed to offend the rules, which really means that they don't offend the interests of business or the pampered sensibilities of the Aga class. The media, driven by fear and advertising, are hopelessly biased towards the consumer economy and against the biosphere." - George Monbiot

59.	Kamil-II	Kamil	Ravi	5.00
60.	Kamil-I	Kamil	Ravi	2.00
61.	Kandei	Kandai	Ravi	0.50
62.	Kihan	Kihan	Ravi	5.00
63.	Kiri	Kiri	Ravi	1.00
64.	Kiunr	Kiunr	Ravi	2.00
65.	Kunkali	Kunkali	Ravi	5.00
66.	Kurhed-I	Kurhed	Ravi	4.50
67.	Kurhed-II	Kurhed	Ravi	5.00
68.	Kuwarsi	Kuwarsi	Ravi	5.00
69.	Lura	Lura	Ravi	1.60
70.	Kachela	Makkan	Ravi	5.00
71.	Makkan	Makkan	Ravi	1.15
72.	Lower Makkan	Makkan	Ravi	5.00
73.	Mangoli	Malin	Ravi	3.00
74.	Malin	Malin	Ravi	2.80
75.	Manjhal	Manjhal	Ravi	1.00
76.	Mehled	Mehled	Ravi	3.00
77.	Panchpul	Panchpul	Beas	2.00
78.	Pher	Pher	Ravi	1.75
79.	Puruveda	Puru	Ravi	1.50
80.	Raula	Raula	Ravi	1.25
81.	Alwas	Sach	Ravi	2.60
82.	Sakti	Sakti	Ravi	1.00
83.	Sal-II	Sal	Ravi	3.00
84.	Dikleri	Sal	Ravi	2.00
85.	Sahu	Sal	Ravi	5.00
86.	Kuril	Sal-Kundli	Ravi	3.00
87.	Salun	Salun	Ravi	4.50
88.	Channi	Samwara	Ravi	5.00
89.	Samwara	Samwara	Ravi	2.50
90.	Bhent Sanghani	Sanghani	Ravi	5.00
91.	Kurtha	Saridi-Kundi	Ravi	5.00
92.	Satnal	Satnal	Ravi	0.50
93.	Chobia -I	Seri Kao-Chobia	Ravi	5.00
94.	Sewa	Sewa	Ravi	5.00
95.	Siunr	Siunr nala	Ravi	1.50
96.	Siul-I	Siul	Ravi	5.00
97.	Siul-II	Siul	Ravi	5.00
98.	Siul Baroti	Siul	Ravi	4.50
99.	Sup	Sup	Ravi	1.00
100.	Tanger Bhaled	Tanger	Ravi	1.50
101.	Sach	Taraila	Ravi	5.00
102.	Upper Taraila	Taraila	Ravi	5.00
103.	Taraila-I	Taraila	Ravi	5.00

104.	Taraila-II	Taraila	Ravi	5.00
105.	Taraila-III	Taraila	Ravi	5.00
106.	Tulang-II	Tulang	Ravi	2.20
107.	Tulang-I	Tulunki Nall	Ravi	3.00
108.	Ubhrahs	Ubhrahs	Beas	2.40
109.	Kaithili	Kainthly	Ravi	3.00
110.	Kainthily	Kainthly	Ravi	5.00
111.	Kuwarsi-II	Kuwarsi	Ravi	5.00
112.	Chachul	Makkan	Ravi	3.00
113.	Upper Makan-II	Makkan	Ravi	5.00
114.	Garoh	Garoh	Ravi	2.50
115.	Joiner Top-I	Joiner	Ravi	5.00
116.	Hysrud	Joiner	Ravi	1.00
117.	Toral-Kundli	Toral-Kundli	Ravi	5.00
Total Capacity		383.55		

Source: Himachal Pradesh Power Corporation Limited (March 2010)

Annexure-B: List of Large, Medium and Small Projects in Chamba district of HP

S. No.	Name of Project	Rivulet/ Stream	Basin	Capacity (MW)
1.	*Chamera-I	Ravi	Large	540.00
2.	*Chamera-II	Ravi	Large	300.00
3.	Chamera-III	Ravi	Large	231.00
4.	*Baira Suil	Baira Suil	Large	198.00
5.	Tundah-I	Tundah nallah	Small	015.00
6.	Tundah-II	Tundah nallah	Small	030.00
7.	Sal Stage -I	Saal nallah	Small	008.25
8.	Budhil	Budhil nallah	Medium	081.00
9.	Bharmour	Budhil nallah	Medium	045.00
10.	Harsar	Budhil nallah	Medium	060.00
11.	Kugti	Budhil nallah	Medium	045.00
12.	Kutehr	Ravi	Large	360.00
13.	Sindi	Ravi	Medium	120.00
14.	Bara Bangal	Ravi	Medium	160.00
15.	**Thein Dam	Ravi & Sewa	Large	600.00

Source: Himachal Pradesh Power Corporation Limited (March 2010)

**Power projects in operation*

***Thein Dam (Maharaja Ranjeet Singh Power Project) is proposed at Shahpur Kandi near*

Pathankot, Punjab at interstate boarder of Jammu & Kashmir, Himachal Pradesh and Punjab

Annexure-C: Chronology of events in the struggle against Hul-1 Project

S.No.	Date	Event
1.	16.11.1996	MoU signed with M/s Astha Projects (I) Ltd., New Delhi for preparation of Detailed Project Report (DPR) for Hul Hydro Electric Projects (2.35MW)
2.	15.3.2001	Another MoU signed with M/s First Hydro Generation (P) Ltd., New Delhi for preparation of DPR for Hul-II Hydro Electric Project (1.40MW)
3.	25.04.2003	The Gram Sabha of Jadera Panchayat passed a resolution against the project
4.	20.09.2003	HP State Electricity Board granted “Techno-Economic Clearance”(TEC) to Hul-II (2 x 1700 KW) to M/s First Hydro Generation (P) Ltd.
5.	29.10.2003	Once again the Gram Sabha of Jadera Panchayat passed a resolution against the construction of project and sent a resolution copy to Chief Minister, Minister of Animal Husbandry (local MLA), Environment and Pollution Control Board and Deputy Commissioner Chamba
6.	08.06.2005	Implementation Agreement for Hul-II signed between Government of Himachal Pradesh and M/s First Hydro Generation (P) Ltd. Signed
7.	08.06.2006	Letter from SDM Chamba to Gram Pradhans of Jadera and Sillagraht to issue NOC in favour of company
8.	02.07.2006	Again the Jadera Gram Sabha unanimously passed resolution against the project and sent a copy to Chief Minister, Minister of Animal Husbandry (local MLA) and DC, Chamba, and unanimously elected Mr. Ratan Chand as Zila Parishad ward member Jadera to lead the movement
9.	01.09.2006	Zila Parishad, Chamba through its resolution no. 4.1-5 asked the State Government to cancel the Hul micro hydro electric power projects looking at the interest of local population
10.	15.12.2006	Gram Sabha Jadera passed a resolution against granting land to company on lease and sent a copy to the Government and concerned department
11.	04.01.2007	Zila Parishad, Chamba once again passed the resolution against the project and asked the Government to cancel the Hul projects citing reasons for that in detail
12.	16.01.2007	Huge protest rally in Chamba town and formation of Saal Ghati Bachao Sangarsh Morcha with participation of people from 8 Panchayats of Saal valley
13.	17.01.2007	Detailed memorandum with all the resolutions passed by Gram Sabhas of affected Panchayats and Zila Parishad to various Ministries and Department of both Central Government and State Government
14.	21-01-2007	Gram Sabha of another project affected Panchayat Sillagraht also passed a resolution against the project and sent a copy to Central Government and State Government
15.	13.02.2007	Grievance Committee, Chamba headed by local MLA passed a resolution to stop all the project construction activities till the project is reviewed by competent authority
16.	07.03.2007	3 MLAs from Chamba region raised the question in State Legislative Assembly on Hul micro hydro projects and in reply Power Minister gave assurance to review the project
17.	09.03.2007	Members of Saal Ghati Sangarsh Morcha filed a complaint to DC on violation of decision taken by Grievance Committee
18.	28.03.2007	Coordinator of Sangarsh Morcha wrote a letter to Power Minister to intimate members of Morcha about the schedule of review committee

"Development which has no regard for whom or what it harms is not development. It is the opposite of progress, damaging the Earth's capacity to support us and the rest of its living systems"

- George Monbiot

19.	16.04.2007	Another affected Panchyat Barour passed resolution against the Hul-II micro hydro project and sent a copy to the State Government, local MLA and DC, Chamba
20.	21.04.2007	Members of Sangarsh Morcha conducted a huge protest march in Chambatown and combined memorandum signed by Saal Ghati Sangarsh Morcha, Himalaya Bachao Samiti Kamla and Himalaya Niti Abhiyan was submitted to DC, Chamba to cancel the project
21.	22.04.2007	Himalaya Niti Abhiyan gave a press statement against threatening atmosphere created by company in the area
22.	28.04.2007	Zila Parishad passed a resolution on the objectionable behavior of concerned Government officials favoring Hul hydro company which was harming the interest of local community and showed its resentment and asked for a suitable action
23.	15.05.2007	Gram Sabha of Sungal Panchyat demanded to irrigation
24.	26.05.2007	Coordinator of Sangarsh Morcha received a letter from ProjectOfficer, Him Urja, regarding meeting on Grievances on Construction of SHP Hul-I and II in Jadera Panchayt Bhavan on 06.06.2007 in Chairmanship of DC Chamba
25.	06.06.2007	Review Committee conducted field surveys and on 8.6.2007 conducted a combined meeting of all three project affected Panchyats i.e. Jadera, Sillagraht and Barour in which people vehemently opposed both the projects. Sal Ghati Sangarsh Morcha submitted detailed memorandum ‘Objections regarding the installation of Hul-I&II Micro Hydro Power Projects’ to the Review Committee.
26.	15.06.2007	Sangharsh Morcha submitted a memorandum to Speaker, State LegislativeAssembly
27.	05.08.2007	During Minjar fair the members of Sangarsh Morcha conducted a huge protest march in Chamba town and submitted memorandum against the projects to Chief Minister of HP
28.	06.01.2008	Gram Sabha, Jadera again passed a resolution against the project
29.	30.01.2008	Zila Prishad again passed a resolution against the project
30.	03.10.2008	Zila Prishad unanimously passed irrigation and drinking water supply scheme based on Hul stream for 4 Panchyats i.e Sillagraht, Jadera, Barour and Sungal
31.	04.01.2009	Jadera Gram Sabha passed a resolution for the implementation of ForestRight Act, 2006 and asked the government not to initiate the dam construction activities on forest land till their rights get recognized under FRA. A copy of resolution sent to Assembly Speaker, CM, HP Power Minister, Forest Minister, Local MLA, Principal Chief Secretary and DC Chamba.
32.	04.01.2009	Gram Sabha Jadera passed a resolution on “Uplifting Drinking waterSupply Scheme” and “Irrigation Scheme Sillgraht” on Hul stream benefiting 22 villages and a copy of resolution sent to Irrigation and Public Health Department, Chamba.
33.	31.03.2009	Memorandum was submitted to DC Chamba and DFO Chamba to stop illegal activities carried out by Project Company on government land and copy sent to the Chief Secretary and the Forest Secretary.
34.	10.05.2009	Copy of memorandum was sent to the Chief Secretary and others regarding review/ cancellation of Hul-I&II hydro power projects.
35.	13.12.2009	Gram Sabha of neighboring Kela Panchayat passed a resolution against theHul Hydro projects and proposed a drinking water supply scheme from Hul stream.
36.	02.01.2010	Members of Sangarsh Morcha complained to Superintendent of Police,Chamba that Project officials were threatening them and any time they could attack them.
37.	13.01.2010	Rally was conducted by Sangharsh Morcha with submission of memorandum to CM through DC, Chamba to cancel the Hul hydro projects.

38.	14.02.2010	Company's contractors and goons attacked members of Saal Ghati SagarshMorcha in village Chungah with swords, guns and sticks, when they were conducting a peaceful meeting. Five members got injuries.
39.	15.02.2010	Members of Sangharsh Morcha organized a huge protest march against theJadera's incident in Chamba town and demanded immediate arrest of all the criminals involved in the Jadera incident and to cancel Hul power projects. Sangharsh Morcha got support from many people's movements and political parties.
40.	16.02.2010	Again a huge protest march was organized in Chamba town and a memorandum was submitted to DC Chamba. Joint Action and Solidarity Committee of over 10 organizations was formed to strengthen agitation.
41.	12.04.2011	Work on project site remained closed for a year after firing indecent. Company tried to start work at Shila Ghrat under police protection. Local people stopped them. HP High Court rendered police protection to the company in a case filed by company (CWP 425/2010) to resume work at the site.
42.	13.04.2011	Company officials came at village Kaliu near Jadera with police when people were on Dharna at the site.
43.	15.04.2011	Local MLA came to meet the protesting people but returned back without any talk.
44.	18.04.2011	Mr. Kulbhushan Upmanyu, president of Himalaya Niti Abhiyan, visited site and remained there for 3 days in support of local struggle.
45.	25.04.2011	Local MP visited the site and promised to help. A rally was organized at Chamba town in which he criticized State Government and demanded to scrap the Hul-I project.
46.	12.04.2011	Dharna at roadside in Jadera started that continued till 12 August, 2011.
47.	12.07.2011	company were forced to withdraw the police and failed to start work.
48.	12.08.2011	Rally was organized in Chamba town to culminate its 4 month long dharna.
49.	03.09.2012	Disgusted by High Court orders the Saal Ghati sangharsh Morcha filed a case in Supreme Court. Supreme Court in its ordered in SLP(Civil) No. 12120/2012 dated 3/9/2012 ordered State Government to take decision on the show cause notice issued to the Company on 25.8.2010 on legal merit. Apex Court further said the observation of High Court is not a binding, but final decision will be taken by the Supreme Court.
50.	04.10.2012	Rally was organized in Chamba by Sangharsh Morcha and memorandum was submitted to DC demanding cancellation of Hul-I hydro project

Source: Himalaya Niti Abhiyan (October, 2012)

CHANGES IN AGRICULTURE AND DEGRADATION OF WATER RESOURCES IN PUNJAB

Dr. Jaspal Singh

ABSTRACT:

Punjab is the significant agriculture state of India. With the introduction of Green Revolution Package in 1965-66 in Punjab in the form of high yielding varieties of seeds, chemicals, assured irrigation, mechanization, remunerative prices of wheat-rice and assured marketing etc. remarkable changes in state's agriculture has taken place. Punjab which was the food deficit state of India upto 1970-71 has become food surplus state of the country after 1980-81. On the other hand, Punjab while achieving this goal in a short span of time has been losing water resources both in quantitative and qualitative level.

Keywords:- Green Revolution Technology, Surface Water, Ground Water, Cropping Pattern, Quality of Water.

1. Introduction

Agriculture sustainability and eco-system protection are the main agenda for agricultural development in developed countries. But in developing countries due to explosion of population, the great majority is facing the shortage of food. To overcome this problem farmers got involved in achieving short term goals of increasing food production with little attention to the maintenance of long term productivity. The exploitation of natural resources without understanding the principle for sustainable and balanced development so long, is now creating a number of new problems in the eco-system. For instance, cultivation of crops without care for eco-system has led to disruption of water balance. Punjab is one of the states, realizing the intensity of the problem of water resources degradation after the five decades of Green Revolution.

With this technology, no doubt, Punjab which was the food deficit state of the country upto 1970-71 became food surplus state of India after 1980-81. Punjab while achieving this goal in short span of time has totally ignored the importance of optimal use of water resources. In these days most of the areas of the state are facing the problem of ground water depletion. In such areas shallow tube-wells and hand pumps have dried up. Moreover excessive use of chemical fertilizers, pesticides, insecticides, herbicides on the crops have spoiled the quality of water in the entire state. In these circumstances, sustainable

development of the state is at stake. It is revealed that Punjab is bound to face a water crisis is near future. The present paper will focus upon the changes in agriculture and its negative impact on the water resources of the state both at quantitative and qualitative level.

2. Study Area:

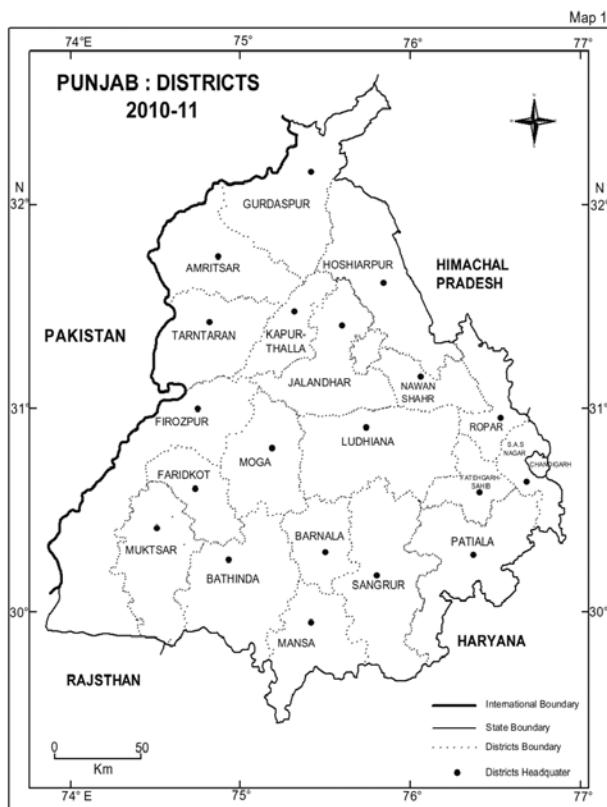
The present study pertains to Punjab state of India. Punjab is the most significant agriculture state of the country. Situated in the northwest of India, it lies in between $29^{\circ}30'$ to $32^{\circ}32'N$ Latitudes and $73^{\circ}55'$ to $76^{\circ}50'E$ Longitude. Punjab shares international border of India with Pakistan in the west. It is bounded by Jammu and Kashmir in north, Himachal Pradesh in the east, Haryana and Rajasthan in the south (Figure 1). Punjab has an area of 50362 Sq. Km. which accounts 1.5 percent of total area of the country. It is the Great Indian Plain where Punjab is situated geographically. More than 90 percent of its land falls below 300 metre contour line (Singh J 2012). The soils of Punjab are formed by the deposition of alluvium brought down from the Himalayas (Mavi & Tiwana 1993). The rich aquifers found on the upper part of the land, exists throughout the state. Out of the total reporting area of Punjab about 84 percent is under agriculture and significantly it is highest among all the Indian states. The population of Punjab is 27704000 persons ,given the density of 550 persons per sq. km according to 2011 census. 62.51 percent, out of the total population resides in

rural areas. The economy of Punjab is dominated by agriculture followed by industry. The agrarian economy of Punjab cannot survive without water.

3. Objectives

The research attempts to expose the interrelationship between the ongoing agricultural practices in Punjab and its role in the rapid depletion of ground water resources. The present status of ground water resources in terms of quality and quantity is critically evaluated at the backdrop of Green Revolution and associated practices.

Figure 1 : The political map of Punjab



4. Data And Methodology:

For the purpose of study both secondary and primary information was collected from different sources. The secondary information / data was available in published and unpublished reports of various government offices, libraries, Internet etc. The

main sources of data are statistical abstracts, census, books, journals, magazines, topographical sheets, newspaper etc. Apart from this, the primary information helpful for the study has also been obtained from the various private agencies working in the state and by interviewing government officials, elderly/experienced farmers, trade union leaders, scientists of Punjab Agricultural University, Ludhiana and unskilled people connected with agricultural practices. For demonstrating results effectively, suitable statistical/cartographic techniques are used for data processing and mapping.

5. Transformations in the agricultural sector of Punjab

The great divide in the history of Punjab agriculture came in 1965-66, when Green Revolution in the form of high yielding variety of seeds, chemicals, assured irrigation, mechanization, remunerative prices of rice-wheat and assured marketing etc. was introduced in the state. With this technology, remarkable changes in the state's agriculture took place. As shown in Table-1, before Green Revolution there was 3757 thousand hectares net sown area in Punjab. But after that it has increased to 4053 thousand hectares in 1970-71 and rose further to 4191 thousand hectares in 1980-81. In 2010-11, there was 4158 thousand hectares net sown area in Punjab.

Table 1 : Punjab : Changes in net sown area, total cropped area and intensity of cropping

Item	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11
Net Sown area (000 hectare)	3757	4053	4191	4218	4264	4158
Total cropped Area (000 hectare)	4732	5678	6763	7502	7935	7882
Intensity of cropping (%)	121	140	161	178	186	212

Source:- Statistical Abstracts of Punjab (Various Issues)

Like net sown area, total cropped area has also recorded positive trend during the same time period.

"We know, at least, that this decision (ending factory farming) will help prevent deforestation, curb global warming, reduce pollution, save oil reserves, lessen the burden on rural America, decrease human rights abuses, improve public health, and help eliminate the most systematic animal abuse in history."

- Jonathan Safran Foer

4732 thousand hectares total cropped area of 1960-61 has increased to 6763 thousand hectares in 1980-81 and then strengthened further to 7882 thousand hectares in 2010-11. The intensity of cropping in Punjab in 1960-61 was 121 percent. But in 1990-91 it was 178 percent. Moreover at the end that is in 2010-11 it was 212 percent.

Green Revolution has brought spectacular changes in the cropping pattern of Punjab. Before the advent of green revolution, in 1960-61 about 30 percent of the gross cropped area was under wheat which increased to nearly 41 percent in 1970-71 and remained same in 1980-81. With slight increase it hovered around 43-44 percent thereafter. Similarly rice which occupied around 5 percent of the gross cropped area in 1960-61 increased to over 17 percent in 1980-81. It further strengthened its position nearly 33 percent in 2000-01 and 36 percent in 2010-11 (Table 2). The increase in wheat cultivation has been mainly at the cost of rabi pulses including gram and rabi oilseeds, while that of rice it captured the area of mainly maize, bajra, summer pulses, oilseeds and later on cotton. Area under pulses has recorded a sharp decline from 19 percent in 1960-61 to 5 percent in 1980-81 and then nearly 2 percent in 1990-91. After 1990-91 it almost disappeared on the cropping picture of the state. Crops like Bajra, oilseeds and sugarcane has also lost its ground in the state during 1960-61 to 2010-11.

Table 2: Punjab : Shifts in the cropping pattern (in percentage)

Item	1960-61	1970-1	1980-81	1990-91	2000-01	2010-11
Wheat	29.6	40.5	41.0	43.6	42.9	44.5
Rice	4.8	6.8	17.5	26.8	32.9	35.8
Pulses	19.0	7.3	5.0	1.8	0.6	0.2
Maize	6.9	9.7	5.6	2.5	2.0	1.6
Bajra	2.5	3.6	1.0	0.1	0.07	0
Foodgrains	64.7	69.2	71.7	75.5	79.1	82.1
Oilseeds	3.9	5.2	3.4	1.3	1.0	0.6
Cotton	9.4	7.0	9.6	9.4	5.9	6.1
Sugarcane	2.8	2.3	1.1	1.3	1.5	0.8

Source:- Statistical Abstracts of Punjab (Various issues)

Punjab in the field of food grain production has observed revolutionary increase during 1960-61 to

2010-11. Table-3 shows that wheat production in 1960-61 was 1742 thousand metric tons while at the end in 2010-11, it was 16472 thousand metric tons. Similarly rice production in 1960-61 was 229 thousand metric tons whereas in 2010-11, it was 10819 thousand metric tons. The overall total food grain production of 3162 thousand metric tons of 1960-61 has increased to 27799 thousand metric tons during 2010-11. In this way food grain production has experienced nearly 9 times increase in the same time period and consequently Punjab as well as India became self sufficient in its food requirements. Punjab which was a food deficit state up to 1970-71, has become food surplus state of the country after 1980-81. With tremendous increase in foodgrain production, Punjab contributed wheat and rice upto 60-70 and 40-50 percent respectively in national pool of food reserves during the last three decades.

Table 3 : Punjab : Changes in the production of important crops (000 m tons)

Item	1960-61	1970-1	1980-81	1990-91	2000-01	2010-11
Wheat	1742	5145	7677	12159	15551	16472
Rice	229	688	3233	6506	9157	10819
Pulses	709	308	204	105	39	14
Maize	371	861	612	333	461	491
Bajra	58	243	86	13	5	3
Foodgrains	3162	7305	11921	19218	25318	27799
Oilseeds	121	233	187	93	88	72
Cotton	709	818	1178	1909	1197	1822
Sugarcane	486	527	392	601	777	417

Source:- Statistical Abstracts of Punjab (Various Volume publications)

(Note:- Production of cotton in terms of 000 bales of 170 Kgs. each)

Beside foodgrain production, the overall production of oilseeds and sugarcane had experienced negative trend during the same time period. But cotton gained positive trend mainly because of the introduction of American cotton in the state.

Increase in net sown area, total cropped area, intensity of cropping, food grain production and shifts in low water requiring crops to high water consuming crops, the increase in the extent of irrigation, intensity of irrigation and net area irrigated by tubewells had been observed in Punjab.

Table 4 : Punjab : Changes in irrigation (in percentage)

Year	Extent of Irrigation	Intensity of Irrigation	Net Area irrigated by source			
			Govt. Canals	Private Canals	Tube-wells	Others
1960-61	54	70	58.2	0.3	40.8	0.7
1970-71	71	105	44.5	0.2	55.1	0.2
1980-81	81	139	42.3	-	57.3	0.4
1990-91	93	168	42.5	0.2	57.1	0.2
2000-01	95	180	23.8	-	76.1	0.1
2010-11	98	186	27.3	0.1	72.6	-

Source:- Statistical Abstracts of Punjab (Various Issues)

As seen in Table-4, the 54 percent extent of irrigation of 1960-61 has increased to 93 percent in 1990-91 and then 98 percent in 2010-11. Similarly, 70 percent intensity of irrigation of 1960-61 has rose to 186 percent in 2010-11. Source wise canal irrigation's 58.5 percent net irrigated area of 1960-61 has decreased to 27.4 percent in 2010-11. Whereas 40.8 percent net area irrigated by tube wells in 1960-61 has grown to 72.6 percent in 2010-11. The positive trend in tube well irrigation occurred mainly due to inadequate supply of canal water in the state. The position of no. of tube wells reveals that there were 0.05 lakh tube wells found in the state during 1960-61. But in 2010-11 there are 13.82 lakh tube wells present in Punjab.

6. Status of Water Resources and availability

Surface water, ground water and atmospheric rainfall are the three sources of water in Punjab. Satluj, Beas and Ravi are the three perennial rivers of the state which supply regular water to the state through canals (Figure 2). For the supply of water from these rivers a strong network of canals, minors and distributaries are developed (Figure 3). Apart from perennial rivers, Ghaggar and numerous small seasonal streams also flow through the state. With the grace of state's rivers and precipitation, the study area has rich aquifers. On these aquifers, a large number of tubewells are installed in the state. According to latest data, there are 13.82 lakh tubewells sucking ground water in the whole state (Figure 4).

The average annual rainfall in Punjab is 60cm (Figure 5). On an average about 80 percent rainfall occurs during the three monsoon rainy months i.e. July to September and rest of 20 percent of the annual total rainfall occurs in January and February months. On the whole, the study area experiences two distinct periods of rainfall i.e. summer or monsoon rainfall and winter or cyclonic rainfall. The rainfall that occurs in summer is torrential in nature and induces speedy water run offs leading to the problem of soil leaching especially in northeastern and major part of the Central Punjab. The rainfall that occurs in winter is drizzling in nature. Table 5 shows the position of total available water from all the three sources in Punjab.

Table 5 : Punjab: Position of available water resources (Lakh hectare metre)

Annual Canal Water available at head works	145.4 Lhm
Annual Canal Water available at outlets	14.5 Lhm
Annual ground water available (including rains and canal seepage)	16.8 Lhm
Total available water resources	31.3 Lhm
Annual water demand	44.0 Lhm
Annual water deficit	12.7 Lhm

Source:- Dr. A.K. Jain and Dr. Raj Kumar, Panjab Agricultural University, Ludhiana (2007)

As per Table 5, the annual canal water available at head works is 145.4 lakh hectares metre while at its outlets it is 14.5 lakh hectares metre. Thus the total surface water available at practical level is 14.5 lakh hectares metre. Similarly the total ground water available including rainfall and surface seepage is 16.8 lakh hectares metre. Therefore the total available water from all sources i.e. surface, ground water and rainfall is 31.3 lakh hectares metre. As compared to supply, the total demand of the state is 44 lakh hectares metre. In this way, the state has 12.7 lakh hectares metre shortage of water. To fulfill the gap between demand and supply, people are exploiting ground water.

Agriculture is the most water consuming activity in Punjab as it utilizes more than 80 percent of available water of the state to maintain the present production

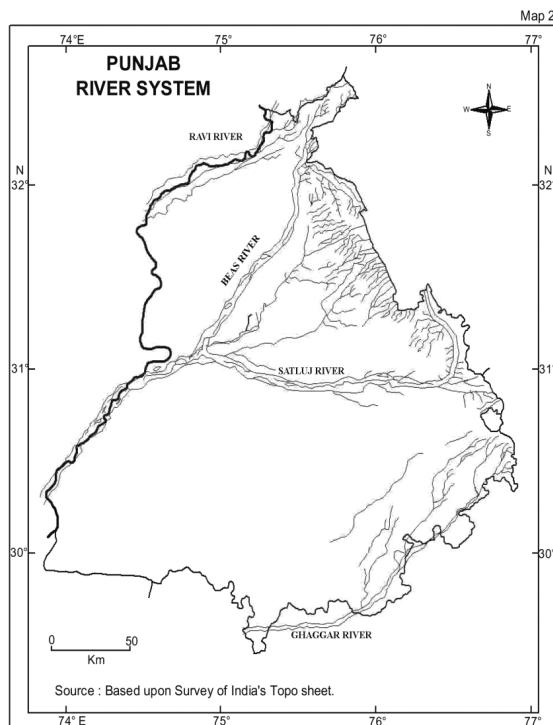
"Unless we can ensure that the economy is kept subservient to our ecology, we will self-destruct"
- Roger V Short (2009)

level. With the introduction of Green Revolution, remarkable changes have taken place in Punjab agriculture sector in the form of cropped area, intensity of cropping, net sown area, cropping pattern, food grains production, irrigation (extent and intensity of irrigation) and use of chemicals. Therefore due to all these changes, consumption of water has increased many folds.

7. Status of Ground Water:

Agriculture activity demands very high quantity of water for irrigation purposes. The expansion and intensiveness of state's agriculture over the decades has led to over exploitation of ground water resulting in rapid decline of water levels in more than 90 percent of the state area. Due to over exploitation, water level in the state is going down as deep as 60 cm per year. To meet the water requirements of the crops, ground water is extracted faster than the aquifers that can be replenished by natural process. The extraction of ground water has increased by 200 times during the last three decades (Hundal HS, 2009). In less than 30 years, ground water resources built up over the last 105 years have been exhausted completely (Kler SR, 2012).

Figure 2 : River and Drainage Pattern in Punjab



B

Figure 3 : Irrigation Network in Punjab

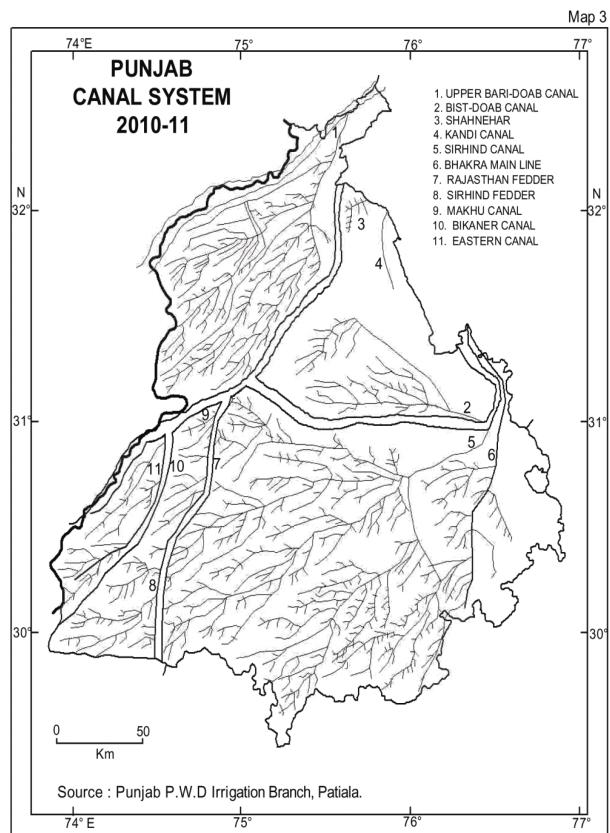
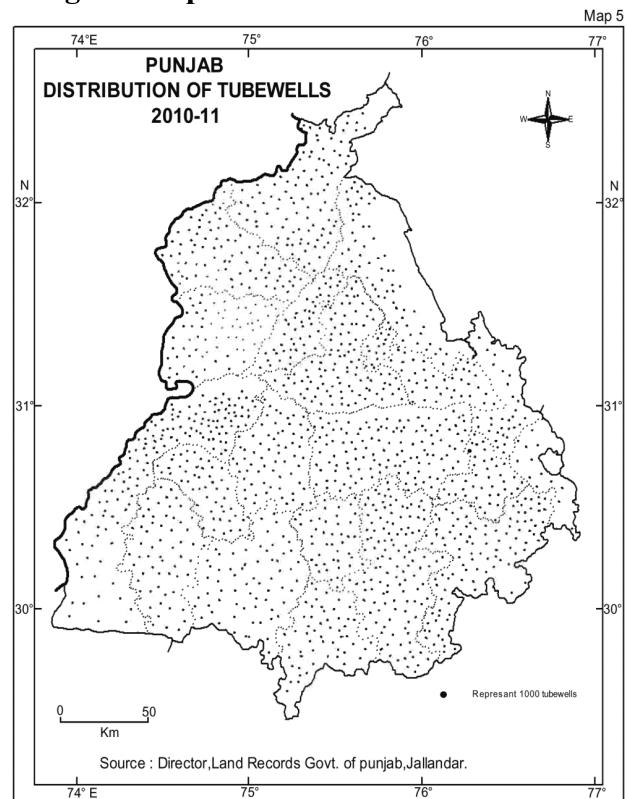


Figure 4 : Spatial distribution of Tubewells



B

Figure 5 : Pattern of Average Rainfall (Annual)

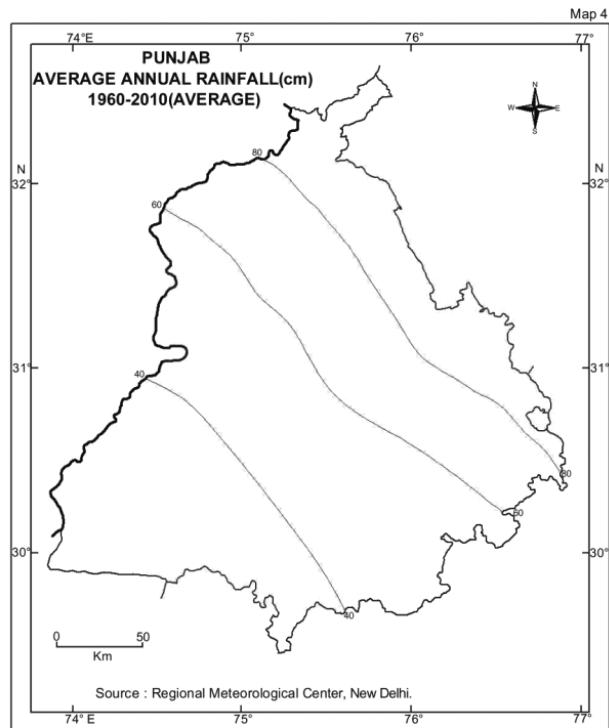


Table 6 : Punjab : Number of blocks in different categories of ground water exploitation

Category	1984	1992	1999	2005	2011
Over Exploited (Dark)	53	63	73	104	110
Critical	7	7	11	5	3
Semi Critical	22	15	16	4	2
Safe	36	33	38	25	23
Total	118	118	138	138	138

Source: (i) Dr. A.K. Jain & Dr. Raj Kumar, Punjab Agricultural University, Ludhiana (2007) & (ii) Central Ground Water Board, New Delhi (2012)

Block-wise position of ground water exploitation is shown in Table-6. As per this, there were 53 blocks identified as over exploited in 1984. But it rose to 63 in 1992, 73 in 1999 and 104 in 2005. In contrast, the number of critical and semi critical blocks have decreased from 7 in 1984 to 5 in 2005 and 22 in 1984 to 4 in 2005 respectively. Similarly the number of safe blocks also registered negative trend. In 1984

there were 36 blocks registered as safe zones which have been reduced to 25 in 2005.

The latest block-wise status of ground water reveals that out of 138 blocks in Punjab, 110 blocks (80 percent) are over exploited and declared as 'Dark Blocks', whereas 3 (2 percent) and 2 (1 percent) blocks are in critical and semi critical stage respectively. The remaining 23 blocks (17 percent) are in safe zone but unfortunately these blocks observe totally degraded ground water in terms of quality as it is brackish and unfit for use.

The recent district wise ground water picture reveals that the water level in more than 80 percent areas of the state which falls in the districts of Fatehgarh Sahib, Gurdaspur, Amritsar, Patiala, Tarn Taran, Kapurthala, Jallandhar, S.B.S. Nagar, Hoshiarpur, Ludhiana, Mansa, S.A.S. Nagar, Moga, Sangrur, Barnala, Bathinda and Ropar ranges between 18.65 mbgl to 33.50 mbgl. In these districts water level is continuously getting depleted year by year. In order to fetch the ground water, general public and particularly farmers are forced to dig deeper into the ground and use more power to pump the water out. Significantly, in majority areas of the state shallow tubewells hand pumps had dried up since last two decades. In this situation, degradation of ground water can pose serious economic and social crisis in Punjab.

1. Quality of Water Resources

Besides quantity, quality of water is equally important. The quality of water is influenced by natural as well as human factors. Among the natural factors, the geological structure, type of soils, forest cover and rainfall are important. The district based analysis suggested that in Jallandhar, Kapurthala and Hoshiarpur districts, the ground water has slight alkalinity and turbidity. In some pockets of Jallandhar district fluoride and nitrate concentrations higher than permissible limits were observed even in shallow ground water. However in Dhillian, Kapurthala district senic (0.072 mg/l) is present which is more than the permissible limit (0.01 mg/l) (CGWB, 2007).

"As society moves forwards in the 21st Century sustainable development will increasingly be seen to be a resilience issue for protecting and enhancing our quality of life within ever decreasing environmental limits" - www.oursouthwest.com

The quality of Hoshiarpur's ground water was found good. By and large, quality of ground water in most of the areas of Doaba region was found suitable for domestic and irrigation purposes.

In Amritsar, Gurdaspur and Tarn Taran districts (Majha region) quality of ground water was found satisfactory except in few shallow aquifers where EC, sulphate, nitrate and fluoride concentrations were seen higher than the WHO and BIS norms. The quality of water was found to be very poor in Bathinda, Faridkot, Muktsar, Sangrur and most of the parts of Ferozepur and Moga districts due to brackish ground water. In these areas EC level is more than 3000 $\mu\text{S}/\text{cm}$ at 25°C , Fluoride more than 1.5 mg/l and Nitrate above 45 mg/l is found (CGWB 2007). The ground water here is totally unfit for drinking purposes. Interestingly, the Department of Public Health and Sanitation continues to supply canal water to urban and rural areas for drinking in spite of contamination. The ground water in most of the parts of Ropar, Ludhiana, Fatehgarh Sahib and Patiala districts is slightly alkaline in nature with medium to high salinity. In these areas, quality of shallow and deeper aquifers except in few pockets is satisfactory. Thus natural factors do not show any major adverse impact upon the quality of ground water resources especially in Doaba, Majha and some areas of Malwa region.

The quality of water in Punjab is greatly influenced by agriculture as it is the main economic activity in rural areas. The introduction of high yielding varieties of seed, the consumption of chemical fertilizers has been increasing steadily. It has increased more than 9 times in the last 40 years from 213 nutrients thousands tons in 1970-71 to 1911 nutrients thousands tons in 2010-11. Similarly, pesticide consumption is very high in Punjab. In 1980-81, the state consumed 3200 metric tons of pesticides while in 2005-06 it used 5970 metric tons. The status of chemical fertilizers and pesticides consumption reveals that Punjab is one of the states having highest consumption of chemical fertilizer and pesticides especially after the ushering of

green revolution (Tiwana & Dua 2007). The excessive use of fertilizers and pesticides (comprises technical grade of fungicide, insecticide and herbicide) have largely polluted the water resources in Punjab. Leaching of toxic chemicals into aquifers and drainage channels have contaminated the quality of water resources in all parts of Punjab.

2. Suggestions:

The critical evaluation of present scenario regarding the degradation of water resources, brings us to following suggestions:

1. Area under high water consuming crops like rice should be reduced and replaced with low water requiring crops such as basmati rice, oilseeds, pulses, bajra, chilies, medicinal and aromatic crops. Government should formulate strict policies to prevent rice cultivation especially in the dark blocks of the state.
2. Sprinkle and Drip irrigation method should be promoted instead of the present method of flood irrigation.
3. To recharge aquifers, check dams, trenches, borewells, recharge wells etc. should be constructed at large scale. There is a need to adopt traditional techniques of rainwater harvesting. In U.S.A. 700 million gallons of water was recharged in 1995 through Artificial Recharging Methods (Dhillon GS, 2003).
4. Excessive use of fertilizers and pesticides should be checked.
5. Government should manage and monitor the quality and quantity of water resources regularly. There is a need to establish ultra modern research laboratories for continuous analysis of water resources.
6. Government should formulate some strict rules regarding installation of tubewells and extractions of ground water.

"Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, and they are tied to their country and wedded to its liberty and interests by the most lasting bands." - Thomas Jefferson

10. Conclusion

Punjab is the significant agricultural state of India. After the introduction of Green Revolution Technology in 1965-66, drastic changes in state's net sown area, total cropped area, intensity of cropping, cropping pattern, foodgrain production, irrigation etc. has taken place. With these changes Punjab as well as India became self sufficient in its food requirements. Punjab which was the food deficit state of India upto 1970-71, has become food surplus state of the country after 1980-81. On the other hand this spectacular growth of state's agriculture has led to degradation of state's water resources both in quantitative and qualitative levels. To save the water resources, now there is an urgent need to formulate solid water policy which till date do not exist in Punjab.

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References:-

- (1) Central Ground Water Board, Ministry of Water Resources Govt. of India, New Delhi (2007): State Profile of Ground Water Quality Problems.
- (2) Dhillon, G.S. (2003): "Dealing with Punjab's Water Table". Hindustan Times, Chandigarh, July 30, p. 7.
- (3) Hundal, H.S. (2009): "Arsenic Content in Ground and Canal Waters of Punjab, North-West India" Environ Monit Assess. p. 393.
- (4) Kler, S.R. (2012): "Punjab Plans to Check Depleting Water Table". 'The Times of India' June 14, p. 4.
- (5) Mavi, H.S. & Tiwana, D.S. (1993): "Geography of Punjab" National Book Trust India, New Delhi. p.39.
- (6) Singh, J. (2012), "Trends in Crop Combination Regions in Punjab's," Twenty First Century Publications, Patiala, p. 11.
- (7) Tiwana, N.S. & Dua, D.K. (2007) : "State of Environment Punjab 2007" published by Punjab State Council for Science & Technology, Chandigarh. p. 75, 77, 78.

"Today, the rich are the haves and the poor are the have-nots. Tomorrow, the rich will be the have-food and the poor will be the have-not food." - Bill Gaede

IMPACT OF DEVELOPMENT ON ENVIRONMENT: ROLE OF LAW TO PROTECT FOREST AND FOREST DWELLERS

Pradnya Rajebahadur

ABSTRACT:

Law is a social institution. It is not only a means to maintain law and order in the society but also provides social justice and implementing welfare schemes. It is well-known that law does not operate in vacuums. It operates in society which is itself influenced by various factors such as social structure, economic condition, nature of government, scientific inventions and the outlook of the people towards life. The role of judiciary becomes very important in the context of globalization; in the preservation of rights of not only various socio-cultural groups but also resources which have enriched their lives. If observed closely, one can clearly find a definite relationship evolved over a period of time between various indigenous groups and their local natural environment, for example, forests and tribes. The current model of economic development sponsored by globalization, is responsible for changing, spoiling or reverting these relationships finally resulting in inducing newer forms of conflicts over resources.

1. Introduction

In modern social welfare state, societies have become complex and complex problems are arising out of. The problem of protection of environment is the one which requires immediate steps to protect our mother Earth. If the law fails to be progressive it is bound to be disregarded and thus to decay and die because law is meant for society.¹ It is rightly said by Friedman, a well-known jurist, gradual or subtle changes occurring in our society make it necessary that where the existing law is unable to move with changes taking places in our society, to reform it or where there exists no law at all, to make a law to regulate changes that taking place in the society.

Law is the weapon in the hands of the state to make, mould and monitor the welfare and development activities, therefore this paper is an attempt to study and evaluate geography of change as a result of globalization and development with respect to legal and judicial response to impact of development on the rights of forests and forest dwellers.

To study the impact of globalization and development on environment in general and forest and forest dwellers in particular, the first question to be answered is what is 'environment'? The Environment Protection Act, 1986 Section 2(a) defines environment as one which includes water, air and land and the

interrelationship which exists among and between water, air, land, human beings, other living creatures, plants, microorganisms and property. This is an inclusive definition of environment; in wider sense the environment may cover all forms of life on this planet. Rodgers defines environmental law as the law of planetary housekeeping, protecting the planet and its people from activities that upset the earth and its life sustaining capacities.²

The next question to be answered is what is 'development'? Development which in general means progress, should not be defined solely in terms of economic growth, increase in GNP, improvement in trade balance etc. The economic factors may be basic to a development process but in order to talk of eventual progress or failure one has to emphasize the well being, happiness and potential of the people as a whole, and of individuals. One has to be always ready to answer the questions: Development of what? For whom? and how? The United Nations Development Programme (UNDP) has described human development as the process of 'enlarging people's choices' with respect to areas of income, education, health, employment and social and political freedoms. The paper tries to analyse the legal aspects related to the ongoing conflict between progress through economic development and/ or environmental protection.

"Why is it so easy to save the banks - but so hard to save the biosphere?" - George Monbiot

2. Objectives

The present research tries to create an understanding regarding the legal aspects and provisions involved in the process of environmental protection in general and forests in particular. It also emphasises upon the rights of forest dwellers in the context of ownership, rehabilitation measures, etc.

3. Data sources and Research Methodology

The information is mainly acquired from the secondary sources which include various governmental reports, portals, etc. Newspaper articles are also used extensively for additional analysis. The paper is empirical and based on observations made by the researcher.

4. Development Environment & Law

The right to development has its roots in the Charter of the United Nations, the Universal Declaration of Human Rights, but the UN Declaration on the Right to Development, 1986, is the first international document to articulate the Right to Development in International law explicitly. Article 1 of the Declarations defines the Right to development as ‘an inalienable Human Right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized’.

The right to development belongs to the so called third generation of Human Rights and highlights the International community’s move towards a holistic approach to Human Rights. According to Judge Rosalyn Hingis of the International Court of Justice, there is frequently an environmental price to pay for development. The Right to development and Right to healthy environment often come into conflict, especially in the case of developing countries whose challenges to provide economic growth that is compatible with

healthy and diverse environment. The challenge then is to harmonize these conflicting sets of Rights. In the last few decades, the concept of Sustainable Development has been formulated as a means to accomplish this challenge.³ Sustainable Development is the development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.

If globalization is taken to mean, a broad process of societal transformation including growth in trade, investment, travel and computer networking, ecological globalization refers to the collective impact that these diverse processes have on the health of the planets natural systems. The planets forest cover is steadily shrinking. Nearly half of the forests that once covered earth have already been lost, and almost fourteen million hectares of tropical forests are being sacrificed each year⁴

Forest help in maintaining the ecological balance. They render the climate equitable, add to the fertility of soil, prevent soil erosion and promote perennial stream flow in rain-fed rivers. They also shelter wild animals, preserve gene pools and protect the tribal population. Besides the benefits from environment and ecological perspectives, forest brings revenue to the state, supply raw material to industries, and act as source of fuel fodder. All sectors of economy make demands on forests resources. Forest land is scarified for massive mining and development projects. Large industrial interests use forests as a source of raw material for paper, pulp and rayon mills. Small business depends on forests as the source of wood for myriad products. Export of timber products generates foreign revenue. Almost half of the nations city dwellers depend upon firewood brought it from the forest for cooking fuel. In addition, these people traditionally use forest as their homes, either permanently or seasonally. Forests and wildlife parks also generates tourists income. Forests also serve as a source of emotional and spiritual renewal from India and all over the world.⁵

“Governments are deemed to succeed or fail by how well they make money go round, regardless of whether it serves any useful purpose. They regard it as a sacred duty to encourage the country’s most revolting spectacle: the annual feeding frenzy in which shoppers queue all night, then stampede into the shops, elbow, trample and sometimes fight to be the first to carry off some designer junk which will go into landfill before the sales next year. The madder the orgy, the greater the triumph of economic management.” - George Monbiot

5. Legal Efforts and provisions made for Forest protection in India

The Stockholm Conference, 1972 on ‘Human development and Environment’ has played pivotal role in shaping the environmental jurisprudence, followed by ‘Rio Conference’ 1992, Kyoto Protocol 1997 etc. in order to give effect and to give more importance to sustainable development, the Indian Legislature has passed various enactments, such as Water Act, 1974, Air Act, 1981 Environment Act, 1986 and many more.

The provisions related to protection of environment in the Constitution of India have also been amended for protection of forest and forest dwellers rights. Article 48-A added to the constitution by 42nd Amendment Act 1976, expressly directs the state to “protect and improve the environment and to safeguard forest and wildlife”. Article 51A (g) has declared that it shall be the fundamental duty of the citizen of India “to protect and improve the natural environment including forests, lakes, rivers, and wild life and to have compassion for living creatures”. Article 51A (j) has imposed on citizens another fundamental duty “to strive towards excellence in all spheres of Individual and collective activity so that the Nation constantly rises to the higher levels of endeavor and achievement”. These duties are nothing but the reflection of concept of Sustainable Development.

Originally forests were placed in the State Lists whereby the states alone could make laws concerning forests. By 1976, the forests were placed under Concurrent List so the Parliament could also make legislation on that subject. We also have special department and ministry and National Commission to look after welfare and development of tribal people. Under special action plan of development, MEDA(Maharashtra Energy Development Agency) is executing micro hydro power project of 30 KW capacity at village Asli in district Nandurbar. Power generated from this project will be utilized for electrification of about 500-550 households in nearby villages.⁶ It is the good example where the development project is in reality used for the development of tribals.

Legislation is generally influenced by the prevailing social and political forces. As mentioned earlier, the rulers of British India have also recognized the role of

forest from commercial point of view. The Indian Forest Act, 1927, is a comprehensive legislation relating to forest management that consolidates pre existing act. The Forest Act, being the product of British colonial days, reflects the exploitative intentions of colonial and feudal society of the time, rather than the environmental and ecological interests. Based on revenue oriented policy, its main object was to regulate dealings in forest produce and augment the public exchequer by levy of duties on timber.

The Forest Act contains provisions pertaining to reserved forests whereby the State Government could constitute any forest land or waste land as a reserved forest by notification. The reserved forest would then become a land over which the State Government would have regulatory rights.⁷ Another significant provision in the Forest Act is the protected forest where the state government can by notification declare to reserve any tree; close any portion of such forest against the rights of private persons; prohibit stone quarrying, burning of lime; and prevent removal of forest produce or clearing for cultivation.⁸

This provisions give *prima facie* impression that the Forest Act is environment oriented but the impact of this law was so harsh that it destroyed the ecological balance. This process of regulation of forests by the government authorities deprived the tribal population of their traditional and cultural rights. This is against the mandate of fundamental rights provided under the Indian constitution.⁹ The situation of tribals has exactly reflected in the following remarks: Tribals looked upon forests, the nature’s gifts as their own property and they had unfettered freedom to do as they pleased but the situation continued to change after the enactment of Indian Forest Act. The master of the forest – the tribal – is now no more than a wage earner.¹⁰ The commercial approach continued for long time even after the independence. In the mean time rampant destruction has taken place with respect to forest, forest dwellers and ecology.

The Indian Parliament in the year 1980 had set up a landmark by enacting The Forest Conservation Act, 1980. Restriction on de-reservation of forest or use of forest land for non forest purpose is the main object of the Act. The state government now has to

take the prior approval of the Central government to make any order to; de-reserve forest; use any forest land for non forest purpose; lease out forest land to a private agency; or cut naturally the cultivation of grown trees in forest land for the purpose of using it for re-afforestation.¹¹ The Act explains non forest purpose means breaking up, clearing of any forest land of tea, coffee, spices, rubber, palms, oil bearing plants, horticulture crops or medicinal plants. Any work relating to ancillary, to conservation, development and management of forest and wildlife cannot be considered as non-forest purpose and, therefore can be allowed.

With the help of fundamental right envisaged under Article 32 (Power of Supreme Court to enforce fundamental right) and Article 226 (Power of High Court to enforce fundamental as well as legal right), the Indian judiciary has played very active role to balance the protection of environment and development. Right to live in healthy environment,¹² Doctrine of public trust,¹³ establishment of polluter pays principle¹⁴, precautionary principle¹⁵ and many more are the gift of public interest litigation filed in the higher judiciary

The Deharadun Valley litigation¹⁶ is significant as the first case requiring Supreme Court to balance environmental and ecological integrity against industrial demand on forest resources. The case arose from haphazard and dangerous lime stone quarrying practices in the Mussoorie Hills range of Himalayas. The state of Utter Pradesh failed to regulate mining as required by the existing mining laws. The Supreme Court played an activist role conducting comprehensive environmental review and analysis of National need for mining operations located in the Deharadun valley. Moreover, the Court went beyond the requirements of Forest (Conservation) Act to merely conserve the forest and issued orders to ensure that the valley be reforested. But recently in the task of managing the right to environment and development the Supreme Court allowed the mining lease grant in reserved forest Ghatkuri in Jharkhand saying that iron is a mineral necessary for industrial development.¹⁷

The role of Supreme Court in achieving the goal of protection of environment with the development has continued further. In the State of Tripura Vs. Sudhir Kumar Ranjan Nath¹⁸ a state regulation on the transit of timber and other forest produce was challenged as violating the freedom of trade and commerce. The Supreme Court considered the Forest Act not a mere taxing enactment but an enactment to preserve, protect and promote the forest wealth in the interest of the Nation. This perspective of the Supreme Court is totally a new eco-friendly approach to the working of forest law that has been reflected in many decisions of judiciary.

6. Placing the rights of forest dwellers

On the issue of sustainable use of forests and the rights of forest dwellers, the Supreme Court in Banwasi Seva Ashram Vs. State of U.P¹⁹ retreated that forests are a much-wanted national asset. In approving the National Thermal Power Corporation Limited (NTPC) in a location that extended to a forest area, the Court said, we cannot lose sight of the fact that for Industrial growth and for provision of improved living facilities there is a great demand in this country for energy such as electricity. A scheme to generate electricity therefore is of National importance and cannot be deferred. In the light of the concept of sustainable development, the Court has issued various orders for the determination of rehabilitation rights. In the second Banavasi Ashram Seva case,²⁰ the Court has imposed more responsibilities on NTPC to find out alternative plots, render resettlement, give free transportation, reserve jobs and provide facilities of roads, water supply, healthcare and electricity to the people residing near the vicinity.

Fatesang Gimba Vasava Vs. State of Gujarat,²¹ is a typical case which threw light upon the rights of tribal habitat in the forest. In this case, the tribal population was supplied bamboo at reduced rates to enable them to make out a living by making articles for sale in the open market. However the State forest officials blocked the transport of articles on the ground

"We shall never understand the natural environment until we see it as a living organism. Today you can murder land for private profit. You can leave the corpse for all to see and nobody calls the cops."

- Paul Brooks

of exploitation of forests. The Gujarat High Court held that this was wrong by giving emphasis on the rights of tribal. The Court said the forest products were the only source of their livelihood. Reiterating Fatesang, the Supreme Court in Suresh Lohiya Vs. State of Maharashtra²² rejected forest departments argument that exclusion of Bamboo products from the definition of forest produce would frustrate the object of law and would give uncontrolled authority to the dealers to extract forest wealth, and held that an article made out of Bamboo, unlike Bamboo, was not forest produce and therefore confiscation of Bamboo mats made by tribals by the forest officials was not valid. The court said this action will take away rights of tribal population to their habitat and livelihood.

For the several years tribal and tribal lands has been exploited by the powerful hands. Many states had taken up steps to restore tribal lands already alienated to non-tribal, and to prohibit further exploitation. In the state of Karnataka a common legislation has been enacted to save lands granted to both Scheduled Tribes and Scheduled Castes. In Maharashtra legislation for annulment of transfer of lands from the tribal people and restoration has been enacted.

In Andhra Pradesh legislation, there was a presumption that a land transferred to a non- tribal is by the tribal person. This fact came for discussion in Supreme Court in P.Rami Reddy v/s State of A.P.²³ The Court observed that, frequently it happens that the tribals being totally ignorant and unable to prove their title to the land fall an easy prey to the scheming by non- tribals, while the non-tribals could be reasonably expected to prove their title. In the absence of strong legislation, it is likely that the economically stronger non-tribal would take over all available lands and wipe out the very identity of the tribal's. Now the modified law states that, the transfer made by a 'person' of any immovable property would be absolutely null and void, unless such transfer is made to a person belonging to the Scheduled Tribe or to a member of a co-operative society composed solely of Scheduled Tribes. The wide interpretation to the expression 'person' which includes state government would maximize allotment of government land in schedule area to the tribal people realizing socio-economic interest.²⁴

In 1997, the Supreme Court has issued sweeping directions to oversee the enforcement of forest laws across the nation In T.N.Godavarman Tirumalapad V/S Union of India,²⁵ the case was initially filed in the Supreme Court to give effect to the provisions of National Forest Policy 1988. The Court gave notice to the Union government and State governments. It stated that the forest must be understood according to the dictionary meaning and the description covers statutory recognized forest, whether designated as 'reserved', protected' or not including any area recorded in government record as forest.

Forest Conservation Law has also been significantly impacted through another case, Centre for Environment Law (WWF) India Vs Union of India,²⁶ concerning the national parks and sanctuaries, while hearing this case, the Supreme Court restrained all the state governments from de-reserving national parks, sanctuaries and forests. The impact of both these judgements has been that: all ongoing activities without the prior approval of the Central government must be stopped. Ecologically sensitive area is to be found out and totally excluded from exploitation. In effect, all the State governments have been prohibited from using forest lands for non- forest purposes without the prior approval of the Central government in accordance with the Forest Conservation Law.

Resultantly, the power to de-reserve national parks and wild life sanctuaries that vested with the State government was transferred to the National Board for Wild Life through an Amendment that came in 2003.²⁷

This trend of judiciary to protect the environment against the big project and various hazardous activities can be seen through various decisions. However, surprisingly in Narmada Bachao Andolan case,²⁸ it can be observed that this trend has shifted towards allowing big projects, the Court held that the Precautionary Principle will apply in a case of polluting or other project or industry where the extent of damage likely to be inflicted is not known and allowed the construction of dam. Despite the strong dissenting judgment of Justice Bharucha, pointing out that the Sardar Sarovar project was proceeding without a comprehensive environmental appraisal and without

even the necessary environmental studies having been done, as was evident from the documents of the government itself, the majority of judges still went on to approve the project.

The same subordination to the environmental interest to the cause of 'development' is again evident in the Supreme Court judgment in Tehri Dam case²⁹. It has been observed that monetary compensation is not valued by tribals as they believe in barter system. They are less qualified so after rehabilitation they get job as a labor at the cost of loss of their culture and traditions.

Though the tribals are real protectors of forests and environment, their rights have always been neglected. In the past tribal people were known to be friends of the (forest) department and served to inform in advance the movements of strangers in the forests and the commission of forest offences. With the increasing strictures on their rights to access to and to use of resources that their habitat once provided them, and which they used to take for granted, they now tend to work for settlers, encroachers and deprecators of forests wealth, who pay them money for their services.³⁰

The Forest Rights Law of 2007 (The Scheduled Tribes and Traditional Forest Dwellers Recognition of Forest Rights) aims to do away with this injustice endowing the tribal people and other forest dwellers with certain rights and duties. The law makes an attempt to recognize the symbiotic relationship of the tribal people and the forest. The *gram sabhas* are empowered to make decisions to regulate access to community resources and stop any activity which adversely affects the wild animals, forests and the biodiversity.³¹

Another vital step towards preservation of tribal rights were taken when the National Tiger Conservation Authority suggested that tiger reserved states should recruit local forest dwelling tribes as field staff. It is essential to strike distinction between those who are in the forests for the survival and livelihood, and those who are there for commercial purpose and

for making profit. It is the latter category that needs to be prevented from gaining access to forest. This is the real fight.³²

In Predeep Krishen Vs. Union of India³³ Supreme Court came down heavily on the executive lethargy of forest department of State of Madhya Pradesh. To permit the collection of *tendu* leaves by the tribals in the surrounding area of national park was challenged as violation of fundamental right under Article 14 and 21 of the Constitution as this disturbs the ecological balance. The Supreme Court suggested that if one of the reasons for the shrinkage of forest is the entry of villagers and tribals living in and around the sanctuaries and national parks, there can be no doubt that urgent steps must be taken to prevent any destruction or damage to the environment. The government must immediately issue final notification and take efforts to resettle the tribal and also ensure that, when resettled, tribal must be in a position to earn their livelihood.

Non-forest use leads to loss of many tangible and intangible benefits. The protection of forests is undervalued in legal economic terms. Many benefits of forests such as clean air, biodiversity and carbon storage are frequently available to everyone and have not traditionally attracted legal rights.

How can then these losses be cured, remedied and compensated in the process of prior sanction for non forestry purposes? This question has been resolved in one of the Godavarman case³⁴ that decided to levy Net Present Value (NPV) for non forest use. NPV is the present value of net cash flow from a project discounted by the cost of capital which is to be recovered from user agency. The Ministry of environment and forest accepted these recommendations and agreed that NPV shall be part of the detailed project submitted to it for the forestry clearance. The basis for calculation for NPV should be economic value spread over 50 years which should be the value taken into account for forest regeneration as opposed to the value for reforestation. The Court also suggested for social benefit cost analysis of the project.³⁵ This concept can be very well related to the

"It appears to be a law that you cannot have a deep sympathy with both man and nature."
- Henry David Thoreau

constitutional doctrine of public trust established by the same court in M.C.Mehta vs. Kamalnath.³⁶

On the same line, a comprehensive plan for mining affected areas in district Bellary, and Chitradurga in Karnataka state has been announced. A share of about 30,000 crore from the mining companies are expected from the auction of iron ores during the next 10 years, which will be used for ensuring sustainable maintenance and development of natural resources and manmade facilities essential for providing desired benefits to the various affected stakeholders.³⁷

In an emerging trend, Judges are granting relief on the basis of common property rights in Nabipur Gram Panchayat vs. State of Gujarat,³⁸ where the residence of Nabipur in Gujarat objected to the construction of huts on their grazing land. The villagers, among them Adivasis and Harijans feared that the proposed diversion of the grazing land would aggravate the shortage of fodder already faced in the village. Allowing the writ petition based on this common property entitlement, the High Court quashed the orders or resumption, since the collector had failed to apply his mind with regard to the actual requirement of grazing land for the people of village and the actual availability of grazing land to them.

Despite the limitations the judiciary has played a dynamic role in protection of environment. In Jawaharlal Sharma Vs. Divisional forest Officer, Uttar Pradesh,³⁹ Supreme Court explained the policy towards sawmills located near forests. The Court said, the existing license can be allowed to continue only if they do not violate the law laid down by the Court from time to time.

Recently the Nagpur Bench of Bombay High Court has taken *Suo motu cognizance* of media reports over illegal renewal of saw mills license by the State Forest Department and has told registrar office to treat them as public interest litigation and appointed Deven Chauhan as *amicus curiae* to draft the case and plead the case.⁴⁰

To facilitate the speedy and fair justice in environmental cases the Supreme Court in Vellore Citizen Welfare case,⁴¹ suggested for a ‘Green Bench’ at the High Courts. The Parliament has passed National

Appellate Authority Act, 1997 to hear appeals against restricted areas under Environment Protection Act and made provision for appointment of technical member to help proper and fair adjudication of justice.

Since 1995 Supreme Court has also established green bench meeting on every Friday to deal with matters of forests and wildlife but recently this first bench has wound up and taken over by latter bench sitting on Monday. The bench listened to thousands of applications virtually taking over the way forests are managed. Some legal experts said though inexplicable, the decision to wind up the bench could be because of controversies over several recent decisions. Green and tribal right activists had criticized the decision to clear the mining operations by Vendantas plans to mine in sacred Niyamgiri hills in Odisha. On the other hand Corporate India and the government saw the 1700 odd applications still pending before the bench as a stumbling block to development.⁴²

In some of the States, the Green Bench is very active and taking bold decisions. On 8 May 2012, the Green Bench of Himachal Pradesh slapped a fine of Rs.100 cores on Jaiprakash Associates for setting up cement and thermal plant at Nalagarh. This shows that in modern days corporate culture must embrace the triple bottom line concept that is profitability, sustainability and corporate governance.

On 6th Oct 2012, the Bombay High Court left no one in doubt when it said there shall be a total freeze on the destruction and cutting of mangroves in the entire state of Maharashtra. The order banned the dumping of debris in such areas and forbade any authority from granting permission for development activity in them. It also banned construction within 50 meters of mangroves.⁴³

The National Green Tribunal (NGT) under the National Green Tribunal Act, 2010 was exclusively established to judge environmental cases. It will have as a judge, an environment expert to guide on ecological issues so that they can come to an informed judgement. NGT has taken long time to form as the political will does not want a strong Green Tribunal for working it has to go through various difficulties. It lacks amenities and infrastructure. This most successful

court on environment matters has to go to Supreme Court for asking directions to the central government to pay heed towards it.⁴⁴ In spite of this the court is working efficiently. Recent cases like the Vendanta, Bauxite Smelter in Orrisa, Thermal power plants in AP, the Jaitapur Nuclear power plant in Maharashtra have seen huge controversy and protest. The most famous Adarsha scam case has also been transferred to NGT.

7. Conclusion

The Indian Judiciary barring few exceptions has attempted well to strike a balance between environment and development with the help of existing laws. In many cases it has granted interim remedies such as stay orders and injunction to restrain harmful activities. To ensure complete justice the Court has issued various guidelines to implement environment enactments and directions under Article 142 of the Indian Constitution.

At this backdrop, to conclude, one can say we have got enough laws to protect the environment but its implementation is in the hands of executives, therefore good governance, corruption free atmosphere, implementation of strict laws and punishment and strong political will is the need to protect the environment. In framing a forest policy, we have to consider three factors like justice to people including forest dwellers, justice to nature and justice to generations to come.

Protection of environment and to achieve sustainable development is not only the responsibility of government, judiciary but also of the corporate and well as the society at large. To fulfill this we have to inculcate Article 51A (g)-fundamental duty to protect and improve environment under the Indian constitution in our day to day life. Reduce, Reuse and Recycle must be our mantra.

Instead of saying, we inherited this environment from our parents; one should say and presume we have borrowed it from our children. It increases our

responsibility not only to protect the environment but also to improve it as an interest on the borrowing.⁴⁶

At the end, I would like to quote the famous prayer from Indian Upanishad :

‘From the unreal lead me to the real,
From darkness lead me to light,
From the death lead me to immortality’.

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References:

1. Law in Changing Societies,Friedman,1970,p.14
2. W. H. Rodgers, Journal Environmental Law, 1977, p.1
3. Human Rights and humanitarian law, SAHRDC, Oxford, ISBN 10: 0-19-569212-8,P.401-404
4. Introduction to Environmental Law, S. Shantakumar Second edition 2005, p.29
5. Environmental law and policy in India, Shyam Diwan, Armin Rosencranz, Oxford University press, second edition, ISBN- 10:0-19-566173-7 P 288,289
6. Econet.org./ttg.study
7. See Ss 4-27
8. See Ss 39-69
9. See Article 29-30
10. V.S.Saxsena, ‘social forestry in Tribal Development’, *Social Forestry and Tribal Developoment*,1986,pp38,39
11. S.2 After 1988 Amendment Act
12. M.C Mehta Vs.Union of India AIR1987 SC 1086
13. M.C Mehta Vs.Kamalnath(1997)SCC 388
14. T.N.Tannaries case (1996) 3 SCC212
15. H Acid case (1996)5 SCC 647
16. AIR 1988 SC 2187
17. MANU/SC/0601/2012
18. AIR 1997 S.C 1168
19. AIR 1987 S.C374

“We can choose to rebalance the use of resources to a more egalitarian pattern of consumption... or we can choose to do nothing and to drift into a downward spiral of economic and environmental ills leading to a more unequal and inhospitable future” - Royal Society report People and the Planet

20. 1992)2 SCC 202
21. AIR 1987 Guj. 9
22. (1996)10SCC 397
23. AIR 1988 SC 1626
24. See Samatha v/s State of A.P. AIR 1997 SC 3297
25. AIR 1997 SC 1228
26. AIR 1997 SC 1070
27. <http://supremecourtofindia.nic.in/speeches>
28. AIR 2000 SC 3751
29. N.D. Dayal Vs. Union Of India(2003)7 SCALE 54
30. see Madhav Menon T., Law and Tribal Societies in Kerala',1985, Cochin Law Review, P.157
31. See Sections 3,5 of the Act
32. Environmental Law in India, P.Leelakrishnan 3rd edition 2008, Butterworths Wadhwa Nagpur ISBN, 978-81-8038-177-5,P52.
33. AIR 1996 SC1071
34. (2006)1 SCC 1
35. Ibid 32,Pp 69,70
36. 1997 SCC 388
37. <http://www.indiaenvironmentportal.org.in>, pioneer (New Delhi) 15/12/2012
38. AIR 1995 Guj 52
39. AIR 2002 SC 769
40. <http://Times of india.com>, 18/12/2012
41. AIR 1996 SC 2715
42. The telegraph Calcutta,India Sunday July 22,2012
43. <http://articles.timesofindia>
44. <http://www.downtoearth.org>
45. See Om Prakash Bhatt v/s State of U.P.AIR 1997ALL.259
46. See Lal's encyclopedia on Environment Protection and Pollution Laws, Fifth edition, Delhi law house, ISBN 81-86789-78-4.

A SOCIO-ECONOMIC GEOGRAPHY OF DISASTER AND DEVELOPMENT AT CHAR STHAL NOAHATA, BANGLADESH

Shaikh Mehdee Mohammad¹ and Andrew E. Collins²

ABSTRACT:

Though development has improved the lives of many people in Bangladesh it also accentuates uneven exposure to disaster risks. The scope of development is altered for those who become increasingly challenged by environmental hazards. This paper analyses how the interplay between disaster and development alters the balance of socio-economic conditions for local people in Bangladesh. The study was carried out at Char Sthal Noahata, a char (riverine island) situated in Sirajgonj district, one of the most flood prone areas of Bangladesh, using community participation methods and focus groups amongst male and female participants.

The findings show that flood and riverbank erosion regularly impacts on the people residing there, including their livelihoods and other assets. However, some belonging to a wealthier group migrated to the mainland that is protected by the river embankment. Development activities aimed at poverty reduction and sustainable livelihoods for the poor, including raising the level of plinths and asset transfers of livestock and birds, tend to be ineffective due to a lack of monitoring and guidance. The middle income group remain without access to local power structures and facilities provided by the government and NGOs. Their circumstances are not changed by wider development activities and they are becoming poorer as their houses can be easily flooded and they remain solely dependent on inherited occupations. Moreover, whilst there are some initiatives for women, these remain limited due to ongoing cultural constraints.

The paper concludes that such sites in Bangladesh show that whilst community based poverty reduction initiatives can reduce vulnerability to environmental disasters and improve sustainable development capacity, this can be ineffective unless there is access to the means of socio-economic transformation for all categories of people residing in the area.

Key words: socio-economic transformation, disaster-development nexus, participatory approach, Bangladesh Chars.

1. Introduction

1.1 Development from a disasters perspective

Development can be considered as a form of change for the betterment or deterioration of human populations. There are been many conceptualisations of the driving rationale to the process of development, though in recent decades this has been driven by multiple discourses that address a fundamental issue of the sustainability of change and its impact on future survivability. Approaches to assessing sustainability include for example measures of ‘sustainable development as net productivity of biomass maintained over decades to centuries’ (Conway, 1987:96). Turner (1988:12) defines ‘sustainable development’, in principle, as ‘an optimal policy ... to maintain an acceptable rate of growth in per-capita without depleting the national capital asset stock or the natural environmental asset stock’. Elliot (2006) simplifies the perspective of sustainability in that development will often reveal loss or degradation of environmental

resources and many patterns and processes of development will fail to respond to future human needs. Collins (2009) addresses the issue by outlining the multiple ways in which development intricately defines what is meant by ‘disaster resilience’.

In the context of the latter, development is the manner in which we defend against hazards by reducing vulnerability, and the way in which we try to recover from disasters once they have occurred. Uneven development, unsustainable development, underdevelopment or inappropriate overdevelopment can all cause humanitarian disasters. In turn environmental and humanitarian disaster impacts on people in such a way as to prevent much needed development. The relationship can be complex in that in some instances major disasters have also stimulated greater development, as for example happened in Japanese urban design following earthquakes or in the flourishing of micro-enterprises amongst some refugee groups. Core to the disaster and development nexus

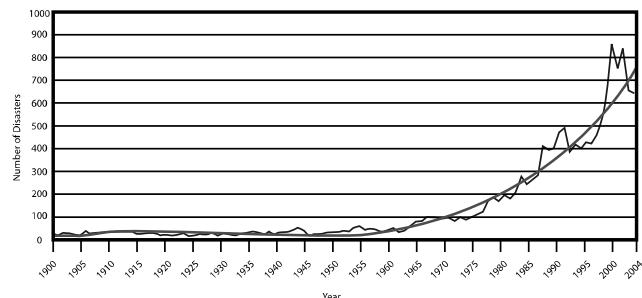
is the reality that the burgeoning of global interest in Disaster Risk Reduction (DRR) to a large extent is tantamount to what is meant by the more urgent aspects of sustainable development. In this paper we take one example of a society which is both divided by uneven development and environmental hazard exposure to examine such relationships further. An inductive and participatory approach is adopted as the prime benefits of the study were considered to be one of further listening to the circumstances of local people rather than to impose meta-theoretical interpretation on circumstances hitherto under-explored in this area.

1.2 People's vulnerability to hazards

Hazards are everyday phenomena of all parts of the world. However, particular hazards can expose varying levels of vulnerability according to the nature of different places or socio-economic or 'class' designation of people. This varies amongst people who may live in close proximity and is can be constantly undergoing change over time. People's adaptation strategies are varied in terms of hazards, places, timing and their status as defined here. Thus, the scenario of hazard-specific vulnerability and adaptations is potentially very complex. Further, environmental (or nature driven) factors such as climate change make the situation more unpredictable and often highly uncertain in terms of outcome. Nonetheless regular data is available for events that are considered to be disaster events. Based on this type of broad data, Coppola (2006) argues that the number of disasters is increasing each year. Figure 1 shows that the total number of natural disasters reported in the world grew from 25 in 1950 to about 880 in 2002. All statistics on the annual number of disasters appear to indicate that, over time, the number of significant interactions between man and nature resulting in significant loss of life or properties is increasing. Bangladesh is considered to represent one of the most environmentally exposed regions of the world in terms of several of these types of commonly reported events, such as flood, cyclone, drought and tidal wave (and tsunami), whilst also being in a zone of high earthquake risk. It has also been classified since its establishment in 1972 as a predominantly developing world country and with the world's highest population densities, despite some aspects of high income development

across some sectors and remarkable survivability successes.

Figure 1: Total number of natural disasters reported in the World: 1900-2004



(Source: Coppola, 2007)

1.3 The Bangladesh context

Bangladesh is a flood prone country because of its geographical location. The catastrophic floods occur at intervals of about 10-20 years such as those in 1974, 1987, 1988, 1998 (Brammer, 2004; Biswas 2005) and in 2004. Brammer (2004) explains that floods in Bangladesh are classified into four main types: flash, river, rainfall and storm surge. Both natural processes and human-induced activities are the causes of floods in Bangladesh. Floods have had severe effects on human life and huge economic losses to the country especially those of 1987, 1988 and 1998.

However, there are several adaptation strategies (i.e. structural and non-structural) that have been implemented by local people, the government and other organisations. Flood protection through building embankments alongside major rivers such as Flood Action Plan (FAP) represents structural adaptation to floods. There are also several non-structural adaptations including relief and rehabilitation, flood forecasting and warning systems, alternative development modes, flood shelters and floodplain zoning. Furthermore, the people of Bangladesh have undertaken numerous adjustments to cope with abnormal floods that utilise available indigenous technological, material and societal resources (Haque and Zaman, 1993, 1994, Alam and Collins, 2010).

1.4 People of the chars in Jamuna River

The Jamuna river basin is one of the multi-disasters prone areas of Bangladesh. In the wet season

the area is affected by floods and riverbank erosion and in the dry season drought often affects the area (Baqee, 1998). But even in the wet season the area, especially its agriculture, is influenced by flood variability. So, the people and their lives fully depend on its nature and its motion (*Ibid.*). The Jamuna River has the largest land area of chars with a total area of approximately 100,000 ha, compared to a total of 75,000 ha of all the other rivers together (Parkinson, 2006). Approximately one million people living on island chars are surrounded by water for the majority of the year. It is the poorest households who live on these island chars (CLP, 2012). The people, who live in the chars of the Jamuna, are one of the most vulnerable communities in the world.

One of the principle causes of poverty in the Jamuna chars are the high levels of river erosion, of both its banks and of the island chars. Erosion and near-annual flooding force thousands of households to move each year, often shifting between five and seven times in a single generation. Furthermore, the chars are isolated from major markets with significant amounts of time and money being spent by their residents in efforts to reach the mainland. The vast majority of char households are not covered by standard government services including health, education and police protection. Interaction between *char*-dwellers and the private sector is also weak as transport costs are high and the chars are not connected to the electricity grid. (CLP, 2012)

1.5 Aim and objectives of the study

The main aim of this study is to explore the socio-economic conditions of the char-dwellers in the context of a disaster-development nexus. The objectives of the study are to:

- Categorise socio-economic conditions of the char-dwellers
- Explore their vulnerability to disaster and development
- Assess the impact of disaster and development on their life and livelihoods
- Identify their coping strategies in respect of the disaster and development nexus

2. Methods and study area

2.1 Methods

The study was designed through a qualitative approach. The research methodology was implemented through active community participation. Primarily the method of data collection was a selection of participatory rural appraisal (PRA) tools that made particular use of focus group discussions (FGD). The respondents are the *char*-dwellers of Noahata who have varying socio-economic conditions and who are comprised of both male-headed and female-headed households.

2.2 Study area

The study area of *Char Sthal* Noahata is in Chauhali *upazila* (sub-district) under the Sirajganj district (see Figure 2). It is a river island *char* situated in the Jamuna River and the age of the *char* is about 20 years. With this length of time the land of the *char* is considered as almost stable, albeit with some parts being eroded to a negligible extent. Though most of the *char*-dwellers are directly or indirectly involved in agriculture, a significant number of people still engage in off-farm activities such as weaving and small businesses.

Figure 2: Location of the study area



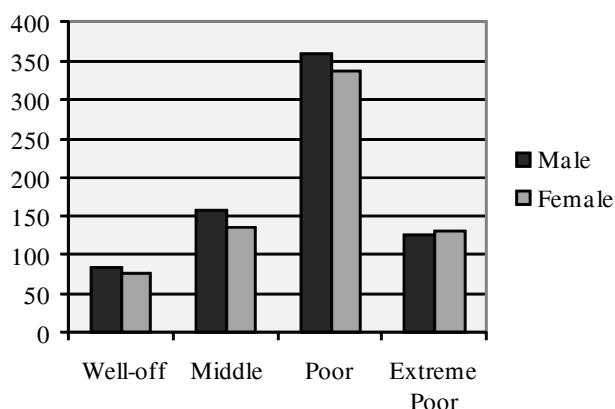
(Source: GOB, 2008)

3. Results and discussion

3.1 Socio-economic conditions of the char-dwellers

The population of Char Sthal Noahata was 1,659 in 2008. On the basis of socio-economic status, the *char*-dwellers divide into four groups, according to wealth. Though villagers used the term ‘rich’, they are not rich. Those to whom this term was applied by the local people merely have a better standard of living in the context of the *char*. We used the terms ‘well-off’, middle, poor and extreme poor in the context of its relative local application. Figure 3 below shows the number of villagers in each of these economic groupings as locally derived by participants.

Figure 3: Population of Dakshin (South) Noahata



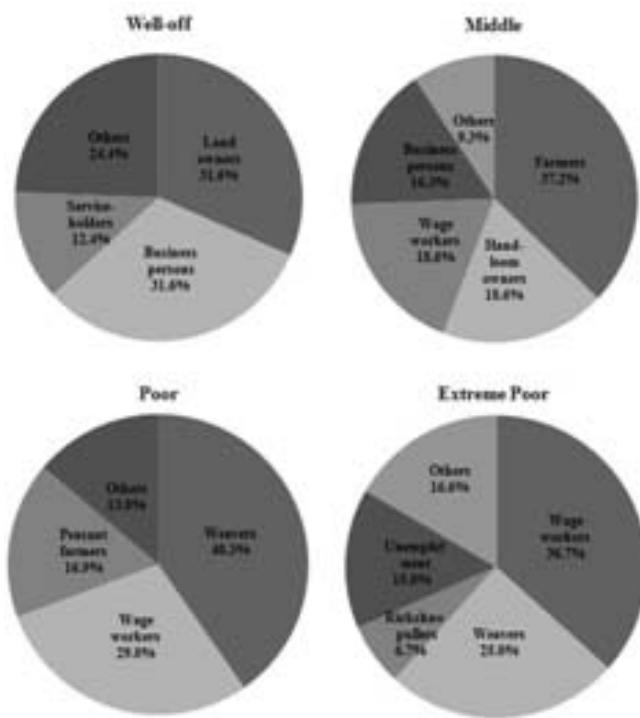
Most of the villagers of the *char* are either poor or extreme poor (67.7%), however, the number of well-off (11.5%) and middle class (20.8%) are significant (see Figure 2)³.

3.1.1 Livelihoods of different socio-economic groups

The occupations of *char*-dwellers of Sthal Noahata are divided into different categories. Some occupations are determined by a particular socio-economic group. It was observed that the well-off engage in agriculture (31.6% - basically agricultural land owners who lease their lands to peasant farmers for one or two years or even for a crop season with an understanding that they will receive two-thirds or sometimes one-third of production⁴), business (31.6%) and also service. Large cultivators (37.2%),

handloom owners (18.6%) and small businesspersons (16.3%) are dominant in the middle group, though a significant number of wage labourers (18.6%) are treated as middle class.

Figure 4 : Livelihoods of different socio-economic groups



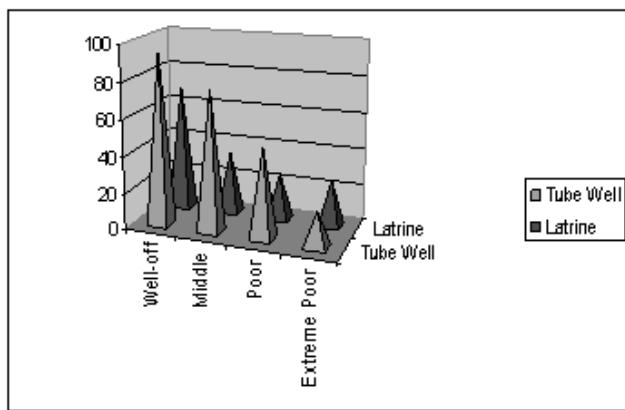
On the other hand, weavers (40.3%), wage workers (29.0%) and peasant farmers (16.9%) occupy the poor group. However, wage labour in agriculture (36.7%) and weaving (25%) are the dominant occupations among the extreme poor (see Figure 5). Some of them are small farmers and rickshaw-pullers (both are 6.7%) but widows (6.7%) and disabled persons (8.3%) who are unemployed make up a significant proportion of this group (see Figure 4). Moreover, some fishermen (five families), carpenters (four families) and boatmen (two families) represent all socio-economic groups.

3.1.2 Health and sanitation

The main source of drinking water is tube well but this is not available at every house. The numbers of people using tube well water varies between different socio-economic groups (Figure 5). The figure is the highest in the well-off group (94.7%) whereas it is very low amongst the extreme poor (19.0%) because they have no tube well at their home and they

are also reluctant to use tube well water due to lack of awareness though they have access to tube wells belonging to well-off neighbours or relatives.

Figure 5: Percent of wealth groups with tube well and sanitary latrines



Sanitation is very poor in the area especially for the poor (only 25.6 percent use sanitary latrine) and the extreme poor groups (25.9 percent) (Figure 5). However, around three-fourths of those two groups (74.8 percent) have got their water sealed sanitary latrine under different development projects. It was observed that two-thirds had broken water hold pipes jointed with a low commode as they are familiar with hanging toilets. Moreover, they had a misconception that it was better to use open hanging toilets rather than the water sealed sanitary latrine as the latter needed more water to clean it. However, some awareness programmes had encouraged them to using the sanitary latrines. The number of middle group using sanitary latrine was slightly higher (34.1percent) though the number of this group using tube well water is 77.3 percent. This is because different NGOs and the local government gave sanitary latrines to the poor and the extreme poor but they did not consider the middle group in this programme, even though most of this group are either not capable of building a sanitary latrine or are not properly aware of it. Only 18.4 percent of poor and 13.8 percent of extreme poor have both tube well and sanitary latrine.

3.1.3 Education status

Similar to the *char*'s health status, the education status of *Char Sthal Noahata* is very poor. There is

only one registered primary school which does not carry out a satisfactory service for the children of school going age. Besides, there are two *moktob* (primary level religious schools) where English is not taught. The figures of school-going children of the poor and extreme poor groups are 56.8 percent and 53.4 percent respectively. Most parents (88 percent) send their children as they would receive a few pieces of energy biscuits and a packet of milk every day under different NGO activities. Whilst a large number of the *char*-dwellers are aware of education, they are not interested in sending their children to high school because of the distance to school, time and transport. Female pupils suffer further trouble during the dry season because water is limited and because they have to walk long distances to collect it. However, during the wet season, water is more readily available and accessible. Despite this, children of the well-off families (82.4 percent) study outside of the *char*. Some children attend high school in the next village, Teghuri, and a small portion of these stay in their relatives' houses nearer to growth centres such as Anayetpur or Chauhali.

3.2 Environmental hazards and disasters of the *char*

The *char*-dwellers said that floods and river bank erosions are the main two natural hazards in their area. The respondents classify floods in terms of duration and magnitude.

There are three types of floods according to the time variation and its duration i.e. normal, early and late floods. They state that the normal flood duration is three months, from April to June. They expect normal floods because it is related to their agricultural activities – the major livelihood. However, they often face irregular floods (i.e. early and late flood (Figure 6)). Though they have faced irregular floods previously, the intensity and abnormality of early and late floods are increasing over the last two or three decades. However, they cannot predict what will happen to their livelihoods in the near future and even in the next year - especially those involved in agricultural activities.

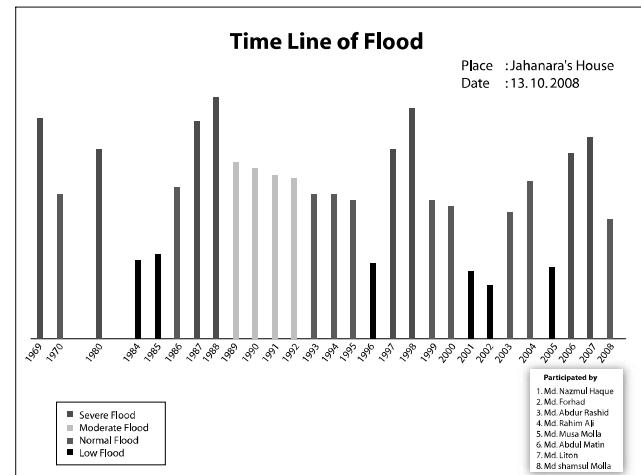
Figure 6: Flood variability of the char

Flood Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Early Flood												
Normal Flood												
Late Flood												

Early flood occurs in the month of April and stays until June. This flood usually damages *aus* rice and jute. On the other hand, late flood continues up to mid-October and sometimes until the end of October. The *char*-dwellers cannot harvest their transplanted *aman* and even deepwater rice and they have to wait up to November for planting winter crops.

The respondents also divided floods into four types in terms of their severity: severe, moderate, normal and low floods. The duration of severe flood varies because severity is not measured by its duration rather its damages. Often this flood starts in May and stays up to August-September. Sometimes it starts at a common time but then prolongs up to November and even sometimes is sustained like the normal floods. Usually severe flood inundates both agricultural fields, roads, settlements and other infrastructures. A moderate flood is often prolonged like a normal flood up to September but it destroys nearly-mature crops in the fields, though farmers can still plant winter crops and *boro* rice. The duration of a normal flood is from July to September. Though lowlands are inundated, *char*-dwellers desire this flood because it does not flood their *aus* rice field, produced in highlands, and settlements. Farmers produce deepwater rice which can grow up to four metres so that it can cope easily with the normal flood. The *char*-dwellers do not also expect this situation because deepwater rice does not grow satisfactorily due to low flood. Then farmers usually graze their cattle in the fields and sow early winter crops. The respondents agree that the intensity of abnormal floods in terms of magnitude, volume and frequency are increasing, though they do not know the exact cause of it. However, they mapped the flood trend for last 30 years in the area where they lived (see Figure 7)⁵.

Figure 7: Flood Situation for Last 30 years



The elderly people remembered the flood situation of 1969 and 1970. But they could not provide the information on floods from 1981 to 1983. Figure 7 illustrates how the intensity of different types of floods is increasing since the 1980s. Though the number of severe floods is unchanged between 1980s, 1990s and 2000-2008, the number of low floods increased in the present decade. Thus, the number of normal floods decreased during this time which makes farmers more vulnerable to floods.

3.3 People's vulnerability to the environmental hazards and disasters of the char

The plinths of the houses of all well-off families are high above flood level. A few numbers of middle class families (32.6%) have such housing condition. Before the intervention of programmes on raising homestead plinths of the poor and the extreme poor, none of those groups had such housing conditions.

It was observed that usually government officials do not want to work at remote places like Chauhali⁶. Even those who are posted to it rarely visit Sthal Noahata. On the other hand, the char dwellers have

to walk 3-4 kilometres on sand and have to use an hour long boat journey in the dry season. It is more comfortable for them in the wet season as they can skip walking and make use of at least a 2-3 hours boat journey. The office of the local Union *Parishad* (Council) is situated in the mainland which also needs the same span of time and travel distance from the char. Further, the poor and the extreme poor have poor access to local power and institutional structures whereas the well-off group often control the administrative system. Living in dangerous locations and absence of proper government services are the common vulnerabilities of all social groups of the char. However, it was observed that only well-off families have homes on platforms above the normal floods and the houses of other groups are situated in low lands which are regularly flooded. Besides, the people of these groups have poor access to power and institutional structure as the elite group of the char control that local power structure.

3.4 Impact of environmental disasters on the char dwellers' life and livelihoods

Most of the agricultural lands of the char are very low and are regularly flooded. Thus, both landowners and sharecroppers are affected. Usually landowners provide agricultural inputs (i.e. seeds, fertilizers, pesticides, wages and occasional other agricultural supplies). If crops are damaged by severe flood, sharecroppers cannot harvest the yield and the landowners lose their investment. Further, if a sharecropper invests for this purpose, it will be worse for him as usually he has to loan money from a moneylender with a high interest rate. Thus, the sharecropper is unable to recover losses for the next few years. It was observed that the process of getting loans from moneylenders is easier than the process of sanctioning a loan from an NGO or a bank. Besides, the residents have little access to agricultural facilities supported by the government. Meanwhile, wage workers are unoccupied for the whole period of the flood, then after the flood there are some job opportunities for them such as earth digging with different government programmes. Generally the poor and extreme poor have little access to these jobs. However, those with close relationships to local leaders often can achieve such opportunities.

Most of the handloom sheds are closed during floods. However, heavy rains damage many handlooms and products as the structure of the sheds are not well-protected even though those sheds are situated with a high platform. Thus, the owners cannot fulfil their production targets. They usually receive an advance from buyers investing for raw materials like thread, dye and wage. Moreover, they loan from local moneylenders, NGOs and commercial banks. During such climatic condition, weavers generally lose their jobs.

Small businesspersons such as shopkeepers are also in trouble because of reducing char dwellers' purchasing capacity during flood period. Heavy rains damage the products in their shops due to lack of proper storage management. Wholesalers do not want to lend products to them.

Both men and women are vulnerable to floods. However, gender sensitive vulnerability is clearly distinguishable. The women of the *char* suffer both inside and outside of the home. The dowry is taken by the husband but even after marriage some women are threatened for more money. Besides, some women are being physically tortured by their husbands. Women also suffer outside the home in several ways. They receive lower wages than men. The daily wage rate is Tk. 80/- for men but Tk. 50/- to 60/- for women though they have to do the same amount of work. However, both crimes⁷ are directly related to flood. Usually the char dwellers consider getting dowry as a recovery strategy from flood losses. Thus, parents marry their male children during and after flood and get dowry from brides' parents. It is found from the FGD with women group that the rate of domestic violence is often increased during flood. The awareness of different emerging issues (i.e. female education, reproductive health, family planning, domestic violence) is gradually being increased amongst due to NGO activities⁸.

3.5 Coping strategies by the char-dwellers for disasters

The *char*-dwellers discussed how they are familiar with the abovementioned vulnerabilities to flood and its impacts on their life and livelihoods. In sharing information they inherently indicated a sense of coping

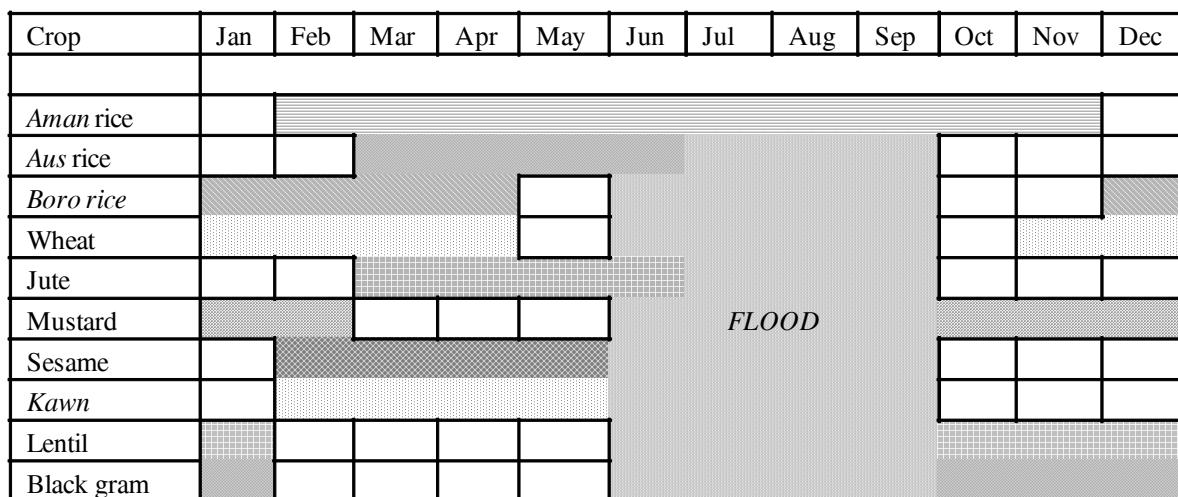
with their situation. There are different coping mechanisms that can be broadly attributed to the varying socio-economic groups of the char.

3.5.1 Cropping pattern

The respondents related to agriculture explain how their cropping patterns cope with the magnitude and duration of flood. Table 8 shows the duration of major crops from sowing to harvesting in the *char* in a normal flooding year. The time of a common seasonal flooding is from June to September marked by blue colour on the table. The farmers often sow *aus* rice and deepwater *aman* rice intermixed early in the pre-

monsoon season (February to April). If *aus* is damaged by early flood they can then still harvest *aman* after flood. *Aus* is harvested before flood occurs (June) and deepwater *aman* continues to grow with rising floodwater and eventually is harvested after floodwater has receded (October–November). Some farmers plant jute, *kawn* (a kind of local millet) and sesame in the pre-monsoon season and harvest before flood occurs. Mustard, lentil and black gram are three early winter crops sown just after the time of flood recession (Figure 8). Besides, farmers plant *boro* rice and wheat as a late winter crop (November–December) and harvest in April.

Figure 8: Crop calendar of the *char*-dwellers of Sthal Noahata in normal year



However, in the case of early floods, *aus*, sesame, *kawn* and jute are damaged but *aman* can sustain if floodwater increases gradually and farmers can eventually harvest 80–100% of it. Nevertheless, if *aman* is also damaged due to sudden flood, farmers plant early winter crops such as mustard, lentil and black gram minimising their loss. Besides, they sow wheat and *boro*.

In the event of late floods (July to October) farmers harvest *aus*, *kawn*, sesame and jute easily. But deepwater *aman* is partially damaged due to lack of the water it needs. The farmers often cannot harvest transplanted *aman* and even deepwater *aman*. However, they select early-maturing varieties of *aman*. Besides, they cannot sow early winter crops. But *boro* and wheat are sown without difficulty and the production is satisfactory if other factors are constant.

Finally, the farmers face disastrous conditions if it is a severe flood in terms of magnitude and duration. This is because all *kharif* (pre-monsoon) crops are completely damaged. They cannot even sow early winter crops in time. However, they can sow both early and late winter crops after floodwater has receded in October–November.

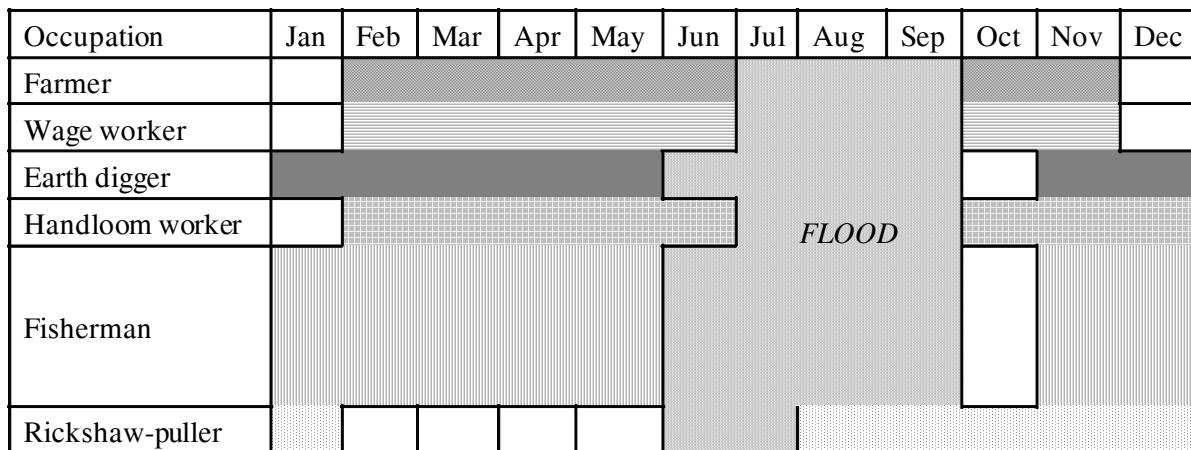
3.5.2 *Livelihood diversification*

The *char*-dwellers do different jobs to survive because of the uncertainty of their livelihoods. Though they have one main occupation they do some seasonal work. In general, occupational opportunity for the *char*-dwellers is seasonally-based. For example, the farmers (cultivable landowners) and the agricultural labourers mainly work in two seasons in a year – the major portion is from February to June and the comparatively minor portion is October and

November (Table 9). Earth-diggers mainly work in and around the Sthal Noahata under different government and NGO's programmes. Earth-digging is mainly available between the months of October

and May. A major portion of agricultural labourers divert their occupation to earth-digging especially in the months of December and January. The most significant feature is that almost half of the earth-diggers are female.

Figure 9: Seasonal calendar of different occupations



A significant number of *char*-dwellers of Sthal Noahata work as weavers in handlooms in and around the *char*. This occupation is available throughout the year except the months of July to September. Few handloom workers choose to work in agricultural fields as their alternative occupation. Furthermore, a few fishermen live in this *char* catching fish in the open water of Jamuna from November to May. They hardly shift to other occupations as most of them are not familiar with any other occupation. However, some of these (it was not possible to achieve the amount quantitatively) are involved in crop fields as labourers. Moreover, around 50-60% of males migrate to Dhaka, Chittagong and other urban centres for rickshaw-pulling due to the lack of work in the Sthal Noahata between the months of August to January. Most agricultural labourers also migrate for paddy harvesting and a few go to work in brick fields.

Widows and women of the poor and the extreme poor families must work for well-off families as maid-servants to obtain three meals. Besides, they may get 1 or 2 kg of rice to bring home. Only a few get any cash in hand. However, some of these are also involved in earth-digging as a seasonal occupation.

3.5.3 Migration

Migration is an important adaptation strategy of the *char*-dwellers. The men especially migrate to

different places throughout the year to find work. Table 1 shows where and for what they move. Wage labourers migrate outside of the *char* over the year especially from November to April. Karotia, a business centre in Tangail district, is the main destination of migrants for harvesting rice. Manikgonj and Faridpur (two districts in the central part of the country) are common places for harvesting jute. Further, in the months of August–September and March–April they move to Rajshahi and Sylhet respectively to reap rice.

Table 1: Places, causes and duration of migration

Place	For what	Duration
Karotia, Tangail	Harvesting rice	15 – 30 days
Manikgonj	Harvesting jute, maize and chilies	-
Faridpur	Harvesting jute	10 – 15 days
Rajshahi	Harvesting rice	
Sylhet	Harvesting <i>boro</i> rice	Around one month
Tangail	Weaving	One week to one month
	Rickshaw-pulling, work in brick-field and in construction site	One to two months
	Rickshaw-pulling	One to two months

Migration includes to Dhaka and even Chittagong for rickshaw-pulling, working in brick-fields and construction sites. In addition, a few go to Tangail for weaving. But during a normal flood year the overall migration rate is below that of other years. Men, who migrate, especially outside of Sirajgonj district, often get married in another place. In most of these cases, women know nothing about the second (or alternative) marriage of their husbands. Men try to maintain both families. However, as a result, both women and families face stern problems in terms of economic conditions and social acceptance especially the second wife.

The main adaptations of men to flood are prevalent amongst all socio-economic backgrounds except the well-off are loans, selling labour in advance, selling and leasing cattle. Women's adaptations to flood disasters across the different social groups, but especially regards the poor and extreme poor, includes low food intake both in quantity and quality, preserving food and dry fuel wood before flooding, using mobile mud-made stoves for cooking, moving in a group, selling poultry birds and cooking just once a day.

3.6 Development of the char

With some resemblance to the pattern of local people's coping mechanisms there are two trends of external assistance: long term development work and disaster response (i.e. humanitarian assistance). Usually the government and NGOs have been involved in 'relief and response' activities to floods built up over many years. Typically relief work is the sole rapid response during and after floods. The (central) government through its various departments and local governments, and the local and international NGOs are involved in this process. All char-dwellers except well-off families depend on relief during and after a severe flood.

It was observed that there are two types of development activities conducted by the government, NGOs and development partners: community level and household level. Infrastructural development is common in the char. The government departments often maintain and repair embankments and roads after any severe flood under different social safety net projects like 'Food for Work', 'Cash for Work' and '100-day programme'. The local people said that NGOs and development partners have also been

involved in this process for several decades. However, NGO activities mainly concentrate on household level assistance. Raising level of plinths, and giving assets (sanitary latrine, tube well and cow) are the recent intervention by development partners through local NGOs. Both the government and NGOs are involved in different awareness (training, rally, campaigning, drills, etc.) and capacity development programmes (training, asset transfer) in terms of the comprehensive disaster management approach (Mohammad, 2009).

3.7 The impact of development activities

It was found from different FGD with different socio-economic groups of the char that disaster oriented development activities are mainly operated for the poor and the extreme poor. The people of these groups can easily get relief during and after a severe flood and the well-off group can cope with the situation either using their wealth or migrating to a safe place in the mainland. The people of the middle class are often at risk as they cannot go for relief due to their pride of place nor have an option to go to a safe location inside or outside of the char.

The well-off group often controls the infrastructural development activities of the char by maintaining liaison with local political leaders and government officials. The people of other socio-economic groups who have good relation with them get job offers as wage workers under these development activities. As NGOs target the poor and the extreme poor for reducing poverty and disaster risk, and ensuring livelihoods, the middle group is overlooked but practically their financial condition is slightly higher than the poor. It was observed that 95.2% of the poor and the extreme poor families have got a package gift from different projects. Only 5.8% of the middle group classified by the char dwellers got such gift offers from those projects. After the intervention of the projects, socio-economic transformation has been happening in the char. Participants indicated that the middle wealth group is becoming poorer now as they are still living in their poor structured houses on such platforms which are flooded regularly. Only 28.0% of them have a cow compared with 95.2% of the poor and the extreme poor who got cows or goats including monthly

allowances for buying fodder and free treatment from development partners.

It was also found that the poor and the extreme poor are facing problems selling cow and milk due to the lack of a proper marketing system. The outside traders buy milk and cows at a very low price. The respondents confirmed that at least half of the char dwellers have sold their cows as the programmes have been withdrawn from the char and they are now not getting incentives and free treatment for their livestock. However, there is another new initiative taken by the government and DFID that is exploring the marketing system for the char.

Thus, in the context explored above development activities are gradually disrupting aspects of social capital amongst the char dwellers that have been used as a coping strategy especially by the poor and the extreme poor. An aged widow (age 62 years) expressed it as follows:

“Now-a-days if you go to a rich people for assistance even during a flood he asks to go to NGO whereas the rich helped their poor neighbours in past. But I think we, the poor, cannot survive without getting help from our rich neighbours.”

The poor still believe in a healthy neighbourhood. Even though NGOs and development partners are working for them they cannot go to them frequently as they would do in the case of their rich neighbours. Many widows agreed that even a few years ago they worked at their neighbours' houses for three meals. On the other hand, the rich are also reluctant for helping their poor neighbours as they also think NGOs are working for them. Thus, they do not need to help them. However, this misconception is harmful for not only in terms of the social capital of longer term survivability but arguably also in terms of maintaining cultural norms and practices. An aged well-off person (age 58 years) said with angriness:

“My poor neighbours came to me if they faced any problems and I tried my best to help them. But now they and their children do not come to me and even they do not respect me what they did earlier. How can I help a disobeyed neighbour?”

3.8 Coping strategies for development

It is said earlier that as the well-off group tries to maintain the relationship with the government and NGO officials, they can easily influence infrastructural works (such as designing, building and repairing embankments and roads) in such a way that their houses and business areas are protected first. Besides, they can also try to influence the process of selection of the beneficiaries for development programmes/projects even when they are not directly involved in those lists. In this way, they can continue their influence over their poor neighbours. As the middle group is often ignored from development projects, many of them (at least one-third) try to convince power structures to enlist their names. Few of these (18.5%) have already shifted their inherited occupations.

The coping strategy of the poor and the extreme poor of the char in this disaster-development nexus is multifaceted involving environmental cycles, livelihood options, power, control and culture. Many of the poor and extreme poor (68.0%) claimed that they have to struggle to get any job (mainly earth digging) as they have no good relation with local leaders. However, it is easier for them to get relief and assistance from the government and NGOs during and after a severe flood. It was observed that the family sizes of well-off, middle, poor and extreme poor are 8.53, 6.68, 5.58 and 4.48 respectively. The poor and the extreme poor families under normal circumstances are usually formed around a clear traditional nucleus. However, it was found from FGD that most of the poor and the extreme poor families became more segregated in the last decade as most NGO benefits are offered on a family basis rather than individual basis. Being more families rather than a big family seemed to equate to greater overall relief assistance.

4. Conclusion

This paper provides an example of the manner in which community based development activities in contexts of environmental hazards can alter societal processes underpinning both poverty and disaster risk. For the case of these remotely located char dwellers residing amidst frequently flooded areas of Bangladesh this is indicated to be through adaptations local people make in the interest of their sustainable livelihoods and

survivability. Social capital amongst these residents is a core ingredient of both their capacity to regulate environmental and developmental contexts altering dynamic pathways to improved wellbeing. It therefore cannot be possible to significantly reduce poverty and disaster risk in the circumstances of these communities without in depth appreciation of local socio-economically derived practices and culture. It is not possible through this one short paper to arrive at large scale value judgments regards the injustices of uneven local development, abhorrent though this may be in terms of varying exposures to disaster risk. However, a significant comment is provided regards the necessary understanding and opportunities for change that could help make all of the people in at risk char areas part of more equitable disaster resilience. This is that progress requires an astute process of participation that spans all socio-economic groups as they would interrelate one with the other. As such the disaster and development nexus of the area could be turned around to one of getting more even development out of disaster.

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References

- Alam, E. and Collins, A.E. (2010) 'Cyclone disaster vulnerability and response experiences in coastal Bangladesh'. *Disasters*, 34(4), pp. 931-954.
- Baqee, A. (1998) *Peopling in the Land of Allah Jane – Power, Peopling and Environment: The Case of Char-lands of Bangladesh*. Dhaka: The University Press Limited.
- Biswas, G.S. (2005) 'The Effects of Natural Hazards on Poor People's Livelihoods', in Khan, I.A. and Seeley, J. (eds.) *Making a Living: The Livelihoods of the Rural Poor in Bangladesh*. Dhaka: The University Press Limited, pp. 125-139.
- Brammer, H. (2004) *Can Bangladesh be Protected from Floods?* Dhaka: UPL.
- Chars Livelihoods Programme (CLP) (2012) *Home* [online]. Available at: www.clp-bangladesh.org (Accessed: 27 March, 2012).
- Collins, A.E. (2009) *Disaster and Development*. London: Routledge.
- Conway, G.R. (1987) 'The properties of agroecosystems'. *Agricultural Systems*, 24, pp. 95-117.
- Coppola, D.P. (2006) *Introduction to International Disaster Management*. Oxford: Butterworth-Heinemann.
- Elliot, J.A. (2006) *An Introduction to Sustainable Development*. London: Routledge.
- Government of Bangladesh (GOB) (2008) *Official Map of Chauhali* [online]. Available at: <http://www.bangladesh.gov.bd/maps/images/sirajganj/Chauhali.gif> (Accessed: 22 May, 2008).
- Haque, C. E. and Zaman, M. Q. (1993) 'Human Responses to Riverine Hazards in Bangladesh: A Proposal for Sustainable Floodplain Development'. *World Development*, 21, pp. 93-107.
- Haque, C. E. and Zaman, M. Q. (1994) 'Vulnerability and Responses to Riverine Hazards in Bangladesh: A Critique of Flood Control and Mitigation Approaches', in Varley, A. (ed.) *Disasters, Development and Environment*. New York: Wiley, pp. 65-79.
- Mohammad (2009) People's Vulnerability and Adaptations to Floods: A Study on the Char-dwellers of the Jamuna River in Bangladesh. MSc Dissertation, Northumbria University, UK (Unpublished).
- Parkinson, J. (2006) *Chars Livelihoods Programme (CLP) – Infrastructure Component (Output 1): Assessment of Progress and Recommendations for Future Project Activities* (Unpublished).
- Turner, R.K. (ed.) (1988) *Sustainable Environmental Development: Principles and Practice*. London: Belhaven Press.
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- ¹ Well-being analysis, a PRA tool, was used for classifying the socio-economic groups of the study area. The respondents considered several criteria such as amount of land, housing condition, occupation, assets and education.
- ² If landowners pay for agricultural inputs i.e. fertilizer, pesticide, sharecroppers have to give them two-thirds of crops.
- ³ Time line analysis, a PRA tool, was used for identifying the sequences of flood impact for last 30 years. The respondents used jute sticks for preparing the graph. They measured and indicated the highest (1988) and the lowest (2002) flood impact years and then calculated the other years. The graph was figured with the same scale by using computer programme.
- ⁴ Posting in remote areas like Chauhali is often considered as punishment.
- ⁵ Both dowry and domestic violence are considered as severe crimes according Bangladeshi laws.
- ⁶ Manob Mukti Sanstha (MMS), a local NGO, works for the char-dwellers, especially women, to build awareness about women rights and violence against them.
- ⁷ River Basin Project funded by Oxfam, *Souhardo* (harmony) funded by USAID and Chars Livelihoods Programme (CLP) funded by DFID are three significant projects were conducted in the char. Though there are some dissimilarity amongst the projects for selecting beneficiaries and benefits. However, a package of benefits were included raising household plinth, transferring sanitary latrine, tube well and cow/goat/poultry birds, cash and training.

Technical Session III

Spaces of Development : Contestations & Claims

CONTEMPORARY POLITICS OF DEVELOPMENT AND SPATIAL CONFLICT IN NORTHEAST INDIA

By Mr. Leishipem Khamrang

ABSTRACTS :

Discourse on development issues in Northeast India stands out critical concomitant with political instability, insurgency activities, social unrest, uneven development and conflicts. All these problems nested together but generally debate revolves round the issue of underdevelopment and insurgency problems. Conflicts get articulated in ethnic and economic terms sets in complex of integration and violence in Northeast India. The said conflicts in contemporary forms have been wrought by historical construct of colonial regime, inheritance of structural policies and the logic of new economic system in the post reform period. With this backdrop in mind, present paper attempts to highlight politics of development and its associate problems in Northeast India.

Key Words: Northeast India, Development, Conflict, Insurgency, Look East Policy.

1. Introduction

The galloping changes of global economy in the 21st century have sensationalized the whole world to integrate distant areas and people into the process of change in various sectors. But global economy seems to exist beyond the reach of Northeast India (like many peripheral regions) with little or no impact on the regional economy. In an attempt to integrate the region with the mainstream economy, the official development policy meant for regional integration has actually disintegrated the region and widened regional disparity thereby making the region one of the most conflict intensified zones in India. The region has witnessed social and political turmoil at diffident point of time due to ethnic clashes, social unrest, insurgency activities etc. Civil strife and conflicts between and within the states are common in the Northeast; while many of these have sociopolitical roots others have their origins in economic differences (World Bank, 2006). Contesting state power relation and economic differences act as catalysts for social unrest, conflict and insurgency problems in Northeast. It therefore, demands for comprehensive investigation on the claimed consensus development upheld by the state and other agencies. What has been witnessed in the

era of globalization is the heightening contest over the space due to contradiction in state power relation.

2. Contesting Development Discourse in Northeast India – Overview:

The logic of indigenous way of development, embedded within the rigid social and culture practices, in dissonance with statist development policy has intensified socio-political crisis in the Northeast. The statist development policies associated with the new kind of economic system closely knitted in the structural policies of the state appear significantly pro-poor with varied packages for inclusive growth. But this new economic system, exaggeratedly emphasizes on market oriented economy with assurance of creations of new jobs and reduction in poverty, favors free enterprises, private capital investment and the extraction of profit from the poor (Peet, 2005). An inherent question is therefore whether to pursue the path of institutional model of development of this new economic system initiated by the state agencies or to strengthen the community's resources base which is intrinsically fixed on relationship of man-environment.

"We recognize that poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production and protecting and managing the natural resource base of economic and social development are the overarching objectives of and essential requirements for sustainable development - from 'The future we want', common vision statement, Rio+20 UN Conference on Sustainable Development"

Contrasting tenet of development approach between the state and the people often resulted to conflict when the latter attempt to resist the statist version of development. The situation of Northeast India fits well into this critical viewpoint of state power relation. The dominant of primitive modes of production makes the regional economy sluggish and unproductive with limited export base production but the statist agencies delimit the choice of people's development with greater emphasis on promotion of private accumulation. There is no well-defined goals of development since the choice of development is not left with the people themselves but delivered by the state agencies (Ahmed and Biswas, 2004). Besides, development in the region is clearly dysfunctional, formulated narrowly and far removed from addressing the needs of most of the region's people (McDui-Ra, 2008). Even the recent reform (Look East Policy) policy has been outward oriented without giving much consideration to the capability and vulnerability of the people and their culture. Biswas (2007) asserts that the policies for development is backed by the neo-liberals and capitalists to bring forth their agenda of extracting resources of the region in the pretext of providing "fill-ups" for the lacks. It implies the promotion of private accumulation and extractive surplus by the corporate in and out of the region. Such a policy of accumulation is prompted by the statist and corporate policy of 'maximum' utilization of the unutilized resources of the region. This doctrine of development issues of 'gap-filling', 'raising' or 'ameliorating' that create not just another gap/lack for the future, but causes irredeemable gaps within its constitutive elements like resources and benefits.

The resources bases of communities that had long remained object of imagination and material practices of communities are systematically getting exposed to a process of contrasting imagination constructed by the state through projects of neo-liberal capitalist territorialization. Buttressed by the state, the capitalist and the statist logics are, therefore, found overextended themselves to subjugate the organic practices from below (Banerjee-Guha, 2011). Rampant exploitation of resources without generating benefit to the people who have in fact given up their lands to the corporate coupled with minimal amount

of compensation substantiates how the state can oppress the citizens. Simple statement can be that, the region is not neglected but people are neglected and victimized in the pursuit of transforming the region. Negligence by the Centre as many claim has resulted to a growing sense of alienation among the people from the mainstream; manifested in various forms of separatist movements in the region. It is this fact that has given rise to much of the present-day economic woes (Baruah, 2005) in the region.

Economic backwardness of the region has been identified as key issue associated political, social, economic, infrastructure and strategic aspects of Northeast India that needs to be addressed with a thrust on social equity. Development is necessary prerequisite for addressing all these problems but the pursuit of development through resource-intensive also creates losers and thus promotes conflicts. Contemporary development policies are ideologically armed with power to control rather empowering the poor thereby unfolding the process of accumulation by dispossession. This follows drastic redrawing of economic and political boundaries base on newer global political-economic relations (Banerjee-Guha, 2008) in India. The outcome of this new global economic relation is the identification of many areas as special economic zones (SEZs). Banerjee-Guha, (2008) asserts that many of these areas are functionally active places curving out from agricultural areas, forests or coastal fishing zones. Under such capitalist regime, the poor agricultural communities and the tribal population often become the victims of development policies owing to the fact that they are unproductive and insignificant in country's economy. In the process of converting these active economic spaces to newer ones, a large number of farmers, fishermen, agricultural laborers and allied workers are getting displaced that is leading to fierce resistance movements in different parts of the country and resultant state atrocities and violence. In Northeast India, construction of dams has displaced thousand of poor tribal population whose main economy is agriculture. The remedy therefore, lies in policies and institutional reforms that explicitly identify and addresses the negative impacts of development (World Bank, 2006).

Certainly, there is lacuna in the policy framework of balanced development and distribution of social justice. In the words of Banerjee-Guha (2009) “The trajectory of development is replete with instances of uneven development, inequity and failure of social justice. These are deeply embedded in the strategies and functions of global capitalism”. She also asserts that recurrence of social and political movement challenges these forces. According to her many such struggles, questioning the dehumanizing effects of global capitalism characterized by dispossession, dislocation and disenfranchisement, have developed into larger movements impacting lives and aspiration of millions. Planners and policy makers have also failed to implement effective measures for alleviation of the problems. Sachdeva (2005) rightly points out that the development strategy implemented so far in the region, mainly through the Planning Commission and North Eastern Council (NEC), has failed to produce the desired results. The state and sectoral plans of the Planning Commission have not been able to provide enough impetus for local development that would have led to self-sustained growth. Instead of creating an efficiency-oriented economic process, the policy framework has resulted in the creation of a politically led distribution-oriented process. As a result, natural resources, profits, savings and the like are moving away from the region to other regions. The almost total dependence on Central funds has also promoted a trait of passiveness towards development and encouraged patronage and corruption. Besides, it creates a government monopoly in employment, which has destroyed the work ethic necessary to build a modern economy.

3. Historical Aspect of Development Divide and Conflict:

The associate socio-political and economic problems in the Northeast has historical dimension. The advent of British played a defining role in development divides and regional conflict. The entry of British gradually transformed the traditional economic system from subsistence type of economy to market oriented economy. But the motive of market

oriented economy, instead of bringing the region under development framework, rendered greater advantages to the British than the people of the region. Attempts have been made since the days of David Scott, the first Commissioner of Assam, to create a taste among the local people of the area for commodities that are not locally available. As a result, markets sprang up in and around Sadar stations that traded with foreign textiles, food stuff and luxuries. Foreign salt, opium, broad cloth and ironware, woolen goods, sugar, coconut oil and fine rice soon found their way to local market (Baruah & Kalita, 2007). Traditional products also entered into free market however, local products could not compete with the imported goods being inferior in quality and hence got marginalized. Few pockets were developed wherever resources or infrastructure facilities were easily available. Similar patterns of selective development continued during the planning periods after independence, leading to lopsided development with concentration of infrastructure and important facilities in major cities. Today, important cities and towns, particularly the state capitals in the region play monopoly in all aspects of development. Whatever meager development facilities available are concentrated in the capital districts while the peripheral areas remain thoroughly marginalized. The mechanism of development policy itself thus heightened regional crisis.

The sole interest of the British to annex the region was to exploit the rich natural resources of the region. The construction of railways was initiated primarily to link the remote tea gardens to the transit points of the steamer services for which the railways lines passed through thick jungles rather than places of human habitations. The most important change that took place immediately after the British had taken over was the monetization of the economy (Nath, 2005). The subsistence type of economy did not help the colonial government in collecting revenue from the people. For the purpose of profit, enclave type of economy was created that did not generate much benefit and impact to the local economy. A commercial bias was also given to the region. Even the laborers for the tea gardens

"As long as there is no trust and confidence that there will be justice and fairness in resource distribution, political positioning will remain more important than service" - Wangari Maathai

were mostly drawn from outside the region. Development of railways, waterways, and establishment of other enterprises such as, coal, petroleum, tea, wood manufacturing, etc., were all guided by sole objective of maximization of profit and not for the benefit of the locals. Lack of interest of the British is also evidenced from the fact that while large commercial ventures took place in Assam in tea, oil and coal for which they invested heavily on infrastructure, they remained quite indifferent about the development of the tribal areas. The pattern of development continued even after the Independence of India. Conflict of tribal and non-tribal, therefore, has historical dimension inventively constructed by the British

Commercial interest was the prime motive of territorial expansion of the British. This made necessary for opening up of trade routes beyond Bengal and Assam. But the hill tribes, particularly the Nagas and the Lushai (Mizos), mounted several attacks. Some British officials were kidnapped and killed. Therefore, the British followed punitive pattern of expedition against Nagas and Mizos and subsequently brought under the control of colonial regime. The British attempted to integrate the entire region under one administration; from the southern tip of the Lushai Hills to the Balipara Tract on the border with Tibet, encompassing the Chin Hills, the Chittagong Hill Tracts, the Naga Hills and the Shans states of Burma. However, this project was abandoned later in view of the ‘immense difficulties’ involved in the exercise (Bhaumik, 2009). Instead, in 1873, the Inner Line Regulations were promulgated, marking the extent of the revenue administration beyond which the tribal people were left to manage their own affairs subjected to their acceptance of British suzerainty. No British subject or foreigner was permitted to cross the Inner Line without permission and rules were laid down for trade and acquisition of lands. The Inner Line was thus enacted a sharp split between the contending worlds of capital and pre-capital, of the modern and the primitive (Kar, 2009).

After the British left, the Constituent Assembly set up a ‘sub-committee’ with four tribal leaders to make recommendations for the development of the tribal areas. The committee found that assimilation of

Northeastern tribals into the India mainstream was ‘minimal’, and that they were very sensitive to any interference with their lands and forest, their customary laws and way of life. The sub-committee, therefore, recommended formation of autonomous regional and district councils that could provide adequate safeguards to the tribals in preserving their land and customs, languages and cultures. It was the wisdom and persuasion of B.R.Ambedkar that the above proposal and related recommendations were activated. Subsequently, in 1952, it was decided to create Autonomous District Council for Garo Hills, the United Khasi-Jaintia Hills, the Lushai Hills, the United Mikir Hills (Karbi) and the North Cachar Hills. The Naga Hills was not given benefit of autonomy under the Sixth Scheduled for the reason that the Naga National Council (NNC) demanded separation from India. Such divisive policy heighten hills-valleys divide in the region. The issue is not only of geographical entity but also about socio-economic and political entity of the hills and the valleys. The region has dominance of tribal population in the hills and non-tribal population in the valleys with distinct economic system and culture. Divide between hills and valley in economic development has often created political turmoil and social unrest in the region. The minority group particularly the tribal feel that they are not given due share in development package. Far flung tribal villages have no access to electricity, safe drinking water, health, education, transportation and other modern infrastructure. This has eventually catalyzed ethnic conflict in the region. Demand for ‘alternative arrangement’ made by United Naga Council, separate tribal university (which has eventually set up), separate hills areas administration in Manipur, demand for autonomy by Chakmas in Mizoram, Kukis in Manipur, Kacharis and Bodos in Assam etc., has intensified regional crisis in the Northeast.

4. Look East Policy: A Critique.

The region’s trade relation with other Asian countries is not new. Historically, Assam has always been highly exposed to international trade. The extent of internalization of the economy and society of Assam was far advanced than the rest of India. There was direct trade relationship between Northeast India, South and South-west China. Existence of the silk

route proves that Assam had intensive trading relationship with China and the far eastern countries. By AD 700, Assam's silk industry had reached its pinnacle of perfection. Chinese Emperor Wu attempted to open up the trade route from the capital to Northeast India. After Yunnan was annexed by China during the reign of Han Emperor Ming (AD 58 till AD75), many foreigners including Indians and the Garos of Meghalaya were found living in Yunnan (Ray, 2005). Guwahati was also a flourishing river port along with Pandu near Kamakhya in the past. These two river ports attracted a large number of commodities from China in exchange of native products. India's trade relation with Asian countries is therefore not a new concept and practices but revival of historical trading ties with the Asian countries.

Look East Policy (LEP) emerged as a significant outcome of the India's economic reform of the 1990s with an aim to forge closer economic integration with the South East Asian Nations. Northeast India is expected to gain ample benefit from this policy because of its economic viability, potentiality and proximity to South East Asia. However, the discourse cannot be simply rested on this count of benefit and realization of economic viability and potentiality of the Northeast India. On the surface, the package sounds extremely profitable but it is a mere appeasement policy to gain favor of the people in order to quench the interest of big corporations and mainland India. The Central's dubious motive is quite evident where trading commodities along the border are restricted within local products; big corporations are given free hand to extract rich resources of the region. There is administrative restriction served by Reserve Bank of India under Foreign Management Act 1999 which prevents border trade from increasing over time. For one, trade is restricted to the border residents and allowed only in non-motorized vehicles. Further, trade is restricted to barter trade under the Reserve Bank of India barter mechanism. Third, even this barter trade imports from Myanmar must precede exports from

NER. Fourth, no monetary trade transactions are allowed and normal trade is only permissible in items other than the specified 22 agricultural items. Finally, even this barter trade (for value less than \$20222) is subject to usual customs documentation which is far too complicated even for the few who engage in such trade (NEC, Vision 2020).

As per the order issued by Director General of Foreign Trade in November, 2012, trade items have been increased from 40 to 62 (by adding 22 new commodities in November 2012). But the question is how trade will carry on under such restrictive policy? On the contrary, big corporations from mainland India and foreign countries are given free hand to exploit rich resources of the region. The state agencies regulate policies at the behest of these corporations. The chief moving forces behind new economic initiative are various private sector corporations and business firms of metropolitan India (Kangujam, 2009). McDui-Ra (2009) asserts that the measure designed to break region's isolation by connecting it with neighboring countries is countered by measures to restrict connectivity; each new set of policies designed to boost the region's economies is implemented by maintaining the patronage of loyal elites in the region; and each new initiative to engender participation from civil societies is carefully controlled. The policies are implemented without taking consultation with the people and civil societies.

There is also a need for improvement of local products in terms of quality and quantity in order to sustain trade relation with the neighboring countries. Given the quality and nature of the commodities, one wonders how locally produced, low quality commodities will generate benefit for the entire Northeast from the international market. The absence of industrial products on the one hand and incapability in handling manufacturing products on the other also remain important factors. The region should be able to produce products of international quality at competitive prices including industrial products. It also

"Fundamentally transforming the foundations of the economy is the biggest contribution we can make towards building a sustainable future. The current economic crisis may be painful, but it will be nothing compared with the crises we will face if we continue to grow in a way that threatens the life-support systems on which we rely" - Jonathon Porritt

requires a high degree of professional and managerial competence. This may not be possible unless there is a strong industrial export base. Northeast India, known for its backwardness and absence of industrial development may remain as a mere import base centers or mere transit route.

Another contradictory notion is viewing development of the region from security paradigm. Insurgency is often considered as a product of economic backwardness and poverty. The *North Eastern Region Vision 2020*, released in July 2008 made significant emphasis on the theme “peace and prosperity”. Planner and policy makers assume ‘peace’ as pre-requisite condition for regional transformation as far as Northeast India is concerned. Surprisingly, state agencies cannot think of alternative measures other than ‘imposition of military rule’ to contain the situation. In the name of peace and prosperity ‘military deployment’ is justified; atrocity committed by the military personnel is justified where violation of human right by the military personnel is seldom brought into justice. Kangujam (2009) asserts that the notion of development is used as a pretext of deployment of more military and structure. Legitimacy to conduct military operations is also derived from the concept of development that asserts peace as a necessary precondition for development.

Researchers argue that Preferential Trade Agreement (PTA) has failed to foster trade relationship between India and other countries in true sense. Khanna (2005) opines that trade with Bangladesh has been stagnant and there seems to be differences with Bangladesh over transit arrangements that India seeks for its links to the Northeast, also over the existence of training camps for insurgents in their territory. Though India and China have agreed to initiate border trade through the Himalayan pass between Tibet and Sikkim, trade routes between Arunachal Pradesh and Tibet are still closed in the absence of a border agreement. Links to Yunnan through Manipur, Mizoram or via Myanmar are not yet materialized. It is really surprising that with close borders and open ports, the Northeast is not still an active part of India’s trade expansion strategy with eastern neighbors. One of the important developments of India’s Look East Policy, i.e., the expansion of trade with its South East Asian

Neighbors also has benefited the Northeastern states very little (NEC, Vision 2020).

The Indian heartland ties with Southeast Asia have historically been maritime oriented and not continental. Even today it is cheaper and easier for India to trade with Southeast Asia by sea rather than by land. Owing to this fact that the opening of border trade between Myanmar, through the provision of the Indo-Myanmar Border Trade Agreement (1994), has not had any major impact yet on the regional economy of Northeast as India’s ASEAN trade continues to be conducted mainly through the sea route (NEC, Vision 2020). The land passes through a difficult physical terrain and the political uncertainties also pose significant risks. There is also a danger that improved roads through Myanmar might bring in drugs, illegal migrants, infectious disease and small arms into Northeast India more easily than before (Baruah, 2004). All these negative impacts need to be considered and tackled carefully. Levesque and Rahman (2008) have identified the related challenges in the form of non-traditional security concerns, namely, inflow of people and narcotics on the one hand and the spread of HIV/AIDS on the other. Trade centers have been established along the border areas such as Moreh between Manipur and Myanmar, Zokhawthar in Champhai district of Mizoram, but all these are becoming famous narcotics and drugs centers. High rate of spread of HIV/AIDS and drug users in Manipur and Mizoram is attributed to lack of maintenance of international borders. The spread of HIV/AID in the Northeast has become a great concern seeking intervention from national and international agencies.

5. Entry of Capitalist Economy and Conflict:

Of late the impact of globalization has been felt in the Northeast. Reality suggests that economic liberalization expresses a process of capital accumulation by the rich and marginalization of the society. Triggered by this trend of globalization, economic policy is made in the interest of dominant economic power. Economic reforms of the 1990s and subsequent formation of Look East Policy (LEP) are the direct outcome of economic liberalization where new economic initiative are carried out in the interest of big corporations and private firms based in

metropolitan India and other countries. Keeping the fact that even after two decades since LEP was envisioned, there is nothing concrete steps taken with the consultation of the people. Every policy adopted or proposed is dictated from New Delhi without taking the views of the people. The statist version of LEP designed for development of the region is therefore often questioned and challenged by several civil resistance movements in the region.

Sensing the fear of losing indigenous entrepreneurship, protectionists have emerged among the indigenous tribal communities. The Tangkhul Trade and Commerce Body (in Manipur) decided to ban non Tangkhuls (non tribal) from holding trading activities in Ukhrul town with a motive to promote local entrepreneurship. Such move had been initiated earlier by the Mizos, Khasis, Nagas, Assamese and other communities in Northeast in the form of movement against outsiders. Indigenous populations have gradually gained consciousness over political, social and economic insecurity under current economic system. In several occasions, non-locals in Manipur were served 'quit notice' to leave Manipur by Meitei militants. The issue of infiltration of illegal Bangladeshi into India's soil has also been important agenda for many civil and political organizations in the Northeast. This has been voiced by different civil organizations including student's organizations. The point here is not just a mere issue of illegal migrants but a question of socio-political identity and consciousness of socio-economic insecurity. Initiative of movement against infiltrators or outsiders is often backed by insurgents, making the situation tenser.

The advent of colonial regime represents initial appearance of capitalist economy in the Northeast, particularly after the formation of Assam Tea Company in 1839 in England. Tea gardens were increased in size through reclamation and consolidation of smaller gardens into large scale enterprises. The financial stresses of the 1860s forced individual planters to hand over the gardens to the managing agencies that operated in the form of companies. These companies were mostly British, and were registered in England.

The growth of other sectors was triggered by immediate mercantile interest of the East India Company. Gradually, the profit motives of private entrepreneurs ensured its expansion under the liberal patronage of the government (Nath, 2005). This was followed by the birth of several other companies of Oil, Coal, and trading companies. Huge investment was made in different sectors for greater return yet all these were made for satisfaction of their hunger for accumulation of large wealth. Even today, most of the major industries or corporations (Oil, Tea, Timber etc.,) in the region bear the legacy of colonial regime. All these were developed at selected places to served colonial interest and local people were highly deprived. The Northeast India (particularly Assam) thus experienced systematic exploitation of resources by the colonial rulers during the colonial regime.

The post independent India inherited similar pattern of exploitation where most of the raw materials for industries are extracted from Assam but have marketing units and company headquarter located outside the state. People of the state are thus highly deprived of its revenue earning (Mishra, 1980). The entry of capitalist economy also destroys traditional economic bases. Market relation introduced by the colonial state has replaced the long lasting relation between tribal and the plain people. Mishra (1983) asserts that the tribals living in the mountain tracks of Arunachal Pradesh not only levied tax from the plain people but also had access to commodities and service of slaves. This traditional practice of economic base was gradually subdued after the annexation of Assam by the British.

The reform period of the 1990s brings in new economic system that comes in the form of market oriented economy. This reform package inventively assures transformation of the traditional economy but wider opportunity opens up for multi national corporations. Many civil societies question the dehumanising effects of global capitalism characterized by dispossession, dislocation and disenfranchisement (Banerjee-Guha, 2009). McDuiie-Ra (2007) has succinctly presented the fear of the ethnic minorities

"It would be disastrous if bad planning policy meant that today's new developments become tomorrow's climate slums" - Tim Yeo MP

against development of mining industries in Meghalaya. Besides, their concerns on health and environmental issues, development of such industries is an invitation to large migrants from outside the state which has already boiled down the ethnic environment of the state. The Meghalaya Government has countered this by promising that jobs would be reserved for locals and that development would be brought to the area. However, larger issue is debate on the generation of benefit to the locals where development of mining industries is contested because majority of the profit will go to the India Government and not to the local population.

The Union Ministry of Petroleum and Natural Gas granted license to Jubilant Oil and Gas Private Limited, a Netherlands-based company, in 2009 for oil exploration and drilling works in Manipur. In the midst 2012 there was public outcry over the oil exploration and drilling work in the state. About 30 oil fields have been identified in the state within 3957 sq. km. that constitute one-sixth of the total geographical area of the state. These are the areas inhabited by poor tribal community. When several civil organizations raise objection against this project, they are labeled as anti-development, anti-government and so on. The deficits of democracy, development, and peace are thus best explained by the lack of attention by the policy makers (Baruah, 2007).

The Ministry of Department of North Eastern Region (DoNER) along with Indian Chamber of Commerce (ICC) organized Northeast business summit for the sixth time in January 2011, in Mumbai with a theme “The Northeast – Opportunities unlimited”. The aim of the summit was to attract private sector investment in the Northeast. Many MNCs are now eyeing for ideal location in Northeast. The entry of global capital particularly in the tribal areas is bound to heighten regional crisis. The economic reforms policies of India need not necessarily emphasize on justification of global capitalism rather it may focus on desire and power of the people. In the words of Hussain (2008), the Indian state has gradually retreated from its democratic commitment to the people in providing basic services like education, health, shelter, safe drinking water, electricity and sanitation, etc. in the wake of market-driven

globalization of its economy under the neo-liberal economic discourse.

The most controversial initiative taken by the central government is to turn Northeast India into powerhouse for India. To mention few, the Upper Siang Project, which is to be the largest hydroelectric project in India with a capacity of generating 11000 megawatts of electricity will submerge about 200 villages inhabited by the indigenous tribal population in the district. Besides adversely affecting the fragile natural environment and rich biodiversity, these series of mega projects will displace an estimated 200000 tribal population. It has been estimated that if all the projects are implemented, 20 percent of the total population of Arunachal Pradesh will be displaced (Hussain, 2008). The proposed Pagladiya Dam Project (PDP) on the river Pagladiya, an important tributary of Brahmaputra with its source from Bhutan will submerge 38 villages affecting 12000 families. The people of Siang district have formed an organization named Siang Valley Bachao Committee (SVBC) against commissioning the mega hydroelectric projects in Siang districts. Many organizations in Manipur have also started resistance against Tipaimuk Multi-Purpose project in Manipur. Such as Hmar Students’ Association (HAS), Zelianglong Union (ZU) United Naga Council (UNC), All Manipur United Club Organisation (AMUCO), etc. The initiatives of the Central Government and other agencies to stabilize the regional economy have been not suitable to the culture and practices of indigenous population. It is also felt that planners and policy makers have failed to take the voice of the people.

6. Uneven Development and Social Conflict:

Northeast India is inhabited by highly ethnic conscious communities and this strong sense of ethnic consciousness often triggered ethnic conflict. There have been several incidents of ethnic conflict in the region since the 70s. Popular Assam violence (due to clash between Assamese/Bodo and illegal Bangladeshi migrants) since the 70s has taken toll of several lives. Conflict between Naga and Kuki in the 1990s, Karbis and Kacharis in Karbi-Anglong districts, Kachari and Hmars in North Cachar Hill districts of Assam, Mizos and Brus (Reangs) in Mizoram, Garos and Rabhai in

Meghalaya and Assam border etc., have sent shock wave across the country (Khamrang, 2012). All these conflicts are attributed to unequal pattern of development in the region.

Northeast has remained in the periphery of the country's as well as of the world's economy simultaneously. Within the region (Northeast) accumulation of capital yielded by the British and subsequent emerging pattern of the colonial economy in the post independence period constrain the diffusion process, resulting in a core-periphery hiatus. The valleys, particularly, the Brahmaputra and the Barak valley were important bases for profit generation through establishment of industries while in the hill states such as Nagaland, Meghalaya and Mizoram, Christian missionaries were more active in spreading education and proselytizing the tribals. All these served to connect the Northeast to the expanding world economic system in a distorted manner giving rise to an unequal pattern of development that perpetuated even after independence.

Concentration of development activities around the state capitals substantiates continuity of colonial mode of development. Most of these urban centers were colonial towns acting as important administrative centers, cantonments, outposts and most importantly tea and oil centers. Even today, maximum development activities are taking place around these cities and towns, such as, Guwahati, Dibrugarh, Jorhat, Sibsagar, Silchar, Shillong, Imphal, Aizawl, Agartala etc., while the surrounding areas remain highly deprived. These cities act as the core centers of the region, perpetuating a process of cumulative causation. There is no linkage between cores and peripheries that has led to a pattern of increased disparity. Initially, disparity in Northeast was thought to be the result of differential locational attributes and uneven distribution of resources; later it was realized that human factors such as planning, growth of skill and economic ability and last but not the least, the equation between the state and the people have played more important roles (Sekhar, 2004).

The outcome of uneven development and economic disparity among social group is the rise of sub-nationalist where each ethnic group attempts articulate economic grievances in ethnic terms. The existence of disparity increases the gap between the privileged and underprivileged that in turn led to grudges among one community against other which result in communal violence (Neogi, 2010). It has been observed that ethnic minorities around the world have recently increased political self-assertion, thereby generating a wave of research into the causes and consequences of ethnic protest and conflict (Oren, 1996). Conflict and violence in Northeast India cannot be isolated from this view where discontented minority groups consolidate their stance on slogan 'distributive justice' against the dictates of the dominant group. Meitei-tribals relation in Manipur provides an appropriate example of discontented minority (tribal) and dominant group (Meitei) where Meitei hegemony is countered by the tribals resulting to demand for separate administration for the tribal in the state. United Naga Council (UNC) has also severed all ties with the Government of Manipur but greater threat to the state's integrity is the demand for 'alternative arrangement' by the Nagas. In general, history of peaceful coexistence of the region is gradually fading away with every community/individual attempts to articulate ethno-political and socio-economic issues on ethnic line. Even the intellectuals are divided on ethnic line; each tries to justify the historical construct of the nation (community).

Uneven economic development has induced construction of social identity. Identity in Northeast India has vast connotation stemming out of political consciousness, economic and social stress. This consciousness is created and recreated over a period of time depending on the changing political and economical situations. The culminations are violence and social/ethnic conflicts. Ethnic related movements have occurred time and again in many parts of the region arising out of the unequal pattern of

"Sustainable development will not be brought about by policies only: it must be taken up by society at large as a principle guiding the many choices each citizen makes every day, as well as the big political and economic decisions that have. This requires profound changes in thinking, in economic and social structures and in consumption and production patterns."

development. Mizoram, Assam and Tripura also illustrate similar attempts of identity assertion due to unequal development. The Bodos, Karbis, Dimasa, etc in Assam; the Chakmas, Brus, Reangs, Hmars in Mizoram and the tribal groups in Tripura and Manipur have strongly advocated for equal and just distribution of development facilities. In Mizoram, Reang, Lais, Maras and Chakma have all attempted to assert their identity demanding a separate Union Territory in Southern Mizoram (Bhowmik, 2009). While assertions made through democratic means are rejected or unheard by the state, many of them embrace arms. In order to counter the armed resistance, the Government of India has opted for repressive measures by bringing in the military there. Despite, the problem could not be tackled. In fact the situation has worsened. Much of the human tragedy that has occurred in the Northeastern region may be said to have stemmed from the Central government's inability to comprehend the complex relationships and equations between the communities that happens to be a structural components of the region (Mishra, 2005).

7. Conclusion:

The nature of socio-economic development and spatial conflict in Northeast India exhibits inherent contest of state power relation. One associate problem is that competition on space is often politicized and the planning policy continues to favor state capitals or the already developed centers. As a result marginalized peripheral areas remain in perpetually distressed condition. The region suffers not only from failed economic integration policy of the Central government but also from failed policy of states in the Northeast that have neglected their own peripheral areas. Space-sector harmony as well as people-place perspective, therefore, calls for serious attention from planners and policy makers. Development should reflect the image and opinion of the people and not the power of the state. In the words of Banerjee-Guha (1997) development is essentially a process, a state of being that encompasses the entire spatial and social mass by bringing about a transformation at all the three levels: economic, social and cultural. To be all-embracing, the process has to be also vertically and horizontally expansive.

The most important challenge that lies ahead for both the civil society and the Government is to comprehend the complexity of the ethnic identities and plan for an all-round development accordingly. It is pertinent to recall Harvey (1989) at this points as he states that tension and conflict arise within a society over the use of space and economy for individual and social benefits as well as for domination exercised by the state or other forms of class and power. The contiguous space of the Northeast reflects a broken surface, impacted by economic, social and ethnic tensions interrelated with each other. The problems of the region are therefore multifaceted and of complex nature. An important aspect that is specific to the Northeast is the sense of belongingness of the people. This needs to be restored through political, social and economic integration. Every document that deals with the issues of development of the region talks about the indifference of the mainstream population towards the region. Government apathy to deal with the complexity of the region in a humanistic manner is also a major issue that has been raised by the local people. The regional development issue of the Northeast is extremely complex one therefore related problems cannot simply be approached on the basis of geographical location and availability of resources. A socio-cultural approach can play a significant role in this matter. In other words, to bring in peace and prosperity to the region, it is necessary to understand its people and their culture, their capacity, strength and vulnerability. Such a perspective based on an integrated knowledge of the economy, society and cultural aspects can effectively usher in a process of economic regeneration for the Northeastern region of India.

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References:

1. Ahmed, R. and Biswas, P. (2004): *Political Economy of Underdevelopment of Northeast India*. Akansha Publishing House, New Delhi.
2. Banerjee-Guha, S. (1997): Population and Development: 'Who' gets 'What' 'Where' and 'How' in India. *MAEER'S MIT Pune Journal*, Vol.17&18.pp.196 -198
3. --- (2008): Space Relations of Capital and Significance

- of New Economic Enclaves: SEZs in India, *Economic and Political Weekly*, November, 22. Pp.51-59
4. --- (2009): What is Radical Politics in India Today. *Radical Politics Today*, (<http://www.spaceofdemocracy.org>)
 5. --- (2011): Contemporary Globalization and the Politics of Space. *Economic and Political Weekly*, 2011. Vol.XLVI(52). pp.41-44
 6. Baruah, S. (2004): Between South and Southeast Asia; Northeast India and the Look East Policy. *Center for Northeast India, South and Southeast Asia (CENISEAS)*, Paper Series.4.
 7. Baruah, A. (2005): *India's North-East: Developmental Issues in a Historical Perspective*. Manohar Publication. New Delhi.
 8. Baruah, A.J. & Kalita, P. (2007): "North-East Economy – It's Changes, Challenges and Remedies" in Kangki Megu (ed.), *Development Issues in North-east Region*. Mittal publication, pp.111-117
 9. Baruah, S. (2007): *Post Frontier Blues: Toward a New Policy Framework for Northeast India*. Policy Studies -33. East West Center, Washington.
 10. Bhaumik, S. (2009): *Troubled Periphery. Crisis of India's North East*. Sage publications
 11. Biswas, P. (2007): Post-Development, Democratic Discourse and Dissensus: A Critique of Vision 2020. *Easterly Quarterly*, Vol. (III&IV), October 2007-March 2008. ([Manipurresearchforum.org](http://manipurresearchforum.org))
 12. DoNER and NEC. (2009): *North Eastern Region Vision 2020*.
 13. Harvey, D. (1989): *The Condition of Post Modernity*. Blackwell Publication, Oxford.
 14. Hussain, M. (2008): *Interrogating Development: State, Displacement and Popular Resistance in North East India*. Sage Publications, New Delhi.
 15. Kangujam, S. (2009): "Trade, Security and Strategic Concerns: The Politics of India's Look East Policy" in Thingnam Kishan Singh (ed.), *Look East Policy and India's North East. Polemics and Perspective*, Concept Publishing House, New Delhi. pp174 – 199.
 16. Kar, B. (2009): "When as the Postcolonial? A History of Policing Impossible Lines" in Sanjib Baruah (ed.), *Beyond Counter-insurgency: Breaking the Impasse in Northeast India*. Oxford University press, Delhi. pp.35-45
 17. Khamrang, L. (2012): Perceived Quality Life in the Cities of Northeast India: A Geographical Perspective. *International Journal of Social Sciences Tomorrow*, Vol.1(3)
 18. Khana, S. (2005): *Economic Opportunities and Continuing Stagnation*. <http://www/india-seminar.com>
 19. Levesque, J. and Rahman, M.Z.(2008): India's Look East Policy in Mizoram: Opportunities, Shortcomings and Challenges. *IPCS, Article*. No.2558, March
 20. McDui-Ra, D. (2007): Anti-Development or Identity Crisis? Misreading Civil Society in Meghalaya India. *Asian Ethnicity*, Vol.8(1), February. pp.43-59.
 21. McDui-Ra, D. (2008): Between National Security and Ethno-nationalism: The Regional Politics of development in Northeast India. *Journal of South Asian Development*, Vol.3(2).pp.185-210.
 22. McDui-Ra, D. (2009): Vision 2020 or Re-vision 1958: The Contradictory Politics of Counter Insurgency in India's Regional Enjoyment, *Contemporary South Asia*, Vol.17(3), pp.313-330.
 23. Mishra, T. (1980): Assam: The Colonial Hinterland" *Economic and Political Weekly*, 9th August, pp.1357-1364.
 24. Mishra, S.N. (1983): Arunachal's Economic Formation and their Dissolution. *Economic and Political Weekly*, 22 October, pp.1837-1845.
 25. Misra, U. (2005): "Towards A Resolution of the Naga Issue" in Monirul Hussain (ed.), *Coming Out of Violence. Essay on Ethnicity, Conflict Resolution and Peace process in North-East India*. Regency publication, New Delhi. pp.160-169
 26. Nath, H. K.(2005). "The Rise of an Enclave Economy" in Alokesh Baruah (ed.): *India's North-East: Developmental Issues in a historical Perspective*. Manohar Publication. New Delhi. pp. 121-140.
 27. Neogi, D. (2010): Disparity in Socio-Economic Development and Its Implication on Communal Conflicts: A Study on India's North-Eastern Region. *International Journal of Human and Social Sciences*, Vol.5(5).pp.303-310
 28. Oren, Y. (1996): The Political Geography of Ethnic Protest: Nationalism, Deprivation and Regionalism Amongst Arabs in Israel. *Transaction of British Geographers*, Vol.22. pp.91-110
 29. Peet, R. (2005). *Geography of Power, The Making of Global Economic Policy*. Zed Book, London.
 30. Ray, H. (2005): "The Silk Route from North-East India to China and the Bay of Bengal: Some New Lights" in Alokesh Barua (ed.), *India's North-East: Developmental Issues in a historical Perspective*. Manohar Publication. New Delhi pp.44-70
 31. Sachdeva, G. (2005): "North-Eastern Economy: New Policy Options" in Alokesh Barua (ed.), *India's North-East: Developmental Issues in a historical Perspective*. Manohar Publication. New Delhi pp.307-330
 32. Sekhar, S. (2004): *Regional Planning in India*, Aimol Publications, New Delhi.
 33. World Bank, 2006. *Natural Resource, Water and the Environmental Nexus for Development and Growth in Northeast India*. Strategy Report, Washington.

QUALITY OF LIFE OF THE MIGRATED CONSTRUCTION WORKERS IN MUMBAI

Amrita Anilkumar Agrawal

ABSTRACT:

The term “quality of life” refers to the general well-being of individuals and societies. The term is used in a wide range of contexts, including the fields of international development, healthcare and politics. Quality of life should not be confused with the concept of standard of living, which is based primarily on income. Instead, standard indicators of the quality of life include not only wealth and employment, but also the built environment, physical and mental health, education, recreation and leisure time, and social belonging. Migration to Mumbai has always remained a matter of serious concern to researchers, planners and policy makers. Mumbai has a long history of migration and migration has remained the major force behind the city's very rapid population growth since its inception. It was the first Indian city to experience the economical, technological, and social changes associated with the growth of capitalism in India. The 2001 census showed an upward trend in the migration to the city. The objective of the study is to critically analyze the quality of life of the migrated construction workers to Mumbai, to find out whether the workers are satisfied with the quality of their life or not and to study their problems and give some solutions for the same. The main methodology used is primary survey of sample size 30 at two sites- Redevelopment of Gopal Co-operative Housing Society Limited at Liberty Garden and MHADA project of B.G. Shirke at Charkop-Marve Link Road, both, in Malad (West) area.

1. Introduction

World Health Organization (WHO, 1997) has stated that, “Happiness; life satisfaction; well-being; self-actualization; freedom from want; objective functioning; ‘a state of complete physical, mental and social well-being not merely the absence of disease’ are the components of measuring the quality of a person’s life”.

A Report by Indian National Commission for Enterprises in the Unorganized Sector (INCEUS, N.A.), states that the construction industry involves a large number of women workers, a number of them young mothers with infant children. Surveys in the construction industry have found that crèche facilities are not available on worksites. An all India study and many state level studies have noted the lack of welfare measures such as crèches for children, rest –rooms for workers, separate toilets for women and potable drinking water. If housing was provided it was generally unfit for human living. Further it was found that there were no complaints from the workers or the labor administrators. One of the consequences of not having adequate crèche facility was that children were often exposed to the unhygienic environment which primarily affected their health and caused several skin disorders, due to their sensitive skin which, is always covered

with the cement or the pebbles containing limestone. The children who were able to walk and run (4 to 6 years of age) were engaged in helping the workers and over time were inducted into the workforce. In fact the workers begin their working life very young and continue till old age without any provision for old age benefits.

Herrle and Schmitz, (2009) have talked about the ugly face of large cities especially in India. According to them, the workers who give the city a face it has today are completely neglected. They do not have proper access even to the basic facilities of life.

2. Data Sources and Research Methodology

This paper is mainly based on Primary Data collection. A survey was conducted for 30 samples taking into consideration specific socio-economic indicators relevant to the research theme. The questionnaire survey was conducted covering various aspects like age, education, and native place, nature of meal, health, income and overall happiness. The survey was mainly conducted at two sites in Malad (w), Mumbai. The first site selected was Gopal Co-operative Housing Society Limited and second MHADA project undertaken by B.G. Shirke. These were one of the few important construction sites observed in Malad area. Apart from primary data

collection, relevant information is also extracted from books. Some of the reports are also referred on line.

3. Location of Study Areas

Malad (West) is one of the residential suburbs of Mumbai city located on the Western suburban railway. This area is observing massive constructions either in the form of redevelopment or new constructions. 1) The Gopal Co-operative Housing Society is observing redevelopment which is located near Liberty Garden. 2) B. G. Shirke group has undertaken construction of new building in association with MHADA. Both the constructions are meant for residential purpose.

Figure 1 : Location of Malad in MMR



Figure 2 : Location Of Both The Construction Sites : Mhada Project and Gopal Co-Operative Housing Society



4. Discussion

According to the Census of India, (1991), work is defined as participation in any economically productive activity with or without compensation, wages or profit. Such participation may be physical and/or mental in nature. Work involves not only actual work but also includes effective supervision and direction of work. It even includes part time help or unpaid work on farm, family enterprise or in any other economic activity. As per International Labour Organisation, worker is defined as a person who is engaged in decent work. Thus a construction worker is every person who works on the construction site, helps in the construction of structures and does take in laborious as well supervision tasks and is paid for the same.

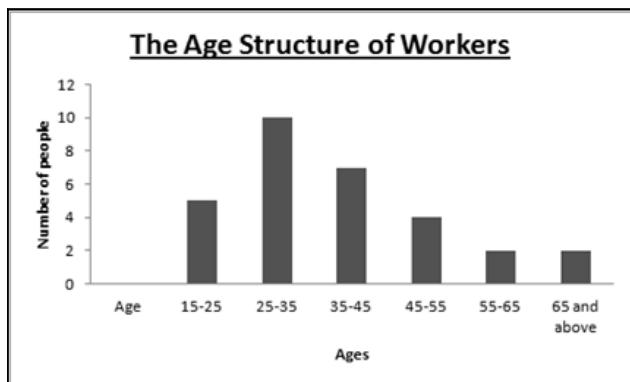
When the term ‘quality of life’ is considered, for a layman it takes into account the nature of housing, the quality of food, clothing as well as health. Thus, the quality of life is obviously governed by the mode of income and payments made for ‘work’. The association of work, income and quality of life needs to be explored.

The main objective of this research has been necessarily revolving around examining the quality of life of construction workers. It tries to examine whether their participation in the range of activities related to construction work has really reflected upon their quality of life (Herrle and Schmitz,2009). Interestingly, in the context of globalization where real estate business has gained immense importance, it is crucial to understand the status of those people who are fundamental in beautifying the city and upgrade it to ‘global’ looks.

5. Observations and findings

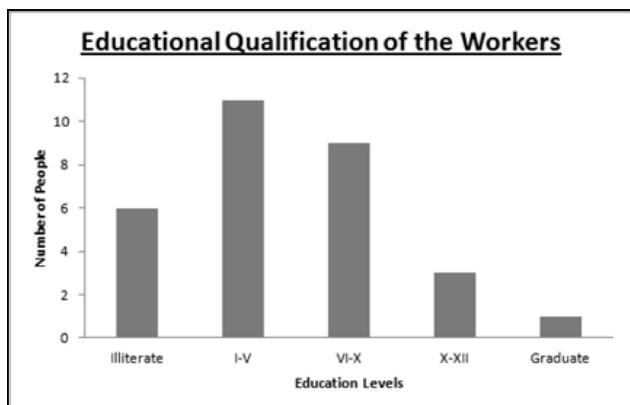
1. The age structure of the workers was taken into account. It was found that maximum number i.e. 10 fell in the age group of 25-35 years and the minimum number i.e.; 2 fell in both 55-65 years and above 60 years age groups. This implies that the workforce engaged in construction is of the most productive age. This implies that the areas from where these workers have migrated suffer a loss of productive age group.

Figure 3 The Age Structure of Workers



2. The educational qualifications were also considered. It was found that most of the workers(11) had taken primary education whereas only 3 of them had taken higher secondary education. This implies that the level of education of the construction workers is very low. This further implies that since the educational level of the workers is low, they are forced to do such type of unskilled jobs.

Figure 4 : Status of Education

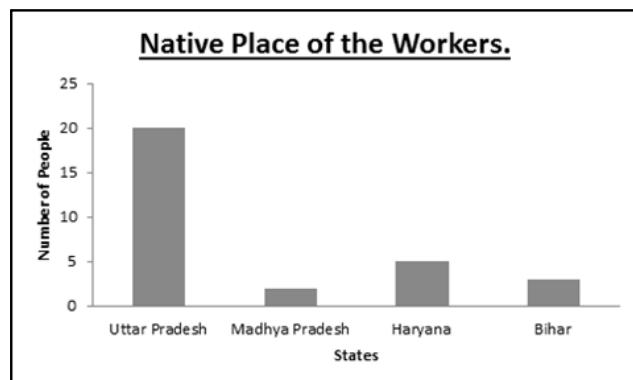


It has been observed and proved by several studies that there is increasing deficiencies in the job market of Mumbai resulting in the scarcity of jobs of both types- skilled as well as unskilled. Construction industry is the only industry where the migrated workers can engage themselves. This is because this sector is developing at a very fast pace with the current redevelopment and rejuvenations programmes run by the city government through public-private partnership.

3. The native places of the workers were also considered to know the region from where they usually migrate. It was found that most of them i.e. 20 workers came from Uttar Pradesh from places like Jaunpur,

Kanpur and other villages. It implies that most of the migrated construction workers are from North India.

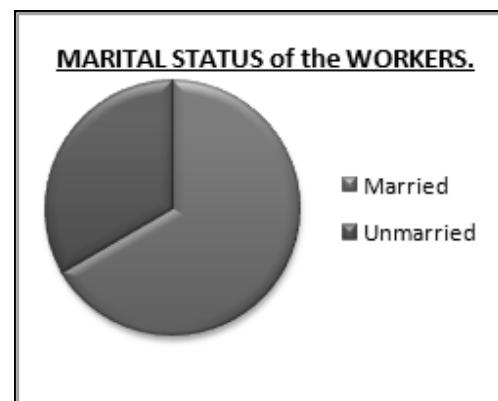
Figure 5 : Source Areas of Migrants



This may also imply that North India lacks sufficient employment for the unskilled workers and thus such people are forced to move out to other areas to earn their livelihood. This also gives us an idea about the direction of the flow of remittances within India.

4. The marital status of the construction workers were considered to know the condition of their social life. It was found that maximum number of workers i.e. 20, were married and 10 workers were unmarried. The early marriages are part and parcel of their socio-cultural background. The workers could have a well settled life only if they were employed somewhere in and around their area. When they are working as construction workers in cities like Mumbai, not only they become vulnerable but also their families also face such situations.

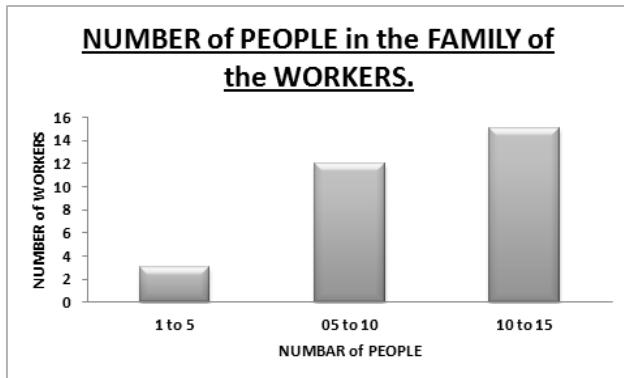
Figure 6 : Marital Status



5. The number of family members was also taken into account. It was found that most of the workers (15) had 10 to 15 members in their family whereas

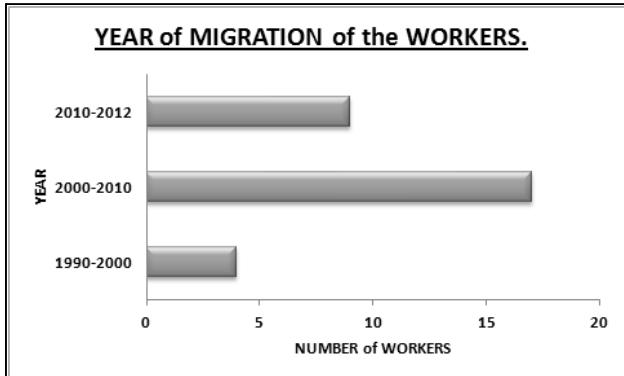
only 3 workers had 1 to 5 members in their family. This was accounted to know the number of people who are dependent on the part of the salary that these workers send to their family.

Figure 7 : Family Size



6. Mostly, 17 workers out of 30 were found to have migrated between 2000 and 2010 and the only 4 of them migrated between 1990 and 2000. This implies that the employment conditions in the northern parts of India were not as bad as in the 2000s, but 9 workers have migrated since 2010 to the present year. This implies that if, within 2 years 9 workers have already migrated, the rate of migration has increased in the present decade. This may be due to the rapid industrialization and urbanization that is taking place in north India. In this scenario, the unskilled labourers do not find jobs and are thus forced to migrate to other parts of the country.

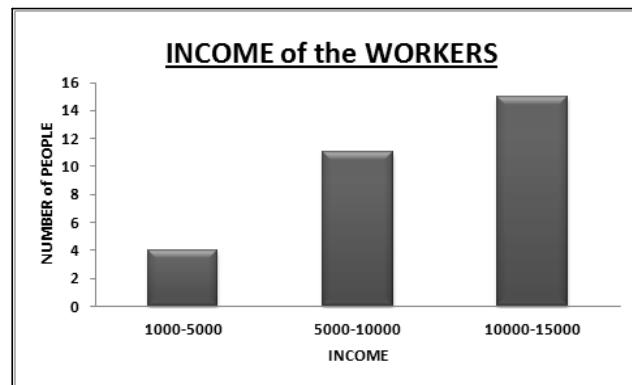
Figure 8 : Period of Migration



7. The income of the workers is a very important factor that decides their quality of life. It was found that the highest income was Rs. 15,000 and the lowest was Rs. 3,000. The income of these workers is not fixed for a month. It depends upon the number of hours

for which they work and are paid at the end of each day. The construction workers belong to informal/unorganized labour force. This leads to totally insecure job conditions as they work either on daily wages, contract or seasonal basis. Hence, if a worker is unable to do a particular task allotted to him, he will either be not receiving his daily wages or receives it partly. Hence, in literal terms, they cannot even afford to fall sick. The supervisor of the workers enjoys just one added advantage of having a fixed income and he gets it on monthly basis.

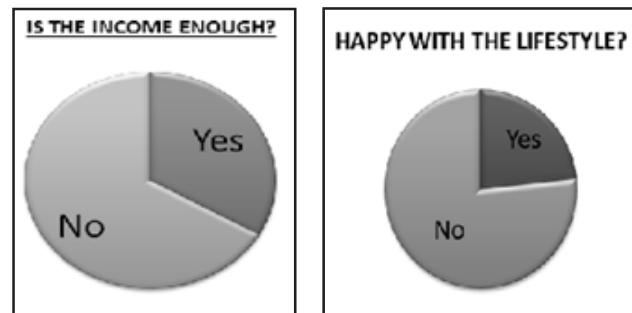
Figure 9 : Status of Income



So the maximum payment received in construction work is Rs. 15,000 which is normally earned by supervisors. Rest of the workers earn much lesser. This needs to be seen at the backdrop ever escalating cost of everyday living in cities like Mumbai.

8. The above two questions are very much inter related to each other. Most of the workers were not happy with their income and their lifestyle. This implies that even though the workers are earning by putting in lot of physical labour and hard work, the money that they earn are not enough to provide better living to their families.

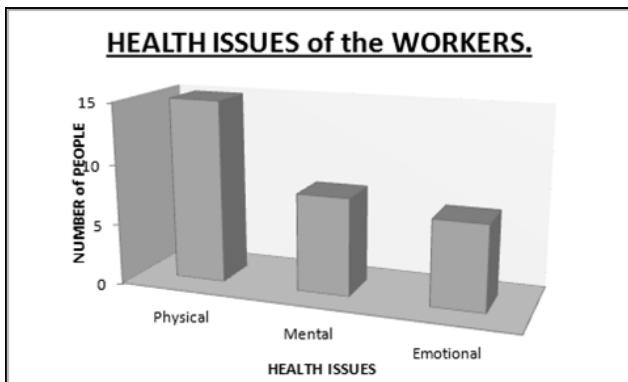
Figure 10 (A) & (B) : Levels of Satisfaction



This further implies that the amount that they keep for themselves is also not enough. Hence their standard of living is affected. This also reflects that the workers are not happy with the overall standard of living. This is because they always feel homesick and are obsessed with ways of earning more money so that they can give a better life to themselves and their family.

9. The term quality of life is inclusive of the “health” aspect, thus, the health conditions of the past 6 months from the day of survey was considered. These were then divided into three broad categories viz. physical health, mental health and emotional health. It was found that most of the workers suffered from physical health problems like body pains (due to heavy work), dysentery, cold and cough and fever. Some suffered from mental issues like irritability due to lack of hygiene, cleanliness and other such problems. Among the women the psycho-somatic diseases and health problems related to mental stress are more prevalent. This is because, even though they have migrated to Mumbai along with their husbands, they find harder to adjust and adapt than their male counterparts.

Figure 11: Status of Health

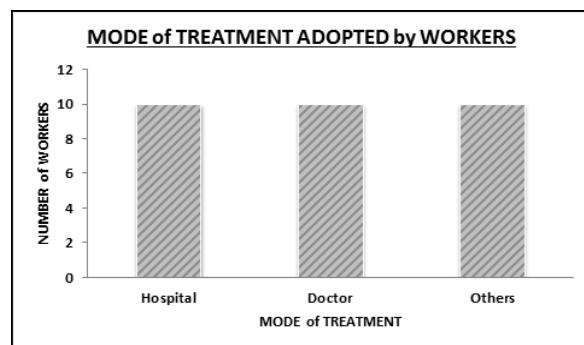


This is mainly due to unavailability of proper sanitation and other facilities which are essentially required for women. The situation becomes further grim if the women are not involved in construction as workers along with men and sit in the temporary and tiny huts constructed on the sites itself. Since, most of the workers are from the rural areas of north-India, it is obvious that the women are highly restricted from exploring the surroundings which, if allowed, could actually help the womenfolk to reduce their anxiety, irritability and boredom and engage themselves

productively. The emotional issues include homesickness and the guilt for not sharing the financial responsibilities towards the family.

10. To check on the awareness amongst the workers and to know whether the workers have been taking care of their illness in a proper manner or not, a question regarding the mode of treatment adopted by them was also raised. It was found that there were three modes of treatment viz. going to the hospital, going to a private doctor or dispensary and going to a local chemist and druggist and asking for the medicines. All the three modes are chosen by the sample population on almost equal basis. Some workers including pregnant women preferred to go to the government hospitals as these are cheaper than any other private doctor. The other reason could be that there is increasing awareness among them regarding the importance of the pre-natal care.

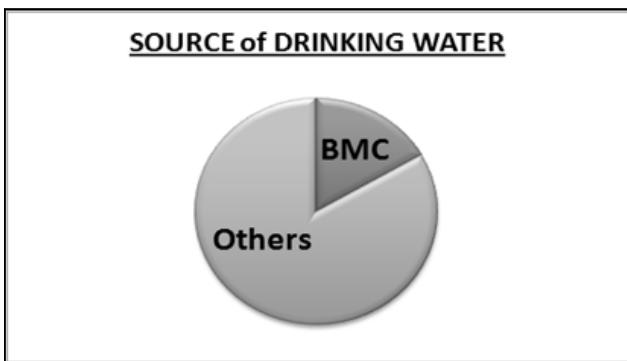
Figure 12 : Treatment options



Some felt that if they chose to go to the hospitals, they would have to get forcefully admitted and this simply increases the hospital bill and they may also lose on the wages for the days they were admitted. Some felt that it is not at all necessary to go anywhere; going to the chemist would help them overcome the problems.

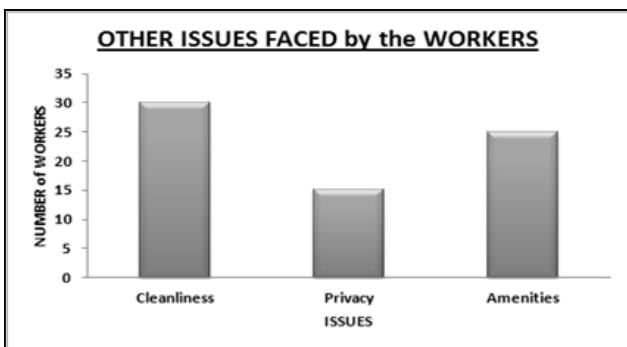
11. Coming to basic infrastructural facilities, the availability of drinking water was considered as one of the most important criteria to know the status of provision of basic facilities. It was found that only one site among the two had a BMC tap for water supply. The other site did not have a proper tap, and hence the workers had to bring the water from other places which were not reliable. This has certainly resulted in inducing some of the major health issues among the workers.

Figure 13 : Provision of Drinking Water



12. Apart from the health issues mentioned above, there were many other issues faced by the workers at the site i.e. the place where they stay. It was found that there were three major issues faced by them viz. lack of cleanliness, lack of privacy and lack of amenities like proper toilets, bathrooms, clean and safe drinking water and proper housing facilities. When compared it was found that most of the workers complained about lack of cleanliness, some complained about lack of amenities and few complained about lack of privacy. Actually this question received a mixed response hence, it can be said that almost all workers suffer from all the three issues. The differences are seen due to differential viewpoint of each worker. Females mostly face the problem of lack of privacy and that of amenities, improper toilets in particular. The health of all the workers, children in particular is affected badly due to improper sources of drinking water. Due to poor housing facilities, the entire family, new born babies in particular are badly affected by the changes in seasonal conditions. Lack of cleanliness is affecting their health very badly. The effect is accelerated in the monsoon season, due to the spread of Dengue, Malaria and other such diseases.

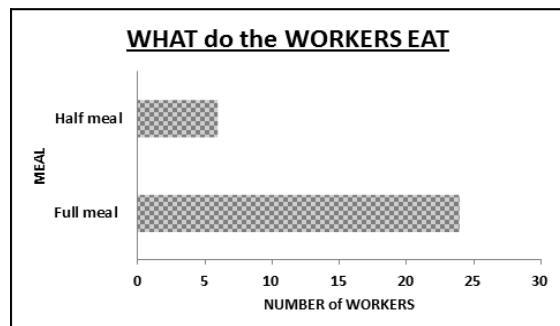
Figure 14: Problems Faced by the workers



Improper source of drinking water causes several waterborne diseases like Cholera, Typhoid and Jaundice. This is further more aggravated when the workers neglect their health to continue their everyday earnings.

13. To examine the quality of life of the workers further, their meals were also taken into consideration. It was found that most of the workers have a full meal of dal, rice, chapatti and vegetable whereas only some of them have a half meal i.e., combination of any of the two (dal-rice, chapatti-vegetable, etc.). From this it is clear that the workers take full care that they are having a full nutritious meal even if there is shortage of money.

Figure 15: Eating Options



However one does not find fruits or dairy items in their meal which is also very important for one's nutrition. Actually, the workers are well aware that nutritious food is very much required specially with the kind of heavy physical activity that they do every day. On asking they straight away reply "we have to eat the required nutrition, or else we cannot work". Also, as the workers are migrants from Northern states of India particularly, Uttar Pradesh, they have the habit of having a full meal since their childhood. Hence, they are ready to adjust with the other factors, but they can in no way adjust with their food habits.

14. One of the best things is that all the workers at both the sites get breaks in between their working hours. They get two breaks- one is the lunch break and the other is tea break in the evening. This helps the workers to relax and recreate.

6. Summary of Findings and Conclusion

The most important observation which was made at the sites was about the poor housing facilities. The

material used for the construction of their houses included asbestos sheets and thick plastic sheets. Their houses lacked the basic facilities of a kitchen and basic furniture. Their houses were broken, some were shattered due to the monsoons (the survey was done during the monsoon season), and thus, such people had to build their houses- which were nothing but, temporary tents on one of the floors of the incomplete constructed buildings and thus had to be shifted from time to time as per the need. Their houses were full of bed bugs and red ants. Rats are a major problem and during winter, the workers find it very difficult to save themselves from the wrath of cold breezes. All this creates totally unhealthy and insecure environment for them. The same becomes a serious concern with special reference to the young ones.

As far as cleanliness is concerned it was observed that, the garbage collection at the construction sites is very poor rather absent. All the garbage that is generated has to be thrown away by the workers themselves. This creates heaps of garbage in the campus because none of the workers are concerned until the supervisor or the manager asks them to do so; leading to breeding of mosquitoes and flies and other types of insects and infections.

After analyzing the conditions of various aspects of the workers at the construction site, it can be said that the overall quality of life of the construction workers is poor. This is because they lack the basic requirements of healthy living viz. proper housing, hygiene and access to clean water, proper medical facilities, etc.

It should be noted that, the income levels of the workers is quite low and above that, the workers spend a major portion of their income only on their food and the rest of it is used for other purposes. Thus, we see that one of the major factors for a good quality of life is ‘savings’ which is not at all found among the class of construction workers. This restricts them from developing further and in turn their standard of living and quality of life remains stagnant at a much lower level. The low educational levels are also a major indicator of their quality of life being poor. These prevailing conditions ultimately result in restricting them from finding a new job, good income and securing

their present as well as future. They remain trapped in the informal, low paid and insecure orbits of economy. These workers are indirectly part of the massive restructuring process in Mumbai (global city making) but remain totally out of the enormous profits made by the real estate sector.

7. Recommendations

To improve the quality of life of construction workers concrete steps should be taken as once they enter the city to work on construction sites, they continue living in the same city. They might change their places of residence but after couple of years start looking for permanent housings. Firstly, if the state or nay city or area for that matter is saturated, it should not allow illegal immigration. This will prevent the quality of life the immigrants from getting worse than what it was earlier. Secondly, if any state allows immigration it should make it a point to provide all the basic requirements catering to the needs of human living. Thirdly, the Government must undertake several measures and set up committees to who regularly check the living conditions of unskilled workers, especially, if they are immigrants by taking up surveys, free health check-up camps especially for pregnant female workers, free counseling for workers who suffer from an emotional issue, etc. this will help the workers to know about their health conditions; it will also help the workers to save the amount of money that they might otherwise spend on doctors, in hospitals or to buy medicines; it will automatically give a warning to the owners of the construction projects and thy will make it appoint to provide clean drinking water, proper sanitation and hygiene and maintain cleanliness.

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References

1. World Health Organization Report (WHO, 1997).
2. Indian National Commission for Enterprises in the Unorganized Sector Report (INCEUS, N.A.).
3. Herrle, Peter and Schmitz, Stephanus, (2009): “Constructing Identity in Contemporary Architecture: Case studies”, LIT Schiftender Habitat Unit, Fakuetal VI Planen Bauen Umvely, TU Berlin.

STUDY OF CHANGING OCCUPATIONAL STRUCTURE: A CASE STUDY OF THANE DISTRICT OF MAHARASHTRA.

Neeta Pathak, Sagar Thakkar & Geetanjali Raut

ABSTRACT:

The occupational structure plays an important role in economic development. It shows the distribution of workforce among the various occupations. The socio-economic development of any region depends on the number of persons who are economically active in different occupations. The workforce participation rate changes with economic development. Indian economy being agricultural employs more than half of the workforce. However, with modernization, urbanization and industrial development picking up, there is a shift in the occupational structure. This paper attempts to study the changing occupational structure and also economic profile of workforce in Maharashtra with special reference to Thane District.

Key Words: Occupational structure, Main-marginal workers, Work-force participation, Establishments, Maharashtra, Thane

1. Introduction:

The occupational structure of a country shows the distribution of its workforce among the different occupations such as primary, secondary and tertiary.

Occupational structure in a country depends on a number of economic, technological and geographical factors. Among various factors determining it, development of productive forces, specialisation and level of per capita income and availability of natural resources are more important.

There is a close relationship between economic development and the occupational structure of the economy. Economic development is often equated with structural transformation of the economy where the relative share of agricultural sector both in national income and labour force declines while that of industrial and service sector increases. As the economy develops there is a shift in employment and investment from the primary sector to secondary sector and to a large extent into tertiary activities.

Along the line of these changes some important shifts are expected in the economic structure of the country. Firstly, a substantial decline in the percentage of population dependent on agriculture followed by the increase in the percentage of population dependent on industry and finally sharper increase in the percentage of population dependent on services.

2. Objectives:

This paper attempts to highlight the changes in the occupational structure of India and Maharashtra in general and Thane district in particular since 1991 i.e. after liberalisation.

This paper would also highlight the following features.

- Distribution of workers according to economic activities.
- Work participation rate (WPR).
- Main and Marginal workers.
- Percentage of workers employed in various establishments-Agricultural and Non-agricultural, establishments by ownership in Thane district.

3. Data Sources and Research Methodology:

The data is collected mostly from the secondary sources like various reports and government publications. Various Economic Surveys of Govt. of India, Census of India, Economic Survey of Maharashtra-1998 and 2005, Socio-Economic Statistics of Thane district, District Census Handbook-Thane, Tata Statistical Outline are used for data analysis.

"Unless we change direction, models show that the profit of the entire consumer goods sector could be wiped out by 2050 - Paul Polman"

The research paper observes three sections. The first section talks about the changes in the share of three sectors viz; primary, secondary and tertiary sectors in National Income along with the changes in occupational structure in India and Maharashtra. In second section, occupational change is studied considering changes in work participation rates in India, Maharashtra and Thane. In last section, occupational structure in Thane district of Maharashtra is analysed with the help of variables like number of establishments and their types, ownership and employment therein, proportion of hired workers to total workers and average workers in these establishments.

4. National Income by sectors and distribution of workers by economic activities:

4.1 Sectoral composition of India's national income:

The sectoral composition of GDP in India has changed substantially on the account of the growth of the economy. The share of GDP originating from agriculture and allied activities has steadily declined, while that originating from industry and services sector has increased. These changes show that Indian economy is transforming from the earlier 'raw material oriented', 'backward economy' to that of developing economy. This is shown in the following table.

Table 1 : Estimates of GDP by Industry of origin (percentage distribution)(India)

Industry	1990-1991	1999-00	2008-09	2010-11
Primary	34.0	30.5	18.0	16.7
Secondary	23.3	23.8	25.6	25.9
Tertiary	42.2	45.7	56.4	57.4
Total	100	100	100	100

Source: Various Economic Surveys, Govt. of India.

The components of the GDP explain the anatomy of the economic structure. The changes in the sectoral composition of India's national income bring out the effect of process of economic development in India in the following way:-

1. The share of agriculture & allied activities in GDP has declined over a period of time.

2. The share of secondary sector has steadily increased at a modest rate.
3. The share of tertiary sector has increased at a substantial rate.

So, it is a well established fact that the sectoral contribution of the GDP has witnessed considerable shift over a time with economic development.

4.2 Changes in occupational structure at all India level

Occupational structure in the Indian economy has changed with the economic development but at a slow pace.

The following table helps us see the shift taking place from agricultural sector to secondary and tertiary sectors of the economy in terms of employment.

Table 2 : Occupational distribution of working population in India (%)

Sector	1991	2001
Primary	67.5	57.3
Secondary	11.7	17.6
Tertiary	20.4	25.2
Total	100	100

Source: Tata Services Limited: Statistical outline of India 2006-07.

We observe the following changes in the occupational structure of India.

1. Even though the share of agriculture is declining, it remains one of the main occupations of the people in India. It employs a very large proportion of working population. However, the dependence of the work-force on agriculture and allied activities has declined by 10.2 percent from 1991 to 2001. This depicts the underdeveloped nature of Indian economy. In agriculture large percentage of workers are either self-employed or casual workers. They suffer from job insecurity. They are poor and also the vulnerable sections of the society. Low investment, imbalance in fertiliser use, low seeds replacement rate, a distorted incentive system, low post harvest value addition and

erratic rain fall have affected the performance of agriculture sector. With more than half the population directly depending on this sector, low agricultural growth has serious implications for the ‘inclusiveness’ of growth.

2. As the industrialisation spreads during the growth process, the share of secondary sector rises. The process of transition from an agricultural economy to an industrialised one is taking place in India, but at a slow pace. The share of secondary sector in the employment has increased by 5.9 percent in this period

This is mainly due to increase in employment in manufacturing in consumer goods industries and small sector and also increase in employment in the construction which is a labour intensive sector.

3. The economic growth and progress is supposedly concomitant with the increasing share of service sector in the economy. This is quite visible in India largely due to the expansion of transport and communication, banking and insurance, IT, Entertainment, Health Care, public administration and other services. This sector is seen instrumental in bringing overall growth of Indian economy in the recent years. There has been an increase in the share of tertiary sector in the employment in the above activities.

There was no clear shift in the work force from the primary to secondary or tertiary sectors in the country during the period 1951-1991. But after 1991, there has been a decisive shift in the occupational structure towards secondary and tertiary sectors. Rapid industrialisation and consequent growth of service sector since 1991 have started to provide more employment. This development is also generating the process of occupational shift in favour of secondary and tertiary sectors.

After studying the scenario of occupational structural change at the national level, we were quite interested to know the changes which taken place in occupational structure in the state of Maharashtra and in our own Thane district.

Before we analyse this, it would be necessary to know changes in economic variables which have been taken place over a period in Maharashtra.

Table 3 : Estimates of GDP by Industry of origin (percentage distribution)(Maharashtra)

Industry	1980-81	1990-91	2000-01	2009-10
Primary	23.5	21.2	16.7	10.5
Secondary	30.4	30.8	25.3	28.0
Tertiary	46.1	48	58.0	60.5
Total	100	100	100	100

Source: Maharashtra's Economy In Figures, 2010 by Directorate of Economics & Statistics, Government of Maharashtra, Mumbai.

It is very much clear that the sectoral composition of Maharashtra and the sector wise income distribution is following the same trend as it is seen at the national level. The share of agriculture and allied activities in SDP has declined, while that of secondary sector has increased at a slower rate but share of tertiary sector has increased rapidly.

4.3 Distribution of workers according to Economic activities:-

In 1991 census, workers were categorized into nine industrial categories, viz. i) cultivators, ii) agricultural labourers iii) livestock, forestry, fishing, hunting, plantation, orchards and allied activities, iv) mining and quarrying, v) manufacturing and repairs-(a) household industries (b) other than household industries, vi) construction, vii) trade and commerce, viii) transport, storage and communication, ix) services.

But, the 2001 census provided information on four categories of workers only i.e. cultivators, agricultural labourers, household industries and other workers. The first two are related to agricultural activities while the rest are treated as non-agricultural workforce.

In this paper for comparative study of occupational structural changes, 2001 census industrial category pattern is followed.

“Progress is measured by the speed at which we destroy the conditions that sustain life.”
- George Monbiot

Table 4: Distribution of workers according to economic activities in India

Industrial category	1991		2001	
	M	F	M	F
Cultivators	39.63	34.22	31.3	32.5
Agri.labourers	21.05	44.93	20.08	39.4
Household industrial workers	2.09	3.53	3.1	6.4
Other workers	37.2	17.3	44.8	21.7

Source: Census of India-1991 & 2001

At the national level, the percentage of cultivators and agricultural labourers is declining. There has been marginal increase in the percentage of male household industrial workers but the percentage females working as household industrial workers has increased indicating increasing feminisation of work. In case of other workers, percentage of males and females both has increased significantly. It would be interesting to know the changes taken place in category-wise distribution of workers in Maharashtra and Thane with help of following table.

Table 5 :The distribution of workers according to economic activities in Maharashtra and Thane(in %)

Category	Maharashtra						Thane					
	1991			2001			1991			2001		
	P	M	F	P	M	F	P	M	F	P	M	F
Cultivators	32.81	29.79	39.07	28.7	24.9	35.8	20.54	15.19	38.57	12.2	8.1	25.9
Agricultural Labourers	26.81	18.67	43.7	26.3	18.3	41.1	10.21	6.86	21.49	9.6	5.9	22
Workers In Household Industries	1.61	1.61	1.6	2.6	2.1	3.6	1.19	1.04	1.72	2.5	1.7	5.6
Other Workers	38.77	49.93	15.63	42.4	54.7	19.4	68.06	76.91	38.22	75.6	84.2	47.1

Source: Census of India-1991 & 2001

It can be stated from the above data that the percentage of people engaged in primary sector both for male and female (combining categories 1 and 2) in Maharashtra as well as in Thane has declined at a faster rate. The percentage of people engaged in household industries has increased but we see a greater increase in the percentage of people as other workers over a period of 10 years from 1991-2001. This trend is quite similar with the national level occupational structural shifts in India.

5. Analysis of Total, Main and Marginal workforce

Labour is a primary factor of production. Therefore, the size of labour force is of great importance. Labour force includes the number of people in the age group of 16-60 years. The number of working persons constitutes the working population i.e. work force of a country.

5.1 Work force participation rate (WPR)

The work force participation rate (WPR) is the ratio of working population to the total population for

a given territory. The work force participation rate depends upon many factors such as age composition, sex composition, attitude towards work, availability of work, life expectancy, definition of workers and other factors. The following table gives the data for the male and female WPR in urban and rural areas.

Table 6 : Work Force Participation Rate (WPR) (in %)

		Person		Male		Female	
		1991	2001	1991	2001	1991	2001
India	Total	37.46	39.1	51.55	51.7	22.25	25.6
	Rural	39.99	41.7	52.48	52.1	26.67	30.8
	Urban	30.17	32.3	48.94	50.6	9.17	11.9
Maharashtra	Total	42.97	42.5	52.17	53.3	33.11	30.8
	Rural	49.68	48.9	53.19	53.9	46.06	43.6
	Urban	32.34	33.8	50.62	52.4	11.40	12.6
Thane	Total	39.85	39.1	54.90	55.8	22.73	19.6
	Rural	49.62	48	55.18	55.7	43.81	39.9
	Urban	34.50	35.7	54.76	55.9	10.40	11.4

Source: Census of India-1991 & 2001

The comparative analysis between the three levels i.e. regional, state and national depicts that the total work participation rate at all India level has increased. However, there has not been a significant change in total WPR in Maharashtra and Thane. The work

participation rate in rural areas at national level has increased. Similarly, the work participation rate in urban areas is also observing a substantial rise. This is mainly due to the nature of rural work, which is largely agriculture where both males and females participate. The lack of educational facilities and unavailability of other alternative job opportunities in rural areas create such conditions that rural people are forced to join family work in the fields/crafts at an early age. But, there has been a decline in rural WPR in Maharashtra and Thane with simultaneous increase in Urban areas. It is revealed that the reason for higher WPR in urban areas is rapid pace of urbanisation in Maharashtra in general and Thane in particular.

The female work participation rate is lower than that of males. This is mainly due to the fact that most of the women are housewives, whose work is not counted as a part of productive work. While the male work participation rate has more or less remained constant, the female work participation rate has risen. This is due to the spread of education among females and change in their attitudes towards work. The female work participation rate is also increasing both in rural and urban areas at national level. However, in Maharashtra and Thane there has been decline in the same in rural areas while increase in urban areas.

At national level, the female work participation rate is much higher in rural areas than in urban areas. This is because in the urban areas women belonging to affluent families, do not work, while in rural areas they join the family work in the fields/crafts. Further, it also shows that the rural women are more burdened. They not only participate in large numbers in the economic activity, but after returning home from work they have also to undertake domestic work. However, in Maharashtra and Thane male WPR in rural and urban areas has increased but there is a decline in female WPR in rural area and increase in urban areas.

It is seen that labour force participation rates for males do not vary much but there is an increase in the female work participation rate.

Similarly, it is also seen that total WPR at India level has increased, both for males as well as females.

But in Maharashtra and Thane total WPR has declined by a small quantity but we see that for females it has declined by a larger quantity. Male WPR both in Maharashtra and in Thane has increased against the declining female WPR.

5.2 Main and Marginal workers:-

The census of India has classified total workers into Main and Marginal workers. The main workers are those who have worked for 183 days or more in a year. The marginal workers are those who have worked less than 183 days in a year. The analysis of changes in the occupational structure on the basis of Main workers and Marginal workers can be done with the help of following tables.

Table 7 : Main Workers(%)

	India		Maharashtra		Thane	
	1991	2001	1991	2001	1991	2001
Total	34.10	30.55	39.28	35.9	37.37	34.2
Male	50.93	45.35	51.24	48.4	54.16	51.6
Female	15.93	14.68	26.47	22.2	18.28	14

Source: Census of India-1991 & 2001

Table 8 : Marginal Workers (%)

	India		Maharashtra		Thane	
	1991	2001	1991	2001	1991	2001
Total	3.36	8.71	3.68	6.6	2.47	4.9
Male	0.62	6.59	0.92	4.8	0.74	4.3
Female	6.32	10.99	6.64	8.6	4.44	5.6

Source: Census of India-1991 & 2001

It is clear from the above tables that percentage of main workers in India, Maharashtra and Thane has declined both for male and female workers. In case of marginal workers it is seen that there has been a drastic increase in the percentage for both male and female workers in India, Maharashtra and Thane.

"Cities are, first of all, seats of the highest economic division of labor. - Georg Simmel"

The decline in the percentage of main workers and increase in marginal workers is due to a number of factors like.

- Slow growth of industrial development and low growth rate of employment in the organised sector.
- Decay of small scale and cottage industries.
- Replacement of labour by capital i.e. more use of capital intensive technology.
- Insufficient infrastructure reducing productive efficiency.
- Underutilisation of resources.
- Industrial sickness.
- Deceleration in the public sector employment.
- Low remuneration contractual agreements.
- Feminisation of labour in low-wage jobs.
- Global competition leading to downsizing of workers.

6. Changes in Occupational structure in Thane district

Thane district lies in the inner periphery of Mumbai city. According to Census 2011, population of Thane stood at 1.10 crore with literacy rate of 80.66%. Thane comprises of fifteen talukas with seven

6.1 Agricultural Establishment

Table 8 : Agricultural Establishment (1998, 2005)

Name of District/State	Agricultural Establishment		% Increase or decrease over 1998	Total Est. in District	% To total Est.	% To total Agri. Est. of State
	1998	2005				
Thane	9,815	4,422	-54.95	3,25,004	1.36	0.73
Maharashtra	5,17,532	6,04,021	16.71	42,25,312	14.30	100.00

Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district 2006-0-2011-12*

In case of Thane district, during the period of 1998 to 2005 total numbers of agricultural establishments were 9815 and 4422 respectively. The state average has increased by 16.71% over the year

municipal corporations. Per Capita District income was Rs.1.05 lakh in 2009-10 (at current prices).

Nearness to Mumbai has led to rapid industrialisation of Thane district. The scarcity of land in Mumbai and comparatively lower cost of land in Thane made people to migrate in the district. This further led to rapid infrastructural development. The industrialisation in the district was due to numerous industrial projects by MIDC with the efforts of regional planning agencies like BMRDA. After 1992, with new policy of liberalisation there have been FDI inflows in different sectors of the district. The historical background of industrialisation with the recent structural shift has contributed to the process of changes in the occupational structure of the district.

The distribution of work force has been studied keeping in mind the division - agricultural and non-agricultural establishments and employment in the same.

An establishment is defined as, ‘an enterprise or part of an enterprise that is situated in a single location in which one or predominantly one kind of economic activity is carried out’. It is an economic unit under a single legal entity. Thus, the study of the number of existing establishments is important to determine its capacity of generating employment. Hence, it is logical to consider that higher the number of establishments, more will be the employment and vice-versa.

1998; the same has been -54.95 for the Thane district. Thus, the trend shows negative growth of the agricultural establishments in the district. This is further clarified when we compare percentage of agricultural

establishments to total establishments with that of the state. It is only 1.36% in case of Thane while 16.71% in case of Maharashtra. The share of Agricultural Establishments in Thane to that of total agricultural

establishments of the state is only 0.73%. The trend is indicative of declining importance of the agricultural establishments and use of agricultural land for non-agricultural activities.

6.1.1 Employment in Agricultural Establishments

Table 9 : Agricultural Employment (1998, 2005)

Name of District/State	Agricultural Employment		%Increase or Decrease over 1998	Total Emp. in District	% of Agri. Emp. (2005)	
	1998	2005			To total Emp. in the District	To total Agri. Emp. of State
Thane	23,804	15,457	-35.07	11,22,710	1.38	1.47
Maharashtra	9,68,351	10,50,995	8.53	1,13,08,510	9.29	100.00

Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

According to Economic Census 2005, total number of persons working in agricultural establishments were 15.4 thousand, (1.38%) of the total employment in the district as against 23.9 thousand recorded in 1998 Economic Census, showing a drastic decrease of 35.07% in employment in agricultural establishments whereas, for the state it shows positive increase of 8.53%.

It is obvious that agriculture is losing its momentum in providing employment in the district along with the decline in total number of agricultural establishments.

6.1.2 Own Account Agricultural Establishments (OAE) and Employment

An establishment without any hired worker on a fairly regular basis is termed as an ‘own account establishment’. It is normally run by the members of household.

Table 10 : Agricultural Own Account Establishment (1998, 2005)

Name of District	Agricultural OAE.		%Increase or decrease over 1998	Total OAE. in District	Total Agri. Est. in the District	% of Agri. OAE (2005)	
	1998	2005				To total OAE in the District	To total Agri. Est. of State
Thane	8,579	2,121	-75.28	1,32,154	4,422	47.96	1.60
Maharashtra	4,92,111	5,04,026	2.42	25,19,332	6,04,021	83.45	20.01

Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

According to Economic Census 2005, there were 1.32 lakh agricultural establishments in the district, out of which 4.4 thousand (47.96%) were OAEs. During

the period of 1998-2005, number of Agricultural Own Account Establishments has increased by 2.4% at state level, while it has declined by 75.28% for the district.

"To change our national economic story from one of financial speculation to one of future growth, we need a third industrial revolution: a green revolution. It will transform our economy as surely as the shift from iron to steel, from steam to oil. It will lead us toward a low-carbon future, with cleaner energy and greener growth. With an economy that is built to last - on more sustainable, more stable foundations"

- Chris Huhne

Thus, the trend shows negative growth of agricultural OAEs in Thane district due to low agricultural returns, preference for salaried jobs, selling

of agricultural land for personal reasons, using land for non-agricultural activities especially for construction.

Table 11 : Employment Agriculture Own Account Establishments (1998, 2005)

Name of District	Agricultural OAE Employment.		%Increase or Decrease over 1998	Total OAE Employment in District	Total Agricultural Emp.in the District	% of Emp. in Agri. OAE (2005)	
	1998	2005				To total Agricultural Est. in the District	To total OAE in the District
Thane	13,073	3,409	-73.92	1,57,244	15,457	22.05	2.17
Maharashtra	8,62,091	7,51,770	-12.80	3218717	1050995	71.53	23.36

Source: Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12

Total number of persons working in Agricultural OAEs in Thane were only 3.4 thousand (22.5 Percent) in the year 2005 and 13.1 thousand in the year 1998. This again shows negative growth of -73.92 Percent. The percentage of persons working in Agricultural

OAEs to the total employment in Agricultural Establishments in the State has remained only at 2.17 Percent. Here, it is obvious that with decrease in number of agricultural OAEs, there is a simultaneous decrease in employment in the district.

6.1.3 Agricultural Establishments with hired workers and Employment

Table 12 : Agricultural Establishment with hired worker (1998, 2005)

Name of District	Agricultural Est.with hired worker		%Increase over 1998	Total Est. with hired worker in District	Total Agri.Est .in the District	% of in agri.est.with hired worker (2005)		
	1998	2005				To total Agri.Est. in the District	To total OAE. in the District	To total Agri.Est. of State
Thane	1,236	2,301	86.17	1,92,850	4,422	52.04	1.19	2.30
Maharashtra	25,421	99,995	293.36	17,05,980	6,04,021	16.55	5.86	100.00

Source: Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12

According to 2005 Economic Census, there were 2.3 thousand agricultural establishments with hired workers in the district (52.04 Percent) which shows increase of 86.17 Percent over 1998. The proportion of agricultural establishments with hired

worker in Thane to total agricultural establishments of the state was only 2.30 Percent. Thus, the double digit growth in number of Agricultural Establishments with hired workers highlights declining importance of the Agricultural Own Account Establishments in the district.

Table 13 : Employment in Agriculture Establishment with hired worker (1998, 2005)

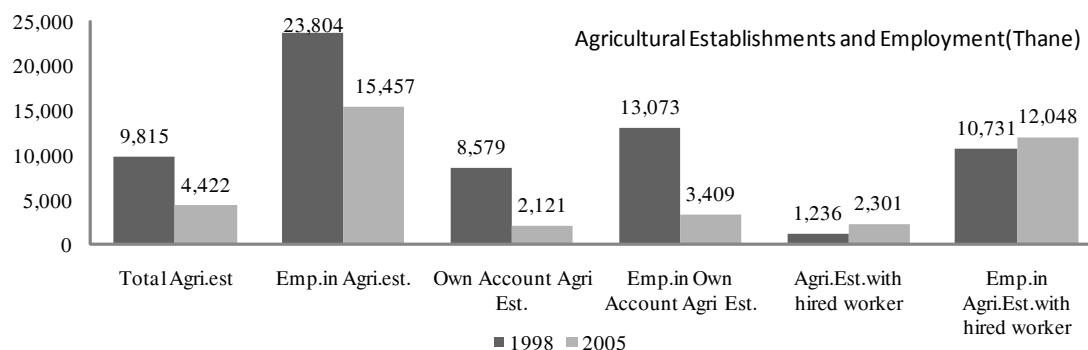
Name of District	Emp. In Agricultural Est.with hired worker		%Increase over 1998	Total Emp.in Est.with hired worker in District	Total Agri. Emp.in the District	% of emp. in agri.est.with hired worker (2005)		
	1998	2005				To total Emp. in Agri. Est. in the District	To total Emp. in Agri. Est. with hired workers in the District	To total Emp.in Agri. Est. with hired worker of State
Thane	10,731	1,2048	12.27	9,65,466	15,457	77.95	1.25	4.03
Maharashtra	1,06,260	2,99,225	181.60	80,89,793	10,50,995	28.47	3.70	100.00

Source: Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12

When we look at the employment scenario in the Agriculture Establishments with hired workers, it is observed that the total hired workers in agricultural sector in the district were 12.1 thousand (77.95 Percent). Compared to 1998, 12.27 Percent increase is observed in the same. The results also indicate that 28.5% of the total employment (2.99 lakh) in the agricultural sector was hired employment in the state. The hired employment in agricultural sector of the district contributed only 4.3 Percent of the total hired employment (9.66 lakh) in the State.

Thus, we can conclude that on one side there is a decline as high as 74 per cent in the employment by Agriculture Own Account Establishments with marginal rise in Employment by Agriculture Establishment with hired worker. So, one can see a wide gap between Employment by Agriculture Own Account Establishments and Employment by Agriculture Establishment with hired worker. The rise in latter is insufficient to compensate the decline in former.

Figure 1 : Comparative Status of Agricultural Establishments and Employment



6.3 Non-Agricultural Establishment

The non-agricultural sector is of immense importance in the State economy, as it covers 86% of the total establishments and 91% of the total employment. The Economic census has considered

mining, manufacturing, electricity, water, gas, construction, wholesale/retail trade, hotels and restaurants, transport, communication and storage, finance, insurance, real estate and commercial services and other services as non-agricultural establishments.

Non-Agriculture Establishments (1998, 2005)

Name of District	Non-Agricultural Establishments		%Increase or decrease over 1998	% Of non-agri. Est. (2005)	
	1998	2005		To total Esta. in the District	To total non-agri. Esta. of State
Thane	2,10,056	3,20,582	52.62	98.64	8.85
Maharashtra	27,16,490	36,21,291	33.31	85.70	100.00

Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

According to the 2005 Economic Census, there were about 3.21 lakh non-agricultural establishments in the district, having 98.64 Percent share in the total establishments. Compare with 1998 there is an increase of 52.62 Percent. In case of Maharashtra, the

percentage of non-agricultural establishments to that of total non-agricultural establishments remained at 8.85 Percent. This shows that non-agricultural sector contributes significantly to the overall economy of the district.

"Anyone who believes in indefinite growth on a physically finite planet is either mad or an economist"
- Sir David Attenborough

6.3.1 Non-Agricultural Establishment and Employment

Table 14 : Non-Agriculture Employment (1998, 2005)

Name of District	Non Agricultural Employment		%Increase or decrease over 1998	% Of non-agri. Emp (2005)	
	1998	2005		To total Empl in the District	To total Empl in the State
Thane	9,07,023	1,107,253	22.08	98.62	10.79
Maharashtra	94,76,367	1,02,57,515	8.24	90.71	100.00

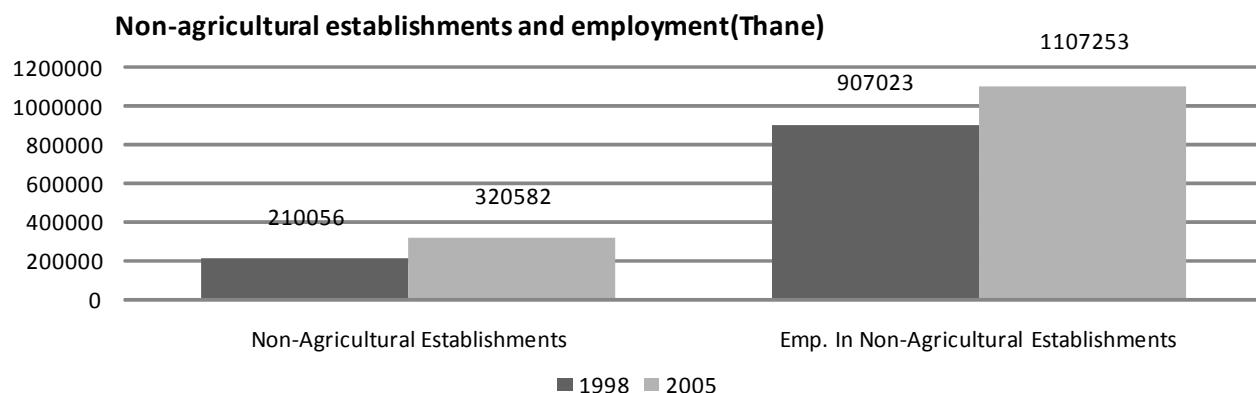
Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

In Thane, total numbers of persons working in non-Agricultural establishments were 11.07 lakh (98.64 Percent) in the year 2005. Compared to 1998, there is a rise of 22.08 per cent in the population engaged in non-Agricultural establishments. In Maharashtra, the percentage of persons working in non-Agricultural

establishment to the total employment in non-Agricultural Establishments remained at 10.79 Percent.

One can conclude that with the increase in number of non-Agricultural establishments, there is a simultaneous increase in employment in the district.

Figure 2 : Comparative status of Non-agricultural establishments and employment



6.4 The Status of Hired workers to Total Workers

While analysing occupational structure, it becomes important to know the proportion of hired workers to total workers and resultant patterns.

Table 15 : Hired workers to total workers

Category	Rural		Urban		Total		%Increase or Decrease over 1998
	1998	2005	1998	2005	1998	2005	
Agricultural	11.13	59.9	43.22	55.04	12.9	58.69	45.79
Non- agricultural	62.84	73.48	80.8	69.12	74.39	70	-4.39
Total	58.79	72.81	80.77	69.06	72.45	69.85	-2.6

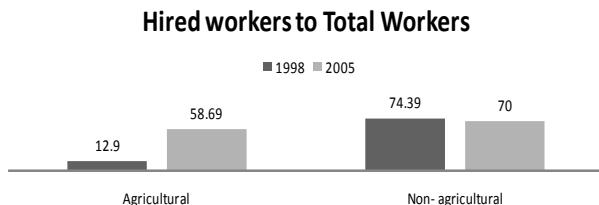
Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

In Thane district, according to Fifth Economics Census (2005), the proportion of hired workers to total workers in agricultural sector was 58.7 per cent. Out of total 59.9 per cent hired workers were found in rural area and 55.04 per cent in urban. Compared to 1998, it shows an increase of 45.8%. Thus, there is a dramatic hike observed in the proportion of hired workers to total workers in agricultural establishments in the district. This shows displacement of workers from agricultural to non-agricultural activities.

It is stated in the Fifth Economics Census (2005) that the proportion of hired workers to total workers was 70 per cent non-agricultural sector. 73.3 per cent workers were in rural area and 69.1 per cent in urban area in the same category. However, compared to 1998, there is a decline of 4.3%. Thus, there is a decrease in proportion of hired workers to total workers in non-agricultural establishments in the district. It is revealed that the fall in the percentage of hired workers is getting reflected in the declining capacity of non-agricultural establishments to provide hired employment due to automation of work, extensive use of labour-saving technologies, and replacement of labour by capital, increasing wage rates

and input costs and so on. There is over all decrease of 2.6% in the proportion of hired workers to total workers in both agriculture and non-agriculture establishments. This shows negative change in proportion of hired workers to total workers in the district.

Figure 3 : Proportion of Hired Workers to Total Workers



6.5 Status of Establishments and Average workers

After the study of change in occupational structure by establishments it would be interesting to study average number of workers per establishment in Thane district. Following tables throw light on the average number of workers per establishment along with their distribution in agricultural and non-agricultural segments as well as rural-urban distribution.

Table 16 : Average no. of agricultural workers per establishment (Thane)

Rural		Urban		Total	
1998	2005	1998	2005	1998	2005
2	4	2	3	2	3

Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

According to Economic Census 2005, there were on an average three agricultural workers working per establishment. However, average number of agricultural workers per establishment in rural area was four while

that in urban area was three. In rural area average numbers of agricultural workers per establishment are more than that in urban area of the district and it shows positive growth compared to 1998.

Table 17 : Average no. of non-agricultural workers per establishment (Thane)

Rural		Urban		Total	
1998	2005	1998	2005	1998	2005
3	4	5	3	4	3

Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

Economic Census 2005 states that there were on an average three non-agricultural workers working per establishment. However, average number of non-agricultural workers per establishment in rural area was

four while that in urban area was three. Thus, in rural area average number of non-agricultural workers per establishment has increased but in urban area of the district, there is a declining trend over the economic census 1998.

Table 18 : Average no. of workers (agri+non-agri) per establishment (Thane)

Rural		Urban		Total	
1998	2005	1998	2005	1998	2005
3	4	5	3	4	3

Source: *Economic Survey of Maharashtra-1998 and 2005 AND Socio-Economic Statistics of Thane district year-2006-07,2007-08,2008-09,2009-10,2010-11,2011-12*

Thus, from the above analysis it is obvious that combined average number of workers per establishment (i.e agricultural & non-agricultural) has decreased and hence there is negative growth in number of workers working per establishment in Thane district. This is mainly due to decreasing capacity of non-agricultural sector to generate more employment due to different reasons discussed earlier in this paper.

7. Conclusion

The present study attempts at analysing the changes in the occupation structure at three levels – district, state and national. It tries to provide a comparative analysis between the abovementioned three levels and find out the similar and distinctive trends between them.

In the two decades of liberalisation, there has been a positive change/shift in occupational structure in India from primary to secondary and tertiary sectors. There has been a decline in the percentage of population dependent on agriculture, increase in the percentage of population dependent on industry and services. The scenario in Maharashtra shows similar trends to that of India as well as Thane district.

In the era of globalization various factors have contributed to the declining importance of agricultural activities in Thane district like migration of agricultural workers, literacy among youth and their dislike for the agricultural activities, educational policy supporting growth of secondary and tertiary sectors, conversion of fertile agricultural land for non-agricultural purposes,

use of inappropriate and outdated technology in farm activities and others.

The growing importance of non-agricultural sector in the district is due to numerous factors: flow of FDI and domestic investment primarily in the secondary and tertiary sectors of the district, modernisation of the industries with the use of labour saving techniques in production, privatisation of public sector undertakings, growing importance of capital based exports, policies of international institutions like WTO, World Bank, IMF and others, declining importance of small and cottage industries and changing cultural values. Though the paper deals with the occupational changes in the last two decades, fallouts of these changes on various sections of society – workers, labours, women workers, etc. are serious concerns. Even though, these changes are portrayed positively there impacts on individual lives need to be assessed carefully.

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References:

1. Mungekar B (ed), The Economy of Maharashtra: Changing Structure and Emerging Issues, Dr. Ambedkar Institute of Social & Economic Change, Mumbai , 2003.
2. Sthanumoorthy R (ed), Maharashtra Economy: performance, Opportunities and Challenges, ICFAI university Press, Hyderabad, 2006.
3. World Bank (2002), India – Maharashtra: Reorienting Government to Facilitate Growth and Reduce Poverty.

4. Planning Commission of India (2002), Human Development Report of Maharashtra
5. Government of Maharashtra – Economic Survey of Maharashtra various issues.
6. Maharashtra Economic Development Council: Economic Escort to Maharashtra, August, 2008.
7. CSO / NSS Publications.
8. Mishra-Puri, Indian Economy, Himalaya Publication, Mumbai.
9. District Census Handbook-Thane, Directorate of Census operation, Maharashtra.
10. Maharashtra State Employment Review (Various issues), State Govt. of Maharashtra.
11. Maharashtra Development Report, Planning Commission, New Delhi.
12. Indian Labour Statistics, Labour Bureau, Govt of India, Shimla.
13. www.maharashtra.gov.in
14. www.thanecity.gov.in

ENCLAVE URBANISM: RESTRUCTURING OF THE INNER CITY OF MUMBAI

Ginella George

ABSTRACT :

Around the world, landscapes are changing rapidly. While the growth of cities has considerably slowed down in the developed world, the list of mega-cities consisting of more than 10 million inhabitants elsewhere is growing every year. The ongoing restructuring of 'city-regions' of metropolises or mega-cities like Mumbai - are driven by the agenda of creating "world class" cities.

The old and heritage rich Inner city fabric of Mumbai is being inserted with new programmes like luxury apartments, condominiums, new commercial types etc that are leading to the emergence of a drastically changed landscape that give rise to enclaves or gated communities. However what stands out prominently is the forming of spatially distinct areas of mono-cultural, mono-functional, and mono-economic social groups in the urban development process.

These new urban types are a resultant of several forms of displacements that have implications on urban form of the city, patterns of living and social structure leading to gentrification, loss of livelihoods, social value and traditions and a changed cultural economy.

Keywords: *Historic fabric/ Inner city, spatial restructuring, enclaves, community and cultural implications*

1. Introduction

"Cities are the summation and densest expressions of infrastructure, or more accurately a set of infrastructures, working sometimes in harmony, sometimes with frustrating discord, to provide us with shelter, contact, energy, water and means to meet other human needs. The infrastructure is a reflection of our social and historical evolution. It is a symbol of what we are collectively, and its forms and functions sharpen our understanding of the similarities and differences among regions, groups and cultures."

(Herman and Ausubel, (1988, 1), Cities and Their Vital Systems

The historic core of Mumbai – the inner city is located in the southern part of the city and is a dense, incomprehensible and vibrant space. It is a site of intense duality, where extreme polarities lie next to each other, traditional and modern, old and new. Bombay is considered to be the first Indian city to experience economic, technological and social change associated

with the growth of capitalism in India¹ and continues to be a city of many cultural expressions. Bombay grew as a port city, from its humble beginnings of a group of seven islands. Its economic expansion in the late 19th and early 20th century attracted a range of ethnic groups from various parts of India. The city today is the capital of the state and thrives as a palimpsest with fragments of its various layers visible through its tangible and intangible forms.

Bombay was not an indigenous Indian city. It did not evolve from an original sacred centre, place of pilgrimage, administrative centre or market town but represents an outcome of an evolving process after 'mercantile colonialism'². This led to the creation of the Native town with its own stratified urban form and demographic pattern. Hence the native town was an assemblage of various communities and their distinct habits of living, working and building that tried to adapt to the ever growing and evolving port city. The city's history has seen the formation of enclaves, first for purposes of security and in present times for exclusion and exclusivity.

"To reverse the effects of civilization would destroy the dreams of a lot of people. There's no way around it. We can talk all we want about sustainability, but there's a sense in which it doesn't matter that these people's dreams are based on, embedded in, intertwined with, and formed by an inherently destructive economic and social system. Their dreams are still their dreams. What right do I - or does anyone else have to destroy them. At the same time, what right do they have to destroy the world?" - Derrick Jensen

The old and heritage rich Inner city fabric of Mumbai is being inserted with new programmes like luxury apartments, condominiums, new commercial types etc. that are leading to the emergence of a drastically changed landscape that give rise to enclaves or gated communities. However what stands out prominently is the forming of spatially distinct areas of mono-cultural, mono-functional, and mono-economic social groups in the urban development process.

2. Objectives

The paper aims to understand the formation of enclaves through the framework of the ‘modern infrastructure ideal’ (as developed by Graham and Marvin) and its implications on social value and urban form in the Inner city of Mumbai.

The key objectives of the paper would be:

- To analyse through history, the urban restructuring interventions in the city and its outcome on urban form and society.
- To look at policy frameworks - DCR 33(7) & 33(9), that aid in the restructuring of the historic core of Mumbai.
- To examine the consequences of the new spatial structure of the new architectural types on the historic fabric, social value and traditional patterns of living and working ‘in the inner city of Mumbai.

The paper uses the framework of the ‘Infrastructure ideal’³ as developed by Stephen Graham and Simon Marvin in their seminal work titled “splintering Urbanism”.

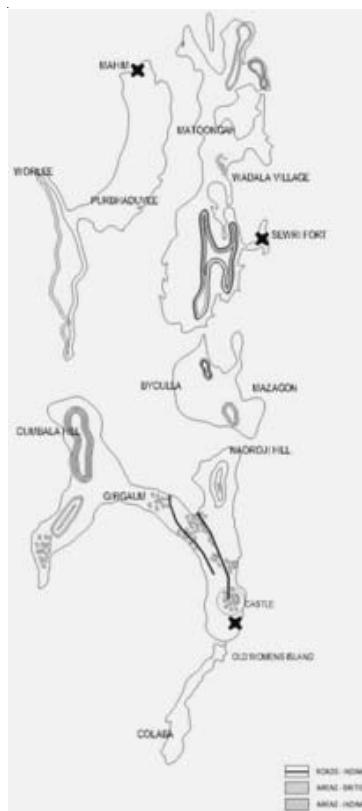
3. Data Sources and Research Methodology

The present research is based on primary as well as secondary sources of data. Various reports and studies done on the Inner city of Mumbai have been used extensively for the present research. Apart from this, a questionnaire survey was conducted in the area of Chira Bazaar area. The samples were selected from the residents of this area.

4. Spatial structure of inner city through history – interventions and outcomes

Like other colonial cities and particularly colonial port-cities, the growth of Bombay closely parallels the expansion of the needs of European empires and the emergence of a global economy.⁴ The power of colonial authorities to command and shape urban space is of primary significance in understanding the development of many contemporary ‘Third World’ cities. An examination of the production of urban space in the late or ‘industrial’ colonial era, of the changing framework of the colonial political economy during this period, will reveal a glimpse of the formative stage of urban development paradigms whose constraining effects have continued to cast a long shadow over Mumbai.

Figure 1 : Ancient Mumbai prior to 1534



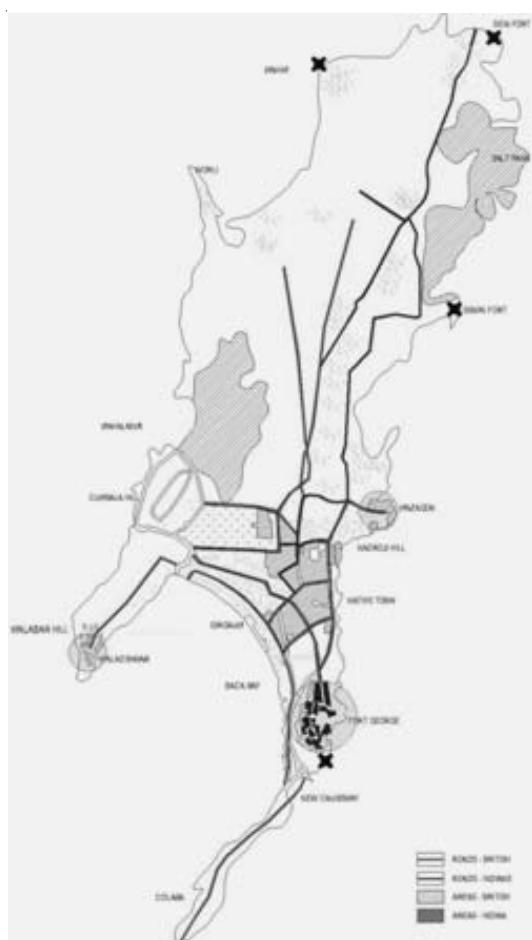
4.1 Pre-colonial (Prior to 1534)

The city being a group of seven islands the settlements were houses that were clustered around a

“In much of the rest of the world, rich people live in gated communities and drink bottled water. That’s increasingly the case in Los Angeles where I come from. So that wealthy people in much of the world are insulated from the consequences of their actions.” - Jared Diamond

temple, a market or an open space or water body. Of the seven islands not all were inhabited only two or three were connected to each other by temporary means or none at all. The islands were grouped along two parallel rocky ridges with limited fertile areas. The fertile areas were covered with groves of coconut and other palms - which were important sources of revenue - rice fields, vegetable gardens and fruit orchards among which lay scattered hamlets of Kolis and Bhandaris.

Figure 2 : Ancient Mumbai (1534-1850)



The urban structure of the settlements was simple due to the size and nature of the clusters. Banganga situated at Walkeshwar is an example of such a kind of pre-colonial settlement. The earliest urban development in the city occurred in the 13th and 14th century when a descendant of the ruling dynasty of Gujarat built a town - Mahim as his new capital. But Bombay remained overshadowed by Bassein.

4.2 Early colonial (1534 – 1850) (B)

The islands were under the control of the Portuguese until 1661 when they were ceded to the British as part of a marriage dowry. After a few years of no profit the islands were transferred to the East India Company in 1667 to which the city owes its entire growth. The interest in Mumbai rose from two major factors: its proximity to Surat, which was an already established trading town and its blinkeredness, which would ensure independence and security thereby making Mumbai's primary purpose as a naval base. This role was facilitated by Mumbai's excellent natural harbour. With Mumbai established as a subsidiary-trading outpost to Surat, the city began to see an inward migration of people in search of work from the surrounding states. The development of built structures between the early eighteenth and the mid-nineteenth centuries, created 'the Fort' (the expanding fortified harbour area) as the dominant urban social space⁵. A fortification wall was added to the town in 1716 which added to its security and became an incentive for the immigrants. The nucleus of Mumbai's urban growth at this time was the well-defined Bombay Castle established by the East India Company as a trading establishment. The rest of the town began to grow in a semicircle around this fortified space. Land was acquired by removing the fishermen's huts from the area and plots were laid out for merchants and settlers. For a clear line of fire from the Fort a semicircular stretch of ground around the fort was reserved as open space on which no houses or trees could stand. The town grew haphazardly around a large open space - Bombay Green adjoining the Bombay Castle. The policies of the East India Company encouraged trade, native industry and promised religious liberty. Supported by various events like - the decline of the Surat port, opening of the Suez Canal etc. migration took place in three layers⁶:

- a. The Parsis and Armenians were invited by the British to settle within the Fort
- b. Banias migrated from Surat and settled north of the Fort
- c. Kolis moved further north from their existing settlement.

The East India Company's enforced reliance upon native brokers to secure profitable trade transactions with the Bombay hinterland ensured the granting of property rights to elite merchant communities - Banias, Bohras and, particularly, Parsis - who thus participated in the development of the Fort's built environment. Three gates and fort walls were used to secure the European settlement and an east-west line formed a rough but a conscious dividing line between the European section – the Fort in the south and a small native town in the north – the earlier fishing and agriculture communities. Broadly the area was distinguished into two parts the European residence and the native town. Within these broad sectors were further clustering's on the basis of nationality, religion and caste. The fire that broke out in the Fort in 1803 was an event that was responsible for a further segregation of the European and the native settlements. The fire was used an opportunity to ask the natives to settle outside the Fort walls on a large parcel of land, beyond the vast open space that was demarcated for the purpose.

Mumbai being a trading outpost it relied heavily on the hinterland for material and labour. Reclamation of land began in a bid to consolidate the islands with the growing of the town and the number of people migrating to the city in search of work. Infrastructure like roads was laid by the British, which primarily connected the European settlements to the port and other spaces of commercial importance like markets, which completely bypassed native settlements.

During the initial phase of 'mercantile colonialism' from the late seventeenth century to the early nineteenth, Bombay, under the controlling hand of the East India Company, gradually evolved as a built environment designed to facilitate the extraction and concentration of vast quantities of opium and cotton from its rural hinterland, and to enable their shipment abroad⁷. These commodities provided the basis for a flourishing colonial trade with China, while raw cotton exports to England contributed significantly to new domestic consumption patterns. Spatially, Bombay was thus conceived as a regional centre of colonial mercantile capital accumulation, at the heart of an export-oriented network of communications centered on its port.

Figure 3 : Mumbai - Late Colonial1850 to 1947



4.3 Late colonial (1850 to 1947)

The early 19th century ushered in a new development of great and lasting importance - the establishment of a separate Native town to accommodate the growing number of Indians. It was the culmination of a sporadic Indian settlement outside the Fort walls over a long period, but the fire of 1803 within the fort led to its official creation. The Indian community thus affected was 'encouraged' to build houses, shops and warehouses in the residential area newly opened up to the north of the Fort. A distinct hierarchy was established by now on the basis of division of labour. The Europeans controlled the administration and military, trade was the preserve of the Gujarati community as well as the Parsis who were ship builders and landlords. Hindu and Jain Banias, Muslim Bhoras and Khojas handled a variety of economic activities like banking, investments, wholesale and retail trade.⁸ While Maharashtrian activities ranged from clerkships to industrial labour and agriculture. Another community of the Kamathis from Andhra Pradesh was in a large number in the city as they were involved with building activities.

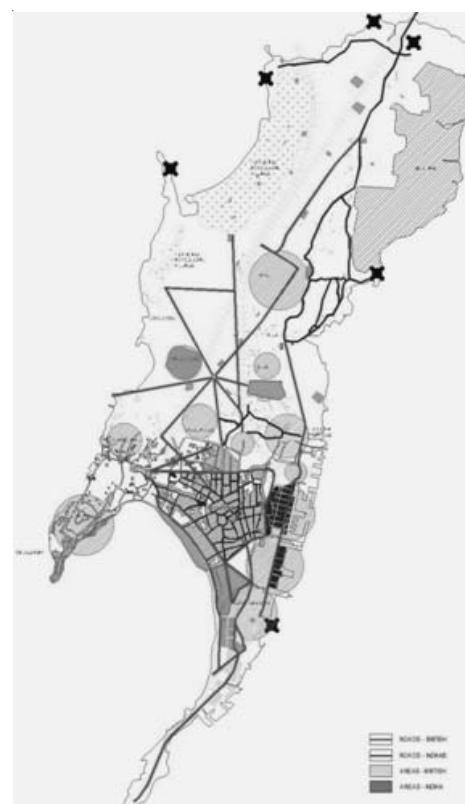
The European suburbs had a distinct built environment in the form of bungalows, town houses and estates. Fort and parts of the native town closest to the open space – the Esplanade had a crop of five to six storied buildings with the ground floor used as shops and business premises and the upper floors reserved as dwellings. In peripheral parts of the native town in Dhobi talao, Fanaswadi, Girgaum the residential type of the wadi prevailed. This was a cluster of two to three storied buildings around a central open place usually occupied by the same family or a sub-caste group. The chawl – a multi storied structure, with a central corridor running the length of the floor off which opened a series of rooms with common sanitary facilities, formed the bulk of worker housing.

After the development of Fort and the Esplanade, richer natives lived in the area of the native town along the Esplanade and poorer natives, and workers lived further towards Bhuleshwar where the streets were dense and crowded. The British outside Fort lived along the western suburbs of Malabar Hill. Mills arising in the Parel suburbs gave rise to dense housing colonies in and around Parel. The arrival of Bombay Port Trust in 1890's further gave rise to a new working class and added to the density of the growing city fabric.

A bubonic plague broke out in 1896 and it was for the first time that the city witnessed an outward migration. The Bombay Improvement Trust (BIT) was set up in 1898 which introduced street widening and policies of sanitation and ventilation. It stated that the congested living and working tenements of the native area was responsible for the outbreak and measures were needed to be undertaken to 'ventilate' this area. As a result four east west roads were cut through the existing fabric that would bring in the sea breeze. Using this as a guise the following east-west roads were laid out that completely bypassed the native areas and connected the British settlements to important areas like the port, governor's residence and the main market:⁹

1. Sandhurst Road
2. Princess Street
3. Parel road
4. Crawford Market to Sandhurst Road

Figure 4 : Infrastructural development



The B.B. railways and the C. I. Railways was developed as a result of the city growing further to the north and Mumbai establishing itself as a thriving commercial hub with the establishment of the mills. The Bombay Port Trust railways started around 1880 exclusively linking the hinterland, mills and port – connecting the workers housing areas to the mills and business district in South Fort. The railways linked the north suburb residences to the south work places. Of the pattern of transport networks emerged a pattern of roadways and bazaars in the native town area lying between the two railway corridors and the trams. Transport infrastructure in the city began to further enforce subtle segregations between the colonial areas and native areas. British laid roads – Queen's road parallel to the railway line ran on the outskirts of the settlements enabling quick and efficient movement and connectivity to the outlying areas.

The transfer of authority from the East India Company to the British state following the Rebellion of 1857 led to a drive to reconstruct social space in the Fort. Additional land was created as a result of the demolition of the ramparts and through

reclamations from the sea, as a more pervasive colonial presence now strove to erase built signs of its military origins and highlight instead the city as a prosperous centre of commercial enterprise, illustrative of imperial power and prestige. With industrial progress the city took the first turn from a small self sufficient island to a city of trade, commerce and economic strength, a city which made the Deccan its hinterland and one that stood on the threshold to becoming the economic capital of the nation.

From this 19th and early 20th century experience theories of physical planning as well as planning legislations and the mechanisms were utilized to implement through the means of social technology environments and people that were modeled or controlled in accordance with an assumed public good.¹⁰

With Independence the spatial divisions of the colonial city were retained, although the European-Indian duality no longer existed. The former European residential areas were now occupied by the westernized upper class Indian residential areas. The native town continued to be a dense and congested space and a thriving economic core due to the location of its markets. The economy radically changed: the city that had combined industrial and commercial activities in its physical hinterland had been reshaped into a commercial and service centre.¹¹ Although the markets gave the spatial form a seamless identity due to its cluster of activity in reality the enclaves were further reinforced on the basis of community and occupation.

Physical planning notions and legislation were introduced as part of the overall situation of colonial power. the basic divisions of the society political social and racial inherent in the colonial process between ruler and ruled , black and white , rich and poor, European and native were taken as given¹². In this situation this techniques and goals of planning – orderly development, easing traffic flows, physically healthy environments , planned residential areas, reduced

densities and zoning of industrial and residential areas were introduced each according to the standards deemed appropriate to the various segregated populations in the city – and all without disturbing the overall structure of power.¹³

5. Policy frameworks – DCR 33(7) and 33(9)

When the British – East India Company took stock of the islands in a bid to turn it into a profit making enterprise, the city was subjected to its first displacements. The Kolis and Bhandaris were pushed north of their original settlements. The fire in the Fort in 1803 necessitated the urgency of a planning body or some planning guidelines due to the congestion. The affluent traders Parsis, Jews and some Marwaris were allowed to live within the Fort walls while the rest were ‘encouraged’ to settlement beyond the Esplanade which later came to be known as the Native town. Interestingly it was in this very Native town that was situated the many bazaars and the hub of commerce that were the main revenue generators for the city.

The Bombay Improvement Trust (BIT) was a body that was instituted after the plague broke out in 1896 and caused much distress to the city. The main functions that the BIT performed in order to sanitise the dense and unhygienic inner city .were¹⁴:

- i. Creation of east west thoroughfares that would draw sea breeze and ventilate the inner-city and its dense settlement.
- ii. Slum clearance and their improvement
- iii. Expansion of city’s residential space,
- iv. Development of vacant lands
- v. Housing for city’s police

These acts of cleansing and of renewal ripped the city fabric in innumerable ways but they were justified with claims of betterment of city life. The east west thoroughfares of Sandhurst Road and Princess Street became the boundaries for the native town. While they were direct connectors of the affluent British residences of Malabar hill to the port – Sandhurst Road and a direct link from the sea road – Marine Drive to

"In modern society, where most people live in cities, and where both needs and wishes are absolved through the same remote agency - money - the distinction between wishes and needs has altogether vanished." - James Buchan

Crawford Market – Princess street¹⁵. Both these thoroughfares had urban planning guidelines related to heights of the buildings, façade treatments etc. The original fabric in was completely replaced by large town planning schemes. In the case of Princess street, it had a clear objective of being the entry point to the city, ships that came to the city had to get a view of the prosperity of the city and hence the buildings had to subscribe to that particular vision. Similarly was the case of the institutional buildings that came up along the Oval maidan – the High court, university etc. this was the second image that a visitor would encounter making the city a symbol of commerce and progress.

The 10 year vision plan of ‘Bombay First’ set up in 1995 strongly advocated urban renewal in many areas and the transformation of Mumbai into a global financial city from a manufacturing centre. The MMRDA regional plan of 1995 had many liberalization options and amongst others emphasised transport planning – highways sea links and freeway, urban renewal projects in dilapidated areas of the island city, increase in FSI, internal redesigning of architecturally valuable buildings for office activities etc.¹⁶ It is evident from the various policies and projects that there is a strong push that Mumbai play a significant role in the liberalized economy.

6. Policies for restructuring and renewal in the present context

The Development Control Regulations for the city introduced the section 33(7) that concerned the redevelopment of ‘cessed properties’ in the inner city. Independence and partition in 1947 seen the rent rates increase disproportionately thus necessitating some kind of bar to be set. The Rent Control Act was instituted and continues to exist till today the rents never having been increased since 1940. This caused almost no returns for the landlords thereby making maintenance of buildings an issue.

The building stock in the city began to deteriorate and ultimately the government had to step in to prevent loss of life due to building dilapidation amidst the tenant-landlord deadlock. It formed a body called the Mumbai Repair and Reconstruction Board that would levy a repair cess on a building as per the year of construction and carry out structural repairs. Although

the rents remain frozen as per the 1940 rate the cess was a percentage of prevailing market rates, even then the money generated was not sufficient as the government did not receive the money as a lumpsum but it would be paid over a period. Category A cessed buildings were buildings built prior to 1st September 1940 and attracted a cess of 34% of its rateable value. Category B cessed buildings were those that were built from 1st September 1940 upto 31st December 1950 and the cess applicable was 26% of its rateable value. Category C cessed buildings were those that were built between 1st January 1951 upto 30th September 1969 and a repair cess of 18% of its rateable value was levied.

Table 1 : Year of Construction and repair cess as applicable

Category	Year of construction	Repair cess
A	Prior to 1st Sept 1940	34 % of rateable value
B	1st Sept 1940 – 31st Dec 1950	26 % of rateable value
C	1st Jan 1951 – 30th Sept 1969	18 % of rateable value

This model also not being too successful the 33(7) regulation was introduced wherein a building could be redeveloped on consensus from 70% of its tenants.¹⁷ The 33(7) was a lucrative option due to the increased FSI (Floor Space Index) a developer would be granted with as a compensation for the redevelopment of the cessed building. Depending on the category of Cessed building accordingly was the FSI limit for rehabilitation and incentive FSI were set immaterial of plot area, location etc. Hence, a category A cessed building when redeveloped would be allowed a total FSI of 2.5times of the gross plot area or the FSI required for rehabilitation of existing tenants, which ever is more plus 50% as incentive FSI. If a category B or C cessed building would redevelop, the total FSI allowed would be as much as required for rehabilitation of existing tenants plus 50% as incentive FSI.¹⁸ But in a case of composite redevelopment of A, B and C category cessed buildings the FSI permissible will be 2.5times of the gross plot area or the FSI required for rehabilitation of existing tenants which ever is more plus 60% incentive FSI. In the case of the plots undergoing redevelopment were six or more the incentive FSI would be 70%.

Table 2 : FSI as per Category of cessed building applicable as per DCR 33(7)

Category	Floor Space Index
A	Total FSI shall be 2.5 of the gross plot area or the FSI required for rehabilitation of exiting occupiers plus 50% as incentive FSI
B	Total FSI shall be the FSI required for rehabilitation of existing occupiers plus 50% as incentive FSI
A, B & C (Composite Redevelopment)	FSI permissible will be 2.5 or FSI required for rehabilitation of existing occupiers plus 60% incentive FSI whichever is more if the number of plots jointly undertaken for redevelopment is six or more the incentive FSI available will be 2.5 or FSI required for rehabilitation for occupiers plus 70% incentive FSI whichever is more

As a result of this, towers with large houses, multi storied parking spaces, terrace swimming pools started coming up in the dense old city fabric of Kalbadevi, which has a very high real estate value. With the application of the policy, good building stock that could be demarcated as heritage was pulled down to make way for highrises while the dilapidated buildings continued to stand since the policy did not have building condition as a parameter for redevelopment. The buildings that redeveloped did not have a cap on the FSI or height of building or guidelines for façade finish, fenestration, response to surroundings etc. giving rise to isolated towers in a lose rise much detailed fabric. The regulation did not have provisions for the commercial units usually on the ground floor, as was the mixed use characteristic of the native town. The redeveloped buildings housed the existing tenants but also brought in new owners through the sale component causing a disparity of classes. Their location close to the business area of the city made them highly sought amongst the elite groups giving rise to enclaves of mono economic groups. The new owners bought and are buying houses at current market rates while the original tenants were rehoused, but the new building type levied maintenance almost 500 times the rent that they had been paying. Also it was noticed that original people got dis-housed as they could not maintain the high cost of living in the newer building stock. It was profitable for them to sell these houses at profitable rates and

move to the northern peripheries of the city since real estate values were much lower. Various planners and citizens of the city reacted to these new urban forms and sought options for better design options. In the light of these developments, the urban renewal scheme or 33(9) scheme was introduced.

DCR 33(9) regulation was introduced as a urban renewal scheme when concerns of urban form primarily and condition of building stock etc were raised. A premise was put forward that a cluster could be planned with adequate infrastructure with due regard to urban form and urban space.

The regulation provided an FSI of 4 or more, whatever was required to re-house all existing tenants/ occupiers.¹⁹ However the incentive FSI varied as per the total area of the amalgamated plot. Along with the FSI certain other parameters were introduced, like an amount of Rs. 5000 per sq.mt had to be paid for improvement of offsite infrastructure around the cluster etc. However, critical questions of how these forms are affecting the social fabric are not being addressed.

Table 3: Incentive FSI given on application of DCR 33(9) as per area of amalgamated plot

Total area of amalgamated plot	Incentive FSI admissible
4000 – 8000 sq.mt.	55 %
8001 – 12000 sq.mt.	65 %
12001 – 16000 sq.mt.	70 %
16001 – 20000 sq.mt.	75 %
More than 20000 sq.mt.	80 %

To further explore this idea, Kalbadevi in the inner city is looked at through the various transformations it is undergoing and is slated to undergo. Kalbadevi has always retained its position of being the ‘great bazaar’ area of Mumbai²⁰ with one of the three cloth markets – Swadeshi market, being on its street and the Mulji Jetha and Mangaldas cloth markets being on a street parallel to it. This site has intense activity all through the day with the various wholesale traders sitting in their galas, to the handcart pullers scurrying around with huge bales of cloth. Kalbadevi being a trading area has small pockets of Gujaratis, Jains and

"I don't know what goes on in the crowd. I've had them show up and throw beer cans at me. I caused riots in most of the major cities." - Lou Reed

Maharashtrians dotting its area. Although the primary activity here is the cloth trade other small activities that were responsible for the development of Mumbai's economy also flourished here. The building types here mainly were wadis and chawls, and these typologies allowed the clustering of the community as per their respective ethnic and caste groups. Today the dominant activity is cloth trade as it still continues to function as part of the cotton spine, but other activities like opium and small industries like utensil making have been stopped or been relocated (paper whole sellers).

Figure 5 : Social Division and spatial distribution of Enclaves



For example, Bhangwadi in Kalbadevi is one such cluster of four buildings with only one fronting the street. This singular building had shops on the ground floor and other offices and godowns on the floors above while the remaining three buildings were

purely residential, and continues to be used this way. Children play in the courtyard and women use the space to celebrate various festivals and rituals. It allows them a certain privacy even though the street outside is a chaotic one due to the area being involved in the cloth trade. Bhangwadi was built by a Gujarati merchant who traded in opium and hence has derived its name. The name given by locals continues to be used to this day although the trading has long ceased. The building has semi open spaces like otlas and verandahs that are used to dry clothes, spices, to chit chat and conduct small businesses like rakhi making etc. The outside space on the street and the inside space around the courtyard are diametrically opposite, completely different. Residents when asked, value this space as it allows them the feel of a residential neighbourhood even though they may be in a crowded business area. The ROMF (Remaking of Mumbai Federation) a private organization submitted a proposal on the basis of the 33(9) regulation for Kalbadevi and its surrounding area. The proposal cites only the Swadeshi market and a church as 'heritage' worth retaining; the rest is erased to make way for tall, high end apartments. The present formal and informal commercial activities are not taken into account as the drawings clearly show them all bundled into generic lower four floors of a twenty to thirty storied structure. The proposal conveniently does not account for the history of the area or its various communities. It clearly makes provisions for only the dominant one and sells its idea as being a relief from the present congested condition. Traditional activities find no mention in the scheme for renewal.

Figure 6: Inner city of Mumbai



New building types and forms emerging out of the process of globalization and subsequent restructuring are a complete contrast of the original. These alien forms thus become redundant spaces over a period of time. They completely lack the original characteristics of the building or the locality and thus disrupt the social fabric.

The ongoing and proposed restructuring of Mumbai through the redevelopment proposals and infrastructure for private transport bears a striking resemblance to similar restructuring programmes, being followed in many cities in the world as part of the globalization scenario.

7. Consequences of the new spatial structure

The principal elements emerging from the current practices of Mumbai fitting in the globalization scenario are a) a decline in the manufacturing and shift of the urban economy to finance and services, b) increasing flexibility in the organization of economic activities, c) large scale intra-urban movement of people and services, d) huge displacements of low-income groups and poorer sections from older areas that experience urban renewal, e) development of pockets of affluence – commercial and residential and shift to mega structure and hyper forms. An analysis of such patterns of shifts in positions proves the link between ideology and power, which has implications on the social, economic and cultural formations of the post modern urban space.²¹ Although, popular and scholarly definitions of globalization have a tendency to emphasize the economic dimension of the process its cultural dimensions are never addressed. When global cultural forces are considered, they are often viewed as dependent on economic globalization. This bias often coincides with a lack of attention to the importance of localities in the globalization debate. A relatively small number of authors, accord that globalization is primarily about culture. For example, Anthony King states that globalization theory is concerned with ‘questions of culture, identity and meaning in-representations of the word as a single place.’

The inner city is the memory of itself, and this, fights constantly against oblivion. In this process, its many urban structures became the physical support of shared meanings, and thus the symbolic support for the communities that, through time, built these structures. The diverse spatial configuration of the city preserves the collective memory of its inhabitants and by doing so embodies a multiple history. In this identification of inhabitants with the urban structures, the built environment performs an essential interface, carrying a constitutive significance. This interface operates at two scales: (i) in the city as a whole, that is, as the integration of its multiplicity, allowing its history to be “read” and revealing its identity; (ii) in its many localities, whose particularities of living and working are an outcome of history.

A central element in the restructuring process is the shift of capital from the primary process of production to the secondary process of built environment. This is seen through the increased construction activity, luxury housing in high value real estate area and commercial areas in the old parts of the city becoming more formalized. These shifts are contrary to the existing ground reality and in the process are completely bypassing certain sections of society, informal activities, public housing and open space. An intersection can be seen between capital restructuring and urban restructuring. The reorganization of the built environment leads to a creation of a new order of social and economic activity which in turn gives rise to a different identity to the city. Similarly in the case of the inner city, its redeveloped projects are being sold as elite spaces of luxury and comfort with an emphasis of proximity to commercial spaces like the stock exchange, major markets etc. This is particularly attracting a section of society with a formidable money power. These processes are initiating a ‘spatial fix’²² causing inequalities not only at the larger region level but also at the city and locality level. In a sense it is giving rise to enclaves not on the basis of community or subcaste as was seen in history, but one that is driven on capital accumulations. People and activities that do not fit within these prescribed ideas and projected

"Big cities are chaotic. And chaos for humans - who have experience from their ancestors - is the last step before conflict. So, in the park, every kind of visual contradiction has been eliminated." - John Hench

images are subjected to a basic pattern of change. This pattern concentrates on a selection of urban functions for locating in specific areas, relocation of less profitable functions and people to the periphery and creation of space for new functions and modern infrastructure.

A significant aspect of the above heterogeneity is that it is systemically leading to a greater marginalization of the poor and a polarization of city space. Traditional and non mechanized work activities like dyeing, handmade paper manufacturing etc are slowly on the decline which in turn is leading to a slow erasure of the city's cultural economic past. The traditional mixed use typology of living and working is being done away to enable segregated spaces of luxury housing and work activities restricted to certain areas.

It is imperative that we understand the expansive nature of this current trend of urban spatiality to prevent our cities from losing their essence and character to becoming banal spaces. Only through such a vision can people become an integral part of the planning process leading to a more nuanced intervention in urban space and a more inclusive approach towards integration and upgradation.

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References :

1. Patel Sujata; Bombay and Mumbai: Identities, Politics and Populism, Urban Studies, Oxford University Press, 2006
2. Hazareesingh, Sandeep; Colonial modernism and the flawed paradigms of urban renewal: uneven development in Bombay, 1900-25, Urban History, Cambridge University Press, 2001
3. In *Splintering Urbanism*, Stephen Graham and Simon Marvin (2001) offer a provocative and stimulating analysis of the contemporary relations between networked infrastructures and the “urban condition.” The book skillfully combines a descriptive and an analytical/critical perspective in support of its central argument that “a parallel set of processes is under way within which infrastructure networks are being ‘unbundled’ in ways that help sustain the fragmentation of the social and material fabric of cities”
4. Ibid 2.
5. Kosambi, Meera. *Bombay in Transition*, Almqvist & Wiskell International, Stockholm, Sweden, 1986
6. Farooqi, Amar, *Opium city- the making of Early Victorian Bombay*, Three essays Collective, 2006
7. Ibid 2
8. Dwivedi Sharda, Mehrotra Rahul, *Bombay the cities within*, University of Michigan, 1997
9. Ibid
10. Ibid
11. Patel Sujata; *Bombay and Mumbai: Identities, Politics and Populism*, Urban Studies, Oxford University Press, 2006
12. Dossal, Mariam. *Theatre of Conflict, City of Hope: Mumbai, 1660 to present times*. New Delhi; New York: Oxford University Press, 2010
13. King Anthony, *Globalising cities*, Routledge, 1990
14. Kidambi Prashant, *The Making of an Indian Metropolis*, Ashgate publishing ltd, 2007
15. Rohatgi Pauline, Godrej Pheroza, Mehrotra Rahul , *Bombay to Mumbai : changing perspectives* , Marg Publications, 1997
16. Mahadevia quoted in Banerjee-Guha, Swapna, Post modernism, post fordism and flexibilized metropolis: dialectical images of Mumbai, in Colonial and post colonial geographies of India (eds) Sarawati Raju, M. Satish Kumar and Stuart Corbridge, Sage Publications, 2006
17. Development Control Regulations for Greater Mumbai 1991
18. Ibid
19. Develeopment Control Regulations for Greater Mumbai 1991
20. Ibid
21. Banerjee-Guha, Swapna, Post modernism, post fordism and flexibilized metropolis: dialectical images of Mumbai, in Colonial and post colonial geographies of India (eds) Sarawati Raju, M. Satish Kumar and Stuart Corbridge, Sage Publications, 2006
22. Harvey, David: *Spaces of capital: Towards a critical geography*, Edinburgh 2001

REDEVELOPING SLUMS : A SPATIAL DECONSTRUCTION OF MUMBAI'S INFORMAL ECONOMY

George Jacob

ABSTRACT:

In keeping with the 'Mumbai - Shanghai' dream 'messy' 'banal' and 'potentially dangerous' spaces need to be done away with, in order to create a 'world class' city that would form entry points for global capital and manifest a new landscape.

Slums have been of major concern to the development authorities. When inspected closely these neighbourhood slums show different layers of growth thus bringing to light the incremental development of the land through creation of jobs & setting up of their informal economy. This highlights that slums are networked heavily with actors & their respective activities & that spaces within them are appropriated to play host to varied activities.

Within the city of Mumbai, the internal city restructuring can be discerned through the enormous transformations that are ongoing in the region framed by the emerging east-west corridors (predominantly the suburbs) with heavy investments into mega-infrastructure projects. Seen together, they exhibit new architectural and urban morphologies. On one hand, large regional relocations of people and activities to the city fringes or rural hinterlands in the form of relocated manufacturing sector and urban services like slum rehabilitation sites etc are taking place, and on the other, we see several localized trade-offs in displacing slums, formal and informal commerce.

Keywords: Informal housing, Slum typologies, Informal economies, Network and associations, SRA scheme

1. Introduction

In keeping with the 'Mumbai - Shanghai' dream 'messy' 'banal' and 'potentially dangerous' spaces need to be done away with, in order to create a 'world class' city that would form entry points for global capital and manifest a new landscape.

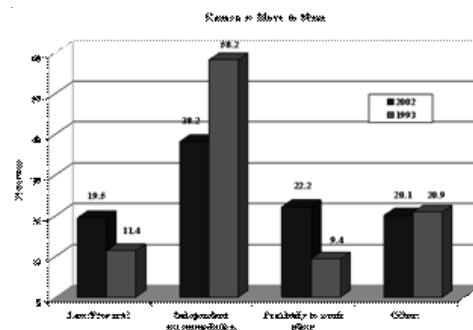
Surrounded by infrastructure projects, enclaves, condominiums, business districts, transport transits and redevelopment projects, slums today cut a sorry figure as they still wait to be looked at. They tell a different story of survival and sustenance. Their affair with the city is very old and it is embedded within the labyrinth of networks that the city has established over time.

"A **slum**, as defined by the United Nations agency UN-HABITAT, is a run-down area of a city characterized by substandard housing, squalor, and lacking in tenure security."

Sporadic growth of real-estate, sprouting of multiple work centres, pressures from minority groups, non-availability of land, non-committal leadership, in-

ability of a working master plan, challenges of old city regulations all-together plates Mumbai as a space for manipulation leading to contestation. Contestation is an urban phenomenon within the economic strata and systems be it for political mileage, prominent land holdings, educational excellence, for profitable investments, successful commodities or superiority in spaces of work, residence and travel. The city offers space for such a contest thus enabling everyone from a person of the economically weaker section to a privileged industrialist to invest and flourish.

Figure 1: Reasons to Move to Slums



"Any vision of sustainable development fit for the 21st century must recognise that eradicating poverty and achieving social justice is inextricably linked to ensuring ecological stability and renewal - 'A Safe and Just Space for Humanity', Oxfam"

Under the umbrella of contestations, it becomes imperative to study the mechanisms the informal sector has developed for survival and sustenance for livelihood. In order to meet the demands for housing and attracting foreign investments in the city, the government undertook projects such as the rental housing scheme, mill lands project, Mumbai Rapid Transport System, repealing of the Urban Land Ceiling and Regulation Act, development of Bandra Kurla Complex as a second Central Business District and the Slum Rehabilitation scheme. Within this spectrum of projects housing and local entrepreneurship found it difficult to find space to grow. Within the city, population in slum pockets grew and their ground coverage expanded. Place on the fringes of the city, like Nalasopara, Virar, Karjat, saw large scale plotted development of farm lands into new housing schemes. According to an article in Times of India in 2003, a survey stated that 42 families migrated into the city on a daily basis of which 60% moved into slums. Accompanied with the knowledge that 23.3% of slum dwellers continue to reside in the slum for 20 and more years and that affordability and proximity to work were primary reasons for moving into slums. This economic group found alternative ways to flourish. The slum in its entirety works as a collective enabling it to manipulate space and employment by means of local financing systems, man-power, materials, machinery etc.

2. Objectives

The aim of the paper is to understand the networks and associations embedded in informal housing + commerce and the implications of new morphologies (SRA scheme) on them, in the city of Mumbai.

The objectives of the paper would be:

- To understand where informal housing is located and how does this relate to the overall urban structure of Mumbai and how was this developed over time.
- To analyse the implications of the new morphologies on existing social networks and distributive spatial justice.
- To comprehend how emerging global economies

could invariably disrupt the established informal economies and networks in slums.

3. Data Sources and Research Methodology

The research for the paper was done through interviews with people on the site and a thorough mapping of the area through a framework that analysed spaces of living, working and recreation. Secondary sources of data like various reports and books also have been used to substantiate the empirical findings.

4. An alternative narrative of Mumbai through the lens of slums

Historically, slums have grown in Bombay as a response to a growth of population far beyond the capacity of existing housing. Migrants are normally drawn to the city by the huge disparity between urban and rural income levels. Usually the residents of these densely populated enclaves live close to their place of work.

The early colonial period of is always described as a time when agriculture and allied activities flourished on the island, the scenic landscape pockmarked with gaonthans witnessing the growth of early colonial period. As part of the dowry of a marriage alliance the British East India Company were attracted by the potentials of Mumbai becoming the center of trade and textile manufacturing units. This period witnessed large scale reclamation and building construction. Since the post independence period upto today, the city witnesses changing trends in work patterns, political agendas, social values, economic standards and revisions in policies many a times causing a fracture and rupture to the city's working. Amidst all this one wing of the city continues to evolve, adapt and work as a well oiled wheel and they are slums.

This approach aims to place the argument that slums have been a condition that have existed throughout the city's transition from an agrarian economy to a subsidiary trading outpost of Surat port to its time as a manufacturing economy with textile industry up to its present form as a service economy.

4.1 Slum as an urban condition

It would be appropriate to begin by enumerating the characteristics of slums.

1. Slums are settlements that have no land entitlement
2. Slums don't have formalized infrastructure
3. Slums exhibit extremely high density
4. Slums operate as informal industries

In the light of these conditions and in order to locate their presence in history it would be accurate to understand that during the colonial period as the Company's influence increased through the development of the docks, the island observed huge migrations during the 17th and 18th centuries. These migrating communities coming from rural Maharashtra and neighbouring states, majorly from Gujarat, Goa and Madhya Pradesh were easily absorbed into existing settlements on the island. These migrants became the work force for the growing trade and industrial activities. During this period farmers became landlords as they realized the potentials of the land as a commodity to be leased out to these migrants.

Kothachiwadi

One such case is that of Khotachiwadi, today demarcated as an urban heritage precinct. Khotachiwadi is a cluster of about twenty-eight small cottages and bungalows built in the late 19th and early 20th centuries in the heart of the city. Once demarcated by British surveyors as slums due to the dense spread of houses. Khotachiwadi used to be a cluster of houses practicing agrarian activities. With the influence of the Company growing on the island and the merging of islands changes were effected in occupation and livelihood of the natives. New forms of work patterns emerged providing opportunities to various people. This allowed for large scale migration into the island and a subsequent demand for space in the city. These new groups especially similar communities namely, Pathare Prabhu and Goans, were easily accommodated into the existing fabric of this village. Thus when Parsee, Hindu and Muslim, Gujarati merchants, shop-keepers and businessmen moved in and around the Fort areas and brought in their urban traditions of built-forms from their city of origin, the other groups of predominantly labour communities found themselves being absorbed into villages similar

to that of Kothachiwadi. It was then, perceived to be, the peripheral regions of the north. The lands were mostly owned by Christian landlords or occasionally by a member of the Pathare Prabhu community – an old courtly caste that linked its existence to a thirteenth century kingdom.

Dharavi

Dharavi, used to be a cluster of koli houses with the sea for an edge on one side and swamps on the other. So when areas around fort, inner-city and villages like Kothachiwadi were getting denser, the poorer communities mostly untouchables started settling down in these swamps. This region was seen to be unliveable and peripheral, from the vantage points of both – the fishing community that lived by the sea, as well as the city civic-authorities in the south. This northern part that lay on the outskirts of the then city limits were havens for the surplus labour coming into the city. Huge tracts of such swampy lands were reclaimed by these migrants to make it fit for habitation.

Figure 2: Slums in Mumbai



"In a conflicting world of poverty, greed and over-consumption, we still don't know what it is to share"
- unattributable

Slum as a condition is a part and parcel of a growing economy. They remain as one of the important ‘cog in the wheel’ for Mumbai. Their presence provided the services as labourers for formal industries, as domestic-help in cultivating farm lands for natives then and now for housing complexes, as service staff for public and private offices etc. Mentioning them as a condition, comes from the above facts and their ability to be able to evolve survival tactics, adapt to the changing economies and enabling new forms of local governance. Due to these patterns of living, they are in a state of constant retrofitting physically through their lived space and through their processes of integration into the system. This physical condition thrives due to, incremental spatial growth of units, accommodation for migrants (about 42 families per day), shared between multi-lingual and multi-cultural communities and the dual nature of these spaces for work, play and prayer. It is thus important that the systems for redevelopment of the slum spaces take into account these spatial and tactical ideas of incrementality.

4.2 Slum Geography

Like ants making their way to pick food crumbs the slums have grown around zones. These zones have been textile mills, railway yards, docks, existing villages, railway stations, arterial roads, east-west corridors and nullah edges. They have come up along spaces that are in close proximity to either work or transportation. As the city of commerce continued to thrive, connectivity became crucial and critical with the development of the trend of living in the suburbs and working in the south. This situation aggravated when multiple work centres opened up across the landscape of the city-region. Places like Andheri, Borivali, Dadar, BKC, Ghatkopar, Thane, Thane-Belapur belt, Vashi came into existence due to large-scale privatization, effects of globalization and availability of finance. Inorder to meet the demands of connectivity and to aid in the processes of transition into a new economy, the city and state authorities have invested in various schemes and public projects. Some of these are JNNURM scheme for inner city renewal, MUTP for trasnport systems, MUIP for east-west road corridors and MRTS for the metro rail. Since the slums occupy 8% of the city and are located on sites lying between formal transport systems, formal

housing and work centres, they became easy target of re-housing or maybe dis-housing - which will form the second part of the paper. Slum Rehabilitation Scheme (SRS) further assisted this process, thus closely stacking redeveloped spaces to make way for infrastructure projects, a physicality that is seen along the four east-west corridors. The slums form large patches of reclaimed land and are services to serve the functioning of the city.

4.3 Slum Typologies

The slums work like machines during the day and are silent in the night to wake up early next day with some kind of resurgence to complete a given task. Acquainted by the sights of this what could be missed are the small activities that form an integral part a whole system of activities. These activities could be varied, at the level of an aerial view they look like dense clusters fused together, organic in every sense – from the way they take root to the way they grow and evolve.

If one resists the generality of the slum and looks carefully at the nature of spaces and activities, these can be further understood as being of various typologies. Slums within the stretch of the city manoeuvre are varidely based on occupation and site context. Slums can be typified as

- Residential slums
- Industrial slums
- Retail slums
- Mix Use slums - residential + industrial, residential + retail, retail + industrial

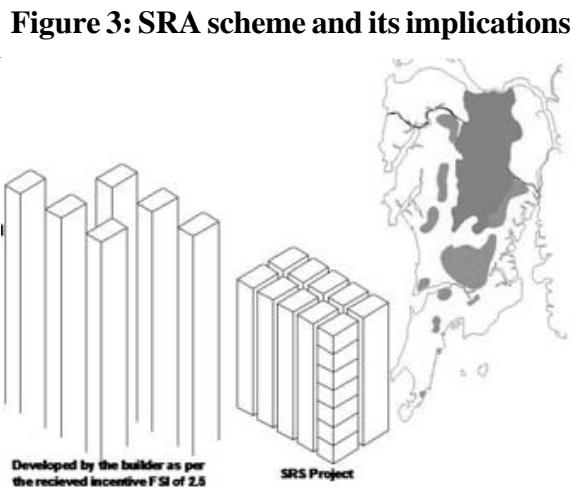
Based on the geographies of slums in the city there have been a constructive but slow growth in the typologies of slums throughout the city. The closing-down of the mills brought middle men to participate in the auctioning of machinery and eventually purchase them and distribute these within the labyrinth of the slum. This setup, livened the industrial economy with the setting up of small manufacturing units spread across the city . The mills survived in parts across the city, as machinery was allocated due to space constraints and unavailability of land ownership to build. The components of the larger product were produced

across the city and then brought under one roof to assemble. The formula is efficiency in terms of management coupled with manpower. The ability of establishing consensus among the people to plan and play their roles, brought stability in the form of a livelihood. This is where the formal systems of planning and administration failed because of their inability to read and articulate slums with their enormous networks and associations.

4.4 Slum Scheming

Thus with an **observation against such a general typology** it is prerogative to understand the frameworks and limitations of policies meant for improvement of the physical condition of slums. This section will attempt to set up that these typologies of slums are formed due to networks and these networks together bring about physical restructuring, social alterations & economy strengthening. We as architects, planners, social activists, government officials should be able to read these patterns of physical alterations, but what is necessary is an enquiry in the social aspects, where it is by and large sits under the larger idea of **processes**.

4.5 Slum Rehabilitation Scheme



The Slum Rehabilitation scheme was introduced in a bid to upgrade the unhealthy living conditions of people living in them. Three types of conditions allowed for the application of the scheme - In situ scheme under Development Control Regulation 33(10) which

rehabilitated the slum dwellers on an ‘as is where is’ basis. The PAP (Project Affected Person) scheme as per DCR 33(11) proposed the relocation of slum dwellers to other places to make way for infrastructure projects. And the Transit scheme under DCR 33(14) where housing is provided for an interim duration of redevelopment.

The Slum Rehabilitation scheme looks at housing people in what is termed as “a clean and pucca” house of 225 sq. ft. The scheme fulfils the requirement of free-housing and justifiable allotments to those eligible besides that it is unable to deliver quality space for work and residence. Infrastructure, playing areas for children, spaces for social gathering, well ventilated and lit corridors, accommodation of different types of works, setting up a maintenance fund, etc. are some of the shortcomings of the scheme. It addresses the complexities of a slum by providing a physical entity that is mismatched to the nuances of socio-economic patterns.

There have been many attempts to upgrade the conditions of these slums namely through history, City Improvement Trust, Urban Land Act, Slum Upgradation Project and Slum Rehabilitation Association. All of the above have been formulated with a concern to improve these deplorable conditions of slums. But, all have been myopic in their understanding and resolution of the rehabilitation housing for slums. For the government shortage of land and the demand for housing were acute problems. These schemes and projects meant for the development of slums became sub-policies in the light of other projects such as MUP, MUIP, MRTS. Rehabilitating slums became projects, for projects leading to a generic nature of space that could not accommodate the living and working patterns of slum. In their organisation they are closely placed and cluster around a small space so as to accommodate other projects.

5. Incremental learnings from the informal sector

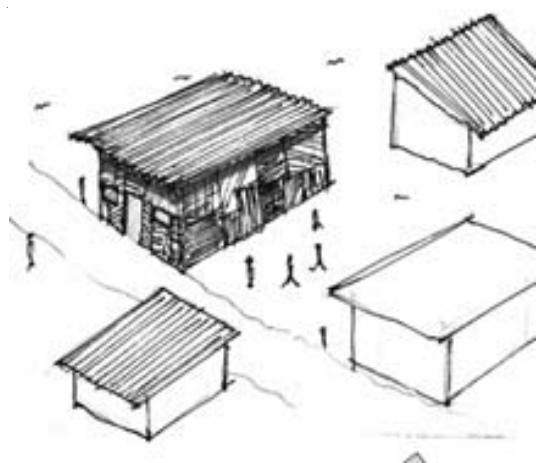
In order that slums and their processes are integrated into city functioning one needs to understand

“But isn’t it time for Christians to admit that we should reject bargains if they are gained by the exploitation of the poorest of the poor in developing countries?” - Tony Campolo

the mesh of networks and the incremental growth. Understanding the various networks involved at this unit-based level aids in comprehending the other connections looming over it. By and large these networks involve various actors and the roles they play – Slum dweller, Slumlord, government, private industries, citizens, money-lenders, mandals, banks, balwadis, etc.

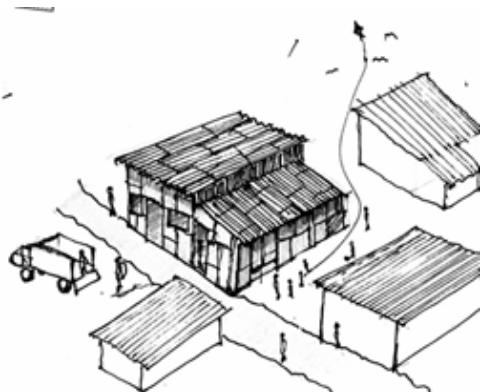
The government makes policies, the slum lord becomes the provider, private developers, citizens comments, money lenders and mandals become the support system, etc. One needs to view the larger historical setting of neighborhoods to fully appreciate the structure of economy, society, and the politics that underpin this.

Figure 4 : Stage 1



To study the case of the varied nature of a slum in Mumbai and the complexities associated with it the story of Shaukat Ali a face in the crowd of this large city was studied. Shaukat Ali has a house that could be classified as an industrial cum residential type.

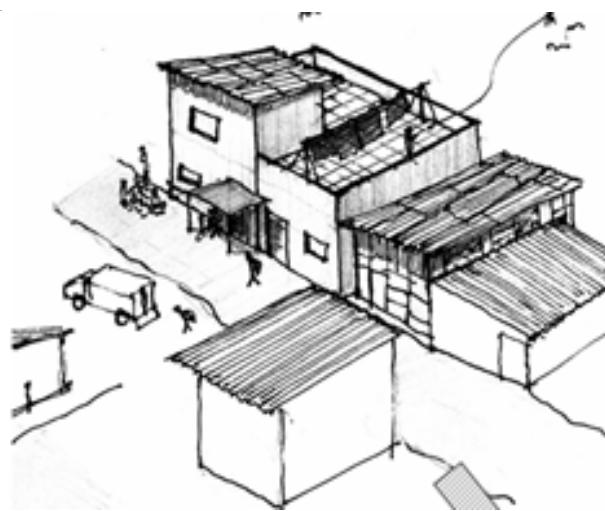
Figure 5: Stage 2



Shaukat Ali came to the city from Lucknow to escape a drunken father and a step mother. The city that opens up its arms to the thousand that come to her doorstep every day also brought Shaukat Ali to this city at the age of 15. He had seen it in the movies and believed this is where he would make it and have a life he always dreamt of. He began with working at a tea stall and slept there itself. Over time he got acquainted with Mohammad Ansari who told him of a place he could call home for a few thousand rupees. Shaukat Ali had savings and that's when he 'bought the land where he lives'.

His roaring business today began with meager beginnings of a 'patra' shed and tarpaulins as wall and roof. Mohammad Ansari initiated him in the scrap business first as a co-worker and then as an entrepreneur. This shift and change also saw the upgradation of his 'home'. Shaukat decided it would be much more profitable to make his home a place of work as well his dwelling unit. Many years had passed and people with similar stories began to live in and around Shaukat's home. That was when they decided it would be much more profitable if they worked in a cluster and each specialized in a particular work. Profits would be more, less official issues to deal with and it would mean a co-operative and the ability to take on larger scale of work without a total investment of capital. They also made provisions for the trucks carrying the unsorted scrap to their 'industrial unit' to have some sort of a loading and unloading bay.

Figure 6 : Stage 3



Shaukat had by now married and had a family of his own, business was growing and the home felt smaller. He then thought of moving out to a larger place somewhere else, but it struck him that his home was his place of work. And where would he establish the community ties that he had established over all these years. He then decided to build a floor more, to accommodate his family. Thus work happened on the lower floor and he resided on the upper floor.

Figure 7: Stage 4



With his children getting married and moving out into similar units of their own, he continued to rent out the other unused area of his house. In spite of living in a typified slum he earns much more than white collared professionals along with having the comfort of having his work in his home all by doing a meager job of sorting scraps in the large driving economy of the city.

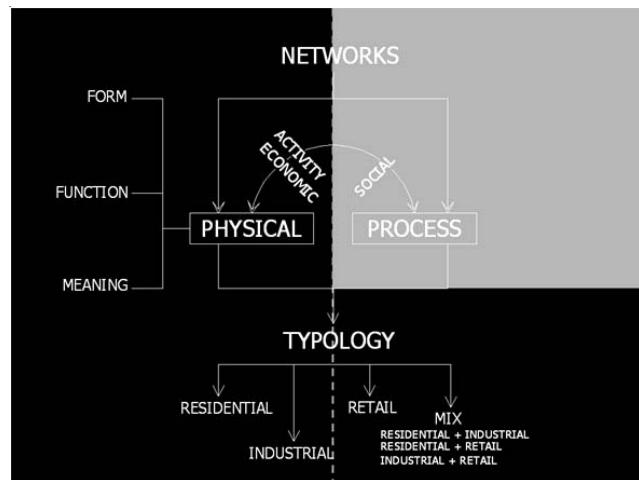
Learnings from the Informal Sector

The diagram shows the two components of a slum the physical aspect of it and the process that runs through that aid in the setting up of an individual units and its proliferation. The processes derive the unit typologies and form of the

With the city adapting to the changing global policies and market trends, the city and state authorities are still grappling with satisfying the need for - affordable housing, acceptable rehabilitation, effective infrastructure and amenities, curbing land grabs and regularising real estate. In order to address & overcome these, the government has formulated a wide

range of policies promising an equitable distribution of spaces & amenities but those have been of grave concern, due to its myopic vision. In response to this the city has undergone major transformations & modifications in the last ten years. Within the realms of such transformations slums have been of major concern playing in the minds of the development authorities as they occupy land that are not theirs.

Figure 8 : City - a mesh of manipulative economies



6. Incremental Housing

With the understanding of networks and their course of strengthening in slums, it is possible to sow the seeds of incrementality. One should shoulder the possibilities of the ceased Site and Services Scheme (SSS) and develop it as a potential. The provision of infrastructure (roads, water, electricity and local transport), community building programs, establishing wholesale building material and hardware outlets and an initial introductory capital should aid in the processes of incremental housing. It will initially also require an agency to plot the site through a process of community participation.

7. Community Participation

The involvement of community participation will be beneficial due to the already existing people network in slums. NGOs and public agencies should together set up workshops and community building

"All cities are mad: but the madness is gallant. All cities are beautiful: but the beauty is grim."
- Christopher Morley

programs with an agenda to understand the nuances of politics of spatial arrangement. Local building contractors and architects should be able to detail the layout and design along with the community. This whole process will be slow and very intimidating and frustrating, but it will definitely result in preparing a definite delivery system. This participation should continue in the form of co-operative societies, which will be able to maintain the space and conduct similar awareness workshops among the residents.

8. Economic Regeneration

The birth of multiple business districts is the core of major issues regarding restructuring. Connectivity being a major concern, further de-centralization will be essentially helpful in fighting with this problem. Private firms and newer businesses should be given healthy opportunities to begin their establishments near or as part of the Slum Redevelopment Scheme, thus giving ample opportunities for both the rehabilitated group and the new entrepreneurs. This can be implemented to correct and cease forced evictions and gentrification. This might be the beginning of a new slum typology.

9. Slums the sites of informal economy

Thus the slum is a site of intense activity both social and economy related. These areas can be permanent or make shift spaces – more so since the restraint of space pushes them to give new meanings to a space. A more detailed understanding of the shared spaces and spaces of economy that the slums have, has to be borne and taken into account while designing and rehousing them. They should be treated on humanitarian grounds and should not be subjected to cramped and dark 225 sq.ft. space with no connection to the ground. Their home stands on or to their neighbours who are a source of comfort when they are struggling in this city.

It are these very connections that helped them to gain acceptance in the environs that they inhabit and make a life for themselves in the city. These are support systems that they cling too and the architecture for them needs to address it within the larger globalization scenario of plush spaces, fast movement and flows of capital.

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References:

- D. Bhogilal, Seervai N., The shunned and shunted: the slum payment dwellers of Bombay, PUCL, Tata Press, Mumbai 1983
- Phatak, VK and Vakil Gandhi, Bombay Urban Development Project - Lessons of Experience, MMRDA, 1987
- Seabrook J, Life and Labour in a Bombay slum, Quartet books, London, 1987
- Benjamin Solomon, Productive' Slums: The Centrality of Urban Land in shaping Employment and City Politics, <http://www.rrojasdatabank.info/wbpover/benjamin.pdf>
- Slum Rehabilitation Authority, Guidelines for the Implementation of Slum Rehabilitation schemes in Greater Mumbai, Government of Maharashtra
- Davis Mike, Planet of Slums: Urban Involution and the Informal Working Class, 2006
- Urbanization and Slum Formation, Giok Ling Ooi and Kai Hong Phua <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1891640/>
- Patel Sujata, Bombay and Mumbai: Identities, Politics and Populism, in Urban Studies, Sujata Patel, Deb Kushal (eds) Oxford University press, 2006
- Naidu, Ratna, Dilapidation & Slum Formation Ch.9, in Urban Studies, Sujata Patel, Deb Kushal (eds) Oxford University press, 2006

The strategist who is unconcerned by sustainability is akin to an architect who cares not whether their building stands or falls - James Mackenzie,

Technical Session IV

The grass can be still greener

ECO-EFFICIENCY AND COMPETITIVENESS: TRENDS AND STRATEGIES WITH COMMON GOALS

José G. Vargas-Hernández

ABSTRACT:

This article aims to develop the idea that merges eco-efficiency and competitiveness as elements in harmony for the sustainable development of a country. Supporting this idea, in a framework of empirical research based on the following theories: resources and capabilities, competitive advantage-structural theory. With this theoretical basis, aligning the competitiveness and eco-efficiency, we construct the path of economic development, sustainable businesses and thereby strengthening the economy which in turn is a factor influencing the quality of life of its inhabitants. It is concluded that sustainability and competitiveness are major goals that should not be separated, if now the real efficiency lies in exploiting the economic competitiveness in a sustainable manner.

Keywords: Eco-efficiency, clean energy, strategy, sustainability.

1. Introduction

Sustainability rests on three pillars that balance economic, social and environmental variables. Of these pillars emerge other important issues such as competitive social responsibility, and eco-efficiency. This article aims to develop the idea that fuses the eco-efficiency and competitiveness as elements in harmony for the sustainable development of a country. Supporting this assumption, the research framework is based on an empirical and descriptive theories centered on resources and capabilities (Barney, 1991) and the structural theory or competitive advantage (Porter, 1981).

2. Background of the problem

With economic industrialization since the nineteenth century began major advances in product innovation and technology to make human life more comfortable and focused on more efficient production, churning out in serial and large scale. Unfortunately economic development was not given at the same time to ensure it awareness-industrial technological development with care and planning of sustainable resources that allow the regeneration in their respective cycles.

The industrialization process was focused on great technological breakthroughs and improvements over

time: the printing press, mass production, the steam engine to name a few. Industrialization based its growth and development in the use of non-renewable natural resources and polluting power generation. Exemplifying the above refers to the steam engine capable of moving trains present in Mexico since the eighteenth century - that consuming incandescent coal , releasing huge amounts of carbon monoxide and carbon dioxide polluting the air. This and other examples as electric power usage involve a constant natural wear (wear, tear and regeneration of used resources unplanned) where combustion of oil contaminates the environment.

There are still many other examples that could be mentioned as the use of gas (hydrocarbons) where burning to pollute the environment is a result of a chemical process. What happens before? Where do we get that hydrocarbon-oil-? Once known as refined gasoline to move cars and buses every day, how to get it? How long it takes to regenerate it? Have anyone ever questioned or thought with the care it deserves. Indeed it involves a long process generating this black gold, thousands of years of chemical decomposition of organic compounds in the soil.

With these simple examples is evident considering the importance of planning in the generation and use of renewable energy, in a structured and orderly. Or better, to support innovation in energy generation and

"A city of green buildings does not make a sustainable city. We need to address wider issues such as waste, water, transport and energy supply and their interface with buildings, whilst at the same time reducing our impact on the environment" - Keith Riley

application of clean energy to ensure not only halt environmental deterioration but begin to regenerate damage caused to the planet along the process of global industrialization. To address these concerns governments and world bodies like the United Nations (ONU, 1972) has developed important contributions to ensure competitiveness and sustainability and are achieving a common goal

Rio Summit in 1992 as a milestone for the development of eco-efficiency, highlighted the following principles:

- The right to have a healthy and productive life in harmony with nature.
- States have the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies without causing damage to the environment of other States or of areas beyond the limits of national jurisdiction.
- The development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.
- The environmental protection shall constitute an integral part of the development process and cannot be considered in isolation.

3. Hypothesis

With this theoretical basis, aligning competitiveness and eco-efficiency, it is feasible to build the path of sustainable economic development of businesses and thereby strengthening the economy which in turn is a factor influencing the quality of life of its people

4. Development

Eco-efficiency is a management philosophy that drives organizations to seek environmental improvements and carry parallel economic benefits. Eco-efficiency focuses on business opportunities and allows companies to be more environmentally responsible and more profitable. The eco-efficiency encourages innovation and therefore growth and competitiveness (CECODES 2000 p 6).

The WBCSD (World Business Council for Sustainable Development) defines eco-efficiency as:

Business are getting through the provision of goods and services at competitive prices that meet human needs and provide quality of life, while progressively reducing ecological impacts and intensity of resource use throughout their life cycle, to a level at least commensurate with the estimated capacity of the Earth. Most companies adopting eco-efficiency are generally leaders in their industry. Eco-efficiency is slowly gaining momentum and real investment in companies that analyze your options rationally to maximize profits in a sustainable way both economic and, for investment in this area besides providing them competitive rate of return, protect the environment allows using clean energy in several industrialized countries and provides them with financial and tax incentives to adopt green philosophy. As is becoming a very important business trend, also applicable in developing countries (CECODES 2000 p. 6).

Deciding to become eco-efficient by a company denotes a conscientious and thorough economic study. Besides establishing a strong social and environmental commitment, contributing to the company in the creation of economic value, reducing environmental impact with sustainable resource use, where value added is even more significant for the company. The eco-efficiency as a business philosophy applies to all areas of business, with the search for additional savings, elimination of risks and identification of opportunities and the realization of projects in the real panorama.

Thus it is noted that eco-efficiency is linked to other global trends like global Lean or Six Sigma. The WBCSD has led the way to make more visible the junction between excellence in eco-efficiency and value of the company to its shareholders. In its 1997 report, Environmental Performance and Shareholder Value, is in full this issue. The work has been reinforced by recent initiatives such as the Dow Jones Sustainability Group Index (DISGI), (CECODES 2000PP 21).

Understanding the company as a set of

"A green economy is one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities"

- United Nations Environment Programme (UNEP)

determined resources according to the theory of the growth of the firm (Penrose, 1959); it is interesting to add the contributions of Nelson and Winter (1982) who consider the promise and problems of modeling the evolution of economic change. Among the many benefits that can be derived from the theoretical approach of Nelson and Winter, it is that it reconciles economic analysis to the real world, the company business and its decision making processes. In a summary of their study expressed a better understanding of technological change and the dynamics of the competitive process. What better example of technological change and global dynamics of the competitive process that the integration of eco-efficiency companies.

According to the book “The resource-based view of the firm” (Wernerfelt, 1995) summarizes the knowledge of Edith Penrose noting that the best strategy involves an assessment of existing resources and develop new resources or capabilities. It follows the analysis of competitive advantage, Porter (1981). It is important to distinguish that competitive advantage is a strategic tool must be maintained long term. In this article I venture to complete the Porter approach which itself is important to achieve competitive advantage, but it is important to note and add that whatever the company’s competitive advantage.

There is a strong intrinsic commitment of each firm to be responsible for the existence of the company and the implications that its activities inflict to the environment. So it should be a strong business awareness to not damage the environment and quality of life dwellers and inhabitants, let alone the planet. Being eco-efficient and exploiting its expertise every business can be successful financially well enough to provide economic benefit to the region where it is respecting the environment, using eco-efficient mind-oriented their resources and ensuring the quality of life for the region where it operates. Fortunately, this philosophy is spreading around the world.

Anybody can be sure that if the environment presents environmental challenges and adverse effects, the same companies in partnership with governments

may present globally solutions, and borders would not be the limit for the entire world would. There have been new ideas and technology to address currently the greatest challenge, to maintain and improve the quality of life globally with responsible business, committed governments, innovation, technology and responsibility in all spheres. Both the theory of resources and capabilities, (Barney, 1991) and the structural theory or competitive advantage, (Porter, 1981) sustain that the company’s strategy must be tailored to achieve a position of advantage (Fong, 2005).

In the identification and assessment of the capabilities of a firm and its competitive advantages is useful to use the competitive analysis model based on strengths, weaknesses, opportunities and threats (SWOT). The SWOT analysis approach identifies the importance of external factors of the company in areas where threats and opportunities are closely linked with the theory of resources and capabilities developed by Barney (1991) in conjunction with the firm’s strengths. This last segment of the SWOT analysis encompasses two theories discussed in this paper and enables to identify clearly and comprehensively the main strength (competitive advantage) of a company and their integration into the economic sphere and the way it is exploiting its competitive advantage in harmony with the rest of their strengths to achieve the economic benefit of the company.

This leads to consider the implications and social responsibility that companies have regarding the environmental impact and the implications and relationships that economic engagement has or may have with the commitments of firms in terms of sustainability.

A. Savings Institutions and energy efficiency

Companies cannot ensure the responsible and equitable use of available resources on the planet based on the ability to regenerate them. But can contribute to these goals through eco-efficiency and responsible business philosophy. In Mexico the Trust Saving of Energy (Fideicomiso para el Ahorro de la Energía Eléctrica, FIDE) as a decentralized agency of the

“Economic growth without environmental & social sustainability at its core will make everything worse again” – unattributable

Federal Electricity Commission (Comisión Federal de Electricidad, CFE) seeks saving, efficient and sustainable use of electricity. It has promoted various programs, replacing appliances energy efficiency, sustainable light. Its mission focuses on:

- To promote technological change, to facilitate and familiarize Mexican families with the use of energy efficient electrical and lighting.
- To promote the new energy technologies.
- Dissemination of sustainable energy culture (FIDE, 2012).

The FIDE is looking through the promotion of new energy technologies and the diffusion of sustainable energy culture, the generation of economic, social and environmental issues, in line with international best practices in this area. Mexico has expressed its concern for the environment and taking care of it. An example of this was the program coordinated by the CFE and FIDE in 1994 national program with the goal of changing the traditional bulbs (bulbs) by saving bulbs. The same way for 12 years, families can purchase appliances that consume less amount of energy, thus contributing to the eco-efficiency.

Furthermore FIDE program in collaboration with CFE, at the country there are interesting clean energy projects like wind farm “La Ventosa”, inaugurated on November 10, 1994 in Juchitán Oaxaca. This development consists of 104 wind turbines that generate 85 megawatts electricity (CFE, 2011). These take advantage of wind energy in the area of the Isthmus of Tehuantepec, built by the Spanish company Iberdrola Renovables, is part of a project to integrate other wind farms in the same area called as La Venta II and La Venta III. With the energy produced by the park’s Ventosa power is supplied to 13% of the population of the state of Oaxaca.

In Mexico there are companies dedicated to the development and innovation of clean energy, a hotbed of technological innovation are the universities, a simple example is the initiative of the Technological Institute of Monterrey Campus Mexico City (Instituto Tecnológico de Monterrey, ITESM). This initiative is part of the Sustainable Campus program launched last

year by ITESM who decided to light their parking using solar panels designed by the company Green Technology Solutions incubated in the institution (ITESM, 2012).

There are interesting options for building eco-efficient homes: Among them are: solar heaters, solar cells and panels for roofs of houses, cells and solar panels for windows, reinforced glass insulator that isolates the inside and outside with an efficiency of 70%. Some options for efficient construction for companies: Cells and Solar Panels for windows in building, water treatment, solid waste treatment. In a bigger picture there are some other government plans, technological innovations, and actions taken by other countries in renewable energy.

Germany is a country that encourages the generation and use of clean energy. The government encourages enterprises that produce renewable energy with a very encouraging program. In this program, companies with stock power are favored by the government that is five times the price of energy for companies with positive stock thus boosting renewable energy generation and the consumption thereof.

A Swiss company called Flisom developed solar panels that are thin flexible sheets, not silicon but much cheaper material called CIGS technology that is manufactured by compression of copper, indium, gallium and selenium. These films because they are flexible could be used in small devices such as mobile phones, PDAs, laptops even for tinted windows in buildings and cars.

The company Ecosphere Technologies developed the Ecos LifeLink, a device the size of a container truck that can be transported anywhere. And inside is a system that purifies the water powered by solar panels, which in turn generate electricity surplus to be used in emergency situations or why not feed any school.

Norway is a country that gives a high value to their natural resources, in each development project, or development of communications infrastructure, largely avoids damage to the environment. To show just to say that in Norway the favorite means of transport is the maritime as far and wide for its fjords and lake vessels

that connect the country, the people and government prefers to use this medium before damaging its ecosystem-pulling trees for road construction. Similarly during the extreme winter that are living Norwegians, since late October, rural people are leaving their economic activities to enjoy family time, just as happens with tourism since early November where many tourist attractions are closed by climate.

In the immediate plans of the Norwegian people are not receiving more visitors, or expand roads or develop more land routes to better connect to the outside because they are finding highly valuable their natural resources, non-renewable in their land. And yet there are some contrasts of a country with high quality of life, important industry, high natural value and sustainable development that is recognized and envied globally,

Spain supports the eco-efficiency with government campaigns that promote energy saving causing the least possible negative impact on the environment. In one of the energy efficiency programs, the government promoted the replacement of old appliances for more efficient appliances. In the same way, the government promoted the change of electrical installations in the early 80's by more efficient facilities to prevent short circuits or waste energy.

The governments can contribute to the formulation of economic and industrial policies that encourage eco-efficiency in business as well as the reduction in consumption of energy and resources in all economic sectors.

5. Conclusions

It is important to achieve competitive advantage and at the same point at and add that whatever the company's competitive advantage, there is a strong commitment intrinsic to each firm to be responsible for the existence of the company and the implications that its activities inflict the environment. By which in opinion, it should be a strong business awareness to

avoid damaging the environment and quality of life for residents, let alone the planet.

Being eco-efficient and exploiting its expertise every business can be successful financially well to provide economic benefit to the region where the environment is respected and mind-using eco-efficient resources and ensuring the quality of life for the region where it operates. If this philosophy is spreading around the world, based on more eco-efficient and more competitive organizations, finally human beings will receive the benefits.

It can be assured that if the environment presents submitting adverse environmental challenges and effects, these are milestones for the formulation and implementation of organizational strategies to face their adverse environment and to adapt them to stay. The same companies in partnership with governments may present worldwide-solutions and borders would not be the limit because everyone has new ideas and technology to face the greatest currently challenge, to maintain and improve the quality of life globally with responsible business, committed governments, innovation, technology, in short responsibility in all areas.

So that it is appreciated the theory of institutions running successful conjoint theoretical application based on resources and capabilities. It is important to know the efforts of other countries around the world in terms of efficient use of energy to raise a strong and well-founded strategy to ensure development, sustainable growth and full awareness that competitiveness is not separated from sustainable development. The first step it should be taken in Mexico to achieve integration of a sustainable economic development by reducing energy consumption and subsequently seek to migrate more to the use of different technologies and renewable energy.

Mexican society has already had approaches with these government policies. There is still much to be done, but there are defendants in a path that will allow the transition and development in higher degree

"The environmental benefits of organic systems over conventional are clear. It has a positive impact on wildlife and produces lower levels of pollution, mainly due to the absence of artificial chemicals and fertilisers. Winter cover crops, shallow ploughing and increased organic matter from the use of manure increase soil carbon and reduce greenhouse gas emissions" - Lord Peter Melchett

of these technologies for the development of the country. Currently the interest and care to the environment is a trend that is spreading in the general population. Now from school, current generations are more sensitive to the care of their world, which is a good start, coupled with this there is a growing concern and greater consciousness about these issues.

Eco-efficiency and sustainability is an issue that occupies the attention of the Mexican industrial sector. In the country there is already developing clean technologies helping to improve the quality of life of the people. Thus reconfirm the fundamental aim of this paper, to check that economic efficiency may not be a trend biased against sustainability.

In sum, the value that is given to resources depends on the strategy being used by eco-efficiency. Current trends are more rationally and responsibly, they are using the best strategy for economic benefits that are being obtained based on competitive advantage, using responsibly resources and capabilities of companies ensuring the renewal of the same and increasing the quality of life. This tendency combines a sustainable model for business, population and the environment winning.

The resources that create high value and can be considered a competitive advantage well maintained over the long term should allow the company to differentiate itself from the others. It is vital that the company can maintain its advantage of being copied. Otherwise it should be innovative and flexible enough to generate a new competitive advantage or otherwise a different company. With the theoretical basis of this work, the theory of resources and capabilities, as well as the theory of competitive advantage, it results logical and strategic to merge both competitiveness and eco-efficiency in order to promote sustainable economic development of businesses and thereby strengthening of the economy which in turn is a factor influencing the quality of life of its inhabitants.

This paper exposes that sustainability and competitiveness as major goals should not be separated. Currently true efficiency lies in exploiting

economic competitiveness in a sustainable way. This is why eco-efficiency is becoming present and currently business strategy and leading global trend.

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References

- Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, vol. 17, no. 1, pp. 99-120.
- CECODES (2000). *Creando valor con menos impacto*. Traducción del documento eco-efficiency World Business Council for Sustainable Development, Reino Unido, pp 1-42.
- CFE (2011). *Comisión Federal de Electricidad*. Listado de centrales generadoras – eléctricas extraído el 15 mayo de 2012 de www.cfe.gob.mx
- FIDE (2012). Consultado el 11 de mayo de 2011de www.fide.org
- Fong, C. (2005). *Teoría de recursos y capacidades fundamentos microeconómicos*. Universidad de Guadalajara.
- ITESM (2012). *Diario ITESM* Consultado el 11 de mayo de 2011de www.itesm.edu
- Nelson, R. R. and Winter, S. G. (1982). "Applications: RBV and Dynamic Capabilities" In Mahon, J. T. *Economic foundations of strategy*. pp. 277 – 286.
- ONU (1972). *Informe de la Conferencia de las Naciones Unidas sobre el Medio Humano*, Estocolmo, 5 a 16 de junio de 1972. Publicación de las Naciones Unidas. Extraido el 20 de Mayo de 2012 www.onu.org
- Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. New York: John Wiley & Sons.
- Porter, M. E. (1981). "The contributions of industrial organization to strategic management". *Academy of Management Review*, 6: 609-620
- Wernerfelt, B. (1995). "The resource –based view of the firm: ten years after." *Strategic Management Journal*, Vol. 16, 171-174.

IDENTIFICATION OF PLANT SPECIES FOR PROMOTION OF CLUSTER PLANTATION IN URBAN AREAS TO IMPROVE BIODIVERSITY

Meghana Ghaisas

ABSTRACT:

The rapid pace of Urbanization is bringing in a series of problems. Population concentration, commercialisation of urban space, reckless housing construction, dense transport networks and privatised transport are some of the key factors leading to environmental degradation. All this ultimately takes a toll on nature. The concretisation of urban space is synonymous with loss of greenery and biodiversity. The efforts of plantations have been petty and away from the real concept of ecological restoration. The current plantation is either of monoculture type or exotic varieties which do not have any local relations and hence remain foreigner. Various faunal and floral components are interdependent on each other and flourish with each other's support enhancing the overall biodiversity. Careful selection of plants and properly planned green areas can be a source of rich biodiversity even in polluted and populated cities.

KeyWords: , Biodiversity, Endemic, Greenery, Planning, Urban.

1. Introduction

Biodiversity has been studied in many different ways since long. But even today, it is carried out mainly through preparing checklist of the floral and faunal diversity. There are number of checklists of species, stray notes and inventories available for almost all the Sanctuaries and National Parks of India. However, very little study has been carried out in Indian ecosystems that how different species in a community and different communities in an ecosystem are integrated and associated. It is also very essential and interesting to know that how these different floral-floral and floral-faunal associations are playing a role in sustaining the ecological balance. There is a scarcity of information regarding native plant communities and their associations in terms of:

- How the individuals and species are put together in communities
- What determines their relative proportions
- Their spatial and temporal relations to each other
- Their compatibility with each other and dependency on each other

It is well established that nature is full of mutually beneficial arrangement between organisms. Similar

climates and soils tend to produce groupings of organisms with similarities at both individual organism and community level. Today it is extremely essential to have an acceptable qualitative idea regarding the relationships between various components of the natural communities.

Kaplan & Kaplan (1989) have formulated a theory on the interaction between man's attention and his surroundings. Urban living with congestion, traffic conditions creates constant stress. Whereas greening areas at such locations helps reducing stress and pollution, infuse fresh breathable air, cooling effects, etc which reduce energy consumption.

Currently natural greening areas around Mumbai Metropolitan Region (MMR) are observed in pockets like Sanjay Gandhi national park, Karnala bird sanctuary etc. Thus the efforts of conservation of biodiversity remain restricted to these places. The existing plantation practices in Mumbai City and MMR are proved to be superficial and meant just for beautification purpose. Such efforts are not sustainable as high costs are incurred on maintenance and water demand. The urgent need is to move away from the traditional method of horticultural plantings composed primarily of exotic species and cultivars to the native varieties of plants. Along with these developmental

"Dwindling natural resources, along with energy limitations, have placed more pressure on us to compete in order to survive. Ironically, the key to our collective survival will be the survival of our compassion for one another. A civil society is key" - "Getpeace" on the Huffington Post

strategies, tools are needed to make urban green areas richer in biodiversity. Therefore, even if urban nature perhaps cannot thought of as “natural” greenery, it is still of great importance. The nature that exists in the landscape is the source we should use for disseminating wild plants and animals into urban areas.

Current tree planting practices involve monocultures of particular trees or fast growing exotic species for purpose of lumber. The monoculture of species is unsuited to the habitat, soil and climate and needs lot of maintenance. The other kind of tree planting is tree planting done for beautification e.g. bonsai, dwarf trees, etc. Monoculture plantation may look green but do not enhance and promote healthier ecological processes. In fact, such plantations are more vulnerable to plant diseases and insect pests in comparison to multi-species stand and harbour lower diversity. Introduction of non-native and exotic species are less adaptable than indigenous species and may cause harm to indigenous species.

Such monotypic plantation and cultivation of exotic species in urban area are currently largely prevalent. Over the past couple of decades, the ongoing decline of public landscape maintenance initiated ‘new’ planting styles to help create better public landscapes through cluster plantation. Such plantation will help in enhance biodiversity, sustainability with ecological balance.

The Miyawaki method for plantation is an ecological method of reforestation applied in Malaysia in Southeast Asia, in Brazil and Chile in South America and in some parts of China. Since 1973, Miyawaki’s team have been forming environment protection forests around newly built ironworks and power stations in cooperation with farsighted Japanese corporations such as Nippon Steel Corp., Mitsubishi Corp. and so on. It has been found to be successful in each of the locations mentioned. Hence, we attempt to replicate this method in Mumbai.

This method promotes intensive mixed cluster tree plantation of indigenous native species which will not require much maintenance with some exceptions. The core principal on which it works is “Natural management is the best management”.

2. Objectives

The present research aims at developing a larger understanding regarding the tree plantation practices with special reference to urban areas. The research not only tries to identify the lacuna in the current plantation practices but also tries to identify the native varieties and species of plants present in the adjoining forest areas important for cluster plantation. It also propagates the crucial importance of ecological restoration against the current practices of ‘environmental management’. Lastly, it aims at propagating sustainable urban greening in currently degraded polluted areas. The study is carried out in Mumbai Metropolitan Region.

3. Data Sources and Research Methodology

As the study aims at finding the best possible different types of ENDEMIC species which can be planted along the urban areas like streets, high ways, public parks, residential & commercial developments, systematic field surveys and observations were made. It included

1. Identification of possible greenery sites in urban area.
2. Field surveys for identification of existing plant & animal species in the study area
3. Comparison between urban & forest greenery.
4. Short listing best suitable plants.

Extensive field surveys were conducted for

- A. Identifying the sites to introduce plantation with a view to enhance the biodiversity in urban areas. The probable sites were identified on various scales – large, medium and linear scales. The large scale sites were identified as large gardens, catchment areas, quarry areas, etc. On medium scale gardens, adjoining lakes, playgrounds, medium parks, large housing colonies, etc were considered and on linear scale places like traffic junctions, highways, industrial green belts, buffer zones, coastal regions, etc were identified.
- B. Study of existing plant and animal species in study areas and Identification of diversity in natural forest areas.

The random sampling method was used for the identification and selection of plants for the cluster plantation in the adjoining forest and garden areas. This was done to investigate the flora–flora and flora – fauna association. The above sampling technique was used for the field study.

Field surveys in the study areas (Urban & forest)

1) Field survey of Existing urban greenery

Specific urban areas in Mumbai were selected for survey, to find out the variety of existing species, their role in maintaining ecological balance, their associations with other flora and fauna. Actual field visits were carried out with photographs in Transects including planting strips. Soil samples were also collected to understand the type of soil and its role in supporting specific varieties of plants.

2) Field Survey of Forest Sites

A study of natural forest habitats near the urban areas having similar climatic and altitudinal conditions (not in core zone) was also conducted. The same was taken up to explore the possibilities of identifying the communities of native species that can be used in urban environments. Hence a random sample study of cluster (quadrant measuring 10m X10m) was selected at lower heights of Sanjay Gandhi National Park (SGNP)and Karnala Bird Sanctuary along the highway. The field survey of forest clusters were studied in different seasons to find out actual cluster vegetations and soil samples randomly.

3) Identification of plant & animal species

The Standard reference books were used to identify the floral species as per the experts' guidance. Diversity of birds in surveyed area was noted by careful observation of key characters like size, colour, vocal call, beak pattern and some specific characteristic features. The same was also done with the help of already available photographs and also later taken by the researcher. Standards books were used to identify the bird species.

The present research is restricted to MMR and hence the identification of plants for cluster plantation is obviously restricted to the varieties of plants found locally. The list of plant species mentioned is not exhaustive. It is inclusive only of those plant species observed during the study period and is only confined to those studied plants. More detailed studies could definitely bring out more possible plant cluster suggestions. The manual does not give specific detailed information about individual plants. For information about plant forms, sizes, colours, etc. other resources should be consulted for this.

4. Study Area

Some nodes / sites from MMR were selected and identified as potential sites for the rejuvenation of existing greenery or regeneration of the newer ones. As already mentioned, three scales were selected and specific areas were selected to represent every scale. Following areas were short listed and identified for cluster plantations from MMR.

Table 1 : Identification of sites for introducing cluster plantations

Sr No	Type	Level	Example
1	Large scale	Regional park	BPT Garden (Colaba)
		Wasteland	Colaba Woods (Colaba)
		Near water body	Vashi Sector 7 (Vashi)
2	Medium scale	Small parks	Prabothankar Thakare Udyan (Vile Parle)
		Gardens	Joggers Park (Juhu)
3	Linear scale	Institutional Scale	Kalina Campus Asiatic Library Institute of Science (Churchgate) I.Y College Jogleshwari
		High ways edges & median	road (Vashi)
		High ways edges & median	Mankhurd Highway
		Playgrounds	Cross maiden (Near V.T. station)
		Bufferzone	Dadar Parasi Colony (Dadar)

Similarly two forest study areas were selected – a part of Sanjay Gandhi national park at lower heights

"The re-establishment of an ecological balance depends on the ability of society to counteract the progressive materialization of values. The ecological balance cannot be re-established unless we recognize again that only persons have ends and only persons can work towards them." - Ivan Illich

and areas of Karnala bird sanctuary adjacent to national highway and human settlements.

5. Observations

Various observations could be made after the conduction of field surveys.

Existing plantations are mainly having monoculture with exotic varieties of plants. Very few endemic species of plants were observed with little or no cluster development. 77% of the existing plantation observed non native varieties of plants. These exotic species do not support the growth of other flora and fauna and animal life. It fails in promoting a large scale biodiversity. Exotic plantations in the city cannot contribute towards ecological balance instead require high maintenance in terms of provision of water, insecticides, fertilizers, etc. The large scale, medium scale and the small scale gardens like BPT garden, Joggers park, Thakre udyan had good floral patterns because of exotic species. It had been a trend to have more ornamental plants in manicured gardens. In most of the linear scale areas like palm beach road, mankhurd highway and road side plantations, repetition of single species of plants is observed, for example,

Australian babul, Eucalyptus and Casuarinas, etc. These foreign varieties are selected because they grow faster and hence the motto of ‘Green Mumbai’ gets fulfilled in couple of years. Such variety of plants and trees attract less fauna. The areas like Vashi secor 7 had a buffer zone between human localities and mangroves with mixed plantation of ornamentals, exotic species blended with natural mangrove varieties. This showed better potential for indigenous plantation and rich biodiversity. The institutional scale areas like kalina campus, Institute of science had variety of species which can be potentially develop with indigenous varieties. The faunal variety in all areas was found very less due to monotypic exotic plantation. The soil samples survey also showed rich nutrient availability in forest clusters. From forest clusters few species observed with frequent sitting and associations with trees, herbs, shrubs etc. The forest clusters in SGNP and Karnala reveals floral and faunal species diversity with indigenous plants. Also minimum of three layer structural organisation was observed as trees, herbs and shrubs with even climbers. Associations were observed for some dominant species within plant clusters and faunal species too. Those are as follows:

Table 2 : Associations within plant clusters and faunal species

Sr No	Name of the plant (Tree)	Tree	Shrub	Climber	Herb
1	Anantmul (Shrub)		Cup & saucer	Dioscorea	
2	Red silk cotton tree	Asana	Kala kuda	Leea	
3	Kakad	Dhaman	Murud sheng		Kalimusali
		Umber			
		teak			
		Kuda			
4	Sand paper tree	Apta	Murud sheng	Ukshi	
		Lagerstroemia			
		Pongam			
5	Kadamba	Behada	Lokhandi	Ukshi	wild yam
		Calycopteris	Vavading		Danti
		Jamun	Valve		
		mango tree			
		Kumbh			
6	Bauhinia	Jamun	Alu	Ukshi	
		Dhaman	Murud sheng		
			karavanda		
7	teak	Putranjiva	Morning Glory		Gaa spus
		Shemath			Wild Corn grass
		Dhaman			
8	Kusum	Atrun	Karavanda	Pin Cushion	
		Dhaman shirish	Murud sheng		

6. Suggestion and recommendation

On the basis of field observations cluster plantation with maximum of native species is strongly recommended and should be planted in urban locations. As shown in table 2, the listed indigenous species can be suggested for promoting cluster plantations in the potential urban areas. These native species could contribute to the betterment of natural environment and restore ecological balance. The suggested species showed associations with other flora in natural forest repetitively which suggests that their incorporation will also support growth of other dependent species and animal life. It is also observed that these species not only facilitate faunal attraction but also have properties like medicinal utilisation, commercial usage, and beautification due to bright and attractive flowering. These species also play very important role in soil enrichment. Anantmul, red silk cotton tree, kadamba, kusum, teak, bauhinia, kakad, sand paper tree are some such species which should be preferred while promoting cluster plantation. This approach makes a concrete addition to urban planning with respect to ecological restoration by improving the biodiversity. But the plant clusters mentioned in the manual should only be used with a full understanding of their potential impacts.

7. Discussions

Reduction of natural forest cover has induced various adverse effects on the animal life where mammals are left with very few habitats. This is reason why at least half of the garden should remain “unmanicured”. The fundamental unit of vegetation in general and even in clusters has been designated as “association”. The degree of aggregation/clustering of a species is an indication of the amount of association of individuals or groups of individuals species in a particular habitat. Nature comprises of many plant clusters which live together in harmony under particular environmental conditions. These plant clusters can be defined as a group of heterogeneous plant species with homogeneous characters that promote their existence in a beneficial manner. Heterogeneous plants are a

varied group of plants different in plant habit i.e. herb, shrub, tree and comprising of different kind of species. Species which are different from each other in their genetic make-up may group together due to favorable environmental conditions forming plant clusters. Introducing adaptable species from forests would also break the monotony of monoculture at the urban sites. Since the species chosen are of endemic nature, they would be expected to show better adaptive values than the exotic ones. This would reflect in reducing the cost and man power used in their cultivation and maintenance.

8. Conclusion

The study reveals the importance of vegetation in urban areas. The suggested cluster plantations with plant species from natural forests with similar environmental conditions can favour ecological sustenance even in urban locations. The serious efforts need to be undertaken from the government agencies on urgent basis especially at the backdrop of rapid environmental degradation in cities in the name of development. Almost every city in India is observing reckless construction of housing, big road, industries, airports, etc. In the process there is unchecked deforestation. In the absence of trees, the levels of air pollution are consistently increasing turning the cities into urban heat islands. The proposed model needs to be seen with this understanding. In initial stages it can be implemented for MMR, if successful, can be extended at state level.

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BIBLIOGRAPHY

1. Ali, S. (1969) – Birds of Kerala Oxford University Press, New Delhi. 444 pp
2. A. K Shankarnarayan (1956) – Phytosociological & Ecological studies of the Grasslands of Bombay
3. A.K. Gupta – Dietary differences between two groups of Phayre's langur *trachypithecus phayrei* in Tripura, India: Responses to food abundance and human disturbance

“There is something fundamentally wrong in treating the Earth as if it were a business in liquidation.”
- Herman E. Daly

4. Abdul Jamil Urfi – Ecology of snakes in an urban environment: An analysis of the data on snakes collected by sundarvan nature discovery centre, Ahmedabad
5. Ali, S. & S. D Ripley (1983) – Handbook of the birds of India and Pakistan (compact edition) Oxford University Press, New Delhi, 737 pp.
6. Allee, W. C (1961) – Cooperation among animals with human implications, Henry Schuman, New York
7. Amano Samarpan - A photographic guide to the birds of india (including nepal, sri lanka, Bhutan, Pakistan and Bangladesh)
8. Ambika Aiyadurai and Surendra Varma – Evaluating the status of forests and relative abundance of wildlife: A rapid survey from a remote and little explored tropical evergreen forest of north east india
9. Andrewartha, H. G (1961) - Introduction to the study of animal populations
10. Andrewartha, H. G & Birch, L. C, (1953) - The Lotka Volterra theory of interspecific competition
11. Anna Lawrence,Mark Johnston, Cecil C. Konijnendijk,Rik De Vreese- The governance of (peri) urban forestry in Europe
12. Ann Marie Powell - Urban Gardens, Plans and Planting Designs
13. Akira Miyawaki -Creative Ecology: Restoration of Native Forests by Native Trees
14. Brain – Blanquet (1932) - Plant Sociology
15. Champion, M. G & S. K Seth (1968) – A revised survey of the forest types of India, 1968 Manager of publications, Government of India, Delhi
16. Charles M.Anderson-A Manual of Native Plant Communities for Urban Areas of the Pacific Northwest
17. Ditter Band - Modern method of plant analysis
18. Dr. Chaphekar et al - Green Belt
19. Dr. Marselin Almeida - Flora of Maharashtra (Vol. 1, 2, 3, 4)
20. Dr. Marselin Almeda & Mr. Naresh Chaturvedi - The trees of Mumbai
21. Dr. Salim Ali - The Book of Indian Birds,
22. D. H Janzen (1972) – Ecology 53, 885
23. Down To Earth Magazine (2009) - Non native plants overpower Locals. Eds. February 16 to 28, 2009
24. Duck Worth, J. W. (1996) – Bird and mammal records from the Sangthong district, Vietiane, Municipality, Laos in 1996 Nat. His. Bull. Siam. Soc. 44:217-242
25. Dr. Syed Ainul Hussain, Ph.D. – An assessment of ecosystem services of the Corbett Tiger Reserve, India
26. Ecology Book (2010) – Vol. 91 No. 7. Eds. July 2008
27. Ernoult, A., F. Bureau & I. Poudevigne (2003) – Patterns of organization in changing landscapes: implications for the management of biodiversity. Landscape Ecology 18: 239-251. Kluwer Publishers, Netherlands.
28. Eugene P. Odum - Fundamentals of Ecology
29. E. K Barucha – Protected areas and landscape linkages: Case studies from the Maharashtra scenario
30. Economic Values of Protected Areas. Guidelines for protected area managers. IUCN – The world Conservation Union
31. Farina, A. (1998) – Principles and methods in landscape ecology. Chapman and Hall, UK.
32. Gupta, A. K (1996) – Conservation ecology of primates and humand impact in northeast India. Ph. D Dissertation. University of Cambridge, UK. 528 pp.
33. Kailash Chandra Bebarta - Planning for Forest and Biodiversity Management
34. King, G. (1996) – Reptiles and Herbivory. Chapman and Hall, London, U. K: 1-155
35. Krebs, C. J (1972) – Ecology Harper and Row, New York
36. K. Yoganand, Cliff G. Rice, A.J.T. Johnsingh and John Seidensticker – Is the sloth bear in India secure ? A preliminary report on distribution, threats and conservation requirements
37. K Shankarnarayan - Phytosociological and ecological study of grasslands
38. L. K Dadhich & A. P Sharma – Biodiversity - Strategies for Conservation
39. Liang-Jun Da & Yong- Chang Song: The Construction of Near-natural forest in urban areas of Shanghai.
40. Mac Arthur, R, (1957) - On the relative abundance of species/bird species/patterns of species diversity
41. Madhav Gadgil & Ramchandra Guha - The use and abuse of nature
42. Malin James C., 1953 - Soil, animal and plant relations of the Grasslands, historically reconsidered

"We can choose to rebalance the use of resources to a more egalitarian pattern of consumption... or we can choose to do nothing and to drift into a downward spiral of economic and environmental ills leading to a more unequal and inhospitable future" - Royal Society report People and the Planet

43. Menon, V. (2003) – A field guide to indian mammals. Dorling Kinderesely (India) Pvt. Ltd. 200 pp
 44. Miyawaki A. et al – Vegetation of Japan
 45. Miyawaki A (1981) – Energy policy and green environment on the base of ecology
 46. Miyawaki A (1982 c) – Phytosociological study of east kalimantan, Indonesia
 47. Miyawaki A (1991) – New succession theory and its application for creation of environmental protection forests. 34th IAVS sysmposium on “Mechanism in vegetation dynamics, 26-30 August 1991. Eger, Hungary.
 48. Miyawaki A(1993) – Restoration of Native forests from Japan to Malaysia. In: Restoration of tropical forest ecosystem (eds H. Lieth & M. Lohmann)
 49. Miyawaki A(1996) – Restoration of Biodiversity in urban and peri-urban environments with native forests. In: Biodiversity, Science and Development, towards a new partnership (eds F. di castri & T. Younes)
 50. Miyawaki a (1998) – Restoration of urban green environments based on the theories of vegetation ecology. Ecological Engineering 11: 157-165
 51. Miyawaki A (1999) – Creative ecology: restoration of native forests by native trees. Plant Biotechnology 16: 15-25.
 52. Miyawaki A (2001) – A vegetation-ecological study on regeneration and restoration of vegetation. Vegetation Science News 6: 55-62 (in Japanese)
 53. Miyawaki A& Golley F. B (1993)–Forest reconstruction as ecological engineering. In: Ecological Engineering 2: 333-345
 54. Miyawaki A& Meguro S (2000) – Planting experiments for the restoration of tropical rainforest in southeast Asia and a comparison with laurel forestat Tokyo bay. Proceedings of IAVS symposium, 2000 IAVS, pp. 249-250. Opulas press, Uppsala.
 55. Miyawaki (1990) – Intensive mixed plantings of native indigenous tree species creating thriving tropical forest
 56. Miyawaki (1982 a,b) – Restoration of living environment based on vegetation ecology: Theory and practice
 57. Miyawaki (1992) – Restoring the life giving ecosystems of tropical forests through joint process involving industry, academia and government
 58. Paranjpye, V. (1997) – A comprehensive environment assessment of the SGNP, Borivili, Mumbai. ECONET, Pune.
 59. Plant Science (2008) - Field Experiments with Transformed Plants reveal the sense of Floral Scents. Eds. Science Magazine 29th August 2008
 60. Poudevigne, I. & J. Baudry (2003) – The implication of past and present landscape patterns for biodiversity research: introduction and overview. Landscape ecology 18: 223-225.
 61. Pough, F.H (1973)–Lizard energetics and diet Ecology. 54(4): 839-844
 62. Prater, S. H (1971) – The book of indian mammals. 3rd Edn. BNHS, Mumbai. 324 pp
 63. Pieter J.H. van Beukering a, Herman S.J. Cesar a, Marco A. Janssen b – Economic Valuation of the Leuser National Park on Sumatra, Indonesia
 64. Quammen, D. (1997) – The song of the dodo Touchstone, New York
 65. Rajvanshi, A., V. Mathur, G Teleki & S. Mukherjee (2001) – Roads and sensitive habitats and wildlife.
 66. S. C Santra - Environmental Science
 67. Stuart Chape, Simon Blyth, Lucy Fish, Phillip Fox and Mark Spalding IUCN – The World Conservation Union. UNEP World Conservation Monitoring Centre (2003) – United Nations List of Protected Areas
 68. Christopher Wood – Town Planning and Pollution control
 69. Wu, J. & R. Hobbs (2002) – Key issues and research priorities in landscape ecology: An idiosyncratic synthesis. Landscape ecology 17: 355-365.
 70. Wynter-Blyth, M. A (1957) – Butterflies of the indian region BNHS, Bombay. 523 pp
 71. Yadvinder Malhi, J. Timmons Roberts, Richard A. Betts, Timothy J. Killeen, Wenhong Li, Carlos A. Nobre – Climate change, Deforestation and fate of the amazon
- BOOKS REFERRED FOR PLANT LISTS**
- 1) The Trees of Mumbai – Marselin Almeida & Naresh Chaturvedi
 - 2) Maharashtra Nature Park Book let
 - 3) Guidelines for development of Green Belts - R. K Kapoor, S. B Chaphekar & V. K Gupta
 - 4) List of plants at Karnala Bird Sanctuary
 - 5) List of plants at Sanjay Gandhi National Park

“What is your personal carrying capacity for grief, rage, despair? We are living in a period of mass extinction. The numbers stand at 200 species a day. That’s 73,000 a year. This culture is oblivious to their passing, feels entitled to their every last niche, and there is no roll call on the nightly news.”

- Lierre Keith

CARBON TRADING AND CARBON TAX : CHALLENGES, OPPURTUNITIES & CONCERNS.

Chandana Chakraborti

ABSTRACT:

The two major market-based options to lower Carbon dioxide emissions are

1 .CARBON TRADE- Carbon credits are certificates awarded to countries that are successful in reducing emissions of greenhouse gases, and can be sold privately or in the international market at the prevailing market price.

2 .CARBON TAX - It is a tax on pollution. In addition to creating incentives for energy conservation, a carbon tax would put Renewable Energy sources on a more competitive footing, stimulating their growth.

Global Warming has a fairly simple and cheap technical solution. If the recent meteorological chaos drives home the threat of climate change and prompts action, it may ultimately be a blessing in disguise.

Key words: Global Warming, Carbon Credits, Carbon Tax, Renewable Resources.

1. Introduction

Over millions of years our planet Earth has been able to regulate concentrations of green house gases through sources (emitters) and (reservoirs). Carbon (in the form of carbon di oxide and methane) is emitted by numerous natural sources like volcanoes, by rotting vegetation, by burning of fossil fuels and other organic matter. However carbon di oxide is very important for life on Earth and is absorbed by the green plants for the process of photosynthesis and also by the oceans to some extent.

However, during the heat waves, floods, fires and super hurricanes of 1988, the North American public discovered a phenomena called '**Global Warming**'. On June 23rd that year, James Hansen, Director of the NASA Goddard Institute for Space Studies, told a US Senate hearing that the warmth of the 1980s was a record and that, in particular, 1987 had been the warmest year in recorded history. With continuous media coverage of the record temperatures in the USA, floods in Bangladesh, and a super- hurricane in the Caribbean, it is not surprising that many people had the impression that the heat waves and droughts of 1988 were primarily caused by the greenhouse effect.

Observations of the Earth have shown beyond doubt that atmospheric constituents such as water

vapour, clouds, carbon dioxide (CO₂), methane(CH₄), nitrous oxide (N₂O) and chlorofluorocarbons (CFCs) trap a certain kind of heat called infrared radiation near the Earth's surface causing the celebrated greenhouse effect. It is now virtually certain that an unprecedeted 25% increase in CO₂ and 100% increase in CH₄ over the past 150 years have resulted from:

1. increased use of fossil fuels,
2. more domesticated animals,
3. the expansion of agriculture and
4. more rapid deforestation.

It is estimated that the global average temperatures would increase by at least 1 degree (1.8 degree F) by the year 2030. That is the best guess according to the Inter- Governmental Panel on Climate Change (IPCC). It could become warmer.(Schneider, 1992).

With different weather patterns developing, agriculture would be profoundly disrupted in many parts of the world. Climatic zones would shift towards the poles, and the polar ice-caps would start to melt. As a result, sea levels could rise from anywhere between 10 centimetres and 2 metres (4 inches and 6 feet). Low lying coastal cities would be wiped off the

"You can have a healthy fossil-fuel balance sheet, or a relatively healthy planet" - Bill McKibben

map. A sea level rise of 1 metre (3 feet) would flood 2,000 square kilometres (770 square miles) of Bangladesh, a country already desperately impoverished and overpopulated. Rising sea levels would have catastrophic consequences for low lying islands like Maldives. If the sea level rises by 3 metres (10 feet), coral atolls like the Maldives would disappear completely beneath the waves.

Rise in global temperatures would thus result in:

1. Extreme weather conditions: droughts, floods Tropical cyclones, storms snow fall, wild fires will become more common.
2. Biological Effects: species extinction, both plants and animals as well as coral reef.
3. Submergences of low lying areas of the Earth affecting agricultural lands and settlements.
4. Agricultural crop patterns would change globally causing food shortage and starvation on the Earth.
5. Human Health effects: New diseases would be caused due to rise in malaria and other mosquito borne diseases as well as malnutrition will take its toll on human health.

2. Objectives

The present study tries to find out the effectiveness of current practices of carbon trading and carbon tax in restricting practices of pollution in particular and environmental degradation in general. The information is mainly collected from secondly sources of data to substantiate research hypothesis.

3. The Background of Carbon Credits

There is no second opinion that all the countries of the world would have to agree to reduce their emissions of green house gases by a fixed fraction, but this may not be the most globally cost-effective plan and definitely not the fairest. A better solution would be for developed countries to buy themselves out of some of the cut emissions by funding even larger reductions in energy- efficient developing countries. This would not only eliminate Third World countries

opposition to emissions reductions, but could encourage them to compete with each other to be the venue for future limitations. The concept of carbon credits came into existence as a result of increasing awareness of the need for controlling emissions. The IPCC (Intergovernmental Panel on Climate Change) has observed that:

Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low-Green House Gases products, technologies and processes. Such policies could include economic instruments, government funding and regulation, while noting that a tradable permit system is one of the policy instruments that has been shown to be environmentally effective in the industrial sector, as long as there are reasonable levels of predictability over the initial allocation mechanism and long-term price.

The mechanism was formalized in the Kyoto Protocol, an international agreement between more than 170 countries, and the market mechanisms were agreed through the subsequent Marrakesh Accords. The mechanism adopted was similar to the successful US Acid Rain Program. These 170 countries have, committed themselves to reduce Green House Gas Emissions and improve Energy Efficiency. The Kyoto Protocol envisages reduction of Green House Gases by 5.2% in the period 2008-12.

4. Conceptualisation of ‘Carbon Credits’

The concept of carbon credits came into existence as a result of increasing awareness of the need for controlling the emission levels of Green House Gases. It is the outcome of the Kyoto Protocol which created legal binding emission targets for the developing countries. To meet these targets the countries must cut or restrain their Carbon di Oxide emissions. It was enforced from Feb. 2005. The very phase Kyoto Protocol has become synonymous with the idea of saving the planet from the global meltdown.

Carbon credits are a tradable permit scheme that allows the holder to emit one ton of carbon dioxide. It is a simple, non-compulsory way to counteract the

"People 'over-produce' pollution because they are not paying for the costs of dealing with it"
- Ha-Joon Chang

greenhouse gasses that contribute to climate change and global warming. Carbon credits create a market for reducing greenhouse emissions by giving a monetary value to the cost of polluting the air. The Carbon Credit is thus a new currency and each carbon credit represents one tonne of carbon dioxide either removed from the atmosphere or saved from being emitted. Carbon credits are also called emission permit. Carbon credit is an Environment and Pollution Control subject. Carbon credits are certificates awarded to countries or groups that have reduced their green house gases below their emission quota. Carbon credits can be traded in the international market at their current market price.

1 Credit = 1 tonne of CO₂.

These credits need to be authentic, scientifically based and Verification is essential. Carbon credit trading is an innovative method of controlling emissions using the free market. Each Carbon Credit represents one metric tonne of CO₂ either removed from the atmosphere or saved from being emitted.

Carbon credits can be created in many ways but there are two broad types:

1. Sequestration (capturing or retaining carbon dioxide from the atmosphere) such as afforestation and reforestation activities.

2. Carbon Dioxide Saving Projects (reducing Green House Gas emissions) such as use of renewable energies. Renewable energies such as wind farms or installation of solar, small hydro, geothermal and biomass energy can all go a long way in carbon offsets by replacing fossil fuels and thereby reducing CO₂. Other types of offsets available in the markets include those resulting from energy efficiency projects, methane capture from landfills or live stocks. For example, if an environmentalist group plants enough trees to reduce emissions by one ton, the group will be awarded a credit. If a steel producer has an emissions quota of 10 tons, but is expecting to produce 11 tons, it could purchase this carbon credit from the environmental

group. The carbon credit system looks to reduce emissions by having countries honour their emission quotas and offer incentives for being below them.

5. Emission allowances

Under the Kyoto Protocol, the ‘caps’ or quotas for Greenhouse gases emissions for the developed countries are known as Assigned Amounts and are listed. The quantity of the initial assigned amount is denominated in individual units, called Assigned amount units (AAUs), each of which represents an allowance to emit one metric tonne of carbon dioxide equivalent, and these are entered into the country’s national registry.

In turn, these countries set quotas on the emissions of installations run by local business and other organizations, generically termed ‘operators’. Countries manage this through their national registries, which are required to be validated and monitored for compliance by the United Nations Framework Convention on Climate Change (UNFCCC). Each operator has an allowance of credits, where each unit gives the owner the right to emit one metric tonne of carbon dioxide or other equivalent greenhouse gas. Operators that have not used up their quotas can sell their unused allowances as carbon credits, while businesses that are about to exceed their quotas can buy the extra allowances as credits, privately or on the open market.

By permitting allowances to be bought and sold, an operator can seek out the most cost-effective way of reducing its emissions, either by investing in ‘cleaner’ machinery and practices or by purchasing emissions from another operator who already has excess ‘capacity’.

For trading purposes, one allowance or CER is considered equivalent to one metric ton of CO₂ emissions. These allowances can be sold privately or in the international market at the prevailing market price. These trade and settle internationally and hence allow allowances to be transferred between countries. Each international transfer is validated by the United

"When politicians & economists understand we live in a finite world & act accordingly then a better future has a chance" - Phil Harding

Nations Framework Convention on Climate Change (UNFCCC). Each transfer of ownership within the European Union is additionally validated by the European Commission.

Currently there are five exchanges trading in carbon allowances: the European Climate Exchange, NASDAQ OMX Commodities Europe, PowerNext, Commodity Exchange Bratislava and the European Energy Exchange. [NASDAQ OMX Commodities]

6.The ‘logic’ of reducing carbon emission through carbon credits

Carbon credits create a market for reducing greenhouse emissions by giving a monetary value to the cost of polluting the air. Emissions become an internal cost of doing business and are visible on the balance sheet alongside raw materials and other liabilities or assets.

For example, consider a business that owns a factory putting out 100,000 tonnes of greenhouse gas emissions in a year. Its government is a developed country that enacts a law to limit the emissions that the business can produce. So the factory is given a quota of say 80,000 tonnes per year. The factory either reduces its emissions to 80,000 tonnes or is required to purchase carbon credits to offset the excess. After costing up alternatives the business may decide that it is uneconomical or infeasible to invest in new machinery for that year. Instead it may choose to buy carbon credits on the open market from organizations that have been approved as being able to sell legitimate carbon credits.

Unchecked, energy use and hence emission levels are predicted to keep rising over time. Thus the number of companies needing to buy credits will increase, and the rules of supply and demand will push up the market price, encouraging more groups to undertake environmentally friendly activities that create carbon credits to sell.

Yale University economics professor William Nordhaus argues that the price of carbon needs to be high enough to motivate the changes in behaviour and changes in economic production systems necessary to effectively limit emissions of greenhouse gases.

Raising the price of carbon will achieve four goals:

- 1] It will provide signals to consumers about what goods and services are high-carbon ones and should therefore be used more sparingly.
- 2] It will provide signals to producers about which inputs use more carbon (such as coal and oil) and which use less or none (such as natural gas or nuclear power), thereby inducing firms to substitute low-carbon inputs.
- 3] It will give market incentives for inventors and innovators to develop and introduce low-carbon products and processes that can replace the current generation of technologies.
- 4] A high carbon price will economize on the information that is required to do all three of these tasks. Through the market mechanism, a high carbon price will raise the price of products according to their carbon content.

In short by giving a monetary value to carbon emission reductions by Carbon Credits carbon becomes a cost of business and is seen like other inputs such as raw materials or labour. Buying Carbon Credits is not a charitable donation, but a retail action. Trade in Carbon Credit has the potential to make forestry more profitable and to sustain the environment at the same time.

For example in India, Kolkata Metro has created an example by earning carbon credits for installing solar panels and other such environmentally sensitive practices.

"Embracing a low carbon economy will be as momentous as the previous industrial revolutions. As the shift from coal to oil did. And the shift from gas light to electric light. It has the potential to give us the competitive edge in the new global economy. The scale of the challenge is extraordinary. We will need to reinvent in the way we live our lives, the way our world works" - Charles Hendry

7. Concept of Carbon Tax

A carbon tax is an indirect tax—a tax on a transaction—as opposed to a direct tax, which taxes income. Essentially, a carbon tax—also known as a carbon dioxide tax or CO₂ tax—is a tax on pollution. It is based on the economic principle of *negative externalities*. A carbon tax is also called a price instrument, since it sets a price for carbon dioxide emissions. In economic theory, pollution is considered a negative externality, a negative effect on a party not directly involved in a transaction, which results in a market failure. To confront parties with the issue, economist Arthur Pigou proposed taxing the goods (in this case hydrocarbon fuels) which were the source of the negative externality (carbon dioxide) so as to accurately reflect the cost of the goods' production to society, thereby internalizing the costs associated with the goods' production. A tax on a negative externality is called a Pigovian tax, and should equal the marginal damage costs.

Prices of hydrocarbon fuels are expected to continue increasing as more countries industrialize and add to the demand on fuel supplies. In addition to creating incentives for energy conservation, a carbon tax would put renewable energy sources such as wind, solar and geothermal on a more competitive footing, stimulating their growth.

The social cost of carbon (SCC) is the marginal cost of emitting one extra tonne of carbon (as carbon dioxide) at any point in time. To calculate the SCC, the atmospheric residence time of carbon dioxide must be estimated, along with an estimate of the impacts of climate change. According to economic theory, if SCC estimates were complete and markets perfect, a carbon tax should be set equal to the SCC. Emission permits would also have a value equal to the SCC. In reality, however, markets are not perfect, and SCC estimates are not complete (Yohe *et al.*, 2007:823).

Simply put, a carbon tax is an environmental fee or a form of pollution tax levied by governments on the production, distribution or use of fossil fuels such as oil, coal and natural gas. The government sets a price per ton on carbon, then translates it into a tax on electricity, natural gas or oil. Because the tax makes using dirty fuels more-expensive, it encourages utilities,

businesses and individuals to reduce consumption and increase energy efficiency. Carbon tax also makes alternative energy more cost-competitive with cheaper, polluting fuels like coal, natural gas and oil. The amount of the tax depends on how much carbon dioxide each type of fuel emits when it is used to run factories or power plants, provide heat and electricity to homes and businesses, drive vehicles and so on. A carbon tax factors the societal cost of greenhouse gas emissions into the price of the fossil fuels that create them—so the people who cause the pollution have to pay for it. Many economists and consumers prefer carbon tax for its simplicity and impartiality.

8. The importance of ‘Carbon Tax’ in Promoting Renewable Energy

By making dirty fuels like oil and coal more expensive, a carbon tax encourages utilities, businesses and individuals to reduce energy consumption and increase energy efficiency. . Carbon tax also makes alternative energy more cost-competitive with cheaper, polluting fuels like coal, natural gas and oil being replaced by clean renewable forms of energy from sources like wind, solar, tidal more cost-competitive with fossil fuels. These energy resources are not only clean but are freely present on the earth surface and are of the flow type. In fact these resources are the resources of the future and are the only options available to mankind in the future.

9. Global Climate Change Scenario

- 5 outreach countries – Brazil, China, India, Mexico and South Africa have challenged G-8 countries to reduce their GHG emissions by more than 80% by 2050 and by 25 – 40% by 2020.
- Switzerland wants a carbon tax imposed on emissions of all countries above a certain level of per capita emissions.
- Stern Committee had recommended a carbon tax on all coal , natural gas and oil based industries so that social cost of carbon production could be countered by using this fund for developing renewable energy.
- Sweden has a carbon tax since 1991 on power generating plants and aviation fuel used in air travel.

- India wants the issues of technology transfer, expanded trade in carbon credits and a strong adaptation fund to be put in place at Copenhagen in 2009.
- Britain wants to start a carbon ration card to sensitize each adult about the carbon dioxide allowance given to him annually. Those in excess pay for it to those who show savings get incentives.
- Recent estimates show that uncontrolled carbon emissions cost the Global economy \$200 Billion annually.

9. Criticisms

The Kyoto mechanism is the only internationally agreed mechanism for regulating carbon credit activities, and, crucially, includes checks for overall effectiveness. Its supporting organisation, the UNFCCC, is the only organisation with a global mandate on the overall effectiveness of emission control systems, although enforcement of decisions relies on national co-operation. The Kyoto trading period only applies for five years between 2008 and 2012. The first phase of the EU ETS system started before then, and is expected to continue in a third phase afterwards, and may co-ordinate with whatever is internationally agreed at but there is general uncertainty as to what will be agreed in Post-Kyoto Protocol negotiations on greenhouse gas emissions. As business investment often operates over decades, this adds risk and uncertainty to their plans. As several countries responsible for a large proportion of global emissions (notably USA, Australia, China) have avoided mandatory caps, this also means that businesses in capped countries may perceive themselves to be working at a competitive disadvantage against those in uncapped countries as they are now paying for their carbon costs directly.

A key concept behind the cap and trade system is that national quotas should be chosen to represent genuine and meaningful reductions in national output

of emissions. Not only does this ensure that overall emissions are reduced but also that the costs of emissions trading are carried fairly across all parties to the trading system. However, governments of capped countries may seek to unilaterally weaken their commitments, as evidenced by the 2006 and 2007 National Allocation Plans for several countries in the EU ETS, which were submitted late and then were initially rejected by the European Commission for being too lax. Also many environmentalists are of the opinion that Carbon Trading and Carbon Tax sets a way for wealthy countries to circumvent their responsibility to reduce GHG emissions. Instead of implementing policies that lead to a reduction in emissions, industrialized countries want to continue with their same consumption pattern and it's better and easier to pay poor countries to do it for them.

A question has been raised over the grandfathering of allowances. Countries within the EU ETS have granted their incumbent businesses most or all of their allowances for free. This can sometimes be perceived as a protectionist obstacle to new entrants into their markets. There have also been accusations of power generators getting a 'windfall' profit by passing on these emissions 'charges' to their customers. As the EU ETS moves into its second phase and joins up with Kyoto, it seems likely that these problems will be reduced as more allowances will be auctioned.

In short, global warming has a fairly simple and cheap technical solution. Extreme weather is already creating enormous human suffering. If it continues, politicians will have a hard time ignoring the problem. If the recent meteorological chaos drives home the threat of climate change and prompts action, it may ultimately be a blessing in disguise.

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"Sustainability is a political choice, not a technical one. It's not a question of whether we can be sustainable, but whether we choose to be." Gary Lawrence

REFERENCES:

- Botkins and Keller, (1996), 'Environmental Science - Earth as a Living Planet Published by John Wiley and Sons.
- Khosboo T.N., Environmental Concerns and Strategies' Published by Indian Environmental Society-New Delhi
- Kaushik A- Kaushik C.P, (2004), 'Perspectives in Environmental Studies', Published by New Age International (P) Ltd. New Delhi.
- Odum E.P, 'Ecology' Published by Oxford and IBH Publishing Co.
- Schneider. S. (1992), Global Warming, Climate At Risk, ed. Porritt. J, in Save the Earth, Published by Dorling Kindersley Limited, London.
- Ramakrishnan. P.S. (2001), Ecology and Sustainable Development, Published by National Book Trust, India.
- Singh. S, Environmental Policy in India'Published by C.S.E New Delhi.
- www.carboncreditmart.com
- www.carboncredit.com
- www.investopedia.com
- www.carboncreditworld

ROLE OF TRADITIONAL INSTITUTIONS IN FOREST MANAGEMENT: A STUDY OF MEGHALAYA

¹Arati Yadav and ²Smita Linda

ABSTRACT:

The state of Meghalaya is primarily dominated by so-called tribal or Indigenous people (about 85 percent); the main ones being the khasis, the Jaintias and the Garos after which the prominent hills of the state are named. These three communities are perhaps best known for their matrilineal kinship system where descent is traced through the female line and land rights and other resource rights are held by the women folk. The bulk of forest resources are formally in the hands of communities, under the control of so called autonomous district councils in the form of village forest, clan forest, private forest and sacred groves and only about four percent of the total geographical area constitutes reserved forest and protected areas in the form of national parks and sanctuaries which is under the control of state forest department. This study is primarily based on empirical view substantiated by secondary data available from the state forest department.

This paper analyses the role of traditional institutions in the conservation and management of forest resources in the khasi –Pnar regions of the state and concludes with a discussion on how these resources is being utilised or managed in a sustainable manner?

Key Words: Indigenous people, matrilineal kinship, autonomous district council, traditional institutions

1. Introduction:

The tribes of North –East India lives in some kind of a ‘natural area’ with boundaries demarcated through ‘natural laws’ called customary laws, here the land and forest resource ownership and the individual rights to use it, are almost exclusively determined under the customary laws (Satpathy, 2004). Traditionally, the society is close - knit in their own group/tribe or clan. These groups were formed basically for security from external invasion, but with the passage of time these groups have established themselves to take decisions pertaining to other social activities in the entire region, as a result number of social institutions exists which have substantial impact on the decision making process in the society. These local institutions carry legitimacy and so people comply without inducement and sanctions. The organisation of the people in the region which endows a number of ethnic groups having distinct socio-economic and traditional setups throws even a greater challenge to the development of resources in a sustainable manner. In Meghalaya, the traditional institutions are strongly rooted since time immemorial but with the advent and

evolution of agents of political modernisation and the emergence of new institutions in the area, many changes have taken place. These traditional institutions have been in operation in the traditional socio-political structure, based on old traditional values and are satisfying the various traditional needs of the tradition -oriented society (Joshi, 2004). On the other hand the newly created constitutional institutions stand for commitment to economic, social and political change and modernisation.

2. Study Area:

Meghalaya, the hilly state is one of the seven states of North-Eastern Region of India. It is a land locked territory lying between the latitudes of 25° 02' north to 26° 06' and 89° 48' east to 92° 50' east longitudes. It was carved out from Assam and made a fully fledged state on 21st January, 1972. Meghalaya is also known as the ‘abode of the hills’ and has a total geographical area of 22429 sq. km with its capital in Shillong. The state is comprised of nine districts namely, East Khasi Hills, West Khasi Hills, West Garo Hills, East Garo Hills, South Garo Hills, North Garo Hills Ri Bhoi and Jaintia Hills, East Jaintia Hills districts and thirty-eight

"Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed ...

*We simply need that wild country available to us, even if we never do more than drive to its edge
and look in." - Wallace Stegner*

blocks. The total population of the state is 23,18,822 persons with an average density of 103 persons per square kilometer (Census of India, 2001). The state is made up of three hills namely, the Khasi Hills, Jaintia Hills and the Garo Hills. The altitude of the state varies between 100m to 1900m from mean sea level. The state shares 496km. long international boundary with Bangladesh in the south and west. The state of Assam surrounds the state from the north and east side. The Meghalaya plateau is highly dissected and has irregular terrain in the western and northern sides.

Meghalaya is endowed with rich natural vegetation, which varies greatly with the altitudes in the state. The richness and variety of vegetation ranging from sub-tropical to tropical is due to diverse topography and variations in rainfall, soil and temperature.

3. Data Sources and Research Methodology

With due regard to the sharp imprint of the historical and political processes on the land (including natural resources) and its people, the study combines the empirical approach with the use of documented material and various project reports relating to the administrative and historical background. However, the entire study is heavily depended on the secondary

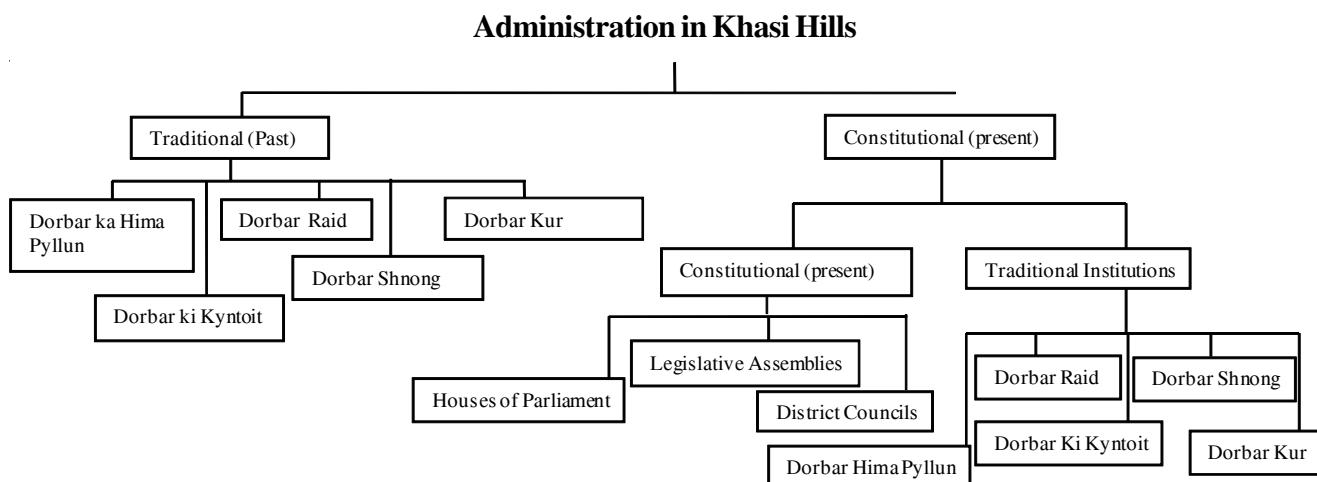
sources, nevertheless, in order to authenticate the study and to know the ground reality important focus-oriented discussion with the village elders, village headmen, clan elders, academicians of this fields etc were contacted and their views on the subject was incorporated. Besides this the state forest reports was also consulted to know the proportion of the forest held under various politico administrative set up.

4. Discussions of the Paper:

4.1 History of Traditional Institutions:

Much before the advent of the British, the indigenous people in the hills of north-eastern India had organized themselves under the political systems of their own which had been evolved through the natural outcome of their deep-rooted social beliefs, customs and traditions (Nongkynrih 2002). As a result two different types of system of administration/governance had been evolved in the hills, i.e., democratic system in the clan-based village societies controlled by the village councils and village headman, and autocratic institutions in relation to their people used to vary from tribe to tribe. In the state of Meghalaya, the Khasis evolved a unique system of administration, which can be diagrammatically represented as:

**Figure 1: Comparative Description of Village Durbar (Dorbar Shnong) of Meghalaya
the past and the present**



Source: Encyclopedia of North-East India 2004

“A nation that destroys its soils destroys itself. Forests are the lungs of our land, purifying the air and giving fresh strength to our people. “

From the above diagram, a brief discussion is outlined below:

a) Ka Dorbar Ka Hima Pyllun: It is the supreme authority of the State, and the highest legislative, judicial and executive body. It was convened when the State faces natural calamities, epidemics or to discuss issues like, extra-territorial rights, defense and foreign policies. A Cabinet or Executive Council handled other State subjects like trade, communications, trading, markets, rivers, forests and day-to-day administration. The Dorbar *Hima* acted as a supreme court and had judicial functions such as disposal of cases of petitioners and also issues related to land disputes. *Ki Myntri, Basan, Lyngdoh, Lyngskor Metabors*, etc. were attached to the *Syiem* to carry out their various duties and submit judicial reports to the *Syiem*. Chief is also supported by *U Syiem Khynnah* (Deputy Chief) in administration, while *Ka Syiem-Sad* helps in preparation and organisation of State rituals. In addition to the chief and *Ki Bokhara Ka Dorbar Hima* it also included representatives of the *Dorbar Raid, Dorbar Shnong and Dorbar Kur*.

b) Ka Dorbar Raid or Ka Dobar Laiphew Shnong: (Dorbar of Thirty Villages): It co-ordinated the affairs of constituent villages (not necessarily 30 in numbers, it included the whole commune or circle). All in the villages were members of a Dorbar Raid, with additional representatives whenever necessary. The *Dorbar* elected the *Rangbah Raid* (Head of Raid) as chairman and also the executive head, while members acted as advisors. The Dorbar supervised administration, improvement of markets roads, and collection of levies, maintenance of Raid lands and sanction of the same land to landless people. It also arranged rituals and ceremonies sent offerings at festivals.

c) Ka Dorbar Ka Kyntoit or Ka Dorbar Pyllun: It is a council of a group of villages or localities, with more or less the same function as of *Dorbar Raid*

but with less jurisdiction within *Ki Kynoit* (means small unit).

d) Village Level Dorbar (Ka Dorbar Shnong): It is the smallest unit of administration and meets each other frequently than above. This also has administrative, financial and adjudicatory functions. The power and authority of *Dorbar Shnong* was derived from the traditions of autonomy and traditional practice which had the force of law.

e) Clan Council or Dorbar Kur: It is the lowest unit of administration generally represented by male members of each Kur. The *Rangbah Kur* (Clan Headman) is also the *Kni Rangbah* (head uncle) being the eldest member of the clan. He is also the president, executive and judicial head, as well as the clan priest. The council look after the clan lands (*Ri-Kur*) and the welfare of all clan members especially the destitute or unfortunate

Thus the hierarchy of five different councils at different levels of jurisdiction and operation shows that grass-root level democracy was practiced by the Khasi people from ancient times. All democratic norms like election, majority consensus, accountability, representation etc, were operational at all level.

4.2 Forest Administration under British Rule:

Since the state falls under the purview of the Sixth Schedule of the Constitution of India, according to which it has the privilege to establish its own local self-government rather than the regular 'Panchayat' system which is common in other parts of the country. As a result the pattern of ownership of resources also differs from the rest of the country. Only 5 % of the forest is under the control of the government and 95 % is controlled and managed by the customary traditional institutions like the District Councils, the Village Councils or *Dorbars*, the clans and even private forests owned by the traditional chieftain exists. Under the customary practices, the entire benefits of the forest and forest products are shared by the entire community.

"Like music and art, love of nature is a common language that can transcend political or social boundaries." - Jimmy Carter

**Table 1: Classification of Forest in Meghalaya:
Ownership and Management**

Type	Area in Sq.Km.	Ownership Status
Reserved	821	Owned and managed by State Government
Unclassified	7417	Owned and managed by District Council
Protected	179	Maintained by District Council/State Government
	768	Owned and managed by Raids
	25.9	Owned and managed by Village community
	348	Owned and Managed by Syiem/Lyngdoh/Sirdars etc.

Source: State Forest Department, Govt. of Meghalaya (1986)

The state has an estimated forest area of 8514.19 sq. km of which only 722.96 sq. km is under the control of the state forest department. The remaining areas are under the direct control of the district councils i.e. of the Khasi, Garo and Jaintia Hills. The Reserved Forests are managed by the State Forest Department and the Protected Forests are managed by the local administrative units such as, the district councils. The forest areas of the state can be classified to be falling under State Forests (Reserved: fully restricted and open forests that are partially accessible), Un-classed state forests which are under the direct control of district councils, Village Forests, Clan/ Community Forests and the Private Forests. District Council reserve forests un-classed forest include forests areas that are not included in the above mentioned classification, and which are controlled and managed by the Government(Tiwari et.al.1999).

There is very little variation in the general principles which govern the land and forest rights in the Khasi, Jaintia and Garo Hills. However, the actual pattern of land tenure differs due to the differences in the social organization and historical development. Here, the land and forests are an integral part of the habitat to which they belong to, hence from time immemorial tribes have exercised complete control over these, and whatever

else is contained above and beneath them. As Nongbri (2001) points out, the khasis have a very complex system of ownership and management of land, there is no 'clear-cut separation' between land and forests.

4.3 Traditional Institution and Forest Administration:

The traditional pattern of forest management is determined by the nature of ownership and its low level of technological maintenance. However there is no definite idea about the accurate area under forest by each category under traditional management and its location as so far there has been no proper cadastral survey and mapping of forest categories. But from the oral evidences and scantily available literature, the following types of forest have been identified by the Khasi Hills Autonomous District Council:

a. Law Kyntang: These are sacred forest and are believed to be inherited by the deities of Khasi and Jaintia pantheon worshipped by the local communities. These forests are of two types (i) those belonging to private individuals. (ii) Those belonging to a village or group of villages. Although with the spread of Christianity the significance of these forests has been decreasing but its sanctity is still maintained. No one is allowed even to pluck a leaf or twig because the person might get cursed or suffer from incurable disease and meet an untimely death. However in the modern times in family ownership trees are being felled provided all the family members agree to it . The same trend is also noticed in the case of sacred groves owned by the village or group of village.

b. Law Adong (Restricted Forest): these forests are set aside for certain specific purposes and cannot be used for any other purpose. It may be reserved for: firewood for cremation, timber for public construction like school building, meeting hall etc, or for repair or reconstruction by individual families affected by natural calamities such as earthquake, heavy rain, landslide, fire accidents etc. These forest also serve as further help to Sacred Groves in maintaining the ecological balance.

"You can make a lot of speeches, but the real thing is when you dig a hole, plant a tree, give it water, and make it survive. That's what makes the difference" - Wangari Maathai

These forests are mainly owned by a village or a group of villages and sometimes by institutions like club etc. They are managed by the Dorbar . As the products are meant for the villagers own use, thus they cannot be sold for commercial purposes. There management is not within the purview of District Council and are managed by the village/community institutions pertained only to a restrictive use. Violators of restrictions are punished by the Village Dorbar/ Syiem/District Council Courts in accordance with the customary laws.

c. Ri Law Sumar : These are forests belonging to an individual, clan or joint clans which are grown by or inherited by him (or them) in village or common *raj* land. The forests may fall under any of the categories of *Ri-Kynti* (private land) or *Ri-Raid* (common or community land). The produce of these forests are used for commercial purposes and the District Council collects substantial revenue for them (Dev et.al.2010).

d. Law Shnong (Village Forests): These forests are reared, maintained and managed by the village as a whole and used by all the members of a village concerned. Earlier, each family could easily draw upon such forests as and when needed as the forest was relatively abundance. But with growing population, these forests have become scarce and each is now required to an allotment from the village Dorbar. The pattern of allotment is an equal share for each family. Sometimes, some families which do not like to go the forest on grounds of distance or difficulties, hand over their shares or claims in return of money. The owner of forest is village Dorbar. Some forests are so large that if they are owned by private owners, and they prefer to handover to the Village Durbar for maintenance. These village forests may be either *Ri – Kynti* or *Ri-Raid* , implying that the maintenance jurisdiction of the Village Dorbar may be larger than its actual ownership jurisdiction.

e. Law Ri- Kynti (Private Forests): These are private forests and are owned by an individual or an individual family. They are more in West Khasi Hills

and East Khasi Hills. These forests are mostly comprised of pine forest with high market value for its products. The owner is free to manage as he or she desires.

f. Law Kur (Clan Forests): These forests are owned by one or more. Here the entire produce is jointly shared among the clan members. Families which do not contribute to the expenses incurred in the maintenance of the forest or did not share the expenses of litigation if any, will have no claim to the share. These forests are found in the West Khasi Hills.

g. Law Raid (Community Forests): These forests are owned by the Sirdarship/Syiem/ Dorbar Hima and are also maintained by them. The produce of this forest goes to the owner,.i.e.The Syiem.

h. Green Block: These are forests belonging to individual families or clans and *raj* lands already declared as “Green Block” by the Government because of their aesthetic beauty and water supply functions to the town of Shillong and its suburbs and also forests that may be so declared under the Autonomous District Councils Act.

i. District Council Reserve Forests: These are forests that may be so declared by the Executive Committee under the Autonomous District Councils Act or the rules made there under.

4.4 Forest Management:

The formation of Autonomous District Councils acts as a bridge between modern democratic administration and tribal democratic institutions. There is no direct relation between State Forest Department and the forest organization of the District Council except in case of schemes undertaken under the grant-in-aid programme and for sharing the royalty on minor minerals The State Forest Department exercises its power only in an advisory capacity in these matters. However, of late the State Government has tried to bring an indirect control on the felling of trees in Council managed forest by resorting to legislative measures like the Meghalaya Tree Reservation Act,1976, the Meghalaya (Removal of Timber) Regulation Act, 1981.

“The difference between animals and humans is that animals change themselves for the environment, but humans change the environment for themselves.”Ayn Rand

And the introduction of purchase tax on timber etc. These legislative measures have so far made little impact because of funds as well as frictions generated due to overlapping of powers. It can also be mentioned that the Forest Conservation Act, 1980, passed by the Indian Parliament, a highly sensitive and aggressive piece of legislation, also has become redundant and ineffective beyond the areas managed by the State Forest Department (Dasgupta et.al.1986).

5. Conclusion:

In order to safeguard the rights of the forest dwelling scheduled tribes and other traditional forest dwellers include the responsibilities and authority for sustainable use, conservation of biodiversity and maintenance of ecological balance and thereby strengthening the conservation regime of the forest dwelling scheduled tribes and other traditional forest dwellers. Decentralization method should be adopted to devolve power to the lower levels of statutory government rather than building on and adapting existing community institutions. This fosters conflict where customary and statutory governance systems pursue different interests and may undermine the incentives for sustainable forest management. In other instances, decentralization has been adopted without measures to strengthen local institutional capacity of local actors to assume responsibility continues to be a major concern for future reforms. The fundamental right of indigenous and tribal populations to land and natural resources must be safeguarded if they are to survive as distinct cultural groups, or simply survive at all.

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References:

- Datta Ray,B.(1998).The Seventy Third AmendmentAct,1992 and the State of Meghalaya. In M.N.Karna, L.S.Gassah, C.J.Thomas(eds.)Power to People in Meghalaya. New Delhi: Regency Publication
- Dasgupta, M; Gangopadhyay, A.K;Bhattacharya, T; Chakraborty,M.(1986).Forestry Development in North-East India.Guwahati:Omsons Publications
- Dev,Nathan;Kelkar,G.;Walter,Pierre(eds),(2010).Globalization and Indigenous People in Asia
- Gassah,L.S.(1998).The Sixth Schedule and the 73rd Amendment :An Analysis. In
- M.N.Karna,L.S.Gassah, C.J. Thomas(eds.)Power to the People in Meghalaya:Sixth Schedule and the 73rdAmendment.New Delhi: Regency Publications
- Govt. of Meghalaya_ (2020)Meghalaya State Vision Document, Views and Comment
- Nonkynrih,A.K.(2002).Khasi Society of Meghalaya: Sociological Understanding. New Delhi: Indus Publishing Company
- Nongbri,Tiplut(2001)."Timber Ban in North-Eastern India: Effects on Livelihood and Gender" , in Economic and Political Weekly,26(1);1893-1900
- Satapathy, K.K (2004). Social and Institutional Aspects of Watershed Management Programmes in North-Eastern Hill Region: An Overview in K.K Satapathy and K.N.
- Agrawal(eds.).Watershed Management: Social and Institutional Issues in North-East India. Umiam:ICAR Research Complex for NEH Region.
- Synniang.IengskhemRyngki(2010).Traditional Institutions in Khasi Hills :A Study of Mawplang Lyngdohship. M.Phil Dissertation(Unpublished).Department of Political Science., Shillong:NEHU.

**Reserch Papers Presented at
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THE SCIENCE AND POLITICS OF CLIMATE CHANGE

Manoj Patharkar

ABSTRACT:

Climate change can be seen as the ultimate fallout of the intricate transformations taking place on the face of the earth. The development of human civilization over the last three centuries has had tremendous impact on the physical features, natural resources and biosphere of the earth. With climate change, it is facing a challenge which compels us to think anew about 'the way we live now'. This paper tries to explore the direct and indirect impact of climate change and looks at the human response to it. From rising sea levels and impact on biodiversity to changes in life cycles of crops, pests and disease-causing germs, climate change can wreak havoc upon earth. The worst possibility is that it might trigger fierce geopolitical conflicts which may threaten human extinction. While some steps have been taken towards the control of carbon emissions, there are clear indications that drastic measures are required. The paper also makes an attempt to pose important questions about the adequacy of the human efforts to deal with climate change and argues that the issue has significant economic and political implications.

Keywords: climate change, geopolitical conflicts, carbon emissions, biodiversity, economic and political implications

Introduction

This paper makes an attempt to highlight the impact of climate change and the political responses and debates related to global warming. It begins with an elaboration of the direct and indirect implications of rising temperature of the earth's atmosphere and goes on to examine the world-wide efforts at controlling carbon emissions. It argues that climate change has far-reaching implications for the way we organize our economic and political life.

Dangerous Anthropogenic Interference (DAI)

Climate change is not new to the earth. It has gone through numerous natural cycles of change along geological time scale. Ice ages and Interglacials have taken it through alternating periods of rising and falling temperatures. The last geological epoch, the Pleistocene, ended about 11,000 years ago and the earth entered the geological epoch Holocene. It was also the end of the last ice age and the beginning of the present interglacial period. It is not yet certain whether the period of ice ages is over or we are living in an interglacial.

What is significant about the current indications of climate change is that they are the result of Dangerous Anthropogenic Interference (DAI). The changes are so dramatic that what used to take 10000 years to change in the natural cycle is now taking place in a matter of a few hundred years. The convergence of various factors is likely to accelerate this rate of change until the whole system reaches a 'tipping point'. The implications are very serious not only for human beings but for the very existence of life on earth.

Climate scientists closely monitoring these changes over the last century have reached a significant consensus as to the nature of Dangerous Anthropogenic Interference (DAI). Apart from the age-old processes of deforestation and migration, human civilization from the nineteenth century onwards has been responsible for large scale interference in various ecosystems. Mining, large dams and pollution have already resulted in a series of adverse effects on the earth's ecosystem while genetic modifications are likely to change the face of the biosphere in unpredictable ways. From the viewpoint of climate, the most important DAI has been the emission of greenhouse

"...the world needs to face up to the challenge of climate change, and to do so now. It is clear that climate change poses an urgent challenge, not only a challenge that threatens the environment but also international peace and security, prosperity and development. And as the Stern report showed, the economic effects of climate change on this scale cannot be ignored, but the costs can be limited if we act early" - Prime Minister Gordon Brown

gases. Certain amount of these temperature-holding gases is part of the natural processes of decay and regeneration, e.g. methane or water vapour. However, burning of fossil fuels on an unprecedented scale has been adding large amounts of carbon dioxide to the atmosphere for the last two centuries. Chlorofluorocarbons have also had significant impact on the ozone layer which protects the earth from sun's ultraviolet rays.

Direct Impact

Temperature is important for climate as it is a measure of the energy input to the whole system. Greenhouse gases hold the heat of sunlight which results in rapid warming on a global scale. This has great impact on the climate of the earth, more directly upon the water cycle and ocean currents. The most dramatic impact of global warming has been seen in the polar region where tremendous amounts of ice is continuously melting as shown by the records of various scientific bodies. 'Feedback' effects of various kinds further accelerate the process. This can lead to rise in sea-levels and consequent flooding of smaller islands and coastlines. *The Times of India* dated 21st November 2012 reports that 'Greenland is losing an average of 200 million tonnes of ice every year since 2003, which could have a big impact on sea levels, scientists claim.' It quotes Eric Rignot from the NASA with Chris Harig and Frederik Simons from Princeton University. These findings come from the interpretation of data from the Gravity Recovery and Climate Experiment (GRACE).

The melting ice in regions around the North pole can interfere with the patterns of water movement in the Arctic ocean. This is likely to have serious impact on the intricate global network of ocean currents. Elizabeth Kolbert points out in her book *Field Notes from a Catastrophe: Man Nature and Climate Change* that weather patterns across the globe depend upon the Arctic key to ocean currents (p56-57). Changes in ocean currents are likely to introduce severe fluctuations in weather patterns across the globe. The September 2012 issue of *National*

Geographic is a special issue on climate change. It deals in detail with the drought in Texas and the possibility of hurricanes and storms of greater intensity across Europe and America.

In his article in the September 2012 issue of *National Geographic* 'The Weather Gone Wild', Peter Miller comments on changing weather patterns in the following manner:

Rains that are almost biblical, heat waves that don't end, tornadoes that strike in savage swarms—there's been a change in the weather lately. What's going on? (p30)

He is positive that these events are not entirely the result of natural cycles of weather change. In his opinion, the root cause of these changes is that the 'earth is steadily getting warmer, with significantly more moisture in the atmosphere.'

Indirect impact

In the long run, climate change is going to affect biodiversity on the earth. Elizabeth Kolbert makes an interesting point in *Field Notes from a Catastrophe*. She argues that it is now possible to witness within one's lifetime changes which Darwin specified with reference to the cycles of ice ages and interglacials. In *Origin of Species* Darwin established that species moved Southwards with lowering of temperatures at the beginning of an ice age whereas species moved Northwards or to higher altitudes in periods of increasing temperatures when the ices ages receded (2007, pp71-72). This principle can now be seen in operation among a number of species on earth. Kolbert refers to the 'Comma' butterflies in England which have been found migrating towards the North.

Kolbert also refers to life cycle variations reported in the USA with reference to mosquitoes belonging to the species *Wyeomyia smithii*. Similar changes on a global scale are likely in the life cycles of crops, pests and disease-causing germs and insects. It will increase the difficulties facing the human species in a period when it is already struggling with issues

"When you warn people about the dangers of climate change, they call you a saint. When you explain what needs to be done to stop it, they call you a communist" - George Monbiot

such as rising population, decreasing soil fertility, and drug-resistant germs.

Most importantly, climate change is likely to exacerbate geopolitical conflicts all over the world. Conflicts over rivers, dams and immigration will become more serious with increasing droughts and other climate-related disasters. Climate change is likely to worsen the conflicts caused by scarcity of resources both in developed and developing countries. Given the integrated nature of global economy, the changes will naturally have a global impact.

Political Response: Denial and Discredit

The need to do something about climate change was increasingly recognized in the closing decades of the twentieth century. Controlling carbon emissions came to be accepted as the most important step towards controlling global warming. After a series of reports by bodies such as the IPCC (Intergovernmental Panel on Climate Change) and negotiations at the global level, an international treaty related to control of carbon emissions came into being in 2005 in the form of the Kyoto Protocol. Almost all members of the UNO joined the treaty in an unprecedented instance of global cooperation. However the few significant exceptions had the potential to neutralize this achievement. The United States of America withdrew from the negotiations at a critical stage and decided to follow a 'different approach'.

The US linked economic performance to environmental conservation by using the concept of 'greenhouse gas intensity', a ratio of economic output with carbon emissions. This made it possible for the US to actually increase emissions while claiming that it has reduced 'greenhouse gas intensity' because its economic output increased proportionately. The continued stand-off with China and India further contributed to the uncertainty about the efficacy of the Kyoto Protocol. A significant feature of all this was the concerted opposition to the Kyoto protocol in media and democratic institutions. Elizabeth Kolbert

points out that the Byrd-Hagel Resolution in the US Senate rejected any emission restrictions unless similar norms were accepted by India and China. She indicates that a publicity campaign to discredit global warming as a 'hoax' was launched by bodies such as Global Climate Coalition, Americans for Balanced Energy Choices, Greening Earth Society and web groups like Tech Central Station. She contends that these institutions were sponsored by powerful economic and oil interests which spent about \$ 13 million on an anti-Kyoto protocol advertising campaign. (pp156- 167)

Today a number of global warming skeptics imply that the IPCC approach is alarmist and based on unsound science. They deny that the temperature of the earth is rising because of human interference or carbon emissions and attribute it to natural changes in the earth's climate. Some of them argue that the impacts of global warming and climate change have been presented with considerable exaggeration. Some of these skeptics have even argued that there is no scientific basis for the projected negative impact of global warming and it can actually be beneficial for life on earth. This politics of denial and discredit has taken the ugliest turn by raising questions about the integrity of scientists working in international bodies which publish reports about the seriousness of climate change. In an article in *The Daily Telegraph* in January 2010, IPCC Chairman Rajendra Pachauri was accused of conflict of interest on account of financial benefits received as the Director of The Energy and Resources Institute. The fallout of this debate has been an atmosphere of uncertainty about 'climate change' in a period when people need to understand its seriousness and make sincere commitments to reduce its causes.

Developed versus Developing World

Measures to control carbon emissions at the global level have sparked a debate between the developed and the developing countries. The latter argue that the developed countries of the industrialized

"Climate change is a very unusual ethical challenge because it's so completely measurable...one of the reasons people should take action is because they have a responsibility for their emissions...therefore what somebody else does is really irrelevant" - George Marshall

West began large-scale carbon emissions in the middle of nineteenth century and have already added huge amounts of carbon dioxide to the atmosphere. The developing countries, on the other hand, began large-scale industrialization only after the 1950s and are currently at a crucial stage of their economic development. In order to survive in the competitive globalized economy, these countries need affordable energy sources in the form of coal-fired electricity generation plants. On an average, 50 % of electricity comes from burning coal. Uniform restrictions on carbon emissions for the developed and the developing countries would put the developing countries at a disadvantage. Hence the demand for greater commitments by the developed countries. In fact, the Kyoto protocol does take into account differential commitments which are backed up by the mechanisms for transfer of green technology by the developed countries to the developing ones.

But there are considerable differences among the developed and the developing countries with regard to the acceptable commitments to reduce carbon emissions. As mentioned earlier, the Byrd-Hagel Resolution rejected any emission restrictions on the US unless similar norms were accepted by India and China. This debate has a complicated relationship with the efforts to deny the seriousness of climate change both in developed and developing countries. Clearly, the issue enters economic and political arena from the scientific arena. The extreme position in this regard is the argument that the developed countries may use the issue of climate change as a lever to restrict economic growth of increasingly competitive developing countries. The world media has witnessed this debate with increasing ferocity in the last decade with reference to both the science and the politics of climate change.

Recently a well-circulated Marathi daily *Loksatta* carried two special articles which highlight the debate in all its essentials¹. In the issue of 21 October, 2012 Rajiv Sane argues that the IPCC concerns are alarmist and its documentation has many scientific lacunae. Like the global skeptics of climate change, he makes use

of a factual error in the IPCC report with reference to the melting of Himalayan glaciers. He is quite clear about the need for India to safeguard its economic interests and not to fall prey to the alarmists. He also supports the use of nuclear power as a viable alternative for India. In a reply to this article, the noted Marathi writer on conservation, Atul Deulgaonkar argues in the 28 October 2012 issue that concerted efforts at the global level are going on to discredit global warming science and scientists. He points out that the basis for Sane's arguments is a book by the British conservative politician Nigel Lawson.

With the heating up of these debates about the politics and economics of climate change, a large body of scientific data is getting relegated to irrelevance. In fact, the very science of climate is being challenged in these exchanges. The real point of argument is actually economic. The basic question is whether a competitive consumerist globalized economy can at all be reconciled with the demands of addressing climate change. If the survival of the economy demands a wasteful lifestyle, how can anyone be committed to emission restrictions or environmental conservation? The issue of climate change has raised this question at the ultimate level where failure to solve the dilemma can lead to prolonged misery for generations to come.

Conclusion

The issue of climate change and ensuing political conflicts can be seen as the ultimate surfacing of the contradictions of the current economic and political system. Its solution depends upon how serious the human race is about achieving a meaningful level of eco-political cooperation and democracy. The consequences of failure are likely to be more serious than those of nuclear warfare.

Notes

1. Despite the unfortunate errors in both articles with reference to the name Rajendra Pachauri and the controversy surrounding Peter Gleick and the Heartland Institute respectively, the two articles effectively highlight the political and economic stakes in the climate change debate.

"The road to climate stability is straight and the solutions simple, and yet scientists, economists, industrialists and politicians are busy making them complicated" - Satish Kumar

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References

Kolbert, Elizabeth (2007) *Field Notes from a Catastrophe: Man, Nature and Climate Change*, London: Bloomsbury.

Hansen, J (2008) "Tipping point: Perspective of a Climatologist" in Eva Fearn (ed.), *State of the Wild 2008-2009*, Washington: Wildlife Conservation Society and Island Press. Available at: http://www.columbia.edu/~jeh1/2008/StateOfWild_20080428.pdf pp6-15

Miller, Peter (2012) "Weather Gone Wild" in *National Geographic*, September, p30

The Times of India, 21 November 2012

Sane, Rajiv (2012) "Global Warming: Doomsday Alarms and Ground Reality (*Jagatik Tapamanvadh: Pralay-Ghantavad ani Vastusthiti*)" in *Loksatta*, 21 October [Marathi]

Deulgaonkar, Atul (2012) "Gang Power, Science for Sale and Defenceless Truth (*Tolisatta, Shastrancha Bajar ani Porke Vastav*)" in *Loksatta*, 28 October [Marathi]

"If we go around clearing up our own mess and being positive about our own lifestyle, other people will start copying us and picking up their own carbon 'litter' too" - Dave Hampton

ISSUES RELATED TO MIGRATION- IN THE CONTEXT OF GLOBALISATION

Prof. Mrs. Archana Prabhudesai

ABSTRACT:

Globalisation, Migration and the geographical change are the interrelated phenomena. Globalisation has caused the introduction of various concepts and issues in the economy which affects different sectors including the Geography.

Concept of Globalisation

It is a process of free flow of goods and services. Globalisation aims at promotion of trade and commerce among different countries of the world. It also forces people to move from one place to another in search of job, better opportunities, higher education or for some other reason. In this way it is an important cause of migration.

But, as noted by World Bank in its Report, “Globalisation, Growth and Poverty” while countries have sought to promote integrated markets through liberalization of trade and investment they have largely resisted liberalizing migration policies.

Many countries have extensive legal barriers preventing foreigners from entering for purposes of seeking work or residency. Despite the reluctance of the government to liberalize immigration policies however the number of people living outside their country of origin has risen from 120 million in 1990 to more than 215 million in 2012(Acc to World Bank Report) which is approximately 3.05% of the world population.

Concept of Migration

It is the movement of people from one place to another either in search of job, better opportunities to live, higher education, or for some other reasons.”

Migration affects on both the places. The place of left behind and on the place where migrants settle.

According to International Organisation for migrants, World Migration Report 2010 .the number of international migrants was estimated at 214 million in 2010 , if this number continues to grow at the same pace it could reach at 405 million by 2050.

Reasons of Migration

1. Economical
2. Social
3. Political
4. Environmental

Types of Migration

1. Internal Migration –When people migrate within the same country or region . Eg. Moving from Maharashtra to Punjab
2. International Migration- Movement of people from one country to another. Eg.moving from India to China
3. Emigration – When someone leaves a country for specific reason Eg. Moving for higher education
4. Immigration- When someone enters into a country Eg.Entering in search of good job opportunities
5. Forced Migration- Movement due to war or famine
6. Impellers – It is a series of shorter and less extreme migration by people.

Migration at a Glance(Secondary Sources of Statistical data)

As per Census 2001

- In the period of 1991-2001 about 5.3 crore persons migrated from one village to another
- Movement of people from villages to town was about 2.1 crore
- Movement from town to villages was about 62 lakhs

- Movement from one town to another was about 1.4 crore

Highest rate of migration was in Maharashtra followed by Delhi, Gujrat and Haryana.

The largest number of persons **moving out of states** was from **Uttar Pradesh and Bihar**.

Migrants pouring into Mumbai from Different States of India



This map shows pouring of migrants into metropolitan city like Mumbai from different states of India in the search of job, residency or for many other reasons. All these are the outcomes of Globalisation and its impact on rising level of migration.

Causes of Migration

There are three main causes of migration. They are

- Push factors
- Pull factors
- Globalisation

Push Factors

They force the individuals to move from one area or another.

- Lack of services
- Safety
- High Crime rate
- Poverty
- Natural Calamities

Pull Factors

They attract the individuals to enter into a specific area.

- Higher Employment
- More Wealth
- Good Climatic Conditions
- Stability

Both these factors work in combination which results in the effect of migration.

Eg. Unemployment forces towards the area having potential for employment job opportunities Poor safety results in search of safe, peaceful atmosphere

Globalisation as a serious cause of migration

Globalisation has introduced a third set called as “network” factors which include

- Free flow of information
- Improved global communication
- Faster and lower cost transactions
- Other countervailing factors

Manytimes it is observed that as business grows & becomes more internationalized it often outsource their production to other developing countries where labour costs are lower. This movement of jobs from developed to developing world mitigates those factors leading to migration. In other words, we can say that in global economy, jobs can move to potential migrants instead of migrants moving to potential jobs.

Process of migration

It is in 3 stages.

- Visits-
When movement of people is for less than 3 months.
- Short term migration-
Movement of people is between 3 months to 3 years. It may be related to work or for education.
- Long term migration-
People move for more than 2-3 years. It may be

in the form of establishing homes in another area . It is a serious cause of migration as population in certain areas increase whereas it depletes the human resources of the areas left behind by migrants

Effects of migration

It has both the effects i.e. positive and negative.

Positive Effects of migration

- Migration generates the atmosphere of sharing cultural values, thoughts
- It develops the feeling of active participation in the traditions of other religions, castes this ultimately leads to national integration

Negative Effects of migration

- Economic Effects-
 1. It affects to the functioning of the government
 2. It reduces the quality of workers and work
 3. There is always a danger of rising cost and expenditure which leads to increasing cost of living.
 4. The biggest effect of migration is a problem of 'Brain Drain'
 5. Illegal migration is one of the biggest problem nowadays i.e. the entry of terrorists, mafias through illegal ways.
- Social Effects -
 1. Mixing of different cultures and races results into cultural rivalries
 2. There is always a danger of displacing of cultures where many a times the culture of a specific area gets eroded.
- Environmental Effects -
 1. Migration affects the physical appearance of the city
 2. It increases level of pollution which harms the health of the citizens

Migration in Metros- Victim of Globalization

Case study of Mumbai

Mumbai is the top most victim of migration. Everyday thousands of migrants pour into Mumbai mostly from Bihar and Uttat Pradesh. The flow continues despite the strong backlash faced by migrants from political parties like Maharashtra NavanirmanSena(M.N.S.)

According to different statistical records the share of local migrants i.e. migrants from other parts of Maharashtra towards Mumbai is also much high.

Effects of migration as a cause of globalization on metros

Migration affects very badly to metros in following ways:

- It creates problem of natural resources depletion
- Rises scarcity of food and other necessities
- Land deregulation
- Heavy pressure on infrastructure

Recent Observations in case of Migration

Concept of reverse migration

From last few years. It is observed that the migrants are returning back to their country or area of origin.

It may be because of

- Good job opportunities in the area of origin
- Increasing savings
- Efforts taken by government for balanced regional development

Conclusion

Migration which is the movement of people from one place to another has a direct relation with migration.

According to experts, there would be a continued rise in the level of migration for the coming decades. In addition to economic and cultural issues in the forthcoming years , migration will bring newer problems like illegal migration.

In response to this countries will be forced to draft new migration policies that will address security, economic and human relations.

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References:

Books-

1. "Human Migration: A Geographical perspective" by G.J. Lewis 1982
2. "International Migration: Prospects and policies in global market" - J. Edward Taylor,Douglas S. Massey 2004
3. "Migration" - MichealSamers 2010

4. "Migration in India" - Shyam Chandra Srivastava
5. "Determinants &Consequences of internal migration in India" - A.S. Oberai, Pradhan H. Prasad, M.G Sardana

Newspaper Articles-

1. "Centre has no role in curbing migration" - Times of India, December 28, 2012
2. " Gypsies migrated from India 1500 years ago" - Hindustan Times, December 9, 2012
3. "A new world by 2030" - Arab News , November 11,2012

Websites-

1. www.policyproposalsforindia.com
2. www.censusindia.gov.in
3. www.en.wikipedia.org

THE ROLE OF BIO FERTILISERS AND BIO PESTICIDES IN SUSTAINABLE AGRICULTURE

Mugdha Keskar

ABSTRACT :

Green revolution was successful to feed the large population of many nations like India, Pakistan and Mexico. However, it was later found that high yield crops varieties required extensive use of chemical fertilisers and chemical pesticides. This had an adverse impact on Human beings, soil, birds, and biodiversity of the region.

This paper focuses on the use of Bio fertilisers and Bio pesticides as a tool to prevent soil erosion, pest control, lessen crop diseases and save the environment from ill effects of chemically based Agriculture.

Keywords: *Green Revolution, Bio fertilisers, Bio pesticides, integrated pest management.*

Introduction:

Green revolution agriculture can be termed as chemical agriculture because it depends on chemical fertilisers, herbicides, fungicides and insecticides. It stresses on crop monoculture of high yield varieties and mechanized agriculture like use of tractors for tilling soil, cultivating, irrigation systems, fertiliser applications, pesticides sprayers and harvesters, that increase agricultural productivity. Unfortunately, this extensive dependence on chemical agriculture has resulted in economic, environmental and health costs. These costs can be accounted for, as follows:

- Fertilisers, washing down to streams, lakes, rivers and finally to sea causing cultural eutrophication.
- Pesticides washing off to water bodies affecting fish and wildlife populations.
- Ill effects of fertilisers use on health of farmers, farm workers and neighbouring areas.eg, Ill effects of Endosulphyan sprayed on Cashew nut plantations in Kasargod (Kerala) by a Government company.
- Increased resistance of pests to chemical pesticides necessitating use of more and more dosage.
- Health hazards faced by customers due to pesticide residue on crops and food products. E.g. Lady fingers' vegetable and Grapes contain traces of DDT. These should be soaked in water for half an hour, before consumption, to avoid ill effects.
- Fast soil erosion and depletion of top soil. **Bio fertilisers.** Bio fertilisers can be used as an

effective source of nutrition for plants. They may be categorised into natural and efficient fertilisers. Natural fertilisers include the production of bacteria, algae or fungi that can convert atmospheric nitrogen into Nitrate and Phosphate solubilising compounds.

Bio fertilisers are nontoxic, cheaper and do not create pollution. Bio fertilisers like Blue green Algae, provide more Nitrogen that gives ecological stability to soil, where as costly chemical fertilisers pollute natural resources and hamper the ecological equilibrium. Thus, costly chemical fertilisers lead the farmers to debt trap and later suicide. Chemical fertilisers are manufactured by huge plants requiring large investments. But Bio fertilisers like Blue green algae can be manufactured in a simple concrete tank.

The production of bio fertilisers can be done by farmers themselves, resulting in reduction in unemployment and migration to urban areas. Chemical fertilisers wash down to water sources and pollute them, whereas bio fertilisers like algae, can hold water, increase Nitrogen content of soil and are effective in reducing sodium salt which affect soils due to excessive water supply by farmers in sugarcane fields.

Bio pesticides

The increasing demand for food of ever-increasing population has led to use of pesticides for protection from pests. Chemical Pesticides include Insecticides, Herbicides, Fungicides, Bactericides, Nematicides and rodenticides. Most pesticides in India are organo chloride compounds like HCH, Chlordane and Heptachlor. These are found in soil samples up to a

period of 80 -110 days. They toxify soil as they are not biologically degradable. Most of the soil samples analysed in a study (Parmar and Dureja, 1990) found residues of DDT and HCH.

Special reference needs to be made here of Endosulphan which was aerially sprayed over cashew nut plantations in Kasargod (Kerala) for 20 years. These ironically belong to Plantation Corporation of Kerala (public sector Company). This resulted in children being born with disabilities like mental retardation, neurobehavioral and cognitive disorders, cortical blindness, congenital malformations. Skin diseases etc. (Source CSE India Green file Aug 2012) after 15 years, the Supreme Court have banned manufacturing or use of Endosulphan in the country. Much still remains to be done from rehabilitating the living to providing specialised healthcare to ill. Besides traces of Endosulphan persistent in districts, soil needs to be cleansed. The state Government now pays a monthly pension of Rs 2000 to bedridden people and Rs 1000 to those with ailments and disability. Therefore, it is essential to use bio pesticides like Microbial and Antimicrobial pesticides.

Advantages of Bio pesticides over Chemical pesticides:

- Less harmful compared to Chemical pesticides.
- Smaller quantities of bio pesticides are required, whereas excessive usage of chemical fertilisers leads to pests becoming resistant to them in future.
- Bio pesticides are safer to humans as compared to Chemical pesticides.
- Bio pesticides decompose quickly, whereas chemical pesticides are biologically degradable thereby affecting the Habitat.

Natural pesticides Like Neem based Neemaura retards the formation and action of Bacteria, protects Urea from Leaching, volatilisation and protects crops from Insect pests resulting in Higher yields.

Conclusion:

Integrated Pest management (IPM) has emerged as a device beyond the green revolution. The farmer can practise IPM as follows.

- Cultivating best disease and pest resistant crop
- Crop rotation
- Use of Bio fertilisers to increase Nitrogen content in soil.
- Use of Bio pesticides

All this will result in Clean and Green environment.

Bibliography : Books

1. Agrawal Anil, (2003) Homicide by Pesticides, centre for science&environment, New Delhi.
2. Environmentally Sustainable Development-A Bag of Green Profit (2009) JIMS, Excel India Publishers, New Delhi.
3. Thakur Indu Shekhar (2006) Environmental Biotechnology-Basic Concepts & Applications, IK International Pvt. Ltd., New Delhi.
4. Mayer Richard J (2001) Connections in Environmental Science, McGrawHillInternational Edition,Singapore.

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DEMOGRAPHICS AND ITS EFFECT ONMIGRATION

Prof. Abhishek Laha

ABSTRACT:

Demography refers to a particular strata or sect or community of people residing in a particular area. It is also useful in studying a varied population or in other words for studying different geographical situations of the world. The study of this paper focuses on issues with migration restricting its scope to illegal migration from across the border and conflicts occurring due to the same and the possible solutions that could be adopted to solve the problem.

Keywords: Demography, Infiltration, Migration, Sect, Market Segmentation.

1. Introduction

Demography refers to a particular strata or sect or community of people residing in a particular area. Demography is mostly useful in understanding the population, their culture and tradition. It is also useful in studying a varied population or in other words for studying different geographical situations of the world. Demography also holds significance in market segmentation which helps the marketer to understand the needs and wants of the customer and thereby creating customized solutions for the defined set of markets. Demography also helps us to understand and estimate current social needs as well as predict future social needs considering variables such as age, sex, ethnicity etc. Marketers use these variables successfully to understand the market and hence design customized solutions for the consumers. This is one of the main reasons so as to the success of regional brands in a geographically widespread country like India.

Migration refers to the physical movement of people from one country to another or one locality to another. In general migration is a phenomenon which is common in human beings. The most common example in this regard especially in the Indian context is that of women who migrate from one place to another after marriage to be with their spouses or another example could be that of people migrating from one place to another in search of employment, compulsions in the employment contract or to have a better and improved standard of living.

2. Research Methodology

While conducting the study for this research the author has concentrated on a sample size of 100 people restricting to people of Vashi node in Navi Mumbai. Further the analysis is done on the basis of information gathered by means of secondary data like newspapers, editorials etc. During the study conducted for the research paper the samples were considered from known people.

3. Issues

During the study conducted for this research paper I decided to focus my attention on issues specifically related to cross-border terrorism, issue of illegal migrants from across the Indo-Bangladesh border as well as issues that are arising due to conflicts and difference of opinions by targeting a particular sect or strata of population. Let us now consider each issue in detail. The first issue deals with cross-border terrorism with regards to which if we see that many a times India as a state has been invaded by foreign nationals to spread terrorism and a sense of fear, terror and instability in this country. For example, terror attacks in Jammu and Kashmir not only leading to mass destruction but also leading to destruction of peace and harmony for India as a State. Another example in this regard could be that of the recent 26/11 attacks on India wherein the infiltrators had actually resided in India prior to the bloodshed and massacre that took place on the unfortunate day. The second issue deals with illegal migration from people across the Indo-Bangladesh border wherein on a daily basis people migrate in India for

search of jobs and to earn their livelihood without proper documentation in place which is not only leading to a population explosion in the country but also increasing the poverty levels in India as well as slowing down the pace of economic development of our country. The next issue that is of prime concern is that of conflicts within the nation between people of different caste, creed etc. For example the recent issue concerning the safety of people from the North-Eastern States which not only raises a question on the national integrity of India as a State but also necessarily suggests that the perpetrators or the culprits must be brought to books.

4. Solutions

Considering the above mentioned issues we must necessarily look at solving them at the earliest in the interest of both the society as well as the nation as a whole. In order to curb terrorist activities as well as illegal migrants from across the border the best possible solution is to have stronger migration norms in place. This is basically because the major reason for such people intruding in the Indian territory is in search of employment or in other words to earn their means of livelihood. This can be minimized by having strong documentation norms in place as in a mandatory requirement for any person moving in to India. E.g. Proof Of Age, Nationality etc. by means of standard and established documents guaranteed by the respective Heads Of State such as passport, driving licence, ration card etc. If we do this I am sure that we would definitely be in a position to curb anti-social activities to a large extent as well as promoting peace and harmony in the country. In order to ensure this we must have talks with all our neighboring countries as well as enact laws so that this process can be implemented not only legally but also with the knowledge of our neighbors. This will also help in curbing population explosion as well as lead to fruitful economic development of India as a State.

If the above mentioned measures are taken then I am sure that people within the different parts of the country would also experience a

sense of security. We also need to ensure that they have healthy and sound working conditions which would reduce people migrating from one place to another. Let us consider the case of the people from the North-Eastern States. This part of our country though rich in natural surroundings due to its hilly terrain has less opportunities for education and therefore less opportunities for employment as well. Therefore the Central Government should take various steps such as promoting employment schemes like MNREGS as well as provide for reservations in education as well as the employment sector. This would possibly reduce people from migrating from one place to another. However for the people who have already migrated to other places for education, employment etc. it is also the responsibility of both the State as well as the Central Government to ensure their safety and security. For example the recent attacks on the people from North-Eastern States in Karnataka was totally weird. By doing such a thing we are proving to the world that we are an unsafe State which will effect our trade and commerce relations with foreign nations and will also lead to a roadblock in the economic progress of our nation as a whole. It would further also lead to a sense of insecurity within the people of the nation. Therefore it is necessary to deal with all such kind of issues urgently keeping in mind the integrity of India as a State on the global map.

5. Findings

During the course of my study related to the above mentioned topic of research and the selected sample size it came to my knowledge that the majority of population that has migrated especially from the eastern parts of the country were illiterate and they came to India only to have a better standard of living or to earn their livelihood. I came to know this due to probing them by means of striking casual conversation as or otherwise they would never be in a position to speak the truth with a stranger. In majority of these cases it came to my realization that these people were influenced by mediators who took undue advantage of the illiteracy of these poor and needy people

and as a result of which these people are actually homeless today i.e. they neither find a place in their own Home State nor do they find a place in India as in the eyes of the Indian Government they are termed as illegal migrants. Another reason for the same is lack of proper documentation or in other words valid documents like passport etc which could establish their migration status. Due to illiteracy being prominent in majority of the said sample size people were not educated about the legal documentation procedures to be followed before migration and as a result of which there was a large exploitation of human labor. This would only create a sense of population explosion not only in metro cities like Mumbai, Delhi, Kolkata, Bangalore, Hyderabad etc but also create a sense of insecurity among people residing in these places. If we take the example of Navi Mumbai as a city assuming that everyday only 100 illegal migrants come to the city with its widespread geography into consideration in a month we could easily expect 3000 illegal migrants

inside the city who do not have any identity of their own or they have a forged identity which is certainly a threat to the established civil society population of Navi Mumbai.

6. Conclusion

We must definitely remember that by adopting strong legal norms we can surely make sincere efforts to curb terrorism and illegal migration through land, sea, air etc which will not only lead to population control which is another serious issue for a developing nation like India but also focus on economic development of India as a State. Besides if demography is used properly and efficiently to curb migration it will also ensure strong bilateral relations with our neighboring countries.

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SPECIAL ECONOMIC ZONE AND IT'S IMPACT WITH REFERENCE TO INDIA

Prof. Lata S. Lokhande

ABSTRACT:

The enactment of the Special Economic Zone (SEZ) Act 2005 and the subsequent implementation of SEZ rules in 2006 have evoked immense interest amongst the investors' community for establishment of SEZs as a business proposition in order to reap the benefits of globalization. At the same time, large scale acquisition of land for SEZ development coupled with burst in construction activities in the zones, particularly in the IT/ITES sectors has also invited criticism from various quarters that the SEZs are one of the land grabbing activities, and are providing undue advantages to the real estate business at the expense of revenue earnings of the Government due to provision of excessive tax concessions and other incentives. This paper is going to focus on SEZs with current scenario of land acquisition in the name of SEZ and its effects on environment, agricultural industry and in the rural areas. SEZ is been majorly dominated by a known industrialist. Emphasis on advantages and disadvantages of SEZ.

Key word: policy, acquisition, real estate,

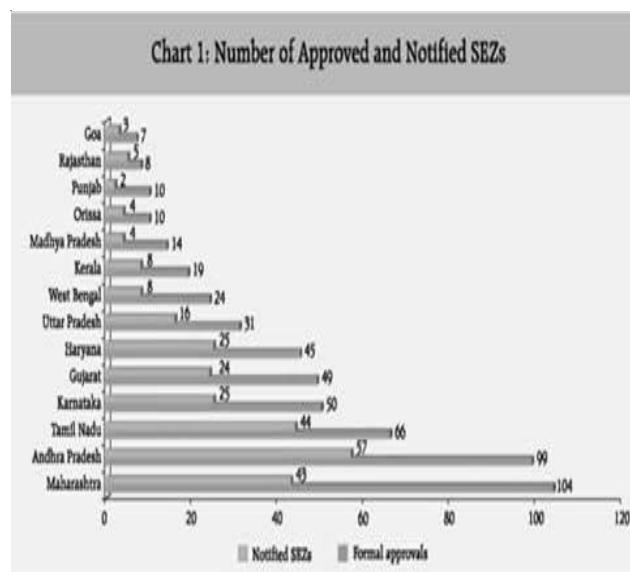
1. Introduction

Special Economic Zone (SEZ) is a geographical bound zones where the economic laws in matters related to export and import are more broadminded and liberal as compared to rest part of the country. SEZs are projected as duty free area for the purpose of trade, operation, duty and tariffs. SEZs units are self contained and integrated having their own infrastructure and support services. Category of SEZ covers a broad range specific zone type include Free Trade Zone(FTZ), Export Processing Zone (EPZ) Free Zones, Urban enterprise Zone and Industrial Zone etc. the first export Processing Zone in Asia was set up by government in india in Kandla in 1965. Based on the success of Kandla EPZ seven more EPZ were set up in Mumbai,Noida, Falta, Surat, Madras, Vishakhapatnam, and Cochin

However the EPZ policy faced several problems like limited power of zonal authority, absence of single window clearance facility, rigid custom procedures bank guarantees restrictions . SEZ in India functioned from 1-11-200 to 20-2-2006 under the provision of Foreign Trade Policy. To instill the confidence of investors , government passed the SEZ in 2005 which came into forces on 10-2-2006, providing drastic simplification of procedure and for single window clearance on the matters relating central as well as state government.

Investors have shown much interest in establishment of SEZs in the developed states like Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka and Gujarat. Though maximum approvals to set up SEZs were granted in Maharashtra (104), only 43 have been notified as of December 2008. The maximum number of notified SEZs are in the state of Andhra Pradesh (57) followed by Tamil Nadu (44)

Item	Number
Functional SEZs (Prior to SEZ Act)	19
Formal Approval Granted	552
Of which Notified SEZs	274
In Principle Approval Granted	141



The main objectives of SEZ

- Generation of additional economic activities
- Promotion of export of goods and services
- Promotion of investment from domestic and foreign sources
- Creation of employment opportunities
- Development of infrastructure facilities

It is expected that this will trigger a large of foreign and domestic investment and achieve the above said goals. Currently there are about 143 SEZs as of June 2012 operating in India and additional 643 SEZs formally approved by the government. For this government offered major chunk of incentives

- Duty free import or domestic procurement of goods for development, operation and maintenance of SEZ units.

- Tax Exemption under Section 10 AA of Income Tax Act
 - 100% for the First 5 years
 - 50% for next 5 years
 - 50% of ploughed backed export
- Exemption from MAT under Section 115IB of Income Tax Act.
- External commercial borrowing by SEZ unit upto US \$500 million in a year without any maturity restrictions through recognized banking channel
- Exemption from Central Sales Tax and service tax
- Single window clearance for central and state approval
- Sales Tax and other tax levies as extended by respective state government.

Setting up of SEZ- Minimum Area Requirement

Type	For states other than special category		Area for special states	
	Min total required area (in Hectares)	Processing area requirement	Min total required area	Processing area requirement
Multi Product	1000	35	200	35
One or more Product	100	50	100	35
Sector Specified / Port/ Airport	100	50	50	50
Electronic hardware and software	10	50	10	50
Gems and jewelry	10	50	10	50
Bio- Technical	10	50%	10	50%
Free Trade warehousing zone	40	50%	10	50%

2.Objectives of the paper

1. To understand the concept of special economic zone
2. To know the impact of SEZ on the Indian economy

4. Research Methodology & Data Collection

The researcher has conducted the empirical study
Secondary data collection through various books,

reputed journals, research report and internet websites.

5. Facts and finding

Though the aim of the SEZ policy is to encourage infrastructure development through multi-product SEZs, specific product SEZs have been approved in large numbers in many states. Sector-wise shares reflect that IT/ ITES zones got a lion's share in the

formal approvals and notified SEZs with 61.8 per cent and 66.1 per cent, respectively. Other sectors such as Bio-tech, Multi-Products, Engineering, Pharmaceuticals/chemicals, Textiles/Apparel/ Wool and Multi-Services have been granted significant number of approvals. The number of formal approvals and notifications thereon for multi-product SEZs are very low due to large scale land requirements of over 1000 hectare for this category. Many of the multi-products SEZs have been awarded in-principle approvals, constituting 37.6 per cent of the total, but were not notified due to land acquisition problems. Some large size multi-product SEZs have been approved to be set up in the states of Maharashtra and Gujarat.

State wise Investment in SEZs:

Investment The financing specifications in the SEZ Act and Rules prescribed that a minimum investment of Rs. 1,000 crore and net worth criteria of Rs. 250 crore for the multi-product SEZs. Sector-specific SEZ developers must make a minimum investment of Rs.250 crore or have net worth of Rs. 50 crore. The SEZ Act allows for 100 per cent FDI in the manufacturing sector through the automatic route, barring a few sectors, for establishment of units in the SEZs and also 100 per cent FDI to develop townships within the SEZs. External commercial borrowings of up to \$500 million can be raised by the SEZ units in a year without any maturity restrictions and with flexibility to keep 100 per cent of export proceeds in an EEFC account. SEZ units are eligible to make overseas investments up to any amount under the automatic route to be funded out of EEFC balances of the unit. Such investments will be subject to an overall ceiling of US\$ 500 million. As of December 2008, the total investments in the SEZ units stood at Rs.93,507 crore. Taking into consideration the rules relating to the investments and the business prospective of the SEZs, Gujarat attracted 60.2 per cent of the total investment in the SEZs covering 30 per cent of all SEZ land. One multi-product SEZ in Gujarat accounts for 40 per cent of all SEZ investments. Maharashtra attracted 8.4 per cent investment at the end of March 2008, followed by Tamil Nadu with 8.3 per cent, Karnataka with 7.4 per cent and Andhra Pradesh with 7.2 per cent. Other

States managed to attract only a meagre share in total investments in the SEZs. With the increasing number of approvals, the investment flow is expected to be much higher over the coming years along with huge employment that these projects offer. Heavy investments are expected in sun rise industrial sectors such as the IT, Pharmaceuticals, Bio-technology, Petrochemicals, Auto components, etc.

State	Investment (Rs. Cr.)	Share in Total Investment (%)
Gujarat	41,733	60.2
Maharashtra	5,853	8.4
Tamil Nadu	5,781	8.3
Karnataka	5,163	7.4
Andhra Pradesh	4,990	7.2
Haryana	2,287	3.3
Kerala	1,101	1.6
Uttar Pradesh	1,058	1.5
Total	69,350	100.0

Land Acquisition- The concept of SEZ envisaged to promote multi-product SEZs and thereby increases the exports. As the minimum land requirement for such category is fixed at 1000 Ha, these SEZs have accounted for 48.7 per cent and 53.76 per cent of the total land area for formally approved and notified SEZs, respectively. Sector specific and multi-services SEZs occupied the remaining land area. IT and the ITES SEZs account for much higher number of approvals and notifications but their share in terms of land area remains very low at 13.63 per cent and 16.47 per cent, respectively of the total approved and notified SEZs. The average land holding of formally approved and notified SEZs accounted for 127 Ha and 118 Ha, respectively. However, the average land size of the in-principle approved SEZs accounted for a higher area of 869 Ha. It, however, poses difficulties in acquiring huge tracks of land for operationalisation of these SEZs. It may be interesting to note that total notified SEZ land in India is less than the land area of China's first SEZ.

State	Formal approvals	Notified SEZs
Gujarat	29.6	30.8
Maharashtra	20.1	19.3
Andhra Pradesh	18.5	23.0
Tamil Nadu	10.5	10.3
Karnataka	4.5	5.9
Orissa	3.6	1.3
West Bengal	3.5	0.5
Haryana	2.7	3.9
Other States	7.0	5.0
Total Land Area (in HA)	70,037	32,435

State-wise land areas earmarked for SEZs reflect that Gujarat accounted for largest share followed by Andhra Pradesh in case of notified SEZs. It may be noted that 90% of all SEZ land notified pertaining to top five States, viz., Gujarat (30.8 %), Andhra Pradesh (23.0%), Maharashtra (19.3 %), Tamil Nadu (10.3 %), and Karnataka (5.9%)

Export Performance Under SEZs

Year	Export (Rs. Crores)	Growth Rate
2003-04	13,854	39%
2004-05	18,314	32%
2005-06	22,840	25%
2006-07	34,615	52%
2007-08	66,638	93%
2008-09	99,689	50%
2009-10	2,20,711	121.40%

The major contributing industries includes IT Sector, gems and jewelry, and automobile parts.

Observations:

In India, the SEZs have been introduced as a growth driver through increase in export potential of the country, development of infrastructure facilities and generation of employment opportunities. The infrastructure development in some of the regions has taken place due to the development of SEZs. However, Jagdish Bhagwati has remarked that “given the current progress in reforms undertaken in earnest since 1991 in India, there is no need to establish SEZs”. He says that India needs only clear policies that will integrate the country into the world market. Some are advocating that the SEZs are beneficial to certain business people rather than to the common man. Some others attribute that there is huge revenue loss to the Government due to various concessions extended to the SEZs. Some major issues in this regard are discussed below.

Increasing Numbers of SEZs: Critics argue that developing a sizeable number of SEZs in the country may not be a viable solution to achieve the desired goals. In India, more than 400 SEZs are in the pipeline to get notified, in addition to 274, which have already been notified. Overall, therefore, 552 SEZs have been formally approved, with an average land size of about 127 Ha. Another 141 SEZs have been given in-principle approval with an average land size of 869 Ha. The notified SEZs have the average land size of 118 Ha.

In China, the five SEZs, which are huge in terms of the land size of about 421,350 hectare encompassing all the amenities and with proximity to airports and sea ports have provided the necessary thrust for exports. The USA and China, which have a large number of SEZs at 266 and 190, are still behind India with 274 SEZs already notified, in addition to 19 existing zones. Majority of the investors have exhibited interest in specific product SEZs. Many of the African SEZs of this category have failed when the world production and consumption pattern underwent changes. Bigger size multi-product SEZs only could provide the required infrastructure and are sustainable options.

Impact of Sez on Farmers- This is the oft cited criticism against SEZs in India. The minimum area of

land prescribed for multi-products SEZ is 1000 Ha. Small states like Jammu & Kashmir, Goa and the Union Territories do not have sufficient barren land stretches to develop multi-product SEZs. Therefore, the minimum land requirement has been prescribed at 100 Ha for these regions. The reduced land requirement is applicable for sector specific SEZs also. Specific products where India has a comparative advantage, the minimum land requirement has been reduced further to 10 hectare. According to an assessment by the Government of the ground realities with regard to the land usage of SEZs, the total area for the proposed SEZs constitutes a minuscule share of the total land-size of the country. The approved land size for the SEZs (both formally approved and in-principle approval) would not exceed 0.063 per cent of the total land area in the country and not be more than 0.116 per cent of the total agricultural land in India.

As per the Government regulations, more than one crop agricultural land area, which falls within the area for acquisition for the SEZ should not exceed 10 per cent of the total land area of the SEZ. In India, contrary to that in China, the availability of waste or barren land at a stretch to develop huge size SEZs is limited. The barren land available in India is either reserved for forests or for coastal zone. If these lands acquired for the purpose of development of SEZs, it may create environmental imbalances. Some stretches of such barren land are surrounded by agricultural land. If acquired and developed into SEZs, such land areas may adversely affect the agricultural production and even in some cases, severely affect the livelihood of the Common man. Taking these factors into account, a look at the agricultural pattern of the country reflects that about 39 per cent of total cultivable areas are irrigated. Remaining agricultural lands are either single crop land or double crop land depending upon the monsoon condition of the region, which are also critical for the livelihood of the masses. Further, considering the demographic transition which is taking place in India, India would be one among the most populated countries in the world by 2030 (according to UN). India, therefore, should be in a position to feed the vast population and be self sufficient in the availability of foodgrains. If agricultural lands are

diverted for SEZ development, it would pose a difficult situation in terms of food problem in the long run.

Another fall-out of such a policy is that the farmers are paid low value for the land acquired for SEZs as compared to the market value of their land. Furthermore, in India, the rehabilitation and compensation policy is inadequate and varies depending upon the area, nature and political scene in the region. There are no standardised packages available for compensation of the affected farmers. The average selling price of the land for the past one year is fixed as compensation for the land acquired for SEZ purpose. This can, however, have two-way implications. One, if there were no SEZs, there would be no market value for farmer's lands which are acquired for the purpose. More importantly, given that the states governments are the ultimate authority for land use, the farmer is not in a position to get the market value for his land on his own. Two, state control of sale of land is maintained on account of the fear that farmers would otherwise sell-off all their lands for industrial and urban use and there would be no farmland left. Given the nature of land use laws in India, there seems to be no easy way out of this dilemma.

Are sector-specific SEZ like IT/ITES a Viable Business Option? The sector-wise composition of approved SEZs reflects that more than 60 per cent of the SEZs are IT or ITES category due to recent boom in the IT related businesses. The land requirements for IT or the ITES is fixed at 10 hectare as compared with large stretches of land required for multi-product SEZs. However, sector-specific SEZs may be affected easily by cyclical and other economic factors, as could be seen from the fact that the IT related industries, particularly BPO sector faced severe attack due to the on going global economic recession that erupted during the latter half of 2008. As a result, considerable number of approved SEZs of IT/ITES category may not start their business due to uncertainty in the sector and the gloomy future outlook. Therefore, large scale development of the sector specific small and fragmented SEZs may not be a viable business option in the long-run and alternatively multi-product SEZs would withstand any such sudden shocks. Another criticism in respect of sector-specific SEZs for IT/ITES highlights that since the minimum land

requirement is very low with a minimum build up processing area of one lakh square meter, more than 50 per cent of the SEZs belong to the IT/ITES segments in almost all major states. This makes real estate development for processing, office accommodation as well as for dwellings imperative. Regulations permit the developers of sector-specific SEZs to build a maximum of 7,500 houses, a 100-room hotel, a 25-bed hospital, and have office space, retail stores and multiplexes up to 50,000 square meter, while a multi-product SEZ developer can build a maximum of 25,000 houses, a 250-room hotel, a 100-bed hospital and office space, retail stores and multiplexes of 200,000 square meter. According to the Ministry of Commerce, about 35 per cent of the land within the SEZ is to be used for processing purposes and about 40 per cent of the land is to be reserved for open space, drainage, sewerage, etc. Housing for dwelling, hospital, school, recreation, etc., are to be developed in the remaining 25 per cent of the land. Therefore, huge property development is involved in the multi-product or specific product SEZs due to the nature of the proposition and the real estate activities will boom in the initial phase of the development of SEZs.

SEZs are offered undeserving tax holidays and other incentives: There is much more validity in this argument as SEZs promises both administrative simplicity, and economic incentives. Among them, the former represents the waiver of routine custom shipment inspections, and no licensing for production reserved for micro and small enterprises (MSEs). Economic incentives range from time-bound income-tax exemptions under Section 10A to zero duties on domestic and imported inputs. The theoretical basis of a trade-neutral policy, which assigns no special preference to either exports or imports, is violated by the SEZ schemes. The revenue losses due to excessive fiscal concessions to the SEZs could be sizeable but at the same time the SEZs would generate more production and exports and thereby more revenue accruals, which would compensate the revenue losses incurred during the course of SEZ development. In addition, pick up in organised sector employment arising from the new SEZs should lead to improved tax administration which could partly offset losses due

to tax concessions. However, free trade zones like Santacruz in Mumbai grant very limited privileges but are working as successful SEZs. In fact, it is difficult to precisely estimate the cost-benefit of incentives and these incentives might often cost more than the benefits from the activity.

SEZs are essential to boost exports: This argument is true which is reflected in the export growth from SEZs in recent years (which recorded an overall growth of 381% over past four year) The share of exports from the SEZs in the total manufacturing exports has been increasing steadily during the recent period and constituted about 16 per cent of the country's manufacturing exports (in 2007-08). In general, the critics have been reluctant to recognise merits to this institutional mechanism on grounds that it is an inferior alternative to free trade and non-discriminatory commercial policy. The role of production clusters, per se, is well supported by economic theory. These clusters lead to external economies for all units in the form of good roads, power, etc., which no manufacturing unit by itself would be inclined to provide. Another aspect of the argument is that a sizeable chunk of exports of gems and jewellery, textiles and clothing, automobiles and parts and IT services are being produced in the naturally developed clusters like Chennai, Bangalore, Tiruppur, Delhi and Surat. In IT, for example, there is no evidence that the Government has had a major role in developing Bangalore or Delhi clusters. The coming up and success of SEZs rests mainly availability of adequate infrastructure with an aim to boost exports. The major constraints to development of such zones are port congestion and transport bottlenecks. It may be noted that the IMF called upon the industrial countries to improve market access for India's exports, particularly by reducing trade-distorting subsidies and tariff and non-tariff restrictions on textiles, agriculture, and skill-intensive services, thereby generating considerable welfare gains not only for India, but also for consumers in advanced economies.

Possibility of shifting of existing manufacturing units to SEZs: It is generally argued that entrepreneurs like to do business in SEZs than in the DTA due to lucrative concessions and profit motive. Therefore, the units that would otherwise have

come up in DTA would simply be diverted to tariff free zone, thereby reducing Government revenues without adding to employment or output. The obvious problem is that there would be an incentive for existing export units to switch to SEZ locations simply for the purpose of benefitting from the incentive provisions.

Private vs Government SEZs: The crucial issue of whether a private-operated and financed SEZ can compete with a Government operated and financed SEZ sparked a considerable amount of debate. The fact is that strong developers are required to finance the creation of SEZs, but financing of economic zones, like all project finance, requires careful structuring to allocate risks appropriately. Risk mitigation is important, including phased build-up of infrastructure, and involving public agencies in financing to ensure and to signal Government commitment. One way of achieving this may be through public-private partnership (PPP). Many private SEZs emphasize to set their own companies.

Exclusion of backward Areas from SEZs: Many SEZ developers exhibit interest in setting up of SEZs in developed states like Maharashtra, Gujarat, Tamil Nadu, Andhra Pradesh and Karnataka, where the basic infrastructure has developed to an extent. On the other hand, the developers have not shown much interest in setting up of SEZs in backward states like Bihar, Jharkhand, Uttarakhand, etc., where sufficient barren lands may be available. In an open economy and a free market regime, Government cannot make it obligatory upon anyone to set up SEZs in such States. However, developers could be encouraged to set up SEZs in such regions if necessary concessions are provided and basic infrastructure is put in place in these states to make it attractive for the investors. Overall, a well balanced and conducive policy environment is required to make the SEZ programme a successful proposition.

5. Conclusion

There is not one best way to establish an effective and financially profitable SEZ. Many countries have developed their own unique trade units to capitalize on their own laws, customs, resources and trade practices. Some of these developments have been successful, like the Shenzhen Village SEZ in China.

Others, like those in Namibia, have failed because they were not financially profitable, or because the social, environmental, or political costs impeded their overall success. These successful and unsuccessful SEZs should serve as models for host countries seeking to develop new SEZs. The complexities involved with the development and management of an SEZ, require to understand all pros and cons before implementation. SEZs can provide great investment benefits by luring companies with tax incentives and new technologies, but some of these benefits might now be outweighed by the economic, social, and environmental costs.

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6. References

Rob Jenkins and Sunil Khilnani (eds), *The Politics of India's Next Generation of Economic* www.sethassociates.com/special_economic_zones.php

Lesson from Nandiram; what next (<http://www.nandigramnet>) statistical data from ministry of india on SEZ (recent publication by 2011-12)

Expot-import published data from 2003-2010 from economics statisticcal department.

Aradhna Aggarwal (2005), Performance Of Export Processing Zones: A Comparative Analysis of India, Sri Lanka And Bangladesh, Working Paper No. 155, Indian Council for Research on International Economic Relations, New Delhi, March.

Arvind Virmani (2005), China's socialist market economy: lessons of success, Indian Council for Research on International Economic Relations, April.

Edgardo Favaro (2006), Trade in Institutions and the Integration of Small States to the World Economy, The World Bank, January 6.

FICCI (2002), International convention on SEZs, Theme Paper on Driving Growth through SEZs, New Delhi.

Government of India, Annual Report 2005-06, Ministry of Commerce, New Delhi.

Foreign Trade Policy, 2003-04 to 2009-10, Ministry of Commerce, New Delhi. Ministry of Commerce web site: <http://sezindia.nic.in/>. SEZ Act 2005, Ministry of Law and Justice, New Delhi, June 23, 2005.

SEZ Rules 2006, Ministry of Commerce, New Delhi, February 10, 2006.

various Press Releases, Press Information Bureau web site: <http://pib.nic.in/>.

STATUS OF THANE MUNICIPAL TRANSPORT-PUBLIC TRANSPORT

**Aniket D. Kamble, Arun Gavit, Bhagyashree Ragji,
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ABSTRACT:

Transport plays a very important role in the development of any economy. Availability of transport implies quick movement of commodities, labour etc. India adopted the liberalization, privatization and globalization in the year 1991 with the motive of economic development in the country. This has otherwise have influenced various key sectors of the economy including transport. Hence the given research paper focus on the Status of Thane Municipal Transport in Thane city.

Introduction

The Thane Municipal transport- T.M.T is the transportation wing of Thane Municipal Corporation which operates a large number of bus lines in the Thane metropolitan area. These buses are called Thane Municipal Transport or T.M.T. bus. TMT bus serves the entire Thane city. It also has operation outside the city limits into neighboring Mumbai, Navi Mumbai and Mira-Bhayandar. Another important public transport provider in neighbouring Mumbai city is Brihan-mumbai Electricity Supply and Transport (BEST) is the second largest bus service provider in Thane. There are other bus service providers like Mira-Bhayandar Municipal Transport (MBMT) Bus which is the newest public transport. The buses are plying from Dahisar check naka towards Versova (thane) check naka. So till now majority of MBMT buses can be taken up at the check naka only. Recently some of the buses ply up to Kopari, Thane (E) too. There are also - Kalyan-Dombivili Municipal Transport (KDMT bus). It has started a new bus service in Thane city connecting Kalyan, Dombivili to Thane city. These currently have one bus service.

Thane Municipal Transport TMT Bus Service

- Parent- Thane Municipal Corporation
- Founded- 9 February, 1989
- Headquarter- Wagle Depot, Wagle Estate, Thane (west)- 400604
- Locale- Thane Metropolitan area
- Service area- Thane city, Mumbai suburbs, Mira Bhayandar, Navi Mumbai

- Service type- Local, Limited bus, Air-conditioned
- Operator- Thane Municipal Transport Undertaking

Private Transport System

Even though a variety of the public transport are available for the commuters still the private buses operators give an extra option within Thane city. Most of the large residential societies have their own bus facilities. They all have scattered stops either in west or east of the Thane station. Existences of these facilities are also due to inadequate public transport within the city.

- Auto Rickshaw- If you like to travel within Thane then auto rickshaws are the best but costly option. The starting fare of auto in Thane city is Rs.15. The travelling can be quick as Thane city has many internal roads which are used as shortcuts to the major roads.
- Taxis- Taxis are also very common in Thane, travelling intercity like Nasik, Pune or even Mumbai. As the closest airport for Thane city is Mumbai. Airport commuters can go for the normal taxis. Major taxi stand in Thane is at Thane railway station (w) and at the Mulund Thane check naka on LBS marg.
- A/C Cabs- Various Private a/c cabs provide services in Thane city. Some of the major private a/c cab providers are: 1) Cool cabs, 2) Meru, 3) Mega cabs 4) Easy cabs

They provide services to airport railway stations like Thane railway station, Kalyan junction, Dadar

terminus, Mumbai Chhatrapati Shivaji terminus, Bandra terminus, Mumbai Central, Borivali station and so on. It also provides services in other major cities nearby Nasik and Pune, Panvel, Khopoli. These providers have numbers from which you can book a cab anytime from anywhere.

Need for Public Transport:

The public transport is a part of Indian economy. This transport is reasonable in the sense of private transport. The people can easily afford it, other than private transport like Auto rickshaws, Private bus, Cabs etc. 90% of people use roadways for transport, so the public transport on road are very much important like buses. Without public transport most of the people cannot travel. So, it's necessary.

Objectives of the study:

- To find out the services provided by the Thane Municipal Transport are adequate or not
- To look into the problems faced by the Thane Municipal Transport management
- To understand the influence of the various government policies on the public transport sector
- To evaluate the role of private sector in transport resulting in to decline in the public sector

Data sources and Research Methodology:

Primary data will be collected through the questionnaire survey and personal interviews of the TMT staff members. Findings will be associated with the secondary data references too.

Questionnaire survey details:

This survey conducted was of 30 passengers

- 1) Daily use of TMT buses? - Yes-23, No-7
- 2) Satisfaction of TMT services? - Yes-27, No-1, Very poor-2
- 3) Journey of Passenger? - Crowded-24, Ok-2, Comfortable-1, Satisfying-3, Others-0

- 4) Breakdowns of buses? - Always-4, Sometimes-11, Alternate-10, Don't know-0, Never-5
- 5) Other transport to prefer? - Rickshaw-17, Privatebus-2, NMMT-0, BEST-6, Other-6
- 6) Ticket rates are appropriate? - Yes-23, No-7
- 7) Bus halt at bus-stops? - Yes-27, No-3
- 8) Ladies getting access to reserved seats? - Yes-28, No-2
- 9) Handicaps getting access to reserved seats? - Yes-29, No-1

Questionnaire survey results through graphs:

Figure 1 : Satisfaction of TMT Services

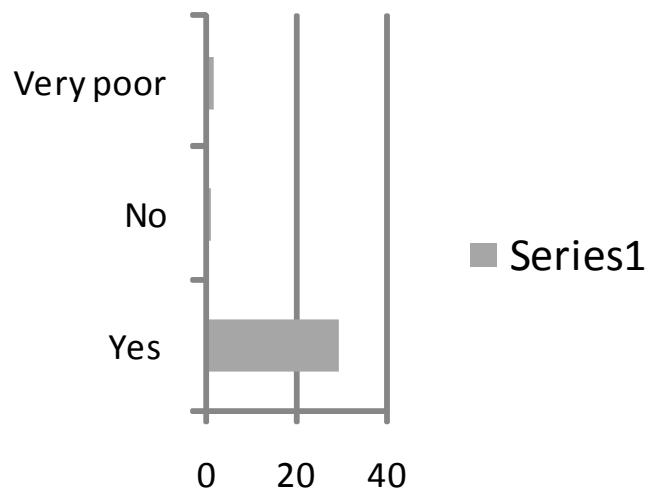


Figure 2 : Journey of Passengers

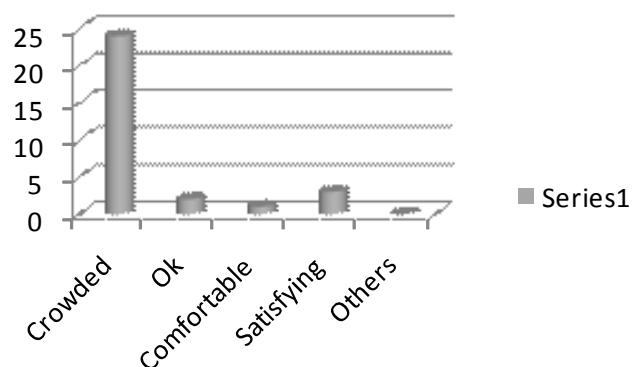


Figure 3: Other Transport to Prefer

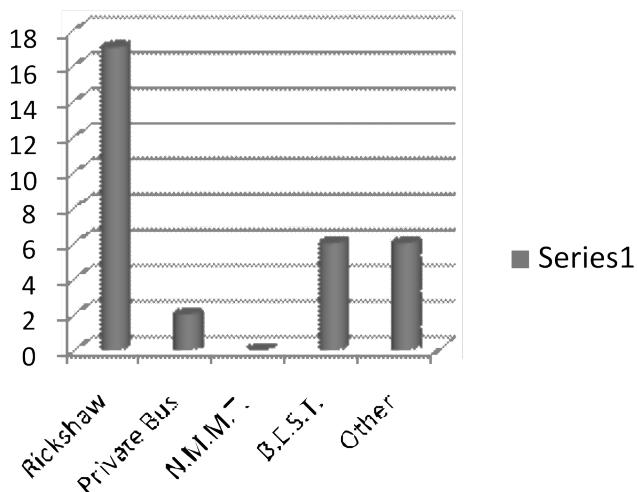
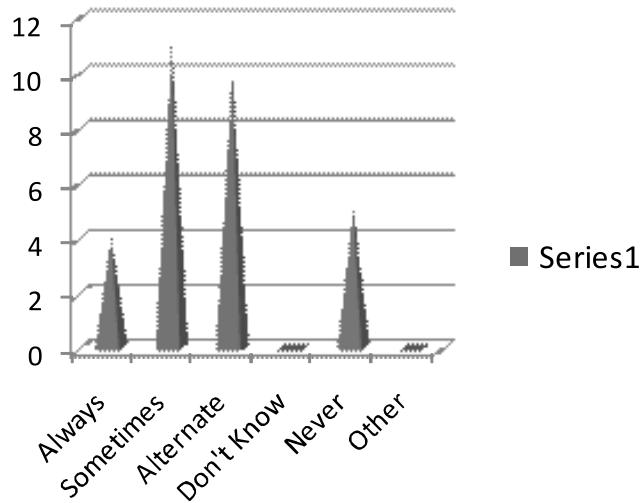


Figure 4: Breakdown of Buses



Suggestions by Passengers

- Increase the frequency of buses (Verdict of 26 passengers)
- Be on time, cleanliness, Improve TMT service (Verdict of 4 passengers)

Interviews of TMT staff:

- Working buses of TMT? - 1991-25, 2001-90, 2011-130
- Non-working buses of TMT? - 1991-5, 2001-110, 2011-158
- Total buses of TMT? - 1991-30, 2001-200, 2011-158

- Total a/c fleets (2012)? - Present working a/c buses-8, Non-working buses-2, Total-10
- TMT condition? - 1991-very good, 2001-good, 2011-poor
- Cancellation of buses per/day? - 1991-3, 2001-90, 2011-150
- Maintenance of buses? - 1991-very good, 2001-good, 2011-poor
- No. of depots? - 1991-2, 2001-2, 2011-2
- No. of bus stands? - 1991-Don't know, 2001-Don't know, 2011-8
- Bus travelers per/day? - 1991-Don't know, 2001-Don't know, 2011-2,80,017
- Daily Income? - 1991-3 to 4 lakhs, 2001-10 to 11 lakhs, 2011-15 to 20 lakhs
- Running per/day, per/bus? - 1991-150kms, 2001-150kms, 2011-150kms
- No. of employees? - 1991-1000, 2001-2500, 2011-3000
- Status of employees? (2012) - Temporary-700, Permanent-2500
- What are the facilities provided to employees (yes/no)? Give reason? - Medicals-no, P.F-no, Pravasbhatta-no, Kendryamahagayibhatta (DA)-no. Reason- No support of government
- Do they satisfied with the maintenance, if no, then give reason? - No, because the equipments required for the maintenance is not original, The requirement of equipments is more but the fulfillment is less.
- At present, who gives the competition to TMT the most? - Rickshaw
- Reason of cancellation of buses? - Reason is breakdown of buses
- Condition of buses at present (2012), give the reason? - Very poor, because of political issues
- What problems TMT is facing? - Political problems and breakdowns of buses

Figure 5 : Questionnaire survey results through graphs:

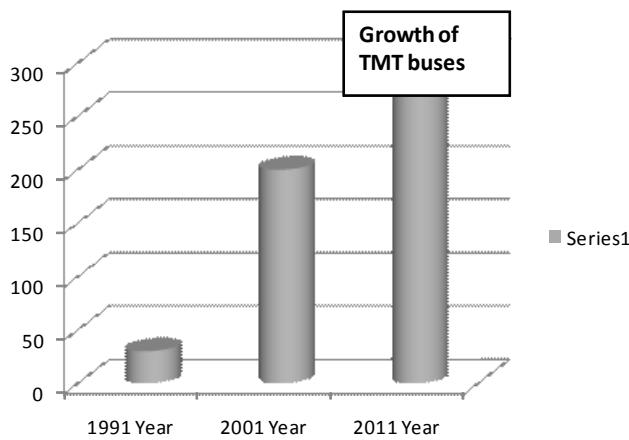
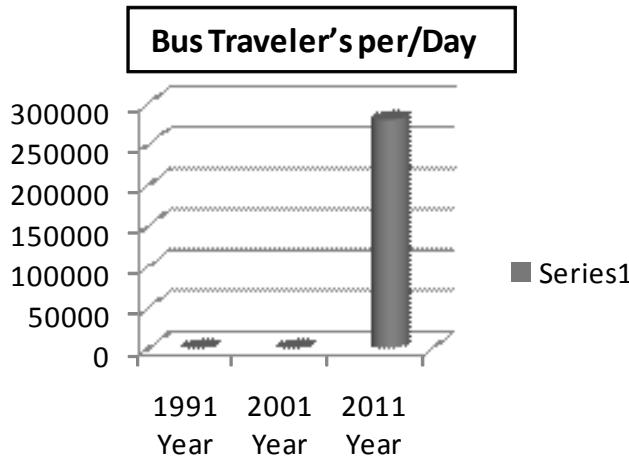


Figure 6 :



Observations

- Traffic problems are the major problems of air pollution. The public transport is less in the comparison of population, so the private transport is increasing. And because of this, air pollution also increases with the increase in vehicles.
- Thane is over populated city and the public transport is less. Because of population the private transport is increasing such as private buses etc. The transportation is not sufficient for the people,

so they are moving for other transports like auto rickshaws, taxis, a/c cabs etc.

- The government gives more importance to privatization, private sectors have more funding. But the public transport have less funding from government is ignore , so the use of private transport increases and we have to face traffic problem, noise problem etc.
- The political issue is making problems, they trying to bring buses on contract basis for their convenience. So, they wanted to show that the TMT buses are less, but the requirement is more. For that, the maintenance of buses is not done on regular basis. As a result, the political people can bring their contract base buses. We also got the information that, these buses will consume Rs 23/-km. If they are not use, yet they will consume the same amount for 200 km/day. It's a negative point of our government which will be a big problem for the transportation of thane Municipal Corporation.

Conclusion:

Public transport in Thane needs immediate attention from the government. Thane city is expanding over the years and also the population of Thane has increased to a large extent. This has increased the need for the growth of public transportation. In the era of globalization, Public transport ie Thane Municipal Transport (TMT),is not growing at the same rate at which the population is growing. Hence the gap is increasing. Though the globalisation has brought development in the other areas of Thane but the public transport in Thane is still not upto mark. It needs immediate attention in the globalizing era.

References:

- www.thanemahapalika.com

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CHANGES IN THE QUALITY OF WATER DUE TO POLLUTION OF LAKES IN THANE CITY

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Dipti Khadtare, Shubhangi Salve**

ABSTRACT:

With the influence of industrialization Thane is now emerging as an important city of India. Being nearby Mumbai it has always been beneficial for the Thane city. However growth of the city is slowly affecting the natural environment. The development of Thane is taking its toll on the environment esp its lake. Thane once known for as the city of lakes, now maximum lakes which is of no use now due to higher levels of pollution. The said research paper will highlight the status of lakes in the globalized-inmaking Thane city.

Introduction:

“THANE” the north-most district of Konkan lies adjoin to the Arabian sea in north-west of Maharashtra state. It extends between 18°42' & 20°20' north latitudes and 72°45' & 73°45' east longitude. The district covers an area of 9,558.0 square kilometers. The Thane district has no natural lakes but also number of artificial lakes, have been constructed mainly to supply drinking water to Mumbai. The name “THANE” is derived from the ancient city “SHRISTHANKA” which was ruled by the shilahara kings. The British took over Thane district from the Peshwa in 1817 and it became part of north konkan district. The population of thane district according to 2011 census is 2,486,941. The density of population is 17,000 per kilometers square i.e. 44,000 per square miles. Thane is also called as ‘SALSETTE ISLAND’. It is located 7meters above sea level. It also called as “CITY OF LAKES” because it has 65 lakes earlier and now the present lake is only 16 lakes from that we have selected these 5 lakes for our survey.

Objectives of the study:

- To know about the pollution levels in the lakes of the city.
- To get the overall view of the water quality, water level, the changes
- To understand the utility of these lakes for the residents

Sources of data:

Primary Data: Data is collected done by us through the questionnaire survey of the major 5 lakes, masunda lake, kachrali lake, upvan lake, makhmali lake and siddheshwar lake.

Secondary Data: Data collected through the questionnaire supply is supported with the help of several books.

MASUNDA LAKE: - It locally known as “TalcoPail”. The location of this lake is at the Shivaji Path, which at thane west. Water area sq.m. 93166.96. It is the most famous and biggest lake in Thane. The main attraction of this lake is floating temple. This beautiful lake is a favorite hangout among the tourist. It has boating and water scooters facilities.

KACHRALI LAKE: - “Kachrali Talao” is a picturesque lake with a small one tree island on it. This lake has a circumference of 500m. This lake is located at pachpakhadi area in thane west, opposite TMC. Water area is 23587.1 sq.m. & Lake surrounding area is 6912.81 sq.m. The area in hectares is 2.00. It attracts many people for its jogging tracks, exercising, kattas, and children play area. There is a beautiful temple of lord Ganesh inside the lake premises. The kachrali talao had taken a major cleaning and beautification from a slum area to a jogger’s paradise. The government has brought Ducks on the lakes; these ducks can be seen in the lakes especially on the one tree island.

Plate 1 : Degradation of Lakes



UPVAN LAKE: - The latitudes and longitudes of this lake are 19°13'17.608"N and 72°57'21.653"E. Water area is 51800 sq.m. and surrounding area is 24400 sq.m. The surface area – 500 km² (190 sq.m). Area in hectare is 6. It is located at foot hills of Yeoor hills and is a scenic spot. It is flanked by the Yeoor hills on one side and the tall “Neelkanth heights” on other side. It is a common spot for recreation. It is regarded as ‘lover’s paradise’. It has boating facility, which attracts many people. It was the major source of water providing for the entire Thane city.

MAKHMALI LAKE: - The makhamali lake is located near “NURI BABA” Darga; in khopat area. This lake got its name because of the water

Hyacinth in the lake at one time. Makhmali means ‘velvet’. The water Hyacinth gave it the look of a velvet blanket. The latitudes and longitudes of this lake is 19°11'54"N and 72°58'16"E. Area in hectare is 1.0 and Garden attached area is 0.51 hectare.

SIDDHESHWAR LAKE: - The latitude and longitudes of this lake is 19°12'4"N and 72°58'6"E. It is located in between Nitin and Cadbury companies. The area is 3.000 hectares. Slum dwellers have encroached upon the boundaries of the lake, polluting it. The drainage from these homes go to the lakes and dirty them. Around this lake there are suffering from the slums from all the sides.

Observations:

Table 1 : Status of selected lakes in Thane city

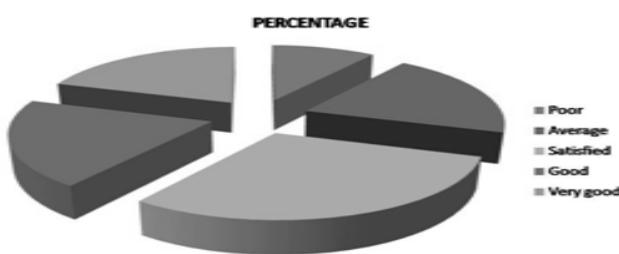
LAKES→ Survey Obs.	MASUNDA	KACHRALI	UPVAN	MAKHMALI	SIDDHESHWAR
CHANGE	Good	-	Satisfied	Poor	Average
WATER LEVEL	Increased	Decreased	Increased	Decreased	Decreased
DEGRADATION	Aquatic life	Biodiversity	Biodiversity	Aquatic life	Vegetation
USAGE	Boating	Boating	Boating	-	Washing Clothes
SATISFACTION	Average	Poor	Average	Poor	Poor
HEALTH	Affected	Stable	Stable	Affected	Affected
ROLE OF TMC	Beautification	Gardening	Renovation	-	-
ECOSYSTEM	Spoiled	-	-	Destroyed	Destroyed

This table shows that the actual condition of each lake. Due to the change in the lake it has some or other way affected the locality staying besides the lake area. This observation denotes the entire effective factor which affects the lake and also surrounding area of the lake. But the observation of all the lake is different from one another.

Table 2 : Quality of Lakes

QUALITY	PERCENTAGE
Poor	10
Average	20
Satisfied	30
Good	20
Very good	20

Figure 1 : Quality of Lakes



This chart indicates the water quality in percentage manner. The highest percentage is 30% and lowest is 10%. With the help of divided pie chart we can see satisfactory pictureof water in terms of quality.

Table 3 : Classification of sample as per the duration of stay

DURATION (YRS)	PERCENTAGE
0-10	20
10-20	13.33
20-30	40.66
30-40	20
40-50	6
50&above	0

This chart represents the duration of present residential area in percentage. The highest duration is between 20-30 years and also lowest duration is 50&above year. So the area surveyed has the maximum number of the people living around 20-30 years around the surveyed lakes.

WATER SAMPLE TESTING REPORT BY TMC:

Table 4 : Water quality of various lakes in Thene

LAKES	pH	Do	TDS	COD	BOD	Nitrate	Phosphate
MASUNDA	7.67	7.35	291	32	11	0.19	0.2
KACHRALI	7.4	7.5	270	26	8	0.182	0.204
UPVAN	7.9	7.33	232	39	14	0.22	0.23
MAKHMALI	7.59	7.22	262	31	11	0.202	0.204
SIDDHESHWAR	7.33	7.85	349	87	31	0.328	0.335

Source: - TMC record 2011-12.

INDEX:

DO—Dissolved oxygen

TDS—Total Dissolved Solids

COD—Chemical Oxygen Demand

BOD—Biological Oxygen Demand

ON GOING PROJECT BY TMC:

Table 5 : Lake conservation practices

YEAR	FUNDING AGENCY	LAKE CONSERVATION BIO-REMEDIATION
2004-2008	With assistance MoEF	Lakes like Makhmali & Upvan
2009-2010	TMC	Siddheshwar physiographic survey of lakes for integrated beautification
2010-2011	TMC	Beautification of Siddheshwar & Masunda



An artificial pond prepared by TMC esp. for the Ganpati immersion.

Suggestions

There is a need to conserve water by turning off the tap when running water is not necessary. This helps prevent water shortages and reduces the amount of contaminated water that needs treatment. Be careful about what you throw down your sink or toilet. Don't throw paints, oils or other forms of litter down the drain. Use environmentally household products, such as washing powder, household cleaning agents and toiletries. Take great care not to overuse pesticides and fertilizers. This will prevent runoffs of the material into nearby water sources. By having more plants in your garden you are preventing fertilizer, pesticides and contaminated water from running off into nearby water sources. Don't throw litter into rivers, lakes or oceans. Help clean up any litter you see on beaches or in rivers and lakes, make sure it is safe to collect the litter and put it in a nearby dustbin. As per the survey done by us, of 'Kachrali', 'Masunda', 'Upvan'

, 'Makhmali' and 'Siddheshwar' lakes we found that we must have to control water pollution of lakes & should conserve it for future also. It is everyone's as well as TMC's responsibility to maintain water clean.

References:

Data collected by various reports of Thane Municipal Corporation.

Websites are as follows: www.waterpollution.com
www.thanemunicipal.org

The authors are the SYBA students of JOSHI-BEDEKAR COLLEGE, THANE.

Appendix

Sample of Questionnaire Survey:

1. Name of the interviewer?
2. What is the age of interviewer?
3. What is the qualification of interviewer?
SSC _____ below HSC _____
Upto graduate _____ extra course _____
4. How many members (age) are there in your family?
Below 18 _____ above 18 _____
5. Since how many months/years you live in present residential area?
6. What is your present occupation?
7. Whether the lake is artificial or natural?
8. If it is artificial, then since how many years it is present?
_____ Years
9. Do you observe any change in the lake?
10. Do the water levels decrease in size, color, quality, and test?
11. If the degradation is happen then since when and what are the reasons?
12. Do you use lake water for cleaning, washing, drinking or any other?
13. Are you surely satisfied with water quality supplied by TMC?
14. Does it affect to your health?
15. Do you boil the water?
Yes _____ No _____
16. Dose TMC has any role in terms of lake preservation?
If yes, what role was played by TMC team?
17. Do you think that the lake beautification is useful for restoring Lake Ecosystem?
18. Signature of interviewer. _____