

# The "Gandhian" Village

BY ROBERT CHAMBERS

## The Environmental Case for Scenario 1

Part of the philosophical underpinning of this scenario can be summarized in the proposition that simple is sophisticated. Applied to technology, the word "sophisticated" implies complexity, high cost and capital intensity. Techniques with these characteristics tend to be more accessible to those who are already better off and more powerful in rural areas, enabling them to appropriate communal resources, to displace labor, and to reinforce their dominance as rural elites. But it is not sophisticated to deprive poor people of resources or to put them out of work. Truly sophisticated techniques, it can be argued, are those usually simpler ones the net effect of which is to generate, not destroy, livelihoods.

The principle that simple is sophisticated can apply in this scenario to choices made in research and development. Research and development decisions frequently lead to innovations which are large-scale, costly, difficult to maintain, and dependent on spare parts or inputs which have to come from outside the rural environment. If the innovation is profitable, all of these factors tend to benefit those rural people who are already better off, rather than the poorer marginal farmers and landless laborers. In contrast, innovations which are small-scale, cheap, easy to maintain and use locally available and renewable materials and inputs, are more likely to benefit the poor. Formal research and development can miss opportunities or point in the wrong directions. The bamboo tubewell was invented not by an engineer but by farmers. For a long time, rice-breeding concentrated heavily on responses to chemical nitrogen, which is often cornered by the larger farmers, to the neglect of improving nitrogen-fixation in the root zone of the rice plant, a biological technology which may be scale-neutral, cheap, renewable, and more readily available to many more of the smaller farmers. In this scenario, research and development are directed towards those simple outcomes to which the poorer rural users will have better relative access.

The case can be extended to the values of professionals. It can be argued that much that passes for professional sophistication is inappropriate in the developed countries; but that it is doubly so in the developing world. The cult of these forms of "sophistication" reinforces dependence and impedes development in the Third World. Elaborate procedures and complex techniques when transferred from developed to developing countries have high costs. They generate an appetite for expensive equipment, for foreign experts, for counterparts, for training in developed countries, for data collection and for the processing and analysis of data. Resources to meet these demands are

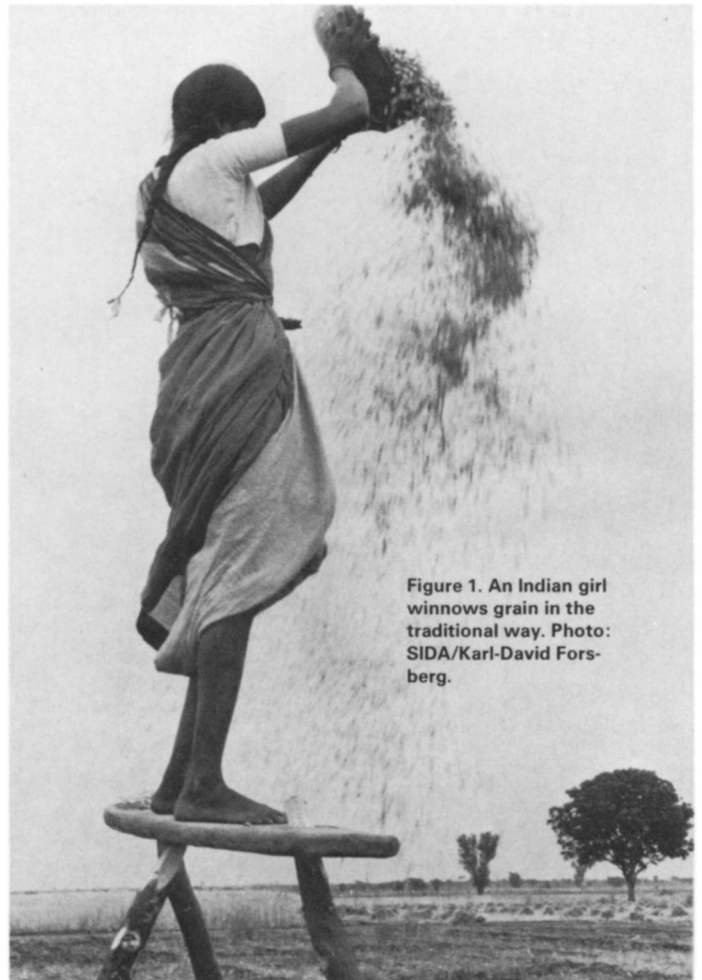


Figure 1. An Indian girl winnows grain in the traditional way. Photo: SIDA/Karl-David Forsberg.

diverted from alternative uses. Urban bias is accentuated and national professionals in the countries of the developing world gain skills, experience and contacts which encourage them to migrate to the developed countries and to international agencies. The rural areas, where most of the poorer people live, remain peripheral within peripheral countries, a mine from which data, skills and funds are extracted.

But if development means ending poverty and deprivation, and if most of the poor and deprived people live in the rural areas of the Third World, then, the argument continues, true sophistication will be found in those procedures and techniques which most effectively reach and help them. Methods tailored to the needs and situation of people who are poor and scattered in rural agricultural communities where skills are scarce are likely to be radically different from those evolved for people who are relatively rich and concentrated in urban industrial centers in countries where skills are plentiful (*eg* Figure 1). What

appears professionally sophisticated for the one will often be professionally crass for the other.

Finally, this philosophical approach finds a paradox. Rural people are often stereotyped as simple and ignorant, but they usually know much more about their environment than do highly trained and travelled outsiders such as government officials and academic researchers. Farmers know the soils, the plants, the pests, the seasons, and the problems and risks which they face. Farmers on their fields experience the sequence and conditions of their cultivation as a whole and have an insight not constrained by disciplinary blinkers. Their adaptations are often skillful, sensitive and subtle—in short, sophisticated—and may involve many activities, many crops, many linkages not obvious to outside observers, and many complex choices (Figure 2). It is only when the approaches made by outsiders are themselves simple and adaptable that the knowledge and skills of rural people can be called into play, enabling their sophistication to make its full and fruitful contribution. In this scenario there are rather few scientists and other professionals, but those that there are have largely recognized the validity of the knowledge and insights of rural people, and work closely with them to identify needs and to develop new rural technologies in collaboration with them.

#### SOCIAL ASPECTS

The scenario is ambiguous about the ownership of the means of production. "Work is very much of a communal type, with emphasis on local cooperation", might imply something like the Chinese system. But the scenario is described as "Gandhian" implying something like the Indian system with family ownership of land. The environmental case for the scenario is likely to differ between these two. In what follows, an "Indian" or "African" system, with family landholdings is assumed, without collectivization.

The analysis of social aspects of the scenario cannot be presented as a case for the scenario, or as a case against it. There are positive and negative aspects, and these depend partly on the values of the observer. Two kinds of situations can be distinguished.

In the first one, where landholdings are more equal, the growth of population leads to the cultivation of unused land and then later to the subdivision of holdings which are farmed more intensively. Land concentration does occur, but slowly, and the shared poverty of the scenario is more egalitarian. Tenancy, indebtedness, and exploitation by money-lenders is less marked. Ideology is egalitarian.

In the second situation, where landholdings are less equal, the growth of population exacerbates inequalities. Although there are few technologies with substantial economies of scale, or which displace labor, the larger landowners exploit their dominance and the abundance of labor by paying low wages, by reinforcing patron-client relationships, and by lending money at high interest rates. Land concentration becomes more marked. Ideology is hierarchical.

In both situations social change is slower than in other



Figure 2. This bullock team in the village of Akbarpur-Barota, India is preparing the soil for planting. Photo: Earthscan/Mark Edwards.

scenarios. Class differentiation and consciousness are slower to emerge. There is greater cultural continuity and political stability as long as the country is not threatened or invaded by more powerful states.

#### THE ENVIRONMENTAL CASE FOR THE SCENARIO

Against this background, the *environmental* case for this scenario can be presented under three headings:

##### 1. Low demand for non-renewable energy sources

The use of non-renewable energy is very low. Villages are largely self-sufficient in energy. Little non-renewable energy is used in agriculture, based as it is on human labor and animal power rather than oil and electricity. Cultivation is by hoe and animal draught. Groundwater is lifted variously by human power and by animal power. Organic fertilizers of vegetable and animal origin are used instead of chemical fertilizers. Control of pests is biological (and not very effective), and does not use chemical pesticides. Cooking and lighting use local energy sources such as biogas, solar energy, firewood, and dung. Part of the village's income comes from communal energy farming with eucalyptus, euphorbia (a succulent) and other energy crops which enable the village to be, by a small margin, a net exporter of energy. Even the tools and utensils used in the village are produced nearby in small regional centers and have a low non-renewable energy content (see Figures 3, 4 and 5).

Compared with other scenarios, little energy is required for transport, other than local transport with bullock carts, donkeys and bicycles. The village produces little surplus for export to the rest of the economy and imports little from any distance. People do not often travel long distances, (except on the inter-village exchange program) partly because they are too poor to be able to afford to travel much. Local transport uses fuels from fermentation processes with energy crops and organic wastes and also firewood.

Towns are few and small, and have little infrastructure. There is little industry. There is less of a contrast between *per capita* rural and urban energy consumption than usual, and the proportion of rural to urban population is exceptionally high.



Figure 3. In the Indian village of Akbarpur-Barota, water to irrigate the fields is pumped by a Persian Wheel, powered by bullocks. Photo: Earthscan/Mark Edwards.

For all these reasons, energy needs are low, consumption of oil and coal is very low, and most energy needs are met from labor-intensive renewable sources.

## 2. Stable exploitation of some land and water resources

Continuing rural poverty prevents the preconditions for a sharp decline in fertility and the demographic transition. For a time, livelihoods were created by increased village-level specialization and the labor-intensity of energy farming. These, however, merely bought time. Overpopulation in villages forced migration into marginal areas resulting in a vicious syndrome of poverty with population pressing hard on inadequate agricultural resources.

Within the village, however, the exploitation of land and water resources is stable. Population pressure has increased the productivity of water and land, though not of labor. Water is collected in small dams, tanks and hafirs in micro-catchments, and then pumped back up slope by human power and by windmills to be stored and used for supplementary irrigation by gravity flow when required. Water storage and control is also improved through conventional minor irrigation works. Groundwater extraction is limited by the techniques available—of lift by oxen, buffaloes, donkeys, camels and human beings—which act to ration and conserve water. Soil conservation and water retention in the soil are promoted by ploughing either on or just off the contour. Intercropping, serial cropping and relay cropping are practiced to spread labor demands and food supplies throughout more of the year. Soil fertility is maintained and augmented by legumes and organic manures. Population pressure on land and low labor costs have encouraged stall-feeding of cattle and the spreading of manure by hand. Overgrazing of communal land has been replaced by communal energy farming which prevents degradation and improves soil moisture retention on that land.

The stable exploitation of soil, land and water within the village contributes to the stability of other villages lower down the catchment; but it is vulnerable to flooding and the silting of dams as a result of the cutting of forests and the cultivation of steep slopes higher up by those forced out of villages by overpopulation (Figure 6).

Close to the coast, fish catches are limited by traditional methods and the small local market for fish. However



Figure 4. A young woman cooks her families' meal with biogas. Photo: Earthscan/Mark Edwards.

further out from the coast, heavy overfishing by large foreign trawlers cannot be prevented because the Gandhian state is so weak internationally.

## 3. Pollution

The government has resisted attempts by multinational companies to foist polluting industries on the country. Levels of chemical pollution are extremely low. There is little industry and little urbanization. Most manufacturing is by hand using local materials and local energy sources. Imported chemicals are only rarely used as pesticides, as fertilizers, or in manufacturing processes. None of the familiar problems of atmospheric pollution from oil refineries, vehicle exhausts, and "dirty" industries is significant.

Such as it is, industrial pollution is scattered and small-

Figure 5. A knife maker at work in the village of Kassala in the eastern Sudan. A small axe is used to form the knife handles, while the blades are sharpened with files. Photo: Eric Grefe.



Table 1. Characteristics of the scenarios, as seen from the standpoint of the author.

Scenario	Level of Capital Investment	Main Source(s) of Capital	Demographic Transition Achieved	Some Environmental Factors			
				Use of Non-Renewable Resources	Irreversible Degradation of Soil, Vegetation, etc	Pollution	Unweighted Score (max = 12)
1	Lowest	Local Rural Accumulation	No	Lowest 4	Rising 3→1	Lowest 4	11→9
2	Low	Domestic and Foreign	Yes	Low 3	Lowest 4	Low 3	10
3	Medium	Domestic	No	High 1	Medium 2	Highest 0	3
4	High	Multi-National Corporations	No	Highest 0	Highest 0	High 1	1
5	Highest	Aid and Multi-National Corporations	Yes	High, later declining 1→2	Medium, later declining 2→8	Medium, later declining 2→3	5→8

Environmental scores are from 0 to 4 along a scale of rising desirability according to conventional values concerning the environment. Arrows represent changes over time.

scale, as for example with small tanneries. Such pollution does not present a serious problem either to health or to the environment.

At the village level, human wastes are recycled, contributing energy and fertilizer. In the many small market towns, human wastes are transported to the neighboring countryside and sold for fertilizer. Such wastes in the few larger towns do present a problem, requiring more investment and larger scale sewage engineering than the impoverished government can afford.

It is only fair to the reader to explain that I have had difficulty in writing this scenario. My brief was to present the *environmental case for the scenario*, but I have found it necessary to go beyond purely environmental considerations. I believe that the environment exists for man, not man for the environment. In particular cases, environmentally unsound practices are justified, especially where they benefit the poorer countries or the poorer people within those countries. Further, the environmental case for or against a rural scenario is likely to be sensitive to population pressure on resources, and to the degree of land concentration and landlessness. A special danger, with a scenario that is described as "Gandhian", is a wistful romanticism which idealizes the self-sufficient village republic, a stable society, and cultural continuity and integrity. This is an ideological position likely to appeal to Western conservationists. But if one is to be at all realistic, it has to be recognized that this may mean a perpetuation and deepening of exploitative relationships, very little surplus extracted by the state for investment, a weak state, and a failure to achieve the demographic transition.

The scenario can only be achieved through resolute isolationism and the rejection of external investment, aid and trade. Major investment would have promoted urban growth and more capital-intensive agriculture. Aid and trade on any scale would have involved the transfer of technology discordant to the scenario and the establishment of urban industries for consumer goods. There is a very limited amount of aid and trade, strictly restrained in order to protect the village environment from major outside influences. The heavy emphasis on village self-suffi-

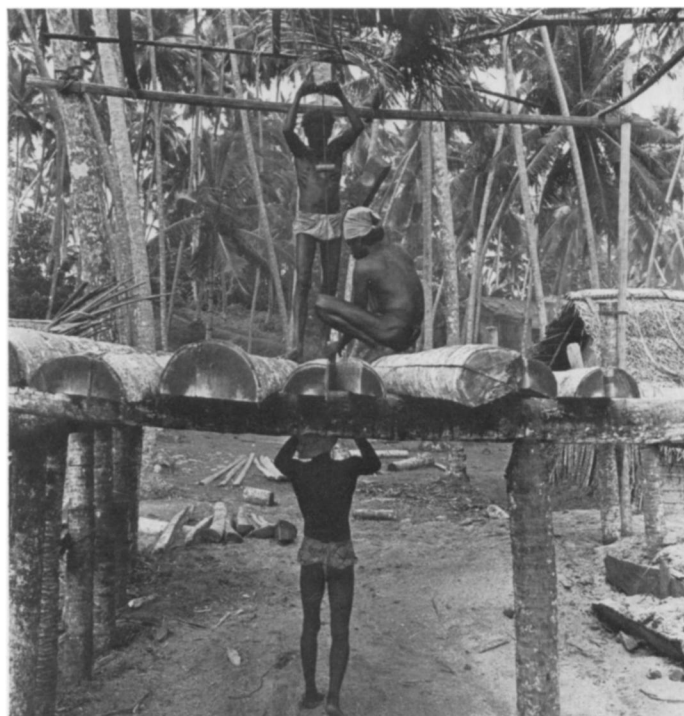


Figure 6. A primitive "sawmill" at work in the village of Koggala on the south coast of Sri Lanka. Photo: SIDA/Mark Markefelt.

ciency goes along with negligible industrialization, low levels of urbanization, and little surplus extracted from agriculture by the state for investment in urban infrastructure or rural communications. The country is extremely poor in terms of *per capita* GNP.

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