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Innovation, Sustainability, Development:

**A NEW**

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**MANIFESTO**

# A New Manifesto

WE LIVE IN A TIME OF UNPRECEDENTED ADVANCES IN SCIENCE AND TECHNOLOGY. THE WORLD IS EVER MORE GLOBALISED AND INTERCONNECTED. YET POVERTY IS DEEPENING, THE ENVIRONMENT IS IN CRISIS AND PROGRESS TOWARDS THE MILLENNIUM DEVELOPMENT GOALS HAS STALLED.

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The STEPS Centre (Social, Technological and Environmental Pathways to Sustainability) is an interdisciplinary global research and policy engagement hub that unites development studies with science and technology studies. Based at the Institute of Development Studies and SPRU Science and Technology Policy Research at the University of Sussex, with partners in Africa, Asia and Latin America, we are funded by the Economic and Social Research Council.

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Global annual spending on research and development exceeds a trillion dollars. Military and security-related applications are the single largest area of expenditure. Yet every day in poorer parts of the world, thousands of children die from waterborne diseases, more than a billion people go hungry and more than a thousand die in pregnancy and childbirth. At the same time, future generations face huge social, environmental and economic challenges from threats such as climate change. Yet global governance, economics and politics frequently work against the interests of poorer countries and people, worsening inequalities.

Meeting these interlinked global challenges of poverty reduction, social justice and environmental sustainability is the great moral and political imperative of our age. Science, technology and innovation of many kinds have essential roles to play in this. But along with many others, the STEPS Centre believes

that this imperative can only be fulfilled if there is a radical shift in how we think about and perform innovation. By innovation, we mean new ways of doing things. This includes not only science and technology, but – crucially – the related array of new ideas, institutions, practices, behaviours and social relations that shape scientific and technological patterns, purposes, applications and outcomes. Central to this, is a move away from progress defined simply by the scale or rate of change – about who is 'ahead' or 'behind' in some presumed one-track race. Instead, attention must focus on the many alternative directions for scientific, technological and associated institutional change. In short, we need a new politics of innovation. This is not about being 'pro' or 'anti' science or technology, but about addressing real questions of choice: 'which science?', 'what technology?' and, especially, 'whose innovation?' and 'what

kinds of change? In other words, we need to foster more *diverse* and far more fairly *distributed* forms of – and *directions* for – innovation, towards greater social justice.

“A radical shift is needed in how we think about and perform innovation”

At the heart of this shift in the global innovation agenda is a greater respect for cultural variety, regional diversity and democratic accountability. Such a shift is possible. Indeed, in inspirational initiatives in many places around the world, it is already happening. But these efforts are often fragmented, poorly supported and resisted by unequal power relations. To challenge these forces means promoting innovation that really works for currently marginalised people and jeopardised environments. This requires the opening up of new political spaces, drawing in social movements, smaller businesses and excluded voices. The result will be more vigorous deliberation and argument over the many possible styles and directions for research and innovation. It also means radically changing the ways in which innovation is shaped, through: *agenda setting, funding, capacity building, organisational arrangements and monitoring, evaluation and accountability*. We take up each of these specific challenges in our final recommendations.

This New Manifesto lays out a political position, as seen from the particular vantage point of a single research centre concerned with these challenges. Yet our purpose is not to assert a single view. Most importantly, we hope to help catalyse and provoke more vibrant and explicitly political debate over global patterns and directions of innovation. In this spirit, we provide a host of links to more detailed examples and analysis on the associated New Manifesto website [www.anewmanifesto.org](http://www.anewmanifesto.org).

While not pretending to achieve a representative synthesis, the production of this Manifesto has also learned much from – and owes much to – many colleagues, collaborators and critics. Most valuably, this includes the hundreds of participants in 20 roundtables in countries from China to Venezuela, India to Zimbabwe, Nigeria to Sri Lanka. As part of our wider New Manifesto initiative, the STEPS Centre is committed to assisting further processes of dialogue and argument about innovation, using our own website as a platform for divergent voices – including those critical of our own stance. Our aim is not only to foster debate, but to catalyse action. This will inevitably take contrasting forms in diverse places. Our hope is that – together with many other parallel initiatives worldwide – this will help result in more diverse and equitably distributed forms and outcomes of innovation.

“Meeting the interlinked global challenges of poverty reduction, social justice and environmental sustainability is the great moral and political imperative of our age”

# From Scale to Diversity

WHY IS THE STEPS CENTRE PRODUCING A NEW MANIFESTO NOW? THIS IS NOT THE FIRST TIME THAT OUR HOME INSTITUTIONS AT THE UNIVERSITY OF SUSSEX HAVE SOUGHT TO CONTRIBUTE TO POLITICAL DEBATE OVER INNOVATION FOR DEVELOPMENT.

In 1969 the United Nations commissioned a study which became known as the 'Sussex Manifesto', published the following year. This argued that science and technology were overwhelmingly steered by the interests of the global rich rather than the poor. With the late 1960s witnessing the moon-landing, the burgeoning Green Revolution and a global smallpox eradication programme, this was a time of great interest in the potential for science and technology to address the most stark of humankind's development challenges.

Forty years ago the Sussex Manifesto focused on the scale and location of scientific and technological activity. This earlier manifesto was of its time; it distinguished between so-called 'developing' and 'advanced' nations in a way that is today problematic. It argued that research agendas needed to focus on the world's 'developing' countries and their needs, with 'advanced' nations urged to devote 5% of their own expenditure on research

and development to problems in 'developing' countries. It put forward challenging funding targets for government spending on research and development and scientific and technological services. It said 'developing' countries should increase the proportion of gross national product spent on research and development from 0.2% to 0.5% over the 1970s. In addition, 'advanced' countries were urged to dedicate 5% of their total aid budgets to capacity building including "...direct, financial and technical assistance to the build-up of indigenous science in the developing countries". Recognising that it would "be folly if there were no reform of the institutions for carrying out these activities", the Sussex Manifesto highlighted the importance of organisational reform.

The precise impacts and implications of the original manifesto are diverse and contested. However, along with a number of other related initiatives during this period, this

earlier manifesto did help to advance broadly progressive aims for building indigenous capabilities in science and technology. Since then, there have been significant achievements. The share of global research and development expenditure in 'developing' countries has increased from 2% in 1970 to roughly a fifth. However, much of this is concentrated in a few rapidly industrialising economies, including China, India and Brazil. Expenditure on research and development across 'developing' countries has risen to approximately 1% of aggregate gross domestic product. Yet, outside the emerging innovation centres in rapidly industrialising economies, levels of research and development as a percentage of gross domestic product remain at around 1970 levels in some countries – especially in parts of Africa. Moreover, and crucially, such aggregate figures say nothing about the *direction* of innovation pathways, the *distribution* of innovative activities within countries, or the outcomes actually achieved for the poorest and most marginal people in their *diversity* of settings and situations.

Forty years on, we are again witnessing coordinated international efforts to solve global problems using science and technology. Modern advances appear to offer more promise than ever, and private sector and philanthropic foundation involvement has added significantly to the potentials. Two arguments are now put forward in favour of this persistent emphasis on science and technology as the core solution to development challenges. In the first, scientific and technological innovations are seen as routes to national economic growth in a highly competitive global economy.

This is held also to lead indirectly to poverty reduction and capacities to deal with environmental protection – in line with general 'trickle-down' models of economic development. Yet, while scientific and technological advance has undoubtedly contributed to growth in particular areas, the benefits – and sometimes risks – have been very unevenly distributed.

The second argument responds to this problem through focusing more directly on particular poverty and environmental challenges. The assumption here is that targeted scientific and technological solutions - 'silver bullets' - can be rolled out and applied at scale. In particular, new philanthropic and public-private investments have massively expanded the scope for addressing challenges that were once neglected because addressing them was seen as unprofitable. Again, this has yielded successes – vaccines for childhood diseases, and crop technologies directed towards low-income countries' agricultural challenges. But these have not been realised everywhere; these initiatives often founder in the face of the diversity and dynamism of local social and ecological realities.

In different ways, both these arguments about innovation for development focus quite narrowly on science and technology. Equally, they emphasise the *scale* and *pace* of innovative activity, over its *direction*, *distribution* or *diversity*.



“We are moving  
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# A New 3D Agenda

IN OTHER AREAS OF CONTEMPORARY POLICY DEBATE,  
DISCUSSION IS SHIFTING FROM SCIENCE AND TECHNOLOGY ALONE,  
TO A DEEPER APPRECIATION OF INNOVATION.

We are moving from narrow preoccupations with research and development to broader understandings of innovation systems – encompassing policy practices, institutional capabilities, organisational processes and social relations. There is acknowledgement of the crucial roles of a wider set of institutions and interactions, including laboratories, firms, funders, governments, international agencies and civil society organisations. This helps move us away from a simple model of technical progress, to an acceptance of a broader range of interactions behind innovation of all kinds – ranging across local and global scales.

However, a further array of questions remains typically unaddressed in policy debates. The first is about the technical, social and political *directions* for change: ‘what is innovation for?’, ‘which kinds of innovation, along which pathways?’ and ‘towards what goals?’ Taking these questions seriously requires us to examine much more sharply questions of distribution. For any given problem: ‘who is innovation for?’, ‘whose innovation counts?’ and ‘who gains and who loses?’ In turn, this raises further

questions about *diversity*: ‘what – and how many – kinds of innovation do we need to address any particular challenge?’ This emphasis on direction, distribution and diversity is at the centre of a new 3D agenda for innovation.

## DIRECTION

Asking the question ‘what is innovation for?’ includes – but goes beyond – issues of prioritisation across different sectors, such as military, health or energy. It also requires us to think about the particular directions of change that are supported in any given sector. Even in the narrow field of low carbon electricity production, for instance, a host of alternative directions for innovation pathways exists. These include those alternatively emphasising: small-scale distributed renewable energy; large-scale, centralised renewables in continent-spanning infrastructures; nuclear fission, and fossil fuels with carbon capture and storage. None of these strategies can be pursued to their full potential without detract-



*Avian flu operation / Lisa Yanovitch*

tion to problems of food supply and hunger. Yet this appearance of optimality reflects particular perspectives, strongly pushed by powerful commercial and institutional interests. In reality, alternative low-input solutions are effective and efficient in many settings. Likewise, in the health sector, innovation activity centres on options – like the development of pharmaceuticals – which maximise private benefits through intellectual property rights. This is reinforced by the interests and practices of powerful companies and regulators, which marginalise attention to ‘open source’ public health measures. It is in these ways that politics come in at every level of decision making over the direction of innovation.

**“Citizen initiatives and social movements have key roles to play in ‘opening up’ hidden innovation pathways.”**

ing from support for others. This inevitably involves political choices and trade-offs. Some pathways – like highly specialised, capital-intensive, centralised, large-scale and long lead-time nuclear infrastructures – can ‘crowd out’ alternatives. Where pathways are difficult to reverse, choices require even stronger democratic scrutiny.

Even where choices are settling around an assumed optimal pathway, this can be misleading. Alternatives are often obscured by political interests and the exercise of power. For example, it is sometimes assumed that high-input, industrial agriculture presents the ideal solu-

tion to problems of food supply and hunger. Yet this appearance of optimality reflects particular perspectives, strongly pushed by powerful commercial and institutional interests. In reality, alternative low-input solutions are effective and efficient in many settings. Likewise, in the health sector, innovation activity centres on options – like the development of pharmaceuticals – which maximise private benefits through intellectual property rights. This is reinforced by the interests and practices of powerful companies and regulators, which marginalise attention to ‘open source’ public health measures. It is in these ways that politics come in at every level of decision making over the direction of innovation.

Direction matters because it shapes the distribution of benefits, costs and risks from innovation. In many low-income country settings, industrial agriculture can work well for those who can afford the inputs, but often marginalises small farmers in riskier and more resource-poor settings. Intellectual property-driven pathways for innovation in health notoriously result in only ten per cent of the world health research budget being spent on diseases that affect ninety per cent of the world’s population. Issues of direc-

tion therefore go beyond merely questioning the implementation of technology or conventional critiques of the failure of innovation benefits to trickle down. Marginal groups and places also lose out both from the negative consequences of lock in to dominant pathways and because the alternative pathways that meet their own needs are obscured, excluded, and pushed aside – ‘crowded out’. These are the reasons actively to challenge the directions of dominant pathways and to recognise and support alternatives.

## DISTRIBUTION

Because marginal people and places so often lose out, the appraisal of alternative innovation pathways needs to focus specifically on the distribution of benefits and address questions of social difference, equity and justice. Social arrangements for appraisal need to be inclusive and deliberative and take place continuously from the earliest stages of innovation pathways. Only in this way can we ensure broad and equitable distribution of benefits and impacts, with serious attention paid to the highly differentiated nature of needs and experiences in the real world – by place and circumstance, gender and generation, identity and ethnicity. Of particular importance here, are the many cases where marginalised women and men are innovating for themselves, improving their livelihoods in difficult political-economic situations, by making use of indigenous knowledges and technologies, rooted in local cultures, histories and practices. Examples include innovations by farmers

in crop and livestock production, by slum-dwellers to secure water supplies and by health practitioners to combine local and biomedical approaches in new, creative ways. Such local innovations do not offer simple remedies, but recognising and supporting them can contribute in important ways to the redistribution of power and resources needed for greater social justice. Likewise, growth in demand among relatively low income groups near the ‘bottom of the pyramid’ worldwide presents a massive – and still under-recognised – opportunity for innovation processes linked to small businesses to foster more equally-distributed economic growth.

Further approaches that actively link science with the interests of excluded communities can help shift the distributional outcomes of innovation towards the needs of the poorest groups. Participatory approaches to plant breeding, for example, start with the concerns of the most routinely marginalised groups such as women and resource-poor farmers, involving them in designing and implementing the selection and testing of different plant varieties. Such approaches bring users centrally into the scientific process and allow for context-sensitive adaptation and shaping of technologies – paying attention to their social as well as technical dimensions. A simple example here is where the uptake of bednets in western Kenya rose dramatically when the colour was changed from that of burial shrouds. Citizen initiatives and social movements have key roles to play in ‘opening up’ hidden innovation pathways. These can help, both in generating locally-rooted forms of innovation and in ensuring that the benefits of all forms of innovation are more widely shared.



“An emphasis on direction,  
distribution and diversity is at  
the centre of a new 3D agenda  
for innovation”

Examples abound of the crucial roles played by social movements, ranging from the origins of global industries like windpower to their crucial roles in urban sanitation, slum improvement, alleviating energy poverty and securing access to affordable medicines and healthcare.

While such bottom-up, distributed initiatives do not present panaceas, far more serious attention to these kinds of innovation – including at the highest levels of policy – are required in order to address the challenges of social justice and equitable distribution.

## DIVERSITY

“In many sectors, protecting creative experimentation in diverse niches ... allows for new markets and innovation pathways to emerge.”

To take direction and distribution seriously means recognising the importance – and deliberately pursuing – a diversity of innovation pathways. It is only in this way that we can resist the processes of concentration and lock-in that, as noted above, close down the directions taken by innovation pathways and crowd out the paths favoured by more marginal groups. Likewise, attention to diversity enables sensitivity to varied ecological and eco-

nomical contexts and disparate cultural settings. And designing policies that deliberately enhance diversity provides a crucial means to foster resilience – hedging against our uncertainty and ignorance about the future. For example, in approaches to crop development in Africa, actively enhancing agro-biodiversity with multiple crop types and varieties responds to varied agronomic and social contexts, as well as offsetting uncertainties linked to global markets and climate change.

In many different sectors, protecting creative experimentation in diverse niches – involving different combinations of users, businesses and applications – allows for new markets and innovation pathways to emerge. Many features of mainstream ‘sustainable housing’, for instance, have arisen out of just these kinds of diverse niches, initially supported and protected on the margins. On-going links between experimental niches and the housing industry continue to foster learning and innovation, showing how diversity can breed diversity.

Fostering diversity also means paying attention to the social and organisational – as well as technical – dimensions of innovation. For example, in community-led approaches to ‘total’ sanitation, the focus is no longer the technical challenge of latrine-building. Rather, an innovative participatory process leads to diverse local solutions that combine social arrangements and technological innovations. Likewise, innovative organisational arrangements can connect technological innovations in new ways. For instance, the HoneyBee Network in India links a broader movement of grassroots entrepreneurs – inventors of a vast



Collecting Water Delft / Bhegwati Prasad / Saral

range of technologies from palm tree climbing equipment, to bicycle-powered washing machines – to an institutionalised form of open source information sharing. This allows people across India – and indeed the world – to gain access to, and build on, product development and marketing support.

However, an argument for diversity does not mean that ‘anything goes’. In plural societies there will always remain irreconcilable interests, perspectives, priorities – and choices. As we have said, our own aim is very specifically to promote the particular directions for innovation that most effectively meet the needs of the poorest women and men. This requires a much more deliberate focus on the politics of technological diversity. Informed by inclusive social appraisal, political debate must critically examine how different innovation pathways do or don’t fit together. In the energy sector for example, there needs to be a hard look at which low carbon options are compatible and where there are limits and trade-offs. Diverse small-

scale renewables and gas turbines integrated into locally-distributed electricity systems can work well together to reduce carbon emissions. This can also be achieved using diverse large-scale nuclear, carbon capture and storage, hydroelectric and centralised renewable technologies. But these two different kinds of diverse portfolios do not dovetail with one another so easily. The question is: which diversity? Just like the earlier examples of choices between *individual* innovation pathways, so too does society face major choices between alternative *portfolios* of innovation pathways.

“Fostering diversity means paying attention to the social and organisational – as well as technical – dimensions of innovation”

The politics of technological diversity thus bring us back to questions of direction and distribution: focusing on which diverse portfolios – and which particular options within them – present the best ways to address imperatives and uncertainties of poverty alleviation, social justice and environmental sustainability.

# A Vision for Innovation

ARISING FROM THE 3D AGENDA, WHAT IS OUR VISION FOR SCIENCE, TECHNOLOGY AND INNOVATION FOR DEVELOPMENT IN THE FUTURE?

Our vision is a world where science and technology work more directly for social justice, poverty alleviation and the environment. This requires innovation which is transformative – reshaping social and power relations to allow innovation in new directions. It means challenging the dominance of pathways driven simply by private profit and military aims. It means innovation for sustainability, paying attention to ecological integrity and diverse environmental and social values. It means that the benefits of innovation are widely and equitably shared, and not captured by narrow, powerful interests. It means encouraging open and plural forms of innovation pathway – social and technical; high tech and low tech; those which are currently hidden, as well as those which are more commonly recognised. It means organising innovation in ways that are networked, distributed and inclusive, involving diverse people and groups, including those who are poor and marginalised. And it means going beyond the technical elites in large international, state and commercial organisations to support and harness the energy, creativity and ingenuity of users, workers, consumers,

citizens, activists, farmers and small businesses.

As a result, this is a world where all feasible directions for scientific, technological and wider social innovation are discussed as matters for legitimate political argument, just as in other areas of public policy. It is no longer credible for politicians and business leaders to assert their own favoured directions for innovation as being somehow uniquely 'science based', 'pro-innovation', 'pro-development' or 'pro-technology' – as if there were no equally-valid alternatives. It is a world where scepticism over some particular innovation pathway can no more be excluded as indiscriminately 'anti-innovation' than opposition to any specific policy is generally 'anti-policy'. In this way – whether locally, nationally or internationally – science, technology and innovation for development are shaped, designed and regulated through inclusive, democratic and accountable processes. It is a world where a deliberate diversity of innovation pathways flourish and interact.

There are many worldwide who share – and strive for – this kind of vision. The crucial question is: how can such a world be realised?



“Our vision is a world where science and technology work more directly for social justice, poverty alleviation and the environment”

# Areas for Action

OUR DRIVING VISION IS AMBITIOUS AND GENERAL IN SCOPE. WHAT IT MEANS FOR PARTICULAR CONTEXTS, PLACES AND PEOPLE WILL, OF COURSE, BE ENORMOUSLY VARIED – AS WILL BE THE MEANS TO ACHIEVE IT. NEVERTHELESS, THE FOLLOWING BROAD RECOMMENDATIONS ARE INTENDED TO CATALYSE AND PROVOKE SPECIFIC CONCRETE ACTIONS IN DIFFERENT PLACES.

Our recommendations are organised around the different areas for action identified at the beginning of this Manifesto: agenda setting; funding; capacity building; organising; monitoring, evaluation and accountability. Each set of actions addresses contrasting dimensions of innovation systems. They are therefore targeted towards different people and organisations who bear responsibility in each of these areas.

## AGENDA SETTING

The setting of agendas for science, technology and innovation policy and investment needs to be informed by an explicitly political consideration of innovation direction, distribution and diversity. The institutional architectures for the setting of innovation priorities at national and international levels therefore need reworking to enable diverse

interests and new voices, including those of poorer and marginalised people, to be involved in inclusive debate. In some countries and settings this will involve building on existing institutional arrangements; in others it will require establishing new fora.

Within countries, we recommend that governments establish and support 'Strategic Innovation Fora'. Whatever they are called, these statutory bodies should be mandated to review funding allocations, debate major investment decisions, deliberate on controversial areas of science and technology options and audit the distribution of risks and benefits from potential innovation pathways. These fora should also be inclusive: constituted by – and bringing together – diverse stakeholders with interests in science and technology futures, including citizens' groups and social movements representing the most marginalised interests. These fora would address both public and pri-

vate sector innovation activity, holding legal powers to call evidence. They would report to parliaments (and through these, to wider civil society) on an annual basis.

At the international level, we recommend the establishment of a 'Global Innovation Commission'. Breaking the conventional model of a 'commission', this would be a broadly-constituted deliberative body, widely networked (among other areas) into global civil society and holding itself accountable to the most disempowered communities worldwide. It would operate under a United Nations umbrella, but with a formal role in trade bodies such as the World Trade Organisation. The Commission would facilitate open, transparent political debate about major investments with global or trans-boundary implications, north-south technology transfers, and public and philanthropic international aid geared to science, technology and innovation. In addition to annual reporting, each year a series of focused enquiries would be conducted on specific topics, including in response to national Strategic Innovation Fora or concerted representations by global civil society networks.

## FUNDING

The funding of science, technology and innovation – whether from public, private or philanthropic sources – needs to be geared much more strongly to the challenges of poverty alleviation, social justice and environmental sustainability. This requires that the needs and demands of poorer and marginalised women and men as potential users of tech-

nologies, as well as the outcomes of innovation, are addressed in funding allocations.

We recommend therefore that all science and technology funding agencies (individually or collectively), regularly review their portfolios to ensure that a significant and increasing proportion of their investments are directly focused on these challenges. Such agencies should also progressively improve the balance in investments across basic science, technology, engineering, design and science services. They should demonstrate a shift towards increasing support for the social, cultural and economic dimensions of innovation systems. Transparent accounts linked to these criteria should be produced and made available to public scrutiny, including by relevant Strategic Innovation Fora.

In order to encourage diversity in innovation pathways, we recommend specific funding allocations to support experimentation in niches, and networking and learning across these, involving the private sector, community groups and individual entrepreneurs. In order to help democratise the process of innovation we recommend that procedures are established directly to involve end users of science and technology – including poorer and marginalised people – in the allocation of funding. And we recommend that incentives for the private sector to invest in forms of innovation geared to poverty alleviation, environmental sustainability and social justice – such as advance purchase agreements, technology prizes or tax breaks – are enhanced. Achievements of this kind should be more deliberately recognised and widely publicised: nationally, regionally and globally.



Seed selector, Kenya / Sally Brooks / STEPS Centre

## CAPACITY BUILDING

Capacity building for science, technology and innovation must move beyond a focus on elite science and so-called 'centres of excellence' to support science that works more directly for diverse social and environmental needs. As a vital complement to training scientists and technology experts, this means extending the scope of capacity building to other players in the innovation system, including local entrepreneurs, citizen groups, small businesses and others. A key challenge in improv-

ing innovation processes is linking between groups, and facilitating inclusion of otherwise excluded people.

We therefore urge an extension of capacity-building support towards 'bridging professionals' who are able to link technical expertise with particular social, ecological and economic contexts. We additionally recommend capacity building investments focused on enhancing the ability of citizens and users to engage actively in innovation processes, not just as passive recipients but as active users, creators and inventors. We recommend

also the support of civil society networks and social movements to facilitate the sharing of technologies, practices and wider experiences and learning. Capacity support should further enable such groups to engage with national and international political debates about science, technology and innovation – for instance through memberships of Strategic Innovation Fora and the Global Innovation Commission.

This, in turn, will involve investment in new priorities for training, including key reforms to tertiary, further and higher education in the area of science, technology and development. These will require new institutions (or refashioned old ones) that actively link science and technology to located needs and demands, and the building of new learning platforms, virtual and face-to-face. They will also include greater provision for local community engagement in tertiary, further and higher education as well as wiki spaces for innovation support of a kind that enable more inclusive, networked and distributed forms of innovation.

## ORGANISING

Organising for innovation requires identifying and supporting social and institutional arrangements that enable technologies to work in particular contexts, and to meet the needs of poorer and marginalised women and men. We recommend that firms, public and philanthropic organisations developing specific technological innovations invest in concrete plans to ensure that these social, cultural and institutional aspects of application are addressed.

Further, local experiences with these organisational aspects of innovation need to be shared and learned from more widely. This requires an open, distributed and networked approach, with active investment in linkages between public, private and civil society groups.

We therefore recommend that future investments – by the public and private sectors – should especially highlight bridging functions, connecting formerly separate organisations and linking upstream and downstream research and development activity. While in many cases, new organisations will not be required, strategic investment in facilitating and coordinating bodies may be needed. Such bodies must be complemented by support for local organisations, networks and movements, and the ability for informal, lateral sharing of innovation. Overall, investment should extend its focus from basic science, to emphasise other aspects of the innovation system, including engineering, design, science services, and social entrepreneurship. Further, we recommend that support be increased for open source innovation platforms, with limits placed on narrowly-defined property-based systems which impede competition and constrain innovative activity.

We propose that at national level, and led by Strategic Innovation Fora, a broad framework for science and innovation policy is developed which puts poverty alleviation, social justice and environmental sustainability at its core. The legal underpinnings, regulatory rules and investment priorities that emerge from such a policy must explicitly reflect such priorities, and be overseen, reviewed and audited in a transparent and accountable way.

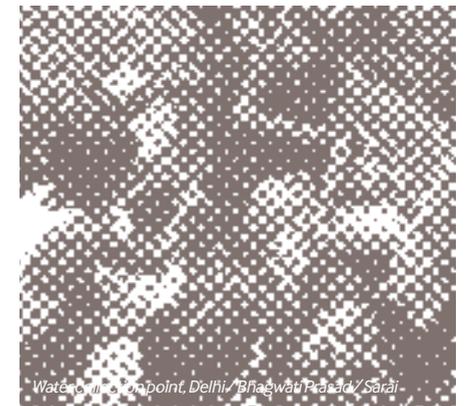
## MONITORING, EVALUATION AND ACCOUNTABILITY

Increased accountability and full transparency must be at the centre of democratised innovation systems – across public and private sectors and at local, national and international levels. This requires active engagement by citizens in priority setting, monitoring and evaluating innovation activities.

We recommend that in all countries benchmark criteria, relating to the priorities of poverty alleviation, social justice and environmental sustainability, are set and so become the basis of indicators for monitoring innovation systems. At the international level, overseen by the Global Innovation Commission, similar criteria should be established for monitoring and annual reporting. Further, we recommend the improvement of data collection systems and methodologies, switching the focus from indicators such as publications, patents and aggregate levels of expenditure, to assessments of the wider development outcomes of innovation efforts. All organisations – whether government departments, philanthropic foundations, non-government organisations and private sector firms registered in a particular country – investing in research and development above a certain amount should be required to report on expenditures in relation to these criteria. Such data should be freely available and open to public scrutiny.

Finally, we propose that the Strategic Innovation Fora (or similar bodies), should have a statutory obligation to report publicly both to national parliaments and the Global Innovation Commission on a regular basis concerning

innovation direction, distribution and diversity, presenting full data from all research and development organisations.



No single prescriptive set of actions can be sufficient, or universally appropriate, to fulfil the vision pursued in this Manifesto. Success will necessarily involve diverse contributions from different people and places. It will require shifts in power relations, culture, and values, as well as institutions, procedures and practices, amongst many people and groups worldwide. The potential value of actions like those identified here is their capacity to help catalyse and enable this new politics: harnessing the energy, creativity and commitment of marginalised groups, small business and civil society – as well as existing organised innovation systems. Only in such ways may the promise of more diverse and equally-distributed directions for innovation be fully realised.

# Final word

WHAT IS NEEDED IS NOTHING SHORT OF A VIGOROUS NEW CRITICAL GLOBAL POLITICS OF INNOVATION. AS MUCH AS OTHER AREAS OF PUBLIC LIFE, THE DIRECTIONS TAKEN BY INNOVATION ARE A MATTER FOR LEGITIMATE DEMOCRATIC ENGAGEMENT AND CHALLENGE. THIS REQUIRES FUNDAMENTAL REDISTRIBUTIONS OF ATTENTION, RESOURCES AND POWER. THE RESULT WILL BE A FLOURISHING OF A MORE VIBRANT AND CREATIVE DIVERSITY OF PATHWAYS—SCIENTIFIC, TECHNOLOGICAL, ORGANISATIONAL AND SOCIAL. IT IS ONLY IN SUCH WAYS THAT HUMAN INGENUITY MAY TRULY RISE TO THE IMPERATIVES OF POVERTY ALLEVIATION, SOCIAL JUSTICE AND ENVIRONMENTAL SUSTAINABILITY.

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