

Views on Development

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We Need New Ways to Make Innovation Work for Development

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In the series „Meinungsforum Entwicklungspolitik“, KfW periodically publishes personal views from renowned development researchers on current development policy topics. The authors bear full responsibility for the contents of their texts. KfW does not necessarily share the views expressed.

Poverty reduction, social justice and environmental sustainability are the great imperatives of our age. Science, technology and innovation have essential roles to play in this. But these imperatives can only be fulfilled if there is a radical shift in how we think about and perform innovation. This includes not only science and technology, but – crucially – the related array of new ideas, institutions, practices and social relations that shape science and technology. In short, we need a new politics of innovation.

Central to this is a move away from progress as a one-track race. Instead, attention must focus on the many alternative directions for change. We need to foster more diverse and far more fairly distributed forms of – and directions for – innovation, towards greater social justice.

At the heart of this shift must be 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. We need to open up new political spaces, drawing in social movements, smaller businesses and excluded voices. The result will be a more vigorous political debate over the many possible styles and directions for research and innovation.

The shift we need: from Scale to Diversity

In 1969, a time of great optimism regarding the potential for science and technology to address of humankind's development challenges, the United Nations commissioned a study which became known as the 'Sussex Manifesto'. This study argued that research agendas needed to focus much more strongly on the world's 'developing' countries and their needs.

Since then, we can observe 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. Outside these, 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 tell us 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.

A little more than 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 the first, scientific and technological innovations are seen as routes to economic growth in a highly competitive global economy. This is held 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 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 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. Let me outline how a new politics of innovation should build on the latter aspects as well and much more than to date.

The approach to take: 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 and to broader understandings of innovation *systems* – encompassing also policies, institutions and social relations. There is acknowledgement of the crucial roles of laboratories, firms, funders, governments, international agencies and civil society organisations. This helps move us away from a

* This paper is based directly on the publication 'STEPS Centre 2010, 'Innovation, Sustainability, Development: A New Manifesto', Brighton: STEPS Centre; see also www.anewmanifesto.org. Melissa Leach is Director of the STEPS Centre; however credit for the text and arguments here belong to the STEPS Centre as a whole.

simple model of 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. The first is about the technical, social and political goals and directions for change: ‘what is innovation for?’ Taking this question seriously requires us to examine much more sharply questions of distribution: ‘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, and along which pathways, to address any particular challenge?’ This emphasis on direction, distribution and diversity is at the centre of a New Manifesto put up by the STEPS Centre, forty years after the Sussex manifesto.

Direction

Asking the question ‘what is innovation for?’ includes issues of prioritisation across different sectors, such as military, health or energy. It also requires us to think about the particular directions of change in any given sector. Even in the narrow field of low carbon electricity production, a host of alternative directions for innovation pathways exists, 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 detracting from support for others. This inevitably involves political choices and trade-offs, and these we need to address more explicitly than is often done today.

Some pathways – like highly specialised, 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 power. For example, it is sometimes assumed that high-input, industrial agriculture is the ideal solution to problems of food supply and hunger. Yet this reflects particular perspectives, strongly pushed by powerful commercial and institutional interests. In reality, alternative low-input solutions are effective and efficient in many settings.

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. Marginal groups and places also lose out both from the negative consequences of lock-in into dominant pathways and because the alternative pathways that meet their own needs are obscured, excluded, and pushed aside. We need to challenge the directions of dominant pathways and to recognise and support alternatives.

Distribution

Because marginal people so often lose out, in our appraisal of alternative innovation pathways we need to focus specifically on the distribution of benefits and address questions of social difference, equity and justice. Of particular importance here are the many cases where marginalised women and men are innovating for themselves. 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 bio-medical 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. Likewise, growth in demand among 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.

To help shift the distributional outcomes of innovation, we should also more actively link science with excluded communities. 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.

Let me emphasise that such bottom-up, distributed initiatives do not present panaceas. However, to address the challenges of social justice and equitable distribution we need to

pay far more serious attention to these kinds of innovation – including at the highest levels of policy.

Diversity

If we take direction and distribution seriously we also have to recognise the importance of – and deliberately pursue – a diversity of innovation pathways. It is only in this way that we can resist the processes of concentration and lock-in. Designing policies that deliberately enhance diversity provides a crucial means to foster resilience – hedging against our uncertainty and ignorance about the future. For example, 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 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 we need to pay more attention to the social and organisational dimensions of innovation. Innovative organisational arrangements can connect technological innovations in new ways. For instance, the Honey Bee Network in India links a broader movement of grassroots entrepreneurs – inventors of a vast 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’. There will always remain irreconcilable interests, perspectives, priorities – and choices. Political debate must critically examine how different innovation pathways do or don’t fit together and also if some pathways are not desirable at all. The question is: which diversity?

How to go about it

If we want to make science and technology work more directly for social justice, poverty alleviation and the environment we need open and plural forms of innovation pathways. This means organising innovation in ways that are networked, distributed and inclusive; it means going beyond technical elites, in order to support and harness the energy, creativity and ingenuity of users, consumers, activists, small businesses and many others. In a world where all feasible directions for innovation are matters for legitimate political argument, it is no longer credible for politicians and business leaders to assert their favoured directions for innovation as uniquely 'science based', 'pro-development' or 'pro-technology'. Scepticism over some particular innovation pathway can no more be excluded as 'anti-innovation'.

The crucial question is: how can such new politics of innovation be realised? Let me summarise our main recommendations made in the STEPS Centre's New Manifesto.

Agenda Setting

To involve diverse interests and new voices, the institutional architectures for the setting of agendas and innovation priorities need reworking. Within countries, governments should establish 'Strategic Innovation Fora', mandated to review funding allocations, debate major investment decisions, deliberate on controversial science and technology options and audit the distribution of risks and benefits from potential innovation pathways. These fora should bring together diverse stakeholders with interests in science and technology futures and would address both public and private 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 need a 'Global Innovation Commission', a broadly-constituted deliberative body, widely networked 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 debate about major investments with global or trans-boundary implications, north-south technology transfers, and international aid geared to science, technology and innovation.

Funding

Funding agencies should regularly review their portfolios to ensure that a significant and increasing proportion of their investments are directly focused on poverty alleviation, social justice and environmental sustainability. 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.

Specific funding should support experimentation in niches, and networking and learning across these. Procedures should be established directly to involve end users of science and technology – including poorer and marginalised people – in the allocation of funding. Incentives for the private sector such as advance purchase agreements, technology prizes or tax breaks should be enhanced. Achievements of this kind should be more deliberately recognised and widely publicised: nationally, regionally and globally.

Capacity Building

To support science that works more directly for diverse needs, capacity building must move beyond elite science and extend the scope to other players such as local entrepreneurs, citizen groups, small businesses and others. This should include 'bridging professionals' who link technical expertise with particular social, ecological and economic contexts, as well as citizens and users towards engaging actively in innovation processes. Capacity support should also include civil society networks and social movements towards facilitating the sharing of technologies and experiences, learning, and engaging with innovation debates. This, in turn, will involve investment in new priorities for training and education, institutions that actively link science and technology to located needs and demands, and new learning platforms, virtual and face-to-face.

Organising

We need arrangements that enable technologies to work in particular contexts, and to meet the needs of poorer and marginalised women and men in these contexts. Firms, public and philanthropic organisations should therefore come up with concrete plans to ensure that social, cultural and institutional aspects of application are addressed. Local

experiences with these organisational aspects of innovation need to be shared and learned from more widely. Future investments should especially highlight bridging functions, connecting organisations and linking upstream and downstream research and development activity. Support for open source innovation platforms should be increased, with limits placed on narrowly-defined property-based systems which impede competition and constrain innovative activity.

Monitoring, Evaluation and Accountability

Increased accountability and transparency must be at the centre of democratised innovation systems – across public and private sectors and at local, national and international levels. We need benchmark criteria relating to poverty alleviation, social justice and environmental sustainability that become the basis for monitoring innovation systems in all countries. At the international level, overseen by the Global Innovation Commission, similar criteria should be established for monitoring and annual reporting. Data collection systems should be improved, switching the focus from indicators such as publications, patents and aggregate levels of expenditure, to assessments of the wider development outcomes of innovation efforts. Any organisation investing in research and development above a certain amount should be required to report on expenditures in relation to these criteria. 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.

Final word

What we need is a new, critical global politics of innovation. This requires fundamental redistributions of attention, resources and power. The result will be a flourishing of a creative diversity of pathways – scientific, technological, organisational and social. Of course, no single set of actions can be sufficient, or universally appropriate, to fulfil the vision I have presented here. Nevertheless, the actions suggested above should 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 will we be able to realise the promise of more diverse and equally-distributed directions for innovation, as an essential means for poverty alleviation, justice and sustainability. ■

