

THE ROLE OF TECHNOLOGY IN POVERTY REDUCTION

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ABSTRACT

We live in a divided and fragile world. The numbers of absolute poor have remained constant over last decade while global divisions deepen. Despite dramatic technological advances approximately a third of humanity are deprived of basic technologies. The poor and the vulnerable are also the principal victims of the impact of climate change on the environment and incidence of natural disasters. Yet the international community has no coherent vision of the future livelihoods of the rural poor.

Opinion is divided as to whether new technology has a major role to play. The contribution of new technologies, for example, in agriculture, should be treated with caution and in comparison with the benefits of low external input agriculture. A major challenge facing the international development community in meeting the Millenium Development Targets by 2015 will be to enable poor people to introduce incremental technological improvements. We need to offer the poor real technology choice over affordable, appropriate and accessible options. It is not hi-tech or low-tech but right tech.

The invisible hand of the market rather than the public good is shaping technological advance. To reclaim science and technology for the public good and harness technology for poverty reduction we will need to put people first in our approach to technology development, protect traditional knowledge from private expropriation, redirect our research efforts towards the poor and empower civil society to critically assess the impact of new technologies and exercise technology choice.

I very much welcome the opportunity to make some introductory remarks at this important Conference on the role of technology in poverty reduction in South Asia. There no where more apt for such a discussion to take place. First, because South Asia has a disproportionate share of the World's poor - 44% of people living in extreme poverty live in the region. Second, nowhere are the contradictions and controversies surrounding the role of technology in poverty reduction more vividly illustrated - new technology versus old technology, hightech versus low tech.

This is a Subcontinent where:

- The drive towards modernity coexists uneasily with the Gandhian values of a more balanced, holistic model of development.
- The high-tech technological hub of Bangalore coexists, for example, with livelihood systems and technologies unchanged for centuries.
- Farmers are in the forefront in developing countries in adopting transgenic crops-echoing earlier controversies surrounding India's adoption of the Green Revolution more than twenty years ago.

So the focus of our discussions over the next two days on technology and poverty reduction is relevant and important. And the choices facing us – not just regionally but globally - are real and urgent.

In this short introduction, therefore, I would like briefly to make four key points that I believe should be central to our discussions on this matter. These are that:

1. Technology has failed to meet the needs of the poor in an increasingly divided and fragile world.
2. In this context, we need to respond to the claims for new technologies with some caution.
3. Rather we need to begin from the perspectives of people in poverty rather than the technologies
4. Finally, to suggest how we can begin to reclaim science and technology for the public good and to reduce poverty in line with the MDGs.

1. Technology's failed promise in a fragile and divided world

First, technology has failed to live up to its promise in an increasingly fragile and divided world.

'*Fragile*' since we are all increasingly aware of the fragility of our planet in the face of climate change. Technology is, of course, both part of the problem and a necessary part of the solution. The impact of carbon emissions on climate change is now well documented by the International Panel of Experts who predict a worsening pattern of natural disasters environmental degradation as a result. While northern economies must bear the bulk of the responsibility for climate change, developing countries pay a disproportionate price - the livelihoods most immediately at risk to the increasing incidence of drought, floods and typhoons, for example, in South Asia are those of the poor and vulnerable.

'*Divided*' since, despite rapid and dramatic technological change in the 1990s, world inequality i.e. absolute gaps in per capita income between developed and developing countries increased. While the share of the world's population living in poverty declined during the same period the number of people living in dollar poverty i.e. who consume less than a dollar a day, has remained constant at 1.2 billion.

We know that access to appropriate technology can be a critical lever out of poverty and its absence a key feature of living in extreme poverty. But while our world is being transformed by rapid developments in 'new' technology, huge swathes of humanity continue to be deprived of the most basic benefits available from technologies centuries old for cooking, water and sanitation, shelter, energy and transport.

And despite the drift to the cities most of these people deprived of technology choice continue to live and work in rural areas. 75% of the extreme poor live and work in the rural areas and it is estimated that 60% will continue to do so in 2025. And most of these continue to depend on agriculture. These are what EF Schumacher, the founder of ITDG, referred to as the "hinterland" of two thousand million villagers. They are the human face behind the abstract nouns we will use today and tomorrow in our discussions. Yet we lack a coherent vision for their future development. Rather, the Washington Consensus, enshrined in institutions such as World Bank and WTO, promotes the apparently irreversible march of liberalised trade and investment - in the face of which small agricultural producers will decline in the face of competitive export agriculture and that rural poor will continue to drift to the informal sectors of our growing cities. Failure to reach agreement on agriculture, of course, was at the heart of

the revolt by developing countries and collapse of the recent WTO discussions in Cancun. So the question we need to address today is ‘what is to be the future of small scale producers in agriculture and manufacturing in the next twenty years and what kind of technology choices will enable them to work their way out of poverty?’

2. *New technologies – new hope or false illusion?*

It is impossible today to discuss the role of technology and human development without dealing head-on with the role of new technologies. The last thirty years has witnessed an explosive pace of scientific and technological innovation – particularly in the information and communications technology and life sciences.

ITDG does not deny the potential contribution that new technology *might* make to human development. However, we would argue that we need to proceed with some caution. The jury is out on whether we can make these new technologies work for the poor.

Information technology: For example, is the explosion of ICTs narrowing or deepening the digital divide? We agree that a digital divide between the information rich and information poor must not be allowed to develop. But our own research for the UK Department for International Development indicates that the case is unproven whether ICTs are an appropriate technology for poor people. The key obstacles for the appropriate dissemination of this technology to poor communities are well known i.e. the absence of infrastructure in marginal areas, prohibitive hardware and software costs and the absence of appropriate content

Biotechnology: Biotechnology is more controversial. Will the potential higher yields of genetically modified crops solve the problem of world hunger? Or will the GM revolution, in the hands of multinational corporates, undermine the livelihoods of hundreds of millions of small-scale farmers. The HDR 2001, for example, claimed that “*Biotechnology offers the only and best ‘tool of choice’ for marginal ecological zones – left behind by the green revolution but home to more than half of the world’s poorest people dependent on agriculture and livestock*”. But ITDG’s own research would challenge the advantages claimed of biotechnology with regard to higher yields, nutritional value and reduced needs for pesticides.

From ITDG’s point of view scientific and technological development is hugely exciting. It could, and should, have a major role to play in reducing poverty and restoring our eco-systems - if it can be harnessed to benefit the many rather than profit the few; to prolong rather than foreshorten our custodianship of nature’s scarce resources. However, it is well advised to be cautious about the marketing and promotion of new science and technology by powerful corporate interests.

We live in a world in which the invisible hand of the market is the decisive factor in shaping what scientific and technological advances are developed for whom. Where 60% of the investment in research and development in OECD countries is concentrated in the private sector and focused on developing products for northern wants rather than southern needs. Where scientific research is more likely to be focused on a cure for baldness than cures for tropical diseases. Where, in a 21st century enclosure movement, multi-national corporate can use WTO rules on intellectual property to usurp the traditional knowledge of emerging economies and marginal peoples.

The sad fact is that we are not directing our scientific and technological research and effort to the question “*What technologies will enable the poor to work their way out of poverty?*” In the 1990s *public* investment in research and development in science and technology stagnated while *private* funding increased five-fold - the most striking case being agricultural research. Agricultural research is neglected at national and international level and is especially lagging behind in developing countries. Funding, for example, for the Consultative Group for

International Agricultural Research (CGIAR) has continued to decline since its peak in 1992 and totalled US\$336 million in 2000. Compare that to the US\$10 billion invested annually in private agricultural research in the 1990s – biotechnology research alone being 25 times greater than the combined annual research budgets of the UN's network of agricultural research institutions.

Such a funding base is likely to skew the priorities of our scientific research effort towards Northern wants (where the market is) rather than Southern needs. We need to take a more balanced approach. For example, we need to bear in mind when making a rational appraisal of the role of GM technology in agriculture the opportunity cost associated with these massive investments when other proven technologies are known to have significant benefits to poor farmers and their communities. These include the set of technologies known as low external input agriculture - agro-ecology, integrated pest management, soil enrichment, crop rotation and the development of locally adapted seed varieties – that have been shown to improve livelihoods, nutrition and environmental conservation.

3. A people-centred approach

The HDR 2001 correctly identified that *“Today’s technological transformations hinge on each country’s ability to unleash the creativity of its people, enabling them to understand and master technology, to innovate and to adapt technology to their own needs and opportunities.”* (HDR2001p79) The focus of the 21st technology debate should not be restricted to new technologies but include all technologies of use to poor people. It is not a matter of for high and against low technology. To meet the poverty targets of 2015 we need powerful new thinking on the use of technology – old and new. This means starting with poor people and what they need from technology not starting with technologies and ‘applying’ them to ‘poverty’. The key question is whether poor people believe the technology will benefit them.

The challenge then is to help poor women and men choose and use technology; to adapt, develop and improve it; and to manage it sustainably over time. It means subjecting the choice of technology to the test of the three As. Is it:

Affordable?: to the 1.2billion people surviving on US\$1 a day.

Accessible?: does it require extensive infrastructure such as power and telecommunications – absent in many poor communities - or presuppose a level of education, skill and training absent in the rural poor?

Appropriate?: for the needs of poor communities. Agricultural biotechnology, for example, is specifically targeted at medium or large-scale commercial farmers. By encouraging dependence on single seed varieties, it might drastically undermine the livelihoods of smallholder farmers who need a range of locally adapted varieties as a hedge against specific risk such as rain failure or pest infestation.

In the immediate decades to come the evidence is that small scale producers and traders in their fields, workshops, homes are more likely to find a pathway out of poverty from incremental technology improvements than from the proposed benefits of new technology. Gandhi once said *“Recall the face of the poorest and weakest person you have seen and ask yourself if the steps you contemplate are going to be of any use to him”*. From the vantagepoint of 1.2 billion rural poor simple practical technologies - such as improved composting techniques; simple agro-processing technology; low cost alternative modes of transport; renewable energy sources; or domestic cooking technologies - can have a big socio-economic impact, strengthen the community and build the capacity and contribution of marginal groups without it costing the earth.

4. Reclaiming science and technology for the public good

In summary, therefore, I would like to suggest four steps to harness technology to reduce poverty:

1. Put people first in our approach to technology development.

i.e. build the technological capabilities of poor people e.g. through intermediary organisations; and subject new technologies to field-testing to see whether they are affordable, accessible and appropriate.

2. Protect social and traditional knowledge.

i.e. establish an intellectual property rights framework to protect local and traditional knowledge by keeping natural resources in the public domain. For example, genetic resources for food and agriculture must be kept in the public domain and protected from private expropriation through international agreements such as the IUPGFRA.

3. Redirect our research efforts towards the poor.

For example:

- More investment by multilateral agencies and donor governments in scientific and technological R&D as part of official ODA.
- National funds and partnerships to create greater developing country capacity for pro-poor research and development
- Or where this might not be affordable, regional funds, for example, for agricultural technology to promote agricultural research of cross-country interest.
- Public support to low income or marginalised technology users to undertake incremental R&D.

4. Begin to build a 'technology democracy'.

Civil society has so far been largely passive in accepting the results of science and technology. We need to build the capacity of civil society organisations to raise awareness of technology policy issues. New technology may have exciting potential but many are sceptical of about the vested interests that lie behind the science and the risks that may be unleashed by its application. People do not object to new per se but ask whether regulatory authorities are willing to regulate and capable of counterbalancing the demands of the developers of technology. They ask whether the potential long-term consequences have been assessed and who will be responsible if things go wrong.

As we have seen with GM efforts to assess new technologies at national level are often thwarted by international trade regimes and regulatory systems. The current WTO dispute between the USA and EU is a case in point. One solution could be the Swedish proposal for an International Convention for Socio-economic and Environmental Evaluation of New Technologies. Under UN auspices this would have the legal weight to ensure independent assessment of emerging technologies through processes that guarantee public participation.

I hope the conference today and tomorrow can begin to analyse what we need to do to take these four steps in the region towards harnessing technology for poverty reduction.