

Enabling People to Make Technologies Work for Them

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Introduction

In the first years of the 21st century, technology lies at the heart of contested public policy issues and debates. New technologies, specially those in the life sciences and information processing field, are raising profound moral and ethical questions about the differential impacts of technical change and the kind of society or development we want. There is a talk of a paradigm shift in social and economic organisation because of technology development. The rate of change in technology is faster than in the past, adding to the imperative of addressing the policy issues.

The issues raised in these debates are not new. Over the last four decades of the 20th century they were raised, and efforts were made to provide answers, by a range of thinkers and organisations that loosely formed the Appropriate Technology movement. With global environmental degradation and North–South divides in technology becoming a major part of the public policy debate and technology development being seen once again by some as the solution to the world’s problems, there is cause to re–examine the relevance of Appropriate Technology to the 21st century. My presentation will emphasise some actions required to achieve the policy objectives of “making new technologies work for human development”.

Technology and Poverty Reduction

There have been significant achievements in reducing poverty. Between 1990 and 1998 the proportion of people living in poverty in developing countries decreased from 29 per cent to 24 per cent, although the actual number of people in poverty declined by only 77 million (DFID, 2000). Life expectancy in developing countries has increased over the past three decades from 46 to 64 years. Rates of infant mortality have halved. The proportion of children enrolled in primary school has increased by

more than 80 per cent. Adult literacy rose from 55 per cent in 1980 to 70 per cent in 1995, although there are 24 million more illiterate adults than in 1980. Access to safe drinking water and basic sanitation has doubled (DFID, 2000).

Technology, or rather technology change, has had a major role in facilitating these achievements and will continue to be a key factor in enabling the International Development Targets to be reached. Despite the achievements to date, the challenge for international development remains the elimination of poverty and inequality.

- Two billion people still do not have access to modern, efficient forms of energy supply.
- 1.5 billion people still live in inadequate shelter.
- One billion people still have no access to safe water, and 2.4 billion have no sanitation.
- 800 million people continue to face regular hunger and long-term malnutrition.
- Hundreds of millions of people lack secure employment.
- 1.2 billion live on the equivalent of less than \$1 a day.

The gaps are widening both between and within countries. While improvements in technology can provide the means for producing more with less, in many respects the capacity to manage processes of technical change to this end defines the divide between industrialised and developing countries (Barnett, 1995).

Three-quarters of the poor in developing countries live in rural areas and depend on agricultural production for all or part of their livelihood. Poverty, too, is not only a matter of incomes. It also means being excluded from social and political processes and from access to services to meet basic needs such as education and health¹. It is experienced differently by different people. Women, the majority of the world's poor — around 70 per cent — suffer additional disadvantage and discrimination and have a different experience of poverty from men. Some social groups, including people from minority ethnic communities, disabled people, displaced people and people living in unrecognised settlements also experience particular disadvantage.

Technology plays an important role in addressing these non-income dimensions of poverty. It contributes to the quality of life of poor women and men through improved access to clean water and sanitation, through health services and through education. Technologies for transportation and communication help reduce isolation and vulnerability as well as open up new livelihood opportunities.

Enabling People to Make Technologies Work for Them

ITDG (the Intermediate Technology Development Group) believes that important among the capabilities that determine “the range of things people can do or be in life” are technological capabilities:

- To analyse problems and obstacles for technological achievement;
- To identify and evaluate potential technological solutions;
- To select, adapt and apply new technologies; and
- To evaluate effects of new technologies.

Some people proceed from a conventional view of the process of technology development and diffusion, wherein research in the “laboratory” is followed by adaptive development and then diffusion through the market. This view reflects the process in industrialised countries where most expenditure on research and development takes place, but it bears little relation to the technological change experienced by the majority of poor women and men in developing countries.

Our approach is founded on Schumacher’s dictum, “Find out what people are doing and help them to do it better.” That means starting with people and enabling them to achieve sustainable livelihoods by building their own technical and organisational capacities, achieving technology choice and adapting and improving technologies.

Building the Technological Capabilities of the Poor

Building technical capacities of “countries” will have an impact only if the capacities of poor women and men are built to manage technical change. Poor people must be enabled to make technology choices. Most poor people in developing countries do not have access to formal employment. They must forge their livelihoods in the private, informal sector, working in the fields, homes and small workshops and making vital decisions about the best use of their limited assets in order to survive on the tightest of margins. They do not invest lightly in new techniques.

Poor people will invest in technology choices that are accessible, affordable and appropriate for them. Building poor people’s capacity to make choices means not just bringing new technologies to their doorstep, but addressing their organisational, management and marketing skills, opening new channels for information and knowledge and making credit and markets more accessible. What mechanisms, actors and institutions can mediate effectively between the global and local levels — bringing technology choice, knowledge and skills to poor women and men and enabling them to operate above the local level to help determine the choices and the policy frameworks made higher up?

Creating Innovative Partnerships and New Incentives for Research and Development

The UNDP’s *Human Development Report 2001 (HDR 2001)* proposes taking advantage of the “network age” to establish virtual, international research communities, pursuing research driven by the needs of the poor in developing countries. The

intertwining of public, university and private efforts is at the heart of new approaches to technology. Would this approach work for research and development in more traditional technologies? To what extent can they be accountable to the ultimate users? We propose that the key output of North–South and South–South partnerships for technology research and development, whether in new technology fields or more traditional ones, should not be “*faux* collaboration” or “more R&D”. Global public investment should be focussed upon creating R&D capacity in developing countries while ensuring that this new capacity is focussed on the needs of the poor. This capacity is a pre–requisite to intermediate the new technologies.

Protecting and Respecting Social and Traditional Knowledge

Discussions on fair implementation of the TRIPs agreements and difficulties that developing countries face in implementing IPR regimes in compliance with international agreements are not new. It is necessary to revisit and change international treaties with respect to genetic resources and local or indigenous knowledge and environmental practices, in order to recognise social and traditional wisdom and better protect the rights of poor women and men and their communities.

Expanding Investments in Technologies for Development

There is an enormous gap between the resources devoted to technological R&D for markets in the industrialised world and those that address the needs of the poor in developing countries. The reliance on market mechanisms in public policy over the last two decades could be said to have contributed both to the neglect of pro–poor R&D and to have reduced overall public funding. Over a decade ago a study by ITDG for the DAC found that there was little explicit consideration of technology in the decision making of bilateral donors. Nothing in recent years suggests that this has changed. To ensure that the voices of the poor are heard in setting the R&D agenda, mechanisms are necessary to facilitate communication and feedback between low–income, marginalised technology users and technology developers. This may well entail the development of appropriate intermediary institutions. It certainly requires consideration of the user–developer in national technology R&D systems and policies. Means are also needed to ensure that support is provided to technology adaptation and development by low–income producers themselves, recognising that technology development is primarily a continuous process of incremental changes and that technology users often make these changes. National policy and donor support, should seek to establish the frameworks that facilitate this user–led technology development and take advantage of the “network age” to enable ready exchange of information about technologies.

Providing Regional and Global Institutional Support

The *HDR 2001* report recognises that “Technology-related problems are often the result of poor policies, inadequate regulation and lack of transparency and the need of the government’s recognising that technology policy affects a host of development issues including health, education and job creation.” Establishing the appropriate national, regional and international policy and regulatory frameworks, however, is more complex than perhaps suggested by the focus on fair application of global rules and new initiatives. Just as technology policy affects many sectors, other policies affect technology development. National as well as global rules need to be applied fairly and across the full range of public policy. National policy, particularly in respect of “appropriate” macroeconomic policy, is constrained by global frameworks and the influence of regional and international actors.

Summary

Technology is clearly a critical factor in poverty reduction. Seen holistically, in the complexity of a dynamic social, economic, cultural and political context, the effective management of technology change is a question of capabilities. The poor must be enabled or empowered to access improved technologies and to make their own technical choices through the development of their capabilities. This would enable them to respond to changing needs and the opportunities as they arise, leading to the sustainable development of their livelihoods. In order to achieve this, the importance of an appropriate policy framework for the management of technology change by the resource-poor should be recognised. Emphasis should be given to the following actions.

Building the Technological Capabilities of People

- Start with poor people’s capabilities, not with technologies;
- Together with poor women and men, subject new technological options to field testing to see whether they are affordable, accessible and appropriate;
- Stimulate and support intermediary organisations.

Creating Innovative Partnerships and New Incentives for R&D

- The international partnerships for technological R&D recommended by the *HDR 2001* should have as an output the creation of greater developing-country capacity for R&D;
- Public support and partnership should be extended to low-income and marginalised technology users to undertake incremental R&D.

Protecting Social and Traditional Knowledge

- Genetic resources for food and agriculture should be kept in the public domain and protected from private expropriation through international agreements such as the International Undertaking on Plant Genetic Resources for Food and Agriculture (IUPGRFA);
- Intellectual property–rights regimes should be developed to incorporate socially generated knowledge, traditional knowledge and common property resources.

Expanding Investment in Technologies for Development

- Additional resources should be provided through ODA;
- Bilateral and multilateral donors should adopt procedures that ensure that all technological options are considered by all projects and programmes;
- Technology users should be enabled to communicate with and influence technology developers in publicly funded R&D systems.

Providing Regional and Global Institutional Support

- Capacity building is required to enable civil society organisations and NGOs to raise awareness of technology policy issues;
- An active campaign is required to raise the profile of technology in international development policy processes;
- Complementary recommendations about how to implement national strategies that enable poor people to achieve technology choice should be developed.

Note

1. Amartya Sen has argued that poverty must be seen as the deprivation of basic capabilities rather than merely as low incomes, thus expanding the concept of poverty beyond income to include education and health. Similarly, vulnerability, voicelessness and powerlessness, are key dimensions of capability. Sen himself (1999) has identified the inability resulting from social norms or lack of basic civil rights to influence decisions that affect one's life as a legitimate dimension of the capability concept of poverty.