Technological initiatives for rural development: Evidence from eight comprehensive rural development programme pilot sites

Introduction

Between July and October 2010, a multidisciplinary team of researchers, led by the Human Sciences Research Council (HSRC), conducted a scoping study to identify technologies available for rural development and to develop baseline information on technology-oriented initiatives previously and currently under way in eight of the Comprehensive Rural Development Programme (CRDP) pilot sites across eight provinces – KwaZulu-Natal, Northern Cape, Western Cape, North West Province, Limpopo, Mpumalanga, Eastern Cape and the Free State. This is one of the earliest studies to have taken place in the original eight CRDP sites and thus it provides relevant information about the current implementation of the CRDP. Findings from the study include: few new technologies have been introduced since the implementation of the CRDP; privately initiated technology activities appear more economically sustainable than project-based activities; monitoring and evaluation (M&E) needs to be improved if the pilot sites are to inform the implementation of the CRDP across

the country; community consultation is inefficient and most activities are top-down, and few technology projects are financially sustainable and require regular government funding. Based on these findings, recommendations for improving the effectiveness of the CRDP pilot sites are made.

Technology for rural development

In contemplating how technology can be used to address poverty, including rural poverty, it is advisable to avoid too rigid a definition of technology and how it can help. However, some definitions are useful. Wallender (1979) defines technology as '…any tool or technique, product or process, physical equipment or method of doing or making, by which human capability is extended', and thus 'technology' includes:

- *process* technologies, which lead to higher productivity or improved quality of a product;
- *product* technologies, which create new products; and
- *transaction* technologies, which facilitate co-ordination, information sharing and exchange among market participants.

As such, a 'new technology' can relate to innovations in respect of products, processes, services, support technologies or institutional strategies. Both 'hard' and 'soft' technologies and innovations are recognised.

'Technology transfer' is understood to refer to the deliberate encouragement to increase the use of a particular technology, while 'pro-poor technology transfer' means the deliberate encouragement to increase the use of a particular technology by low-income people, or by government and other institutions that service low-income people. In most cases, 'technology transfer' is assumed to involve some measure of creation or adaptation of the technology to make it suitable to local needs and circumstances.

'Indigenous knowledge' (IK) is generally described as the knowledge that local people in a given area or community have developed over time and which they continue to develop (Warren 1991; Scoones & Thompson 1994). Such knowledge is not static and not confined to the 'original' inhabitants of an area; it is locally developed knowledge that

continues to be developed (Warren 1992; Grenier 1998).

Arising from this awareness of the dynamics of indigenous knowledge, a number of development professionals now talk about rural people's local innovations. According to Waters-Bayer and Van Veldhuizen (2005: 1): 'Local innovation refers to the dynamics of indigenous knowledge – the knowledge that grows within a social group, incorporating learning from own experience over generations but also knowledge gained from other sources and fully internalised within local ways of thinking and doing. Local innovation is the process through which individuals or groups discover or develop new and better ways of managing resources – building on and expanding the boundaries of their IK.'

Local innovation is, therefore, intrinsically a part of indigenous knowledge and precisely what makes it work, despite changing circumstances. With access to wider sources of knowledge and the assessment and incorporation of these into local practices, indigenous knowledge often loses its 'traditional' appearance. However, it is still locally developed and therefore still indigenous knowledge.

Profile of technologies included in the study

The audit identified 64 projects receiving government and non-government support and making use of 'modern' technologies, 27 local initiatives making use of 'modern' technologies but receiving no support, and 22 examples of local or indigenous practices making use of some form of technology. Many of the identified technologies/technology projects are common across the pilot sites (for example, home gardens, mechanised agriculture, brick making, and ventilation in pit latrines).

Of the 64 technology projects identified, 25 were either initiated by the CRDP process or were existing activities supported by government as part of the CRDP. (The latter are usually pre-existing provincial government or municipal projects that are now receiving further funding and support.) The remaining 39 were initiated prior to the onset of the CRDP.

The 27 local initiatives were privately managed enterprises using technologies and included mechanised agriculture, hammer-mills, and chemicals to produce detergent. In many instances, the 22 technologies identified as indigenous knowledge or local practices refer to animal traction and transportation, indigenous livestock rearing, and craft and clothing manufacturing that makes use of 'traditional' equipment or clothing styles.

Across all of the CRDP sites technologies from the following sectors were found:
- agriculture;
- mining;
- manufacturing;
- information and communication technologies;
- renewable energy technologies (RET) such as biogas, solar panels, wind mills;
- environment (those that use natural environment materials to generate income using some form of technology); and
- services (housing, sanitation, transportation).

Key research findings

Many technologies were introduced before the launch of the CRDP by both government and non-government institutions. Some of these are now supported in terms of the CRDP, but others are not. Technologies used in agricultural production tend to predominate in that they are found at every site, while different types of agricultural technologies and practices

are often found at different sites. Mining, on the other hand, is found at very few sites but the technologies used are similar across sites and are largely simple, hand-held tools.

Key lessons and principles regarding commercial enterprises can be drawn from self-initiated enterprises (technology initiatives) undertaken without any government or donor support. Many of these appear to be economically sustainable, often because they are operated by an owner who employs others as required. Some could do with support; however, such support should be provided carefully so as not to create expectations of long-term support and ultimately dependency on government for the sustainability of the enterprise. The support should also be provided in such a way that ownership/decision-making remains firmly in the hands of the participants and is not transferred to government officials.

Effective monitoring and evaluation (M&E) has also been identified as a key requirement for the implementation of sustainable development interventions. The M&E process needs to go beyond financial expenditure and number of people benefiting. M&E must consider the long-term sustainability of the initiatives and the impacts that they have on people's livelihoods. Greater participation of all stakeholders, including the beneficiaries, will support this process and will thus fulfil one crucial purpose of the eight pilot sites, which is the development of lessons and best practice to ensure the effective implementation of the programme at the other proposed sites.

Community consultation is another important key to success, and although this seems to be occurring, it is in a very limited manner. Little attention is paid to diversity and heterogeneity among community members and thus their diverse needs are not given sufficient attention. Rather, the prevailing process

is to implement technologies decided upon from outside the community, with the hope that local people will buy into these ideas. Local initiatives, on the whole, seem to be largely unacknowledged. Steps should be taken to ensure that any technologies used are the most suitable for local social, environmental and economic circumstances.

There is a need to revisit the financial viability of models used in many of the commercially oriented projects, regardless of whether or not these are large- or small-scale endeavours. At present, most new and existing projects do not appear to be achieving their desired financial expectations. Reasons for this range from lack of sustainability of projects (many appear extremely dependent on government for infinite support), to the large numbers of participants associated with projects on relatively small land sizes, to the extremely finite markets and limited potential for growth.

Recommendations

Based on the findings of the audit, a number of elements appear to impact on the effectiveness of the use of technology at the CRDP pilot sites. The following recommendations are made in order to improve the effectiveness of the technological initiatives:

Use effective social facilitation processes.

As part of the ongoing social facilitation, participation and profiling activities, the War on Poverty Questionnaire (2009 version) is being used at many sites to quantitatively profile the communities. While this questionnaire provides some relevant standardised information about different poverty and skills levels, including access to employment and services, it does not address issues such as development needs, nor does it help identify solutions to these needs,

many of which are site specific. Social conditions at a particular place can fluctuate dramatically over time, and these changes and their implications for development cannot be understood through once-off assessment exercises using a standardised questionnaire. The significance of ongoing social facilitation and communication cannot be emphasised enough.

Ensure that commercially oriented projects take into account existing conditions and challenges.

There often exists an over-emphasis on, and a poorly understood intention of, commercialising every project. A strong focus on commercialisation is understandable as the intention is to create employment and improve livelihoods, thereby reducing poverty. However, scant attention appears to be paid to prevailing social and political circumstances and existing resources and income, or to abilities determined by education, the effective integration into externally managed 'projects', and the roles and responsibilities of project participants now and in the future. There is a need to consider these factors and some of the constraints when conceptualising and establishing commercial activities. Some of these problems relate to poor implementation of plans, but others are flawed in the sense that their conceptualisation is unsound and subsequent expectations (such as expected economic returns) are unrealistic. Handing over projects to communities is a laudable step undertaken by government; however, the necessary management institutions must already be in place and effective at that stage.

Build institutional, technical and non-technical capacity of project beneficiaries and strengthen their relationship with the broader economy.

Upscaling (upsizing) of technology projects needs to be done with caution.

Scaling up development initiatives requires careful planning and will also require more development interventions and more costs. As a result, these initiatives should be thoroughly analysed before being undertaken. Importantly, it is not sufficient or effective to address issues at community level only. This is particularly so for commercially oriented interventions. Such interventions need to take into account the broader economic opportunities and the reality of effectively integrating the community-based enterprises within the broader economy where this is necessary. This means addressing structural barriers to integration and not merely the provision of project financing, associated technology and skills. Many of the pre-CRDP interventions appear to have either collapsed completely, are struggling to survive or remain fairly dependent on government financing for continued functioning. Few successful and interdependent economic interventions have resulted from previous programmes, and almost no growth is evident (on the contrary, in terms of active participants, most have shrunk). For some, the operating costs using existing technology and infrastructure are high, making their financial sustainability within fluctuating markets (both demand and supply markets) a concern. Thorough analyses are required of proposed and existing interventions. Market requirements and standards are especially important in such planning and implementation. These need to be adhered to and considered during initial conceptualisation, especially if growth and entrance into the broader economy is anticipated. It is essential that the existing design of and approaches to implementing and supporting business models be revisited so that these can play an important role in strengthening the CRDP process.

Encourage and support entrepreneurs.

Many CRDP interventions bear the hallmark of 'income-generating poverty-

reduction projects', which are meant, in principle, to function like enterprises, but which often do not. A critical distinction is that poverty-reduction projects tend to be group-based, whereas spontaneous enterprises tend to be led by a single individual or household, or in some cases by small partnerships of individuals who are well acquainted with one another. People often form groups only as a strategy to attract government support and resources because it is well known in many communities that groups get attention, whereas individuals do not. The preference of government and often non-government organisations (NGOs) for supporting groups is largely based on the idea that this is the only way to reach large numbers of people. Support of group initiatives may be more successful, where they are driven by an individual who is employing people and creating local jobs. In fact, support of existing initiatives should be seen as a fundamental strategy to achieve local economic development in rural areas. A number of approaches exist to support groups, with the common denominators being either training (which is usually more efficient as a group activity), improving the environment within which entrepreneurs can emerge and/or thrive (for example, by investing in roads or telecommunications infrastructure), or assisting with forms of co-operation other than joint productive activities (such as collective input procurement or output marketing).

Consider alternative project models that might be better suited to a particular enterprise than the traditional group-based approach. Seek out and support partnerships with private partners who can provide technical expertise and a reliable market.

One area where there is still a great deal to learn is that of partnerships with private partners. Many such partnerships have not fared well. Interpretations vary as to why not, but part of the problem is the fact that, ultimately, the 'community partner' consisting of beneficiaries is often a sizeable group which is heterogeneous in terms of both aspirations and abilities. A potent antidote to the problems associated with group-based, income-generating projects is to avoid focusing excessively on income generation in the first place. While it is understandable that government would wish to focus on establishing projects aimed at income generation, improving services or providing access to information can often benefit far larger numbers of people at a more modest cost.

Establish an M&E system that allows for challenges to be identified and addressed so as to ensure that projects have the desired impact.

Effective monitoring and evaluation of technology projects and interventions seems to be frighteningly lacking in most instances, as very few and limited records are available. The prevalent concern seems to be the financial accounting of the government job creation and budget expenditure, with scant regard to other aspects of the interventions. As a result, it is unclear how lessons can be learned from the pilot sites that will ensure improved roll-out to other proposed sites.

References

Grenier L (1998) *Working with indigenous knowledge: A guide for researchers*. Ottawa: International Development Research Centre. Accessed March 2003, http://www.idrc.ca/books/847

Scoones I & Thompson J (Eds) (1994) *Beyond farmer first*. London: Intermediate Technology Publications

Wallender III HW (1979) *Technology transfer and management in the developing countries: Company cases and policy analyses in Brazil, Kenya, Korea, Peru and Tanzania*. Cambridge, Massachusetts: Ballinger Publishing Company

Warren DM (1991) *Using indigenous knowledge in agricultural development*. World Bank Discussion Paper No. 127. Washington, DC: World Bank

Warren DM (1992) *Indigenous knowledge, biodiversity conservation and development*. Keynote address at International Conference on Conservation of Biodiversity in Africa: Local Initiatives and Institutional Roles. Nairobi, 30 August – 3 September 1992

Waters-Bayer A & van Veldhuizen L (2005) Promoting local innovation: Enhancing IK dynamics and links with scientific knowledge. *IK Notes* No. 76, March 2005. Washington, DC: World Bank Group

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