Chapter 4

ELEMENTS OF EFFECTIVE TECHNOLOGY TRANSFER AND STIMULATING ENTREPRENEURSHIP

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Introduction

Innovation and technology transfer are issues which receive considerable attention from business. Technological innovation, dissemination and adaptation are essential elements of many sustainable development goals. Business and industry are a primary source of innovation and provide optimum benefits when short- and long-term enabling frameworks encourage the development, commercialisation and dissemination of technologies. Business does not do this in isolation and they form partnerships with a variety of other players and thus leverage resources and benefits. Business, also by developing and commercialising technologies, creates new markets, promotes small and medium-sized enterprises (SMEs) and transfers knowledge and builds capacity.

The process of transferring technology is not however without its problems. Some of the barriers to technology transfer are as follows:

- Technology developers/owners are not necessarily good commercialisers/marketers.
- Those needing the technology may not have the capacity to search and negotiate or even absorb/adapt the technology.
- Firms are ignorant about the consequences of the effects.
- There can be a reluctance to change.
- Low foreign investments coupled to technology investments.
- Government barriers (regulations) to technology transfer (import and export).
- No or little incentives/deterrence.
- Low public awareness/public pressure.
- Existing asset base.
- Existing technology and infrastructure base.

A critical set of circumstances also needs to be in place for the successful transfer of technology and these include:

- The technology must be needs-driven.
- The technology must be adaptable to local conditions.
- Life cycle management is essential to ensure sustainability.
- Ownership.
- Appropriate technology.
- Support infrastructure is required.
- Alignment with skills base and local capacity.
- Full cost accounting.

Thus the issue is a complex one and requires a complex and multifaceted response. The issues have been addressed in many ways by businesses across the world. One example of this is the World Business Council for Sustainable Development (WBCSD) project on Sustainable Livelihoods.

Sustainable livelihoods project of the World Business Council for Sustainable Development

The concept of doing business with the poor and in fledgling markets calls companies to think beyond conventional wisdom. Thus the WBCSD initiated a project called Sustainable Livelihoods as it was felt that WBCSD members and regional partners can and should be on the front lines of efforts to bring the poor into the market, thereby alleviating poverty and increasing prosperity and opportunity for all. The role of business in this issue was also recognised by Kofi Annan, the Secretary-General of the United Nations, when he said *"There are many positive ways for business to make a difference in the lives of the poor – not through philanthropy, though that is also very important, but through initiatives that, over time, will help to build new markets."*

How to develop and engage in these business opportunities and "**do well by doing good**", is what the WBCSD Sustainable Livelihoods Project attempts to address. The 'blended values' approach is an approach in which social and financial values are blended and has to do with doing business within the norms, laws, and expectations of society.

Business cannot succeed in a society that fails – and a planet of over four billion poor people looks much like a failing global society. Thus business needs to seek out new markets and framework conditions in many developing countries. Communications are faster and cheaper, making the world a smaller place and public expectations of corporations are changing. In addition, new, and better, partners are available and aid and investment are beginning to reinforce one another.

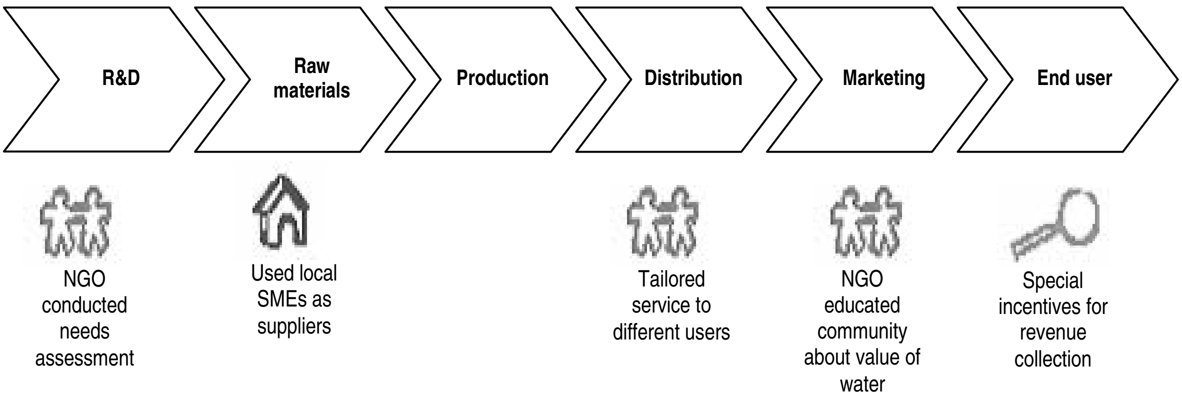
The benefits for companies and communities of this business approach have been identified by the WBCSD as detailed in Table 4.1.

Table 4.1. Benefits for companies and communities

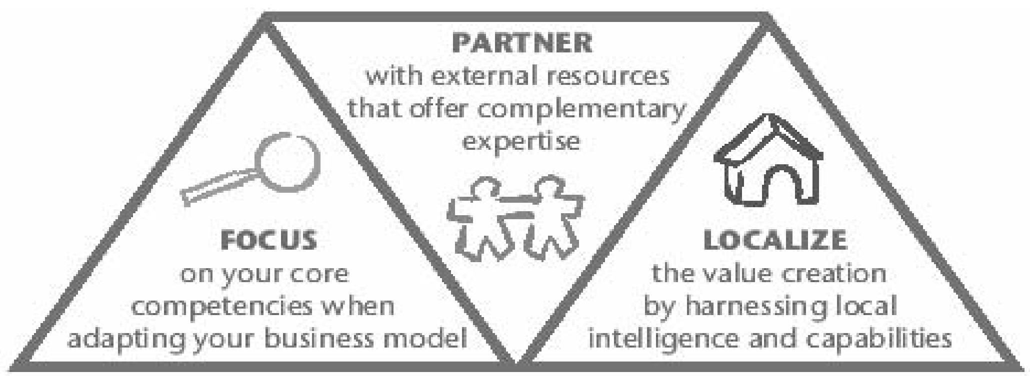
The poor as a resource pool		Poor communities as consumers	
Business benefits	**Community benefits**	**Business benefits**	**Community benefits**
• Reduced labour costs • Shared risk • Local knowledge and capabilities • Better government relations •Fair trade branding	• Job creation • Capability building for local SMEs • Know-how and technology transfer • Improved business environment and investment climate	• New markets, revenue growth • Increased brand value, positioning to capture future market growth • Transfer product innovations to existing markets	• Greater access to quality products and services • Lower prices • Improved quality of life • Improved productivity

This work identified that innovation and technology transfer play a key role in realising the benefits of this approach to both the community and business. Capacity building was also identified as an important issue.

The WBCSD Sustainable Livelihoods project also looked at the value chain and where innovation could play a role in maximising benefits as detailed in the following diagram.



The key areas identified by the WBCSD for successful sustainable livelihoods businesses are described in the diagram below.



Another important consideration in the development of new business markets is that of partnering with other businesses with some shared objectives. The advantages of this type of approach were identified by the WBCSD as follows:

- Cost reduction: shared market research, joint distribution and/or billing.
- Revenue enhancement: complimentary products, promotion of economic development.
- Access to capital: shared contacts and knowledge, some funding explicitly supports business linkages.
- Technological and product innovation: mutual benefits from combining different perspectives, joint development activities.

Again, innovation and technological aspects were identified as being important.

As part of the Sustainable Livelihoods project, the field guide which was developed was "road tested" in various ways. One of these was a joint workshop held between the WBCSD, the National Business Initiative (WBCSD's regional network partner in South Africa) and Eskom. Many issues were explored, in particular, the role of SMEs, a key issue for South African business. Some of the focus areas were identified as follows:

- Understanding the informal versus the formal sectors of the economy.
- The identification of clear targets in order to focus effort.
- To build capacity within the SME sector that currently lacks the business skills required to meet big business' expectations.
- Identifying appropriate partners.
- Defining the business case and accessing funding.

Case study – efficient lighting initiative of Eskom

One case study which encompasses many of the issues detailed above and highlights how innovation, technology transfer and capacity building can be leveraged to meet sustainable development goals, is the Efficient Lighting Initiative.

South Africa's marked economic growth in recent years has propelled electricity peak demand to rise at around 4% a year in a high growth scenario (Eskom Integrated Strategic Electricity Plan). Consequently, unless something is done, by 2007 peak-period demand will exceed Eskom's ability to supply electricity during these periods, and by 2010 additional base load capacity will be required. Thus, Eskom is addressing this challenge by the expansion of supply options, return to services programme of three mothballed power stations and the Demand Side Management (DSM) programme.

DSM allows Eskom to influence electricity usage patterns of consumers. Eskom is implementing DSM in South Africa through collaboration with the Department of Minerals and Energy (DME) and the National Electricity Regulator (NER). Eskom's DSM strategy comprises a dual approach: to reduce electricity demand at peak periods (07:00-10:00 and 18:00-20:00) by shifting load to off-peak periods and by overall electricity consumption reduction (24-hour reduction) by installing energy efficient equipment and optimising industrial processes. Sustainable DSM projects often involve a combination of both methods.

From small beginnings in 1991, starting with research, pilot studies and time-of-use tariffs, Eskom's DSM programme has grown into a concerted national electricity-saving effort officially initiated in the last quarter of 2002.

The 1999 launch of the local efficient lighting initiative called Bonesa was among the major milestones in the early phase of DSM in South Africa. This was jointly funded by the Global Environment Facility and Eskom over a period of three years. Now the use of compact fluorescent lamps (CFLs) through customer education, advertising and marketing is being promoted. The focus is to lower the price of energy efficient globes. The CFLs were originally priced between ZAR 60 and R80 per lamp and in 2004 the price for CFLs dropped to between ZAR 13 and ZAR 20 due to joint sales promotions with local suppliers and increased volumes of CFLs.

In September 2002 the DSM Fund was approved and 2003 was spent mainly on setting up the DSM business model and operations, customer awareness and education campaigns as well as the establishment of Energy Services Company (ESCo) industry. DSM aims to achieve a market-driven business environment by 2007.

Conclusions

Innovation, technology transfer and capacity building are critical components in developing new markets and stimulating entrepreneurship. The correct enabling frameworks need to be put in place in order to facilitate innovation and technology transfer to minimise barriers as much as possible. Partnerships have also been identified as key enablers for successful progress in this area. There are many examples of where this has been successfully implemented and the future challenge will be to replicate those successes and increase the benefits to the developing countries.

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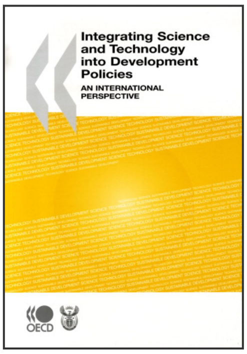

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