



Water and Sanitation Program

An international
partnership to help
the poor gain sustained
access to improved
water supply and
sanitation services

CREATING SUCCESSFUL PRIVATE SECTOR SUPPLY CHAINS A resource guide for rural water supply and sanitation practitioners

Part of the Supply Chains Initiative, a global initiative led by the Water and Sanitation Program

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The Supply Chains Initiative is a global initiative led by the Water and Sanitation Program. Collaborating partners include government departments, NGOs and bilateral and multilateral agencies. The aim of this initiative is to develop practical tools that enable and encourage the private sector to provide goods and services related to rural water supply and sanitation.

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FOREWORD: AIM OF THIS RESOURCE GUIDE

The sustainable supply of goods and support services for rural water supply and sanitation (RWSS) continues to be a challenge for practitioners in developing countries. The donor community has traditionally developed much of the new rural water and sanitation technology (a particular example being a number of handpumps over the last two decades). But often the establishment of spare parts distribution networks and repair services needed to maintain the equipment have not accompanied the introduction of new technology; when the equipment fails, it is not repaired and users return to their original contaminated source of water.

The challenge for development practitioners (i.e. government departments, donors, NGOs) is to ensure that these spare parts and repair services are available to all end users so that the sustainability of RWSS technology is ensured and users continue to have access to a clean water source. This guide suggests that the best way to develop effective spare parts and repair service supply is to encourage the private sector (generally small and medium enterprises – SMEs) who, with the right incentives and enabling environment, is well placed in the community to deliver.

This resource guide provides guidance for development practitioners on how best to engage these SMEs to develop successful “supply chains” for RWSS¹. (It deals with goods and services for projects where equipment is already installed and also for projects that are yet to be developed.) Drawing upon experience gained in 12 studies of supply chains throughout South Asia, West, East and Southern Africa and Central America (which focussed largely on handpumps), and experience in other sectors (i.e., textiles and agro-processing) this guide recommends **five key factors for successful and** sustainable private sector supply chains:

1. Adequate demand
2. Effective stakeholder incentives
3. Effective information flow
4. Effective supply chain management
5. An enabling environment

Developing interventions for the creation of sustainable supply chains for rural water supply and sanitation is an on-going process. This resource guide and the results from pilot projects will act as the building blocks of applied supply chain knowledge in the water sector. Combined, these will hopefully contribute to the development of strategic policies at all levels for government and development agencies alike.

¹ Goods and services (technology, training, repair services, financial and technical services and facility management) are supplied to customers through a supply chain from manufacturers, importers and service providers through a network of distributors.

The recommendations in this guide are based on experience gained from these twelve studies of supply chains².

Case Study 1 Afridev Handpump (Peshawar, NorthWest Frontier Province, Pakistan)

Private sector manufacture of a hybrid pump to meet customer demand and reduce production costs.

Study 2 The Treadle Pump (Bangladesh)

External support agency intervention in the supply chain to improve product quality, increase demand, foster competition, lower prices and develop the private sector.

Case Study 3 The Rope Pump (Nicaragua)

The benefits of a simple, low cost technology for the development of sustainable supply chains.

Case Study 4 Vergnet (West Africa)

Single operator control and management of an international supply chain.

Case Study 5 Afridev (Malawi)

Benefits and constraints of a supply chain where a single-owner chain of stores distributes spare parts.

Case Study 6 Afridev (Inhambane Province, Mozambique)

NGO role in supply chain management and business development support to foster private sector involvement.

Case Study 7 Various Pumps (Benin)

Importance of donor coordination for the effective and sustainable supply of handpumps and spare parts.

Case Study 8 The growth of private sector participation (Bangladesh)

Examining private sector participation in developing successful supply chains for RWSS goods and services.

Case Study 9 Reviewing supply chain interventions over 20 years (Ghana)

Development agencies' attempts to develop sustainable supply chains to deliver spare parts and repair services over a 20-year period.

Case Study 10 Assessing supply chain options for delivering household arsenic measurement and removal kits (West Bengal & Bangladesh)

The potential for the development of private sector supply chains for arsenic mitigation technologies in West Bengal and Bangladesh.

Case Study 11 Analyzing private sector and supply chain potential (Tanzania)

The potential for private sector development and supply chain creation within a limited infrastructure.

² Case Studies 1,2,3, 8 & 10 are available in published Field Notes from the Water and Sanitation Program. Source material from all other case studies is available from The Water and Sanitation Program. See last page for all contact details.

Case Study 12 Bicycles and their spare parts (Niassa Province, Mozambique)

The dynamics of a successful, completely private sector supply chain that delivers bicycles and their spare parts to rural areas and the potential for this trading route to convey water and sanitation technology.
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1 INTRODUCTION

In 1980 the International Decade for Water Supply and Sanitation was launched by the United Nations with an ambitious goal to provide universal safe water supply and sanitation facilities. To deliver such facilities, the donor community focussed primarily on mass installation of handpumps around the world. A system was introduced to provide guidelines on the suitability of a particular technology for community installation, maintenance and management (the Village Level Operation and Maintenance (VLOM) system) The VLOM system was adopted worldwide and significant resources were spent developing technology, such as the Afridev handpump, that would fit its criteria.

Undoubtedly, the International Decade for Water Supply and Sanitation achieved a great deal; an estimated one billion people obtained access to safe water for the first time and over 750 million people gained access to improved sanitation facilities (OED, 2000). However, it is now recognized that the VLOM approach failed to pay adequate attention to the delivery mechanisms needed to provide necessary spare parts and repair services. As a result, one of the lasting legacies from this period is a series of inoperable handpumps only a few years after their installation. This forced users to return to their original contaminated water source, a problem particularly acute in sub-Saharan Africa (see Box 1.2).

Box 1.1 Handpump failures worldwide

Sub-Saharan Africa

1994 - between 40 and 50 per cent of handpumps found not working, in part due to lack of spare parts (Diwi Consult 1994).

1997 Handpump Technology Network Workshop – participants agreed that 20–50 per cent of handpumps were broken at any one time (HTN Conference 1997).

Mali

1997 – evaluation found 90 per cent of pumps were inoperable one year after installation (World Bank 1997).

Benin

2000 – case study for the supply chains initiative found approximately one-fifth of handpumps were not working because of a lack of spare parts.

Encouraging the private sector

In most developing countries, goods and services are traditionally delivered by the public sector, with donors supplying spare parts and technical assistance through projects. Development projects have attempted to either channel spare parts and repair services through existing government departments or to set up parallel mechanisms associated with their own project support staff. In both circumstances, spare parts have often been provided free to users or with subsidies.

Despite best intentions, these delivery mechanisms have consistently failed because of limited resources, capacity and a lack of incentives. Such failures have now led development practitioners to consider the role of the private sector in the rural water supply and sanitation business.

Private sector characteristics in rural water

The private sector in rural water and sanitation is generally comprised of small and medium sized enterprises (SMEs) which are usually independent traders including manufacturers, importers, distributors, wholesalers, retailers, and service providers. These SMEs have often been involved in project implementation, invariably funded by donors through projects.

Manufacturing firms are generally small, employing between 5- 50 staff, and often producing fabricated items for agriculture and similar hardware that involves metalworking and machinery skills. Distributors, wholesalers, and retailers are typically involved in selling hardware; water equipment is in addition to the primary business and represents 10 to 40 per cent of total income. While typically involved in selling hardware, the more remote the location, the more likely it is that a trader sells other goods, such as foodstuffs and domestic appliances.

Current private sector involvement

Despite considerable experience of SME development in other sectors, such as agriculture, private sector development projects in rural water supply and sanitation have had a chequered history. In South Asia and Central America, SMEs are very active in the water sector and successful, and sustainable supply chains deliver water supply technology to rural areas. Often these have been created as part of donor-assisted projects and now exhibit decreasing reliance on the 'development machine.' In India, for example, there is a considerable network of handpump manufacturers; the largest ones market their wares internationally through websites and have agents throughout the world, often targeting donors, who are their largest customers.

In sub-Saharan Africa markets have not developed in the same way. This is in spite of significant SME activity in other sectors, such as food and agriculture, and in associated services, such as motor repair and servicing. Although some success has been achieved in making spare parts available to rural users, the markets are often not self-sufficient because of the significant external support they receive which act as disincentives for SMEs to invest. Disincentives include:

- the significant involvement of donors and the government;
- lack of information about potential market opportunities;
- limited access to finance and other factors that might encourage private sector involvement; and
- heavy, untargeted subsidies that distort markets, and do not have clear reduction strategies.

The increasing shift to develop strategies for greater private sector involvement marks a fundamental change in policy and mindset for many development practitioners, particularly NGOs and governments, and the prospect poses many challenges. Not least is the acceptance of the private sector as a suitable participant in development and the need to understand its dynamics without fear or mistrust. The following chapters look in-depth at the factors considered important for engaging the private sector in RWSS supply chains around the world.

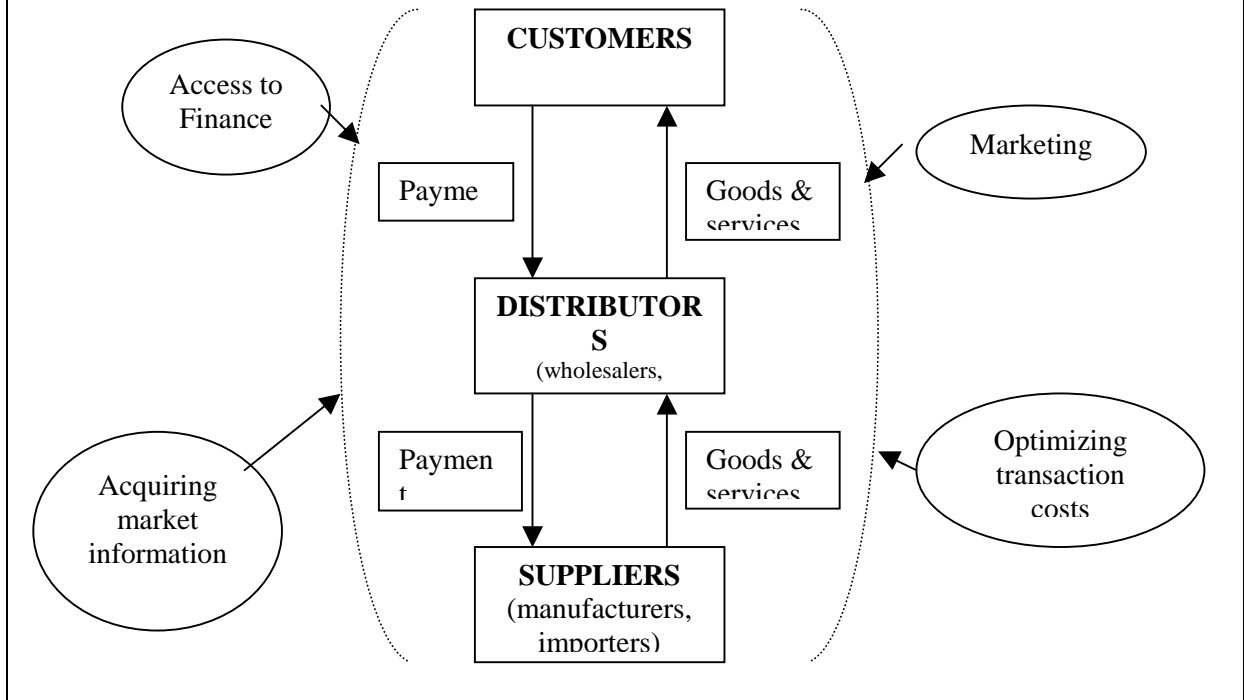
2 THE NATURE OF SUPPLY CHAINS

In their simplest form, supply chains transform raw materials through a process that results in products that are sold to customers. Payment for this process flows in the opposite direction in the chain. (See Box 2.1.)

In the rural water supply and sanitation sector, the potential exists for goods and services (technology, training, repair services, financial and technical services and facility management) to be supplied through a supply chain from manufacturers, importers and service providers through a network of distributors.

Box 2.1 Supply chains: a definition

A supply chain is the term used for the process that relates all activities involved with the flow and transformation of goods from the raw materials stage through to the end-user, as well as the associated information flows. The diagram below shows the core functions within the “()” and some associated activities outside the “()” that are necessary for the effective operation of supply chains. These associated external activities are referred to as the enabling environment, and also include access to good infrastructure and a regulatory environment that does not restrict trade. Materials and information flow both up and down the supply chain. Supply chain management is the integration of these activities through improved relationships within the supply chain to achieve a sustainable competitive advantage (Handfield et al, 1999).



The underlying objective of all supply chains is to deliver a successful product at an acceptable profit. To achieve this, the product must meet the aspirations of the customers; that is it must be:

- available;
- affordable
- of adequate quality; and
- delivered in an appropriate time.

The degree to which product providers in the supply chain achieve these aspirations and go beyond them can be defined as customer value (Tyndall et al, 1998). But benefits have to satisfy both the suppliers as well as the customers, and such chains are often referred to as value chains (Cutter 2000). This describes all of the functions required to achieve successful supply chain operation and ultimately to achieve customer satisfaction.

3 CREATING SUCCESSFUL SUPPLY CHAINS – FIVE KEY FACTORS

For any supply chain to operate effectively there must be a demand for the goods and services it supports and certain factors are important to create such product demand. These include price, product appropriateness and simplicity of the product technology. For the private sector to be involved in such a supply chain, it must have adequate incentives. Finally, to create and sustain the supply chain there must be good information flow between stakeholders, effective supply chain management, and an enabling environment that does not restrict trade.

All of these five factors are collectively important for a successful supply chain and there are many linkages between them.

Box 3.1 Five key factors for a successful supply chain

1. Adequate demand
2. Effective stakeholder incentives
3. Effective information flow
4. Effective supply chain management
5. Enabling environment

3.1 DEMAND

Demand is the fundamental factor for the creation of a successful supply chain. A supply chain only exists to supply goods and services in response to customer demand for these goods. Without adequate demand, such a supply chain will not develop and function sustainably.

The nature and importance of demand for the creation of self-supporting, sustainable markets is often misunderstood by development practitioners despite the fact that through their projects they create the majority of demand for water supply and sanitation products (e.g. new equipment, spare parts and repair services). Despite best intentions to create viable private sector markets for these products, markets have often become distorted. This is because market intervention has not reflected demand, and that has in turn restricted private sector operation or discouraged involvement at all. In contrast, in one case study, that of the Afridev pump in Pakistan, it was found that the private sector has been able to respond effectively to consumer demand, with little or no external interventions (see Box 3.2).

Box 3.2 Effect of market interventions on private sector response to consumer demand

A study of the Tara pump in Bangladesh (Case Study 8) found that attempts to maintain quality by introducing rigid standards resulted in suppliers being unable to make changes to the pump, even though they knew they could improve it in line with consumer preferences and demand.

In contrast, manufacturers of the standard (donor-developed) Afridev handpump in Pakistan (*Case Study 1*), started to produce hybrid pumps in response to consumer demand for a more affordable, but not necessarily more reliable, handpump. Donors, who had initiated the original pump's manufacture and distribution, then allowed the market to develop naturally with limited intervention. This resulted in a market offering an increasing range of handpump options that differed in price, quality and ease of maintenance.

Attempts to heavily control the market rarely result in the provision of appropriate goods and services; any intervention must therefore be targeted with clear goals and strategies to ensure consumer preference is accounted for.

Understanding and Creating Demand

The creation of consumer demand for any given product is dependent on five key criteria:

Purpose – the product achieves its intended purpose.

Price – the product is available at an acceptable price to the consumer.

Location – the product is available in adequate volumes in the required location.

Quality – the product is of an adequate quality for the consumer.

Consumer knowledge – information about where and how the product can be acquired is available to the consumer.

Purpose

A product must fulfil its intended purpose in order to create and sustain consumer demand. It must be simple enough for people to understand how to use and repair it. If it is too difficult to fix, when it fails it is left unrepaired. Often, the more complex the technology, the more difficult it becomes to repair (Arlosoloff, 1987).

Price

To stimulate and sustain demand, the price of a product must be acceptable to the consumer. The ability and willingness to pay is dependent on available cash and the perceived product benefits when compared to other available products and services. Invariably in rural environments low-income peoples' cash flow is seasonal, dependent on crop harvesting and so investments are more affordable immediately following the harvest. Since cash flow is also critical to the survival of small businesses, understanding this variability in advance will help SMEs to develop coping mechanisms. The most common coping mechanism is product diversity; traders ensure they are not dependent on one product for their livelihood.

Technology choice is also crucial to product cost and therefore to consumer demand. Invariably the more complex the technology used, the longer the supply chain needed to support it. With more stakeholders in the supply chain needing to make a profit, and with goods and spare parts often having to travel greater distances, the price of these goods increases which can have an adverse effect on consumer demand. In contrast, simpler technologies often need less spare parts, have shorter supply chains and cheaper costs for goods which helps to stimulate and sustain consumer demand (see Box 3.3).

Box 3.3 The effect of technology choice on supply chains and consumer demand

Complex technology – the Afridev pump (Case Study 1, 5 and 6)

- Donor developed to meet VLOM criteria
- Relatively simple in design but the quality of certain parts is vital for effective operation
- New pump costs US \$300 -1,200
- Requires over 20 spare parts, of which five are fast wearing
- Some parts need to be imported at considerable cost because they cannot be manufactured locally
- Works in a range up to 50 meters (approx.)
- The supply chain for spare parts can be complicated and long because it often involves importing (especially in sub-Saharan Africa)
- Consumer demand can be low due to cost of spare parts and lack of local availability

Simple technology - the rope pump (Case Study 3)

- An ancient pump with recent donor development
- Simple design
- New pump costs US \$75 -100
- Requires few spares parts (rope, plastic pistons and guide pipe), all of which are available locally

- Works in range up to 50 meters
- The supply chain for spare parts is simple and short
- Consumer demand is stimulated and sustained as costs are affordable and parts are available locally

Geographic location of demand

The demand for a product needs to be sufficiently concentrated within a geographical area to sustain individual businesses and thus the market. In South Asia, high population densities make it easier for SMEs to maintain their business due to shorter delivery distances and closer suppliers. Consumers in turn are satisfied with the maintenance and repair services available to them. But in sub-Saharan Africa, private sector entrepreneurs may have to travel large distances, often on bad roads, to deliver products, perform maintenance and make repairs. Moreover, there simply may not be enough customers within a reasonable distance to make the business profitable. (In such remote areas practitioners may need to consider a technology that requires limited or no spare parts, e.g. rope and bucket.) The French-owned company, Vergnet, however, through a good knowledge of consumer demand in a given location has been able to provide their pump through donor-funded projects in West Africa in sufficient volume to ensure the creation of a profitable supply chain for spare parts (see Box 3.4).

Box 3.4 Number of customers per location is critical to market development

The company Vergnet (Case Study 4) supplies their foot pump predominantly to West Africa. The associated spare parts are supplied through a network of local hardware shops. To be profitable for all stakeholders in the chain (e.g. local trader, district/regional wholesaler, importer and Head office in France) Vergnet has established that the optimum ratio of pumps to shop is between 200-300. Each shop is the main supplier of spare parts for these 200-300 pumps.

Individual development projects tend to install large volumes of equipment in specific locations; all requiring spare parts. In Benin, (Case Study 7) limited co-ordination between implementing agencies in the locating of projects has resulted in various small, limited and unsustainable markets in different water technologies. Co-ordinated locating of projects, amongst implementing agencies and government has the potential to create sufficient levels of demand for supply chain development and a viable market exists.

Quality

In addition to price, product quality and reliability affect consumer demand. However it is not always the case that consumers are willing to pay for quality improvements and often a trade off is made between price and quality. Often rural consumers will purchase cheaper, less reliable technologies rather than expensive technology that lasts for a longer time (see Box 3.5). This is partly because of the nature of cash flow cycles but also because of the higher costs involved and difficulties in repairing the more complicated technologies.

Box 3.5 Cheaper, less reliable and shorter-life technology often preferred by the rural poor

An international NGO, International Development Enterprises (IDE) has shown that the rural poor often prefer cheaper, shorter-life technologies in spite of the need to repair or replace them more frequently (Case Study 2). This preference stems from their cash flow levels that coincide with agricultural cycles. It is more acceptable to replace or repair a pump every two years than to pay for a more expensive pump, or perhaps seek donor assistance to replace their community pump.

This is despite the fact that, in replacing the pumps every 2 or 3 years, consumers accept high discount rates, often more than 80 per cent, which is much higher than the 12 per cent used in the preparation phase of many development projects (Travers, 2000). Seasonal cash flow variations can affect consumer demand for high quality, reliable technology, with consumers opting for a cheaper option. This is the case

with the treadle pump in Bangladesh (pictured). Practitioners and SMEs need to understand these variations and demand patterns to create successful goods and spare parts supply chains

Low cost technologies can also create a demand from individual families as well as the community as a whole. This is the case with the rope pump in Nicaragua (Case Study 3). The pump costs approximately one-quarter the price of its nearest rival and less than one-eighth of the more technically advanced Afridev pump. The case study in Nicaragua has also found that family ownership can lead to greater care and longer pump life.

While the rural poor generally prefer cheaper technologies, evidence with the Afridev pump in Pakistan (Case Study 1) and the Treadle pump in Bangladesh (Case Study 2) suggests consumer demand can also act as a major incentive for quality improvements by suppliers (see Box 3.6). In Pakistan, having established a significant market for Afridevs and their hybrids, evidence suggests that in order to stay competitive, manufacturers are now having to respond to increasing consumer sophistication on the quality of pumps. An approved method of quality assurance and certification may help to address this issue, which is something development practitioners could help to develop.

Box 3.6 Consumer demand as an incentive for quality improvement

IDE identified consumer demand for a range of Treadle Pumps of differing quality and price (Case Study 2). Previously the options available had been limited to one level of quality (usually high in the case of development projects), which could not create enough demand to reach a critical mass and thus ensure a sustainable market. By providing support to manufacturers in the form of marketing and creation of new markets, IDE created the incentives for manufacturers to respond to the demand for a range of quality and price options; at the same time IDE also educated manufacturers about the importance of maintaining a minimum level of quality in order to sustain the credibility of their products.

Consumer knowledge

To stimulate and increase demand, potential consumers need to be given sufficient product information, (such as how and where to acquire it, special qualities and benefits). As well as creating initial demand for the product, this is key to sustainability; having installed water supply equipment, some projects have failed to tell users where to purchase spare parts, resulting in pumps which could not be maintained. This type of customer education is essentially a marketing function. The international NGO, International Development Enterprises (IDE), has shown how innovative marketing can successfully create demand (See Box 3.7).

Box 3.7 Innovative marketing creates demand

In Bangladesh, (Case Study 2), IDE employed a number of specific marketing schemes to provide consumers with information regarding the Treadle pump. One such scheme was to develop a travelling 'theatre show' to sell the added value message of the Treadle pump, focusing more on the gains in social status from owning the pump than the improved health benefits.

Recommendations for practitioners

Increase understanding of demand and the dynamics of SMEs among implementing agencies

- ***Consider creating an SME development coordinator within the Government project team***
Employ a business development specialist as coordinator whose role will be to manage all SME areas while the project develops. This will include coordinating between development agencies and the private sector, developing and implementing supply chain strategies and providing the

water sector development teams with the appropriate business development skills necessary to engage the private sector in projects.

- ***Conduct market assessments in partnership with SME experts***

In coordination with other development agencies, government and SME experts, conduct market assessments to determine the dynamics of the general business environment and the potential demand in the water sector. In brief, the Market Assessment should include:

- Existing available services; (condition, maintenance and spare parts required, distance to nearest repair and spares stockist and level of stock available);
- Income and spending patterns, geographical focus of demand;
- Existing supply chains for water supply equipment;(location of traders in chain, commercial relationships, effectiveness of the supply chain, credit arrangements, profit margins, degrees of supply chain management, transaction costs, infrastructure);
- Supply chains in comparable markets,(i.e. agricultural sector, bicycles);
- Potential market;(marketing opportunities to create demand, assessing existing market and impact on demand of future projects, planned by government and external support agencies, plus potential growth patterns where they can be estimated).

Conduct a technology assessment at the project outset

At the project planning stage and before selecting your chosen technology, conduct a technology assessment. This should consider:

- the level of technology already in use and its spare parts and repair requirements
- how users measure and react to quality issues regarding the existing technology
- the simplest, cheapest technology that can be used
- the quantity and complexity of spare parts required for any given technology
- the choice afforded by the technology, i.e. is it available in a range of prices and qualities that meet differing consumer needs and can its suitability be tested through a pilot scheme before implementation on a large scale
- the length and complexity of the supply chain needed to deliver this new equipment and its spare parts and the effect this has on price
- the capacity of the business environment to support the supply chain, i.e. how many traders are needed, likely profit margins, transaction costs, quality of communications infrastructure
- the requirements and potential of the technology for technical and business development support as well as its commercial viability

Having considered all of these issues in your assessment, and before making your final choice, ask yourself again, is there a simpler, cheaper and acceptable alternative?

3.2 EFFECTIVE STAKEHOLDER INCENTIVES

To encourage stakeholders³ to enter the RWSS market for goods and service supply, the right incentives must be in place. And the primary incentive for all SMEs in such a market is profit, although secondary social incentives, such as helping to ensure clean water is available may also be relevant.

³ Stakeholders are taken to mean SMEs in manufacturing, distributing, wholesaling, retailing and repair services.

Misunderstanding private sector motives and incentives on the part of implementing agencies may prevent SMEs from entering the water sector (see Box 3.8).

Box 3.8 Understanding private sector incentives, Mali (OED 2000: 43)

In Mali, the India Mali pump was considered the most appropriate by project implementers as it was locally manufactured and met the VLOM criteria. A foreign contractor was contracted to install the pumps, which were funded by villagers' contributions, on the unspoken understanding that the company would support project procurement policies which favored sourcing from local manufacturers. But the company was able to purchase and ship the same pump and its spare parts from India to Mali at half the cost of the pumps that were manufactured in Mali. This allowed it to retain a larger profit than previously anticipated. The foreign contractor clearly acted in the manner one should expect from the private sector; that is, its key motive was to maximise profit, and it took full advantage of the opportunity to achieve this.

To make profits, SMEs need to identify and realise business opportunities when they present themselves. To do this the entrepreneur needs access to information relating to consumer demand, population densities, existing supply chains and infrastructure. Development agencies can help provide this information by funding the necessary market assessments.

The ability to realise profits is of course affected by a number of factors, from internal issues for individual businesses to those that affect the whole supply chain and the business environment. The existence of potential for profit alone does not guarantee the development of a market.

The actions of implementing agencies in the water supply sector can sometimes provide disincentives for the private sector. For example, in the handpump market, two common actions that act as a disincentive for SMEs to engage and develop the market are the provision of free spare parts and the placing of large orders with advance payment.

Providing free spare parts into a market achieves a short-term goal for project implementers, but rarely leads to sustainable market development. More often it prevents SMEs from engaging in the business as the market becomes distorted with expectations that more free parts will become available. Equally, providing spare parts on credit to distributors through a top-down process may put the long-term sustainability of the supply chain at risk (see Box 3.9). Practitioners need to ensure any subsidy interventions have a clear purpose and time frame with a parallel market development process so the market continues when the subsidy ends.

Box 3.9 Spare parts distribution in Malawi

In Malawi (Case Study 5), donors have provided the spare parts needed for the standard handpump used in rural areas free to the government. Chipiku, a national chain of stores, is provided with the parts on a consignment basis (that is, Chipiku pays the government after they have sold the parts). Research revealed that when the supply of parts ran out, the stores made little attempt to obtain them from other stores or from the regional warehouses. Chipiku considers selling spare parts their contribution to the government's attempts to provide spare parts to the people of Malawi, but once the parts are no longer available from the government, it is unlikely that Chipiku will continue to supply them.

Implementing agencies tend to order in large quantities from a central source, often making advance payments of between 50 and 60 per cent of the total cost, and guaranteeing final payments. This provides SMEs with a high profit, no risk scenario where there is little incentive for them to invest any of their own resources into developing local distribution and supply networks throughout the country. But such investment is vital if the structures are to be in place to continue the supply chain once the implementing

agency leaves the market. Despite some attempts to avoid these problems by procuring directly from a local market, the implementing agency's own procurement rules discourage buying in the small amounts necessary to purchase from local traders, favouring one-off bulk orders.

Recommendations for practitioners

Make viable business opportunities available to SMEs

- Determine the key incentives for existing SMEs, predominantly what sort of profit levels they operate with.
- Avoid activities that distort markets and act as disincentives to the private sector, such as giving things away.
- Facilitate the procurement of equipment for projects at local market rates, through local supply chains.
- Ensure subsidy packages have a clear time frame and exit strategy
- Ensure that any subsidy interventions have a clear purpose and time frame with a parallel market development process to ensure the market continues when the subsidy ends. It should be accepted that this timescale i.e., the time for a market to develop might be outside the conventional timescale for development projects of 3 to 5 years.

Encourage customers to create incentives to stimulate private sector market development

- Provide limited intervention in the market

If significant numbers of customers are aware that they can influence supply, the chances of the right product being delivered to the customers are greatly increased. By adopting a hands-off approach to the development of markets, such markets may grow on their own. The role for development agencies will be to ensure customers know how and to whom to make their concerns known.

3.2 EFFECTIVE INFORMATION FLOW

The importance of available and reliable information in a supply chain cannot be overstated. In order for private sector enterprises to develop successful supply chains for goods and services, they must first be aware that a good business opportunity exists – access to information regarding consumer product demand is vital. And once a supply chain has been set up, its continued success and sustainability is greatly dependent on good information flow among all stakeholders. Practitioners can help to engage the private sector by improving access to such information and, once the supply chain is established, to improve information flow within it.

Information on customer demand

A major constraint for businesses to engage in rural water and sanitation supply chains is the lack of accurate and reliable information on existing and potential consumer product demand. Information about consumer demand allows stakeholders to identify whether a business opportunity exists and, if so, to ensure that the right product is delivered in the right location at the right place in the correct quantities and appropriate quality. If this information is not available it may reduce private sector confidence in the market and can act as a disincentive to invest. Equally, without adequate information, financial institutions may be reluctant to provide business loans, considering the market a risky investment. This creates an additional barrier for businesses that need to borrow capital.

In sub-Saharan Africa the private sector is significantly involved in every other type of market except water and sanitation technology. It is conceivable that lack of information, coupled with other disincentives, may be a major factor in private sector disinterest in the RWSS market (see Box 3.10).

Box 3.10 Lack of information acts as a private sector disincentive to invest

In the Niassa Province of Mozambique (Case Study 12) over 20 rural traders involved in the trade of bicycles and spare parts were questioned about their knowledge of the water sector as a business opportunity. Overwhelmingly, these general traders did not believe there was any potential market, considering water projects to be the responsibility and remit of government. But there was some interest in investigating the viability of such a business.

In West Bengal and Bangladesh Case Study 10), where arsenic has been discovered in much of the groundwater in rural areas, the private sector has been slow to respond to the market for arsenic testing devices and water treatment methods. The nature of the crisis has, understandably, prompted government and donors to build their own supply chains to ensure that affected areas are served quickly. Uncertainty over which mitigation methods are the most appropriate, or the most effective, plus a lack of information about the nature of the potential market, has created a disincentive for the private sector to become involved. The perception that the government is already serving the market further deters market entry, and a self-perpetuating situation is created.

The private sector must be able to identify a business opportunity in order to enter the RWSS market.

Access to information about consumer demand is vital in this respect and practitioners should consider ways of making this information widely available to the private sector. This may include funding market surveys and co-ordinating with other agencies and government to package the information in an appropriate form for the private sector

Good information flow among stakeholders

The effect of poor information flow among stakeholders in a supply chain can be dramatic and costly. A small fluctuation at one end of the supply chain results in a very large fluctuation at the other end and, without adequate information sharing among stakeholders, such fluctuations may be badly misinterpreted. This is known as the bullwhip effect (see Box 3.11).

Box 3.11 The bullwhip effect

A small shop finds that it is selling more soap than usual. It decides to order an extra box to cope with demand. The wholesaler concludes, without understanding what is actually going on in the market, that if this shop is experiencing a run on soap then maybe others will too; he/she then orders an extra 400 boxes of soap. This 400-box order does not represent true demand, resulting in an increase of stock, with its associated storage and administrative costs, lost opportunity, price erosion, and the risk of obsolescence. This can also occur in reverse; a minor reduction in orders at the customer end of the chain can result in too little stock being produced, resulting in lost sales (present and future), delayed receipt of revenues and loss in brand value due to a damaged reputation. Sharing assumptions and/or interpretations with stakeholders can reduce the bullwhip effect.

In the naturally evolving supply chains studied (e.g., bicycles in Mozambique), the information flows among supply chain stakeholders were generally better than in donor-created supply chains (e.g., handpump spare parts in Benin). Often in donor-created chains, donors did not consider the long term need for good communication links between traders and falsely assumed communication would happen naturally.

In practical terms, increasing information flow in a supply chain means improving the way stakeholders share information. Sharing information on demand, inventory levels and all relevant areas of business improves the working relationship between partners and leads to a number of other benefits (see Box

3.12). Information sharing among stakeholders in a supply chain can increase profits and performance while reducing individual business risk. To facilitate this process, practitioners could consider creating business development service providers to act as third parties who provide a central hub of information to be passed among stakeholders

Box 3.12 Benefits of information sharing in the supply chain

- Through co-ordination, supply chain members will make better use of resources, creating greater value for the customer and higher profits and performance for them (Lee et al, 1999).
- Understanding demand characteristics through good information flow reduces the need to hold stock, because products can be produced to meet the accurate and known demand. It is information that is stored rather than stock, reducing the costs for supply chain members.
- Individual risk is reduced as risks are shared.

Information sharing can take the form of:

Partner-to-partner transfer: traders only deal with the two partners next to them in the supply chain

Third partner transfer : Information is collected and brokered by a third party organization, for instance a specialist firm, or a farmers' trade association. The potential for this third party function is increasing considerably with the use of electronic media and the Internet. The international drive to promote information and communication technologies (ICTs) in development may well have a significant effect on the nature of information flow among SMEs. Business development service (BDS) providers, however, offer a more formal process for delivering this kind of support. By taking a holistic approach, these organisations could provide data to the whole supply chain on demand and make this information service commercially viable.

Despite the advantages of information sharing for all stakeholders in the supply chain, not everyone may perceive these benefits. Potential barriers may include:

- a lack of trust and unwillingness to share
- concerns about confidentiality
- fear that competitors could use information to exploit a situation
- a lack of appropriate technology.

Information sharing is only an enabler of better co-ordination within the supply chain, not an end in itself. Information is only of value when used correctly and stakeholders need to be aware of this.

Recommendations for practitioners

Improve access to information on consumer demand

- Co-ordinate with partner agencies and government to fund market surveys and package combined information in an appropriate form for the private sector and financial institutions. Information will include the demand, market size, risks (including government interventions) and potential returns on investment.
- Ensure customers are aware of where to go for spare parts or new equipment so that demand characteristics are visible to the supply chain. Traders can then respond accordingly. Local government departments could periodically check customers are aware of where to go for goods and services.

Improve information flow within the supply chain

- Simplify the supply chain. This eases the flow of information in the supply chain and increases visibility of consumer demand and market dynamics among competitors, customers and future competitors.
- Optimise the location of stakeholders for effective logistical operations; the closer stakeholders are to each other, the easier it is for them to communicate effectively.
- Consider facilitating the creation of business development services (BDS). These can act as a third party within the supply chain, providing a central hub of information to be passed among partners. However, ensure this intervention has an appropriate exit strategy so that BDS providers are not indefinitely reliant on external support.

3.3 EFFECTIVE SUPPLY CHAIN MANAGEMENT

Businesses around the world expend significant time and money on the overall management of supply chains to enhance the productive use of resources. In the motor car trade, for example, companies deploy huge resources into this area because it is so critical to the effective operation of their business.

Key functions of supply chain management are to:

- build effective relationships between stakeholders, e.g., by creating opportunities for partners to meet each other
- improve communications
- identify and develop potential partners in the chain
- make partners aware of the 'bigger picture'
- create a collaborative environment for planning

Supply chain management in the water sector

Outside the water sector, many supply chains are designed and controlled by a supply chain manager (usually employed by the manufacturer) who manages the multiple systems through which the supply chain operates. In other cases, supply chain control is diffused and decentralised within the distribution network. From the 12 case studies used in this guide, two main types of water sector supply chain management emerge:

- Management by a private sector manufacturer (Vergnet, West Africa – Case Study 4) or distributor (Chipiku Stores, Malawi – Case Study 5).
- Management led by a development agency.

Supply chain management by private sector manufacturers and distributors

The two common models of private sector-led supply chain management are where:

- the private company owns and controls the whole supply chain (Ghana (Case Study 9, Chipiku stores, Malawi (Case Study 5))
- the private company controls the supply chain but does not own all of the stakeholder operations in the chain, (Vergnet, Case Study 4).

The use of one company to distribute parts through the supply chain has been shown to make supply chain management easier, but this has not always resulted in the effective and sustainable supply of spare parts

In a review of supply chain interventions over 20 years in Ghana (Case Study 9) and in the development of the Afridev supply chain in Malawi (Case Study 5) large private companies were contracted to

establish and manage supply chains for handpumps and their spare parts. Often this was done through supply chains that they already managed. While it was found that there was an advantage in having supply chain management conducted within a single organisation, some of the incentives to secure these companies' original involvement (i.e., being given free spare parts) disrupted the natural development of a sustainable supply chain.

Vergnet (Case Study 4) identifies existing businesses to act as its subsidiaries, to which it grants licences to sell the Vergnet pump in return for an agreement to abide by Vergnet's operating methods. The subsidiaries play a key role in managing the supply chain, stocking spare parts representing Vergnet's interests, checking all of the local shops that they supply every three to four months, and managing payments to the local shops. Vergnet becomes a shareholder in the subsidiary and benefits from the profits of pump and spare parts sales through dividends. Vergnet manages its supply chains by having three geographical project managers based at its French headquarters and one network analyst/supply chain manager who oversees all three areas. Project managers liaise annually with local government to agree on the price of spare parts and the profit margin for the subsidiary and the local shops (approximately 10–20 per cent). They also visit and liaise with the subsidiaries on stock levels and order management, including an annual assessment of the spare parts requirements for the following year. Spare parts are then supplied to the country in one batch per year to reduce freight costs.

External development agencies have also played a supply chain management role in some cases:

- International Development Enterprises (IDE) were heavily involved in the marketing aspects for the Treadle pump in Bangladesh (Case Study 2). This targeted intervention with its clear goals resulted in improved product quality in a specific market sector and increased demand. As well as a marketing function, IDE also provided a form of supply chain management in order to ensure demand was met by building relationships between all stakeholders (i.e., consumers, retailers, wholesalers and manufacturers);
- Care International in Mozambique (Case Study 6) played the role of facilitator in developing and supporting the supply chain for Afridev pumps. However it found that the chain needed more support in nurturing and building relationships than originally thought;
- In developing the Afridev pump in Peshawar, Pakistan through supporting technology development and a local manufacturing base, UNICEF unintentionally enabled the development of a thriving 'hybrid Afridev' market (Case Study 1). Their limited intervention approach enabled the new market to develop independently which led to a supply chain that needs little overall management.

When supply chain management is led by an agency external to the supply chain, the importance of stakeholder collaboration to develop accurate forecasting and replenishment strategies is vital. However, evidence from the case studies suggest stakeholders rarely collaborated and decisions were often made sequentially (that is, only considering the next step of the supply chain) rather than holistically, with an eye to the bigger picture. Forecasting was not accurate and orders were often based on averages and on a one-for-one replenishment basis. As a result, stakeholders incurred time delays and increased transaction costs, often failing to meet the demand or reacting adequately to variances in the market.

The degree and style of management required will vary depending on the stage in the supply chain's development and the nature of the product or service being supplied. In the long term, supply chain management should be provided by organisations directly involved in the supply chain, e.g. manufacturers or businesses who provide commercial services to the supply chain stakeholders. In this way all parties are more likely to share understanding of business and incentives for successful supply chain operation.

At the beginning of projects, implementing agencies can play an important supply chain management role for specific objectives i.e., kick-starting a supply chain or improving the product quality. However any external interventions must be part of a clear strategy with identified goals and exit processes, to ensure that development agencies do not become intrinsic parts of the supply chain, and thus reduce the likelihood of sustainability.

Recommendations for practitioners

Develop supply chain management capacity among the private sector

- Encourage private sector supply chain operators to provide the resources needed for effective supply chain management from within their organisation.
- Train project staff to provide these supply chain management skills during project implementation, with a view to developing supply chain management mechanisms that can still be in place beyond the project.
- Identify the potential for SMEs to provide the supply chain management role to the supply chain on a commercial basis. Such SMEs could be employed as business development service providers available to all stakeholders in the supply chain. (See 3.5, for more information on business development service provision.)

3.4 AN ENABLING ENVIRONMENT

The business environment in which they operate affects the performance of all SMEs. Factors considered important to create such an enabling environment (Hallberg 2000) include a stable macroeconomic situation, an open trade investment regime and a competitive financial sector, along with well-developed physical infrastructure (transport and communications). Where these factors are not well-developed businesses may find it hard to establish themselves or to expand due to burgeoning transaction costs or a lack of access to finance. These extra costs and constraints can be critical, especially to SMEs that work in rural situations, often with low profit margins. Development agencies can reduce these costs and constraints through strategies that improve the access to finance, reduce the regulatory environment and support infrastructure investment. Agencies can also play an important role in creating effective support mechanisms for SMEs through developing markets for business development services (BDS) providers.

Access to finance

The ability to maintain adequate cash flow is crucial to all SMEs. Likewise the ability to invest in an existing or new market is dependent on the availability of capital. Access to affordable credit, either through the formal or informal sector, can be a key determinant of business success or failure.

For consumers and most stakeholders in the supply chains studied, finance was generally provided through the informal networks; access to formal finance being limited. In Mozambique (Case Study 6) Afridev pump manufacturers found formal financial institutions less than enthusiastic about investing in the sector (see Box 3.15).

Box 3.15 Manufacturers face limited access to formal finance

In Mozambique (*Case Study 6*) financial institutions charge between 20–30 per cent interest rates and require 100 per cent collateral on commercial loans. Many manufacturers and larger wholesalers consider these rates and conditions too high to make them viable. The rates themselves reflect the state of the financial sector at the time of the study and in particular the assessment of risk attached to the water sector. The inability to access formal finance may be a hindrance to large scale private sector investment and this is an area where development agencies can help to increase investment confidence among financial institutions.

Studies of SMEs in non-water sectors, (Parker, 1995) also found that among SMEs, informal financing predominated with entrepreneurs using their (and their relatives' savings) for start up, and any profits for working capital and expansion. However, they were not entirely excluded from access to bank credit. As many as 43 per cent of the SMEs who responded in Tanzania and 34 per cent in Senegal had received bank loans, and they tended to rank credit relatively low as a constraint to developing and expanding their business. These studies also found that even without access to bank credit, SMEs often showed quite rapid rates of growth. While the reinvestment of their profits financed much of this growth, non-bank sources of finance were also important and these included advances from customers (40 per cent of firms in Malawi and Mali) and credit from suppliers (27 per cent in Mali).

Where SMEs can afford to pay market rates for formal financing (bank credit) their ability to repay the loan varies greatly according to individual prospects and capabilities (Brunetti et al, 1997). Undoubtedly, credit providers should be able to charge rates that are sufficient to compensate for transaction costs and risk, but the challenge lies in helping credit providers to accurately assess market risk. In Benin (Case Study 7) as in much of sub-Saharan Africa, the formal commercial loan rates are 20-30 per cent with 100 per cent collateral requirements. But this is not based on adequate knowledge and understanding of the potential market. If such credit providers had better information and a fuller knowledge of the market, they would be able to assess the market risk accurately, which may result in lower and more affordable interest rates.

SMEs in all sectors benefit from the well-established informal financing mechanisms that exist throughout the world. Supporting the development of the formal finance sector is an important role that development agencies can play to help SMEs and larger private sector operators' scale up their investments in the rural water and sanitation sector.

Regulation

The impact of government legislation on SMEs can often be significant, either by improving or worsening the environment in which to do business. Even small changes in levies on fuel and imports can have serious effects on an SME's ability to stay in business. Over 3,000 entrepreneurs in 69 countries were asked to list the main obstacles they faced in operating their business. Taxes, regulations and inadequate infrastructure were rated the highest (See Box 3.16.)

Box 3.16 Main obstacles in the business environment for private sector operators (Brunetti et al, 1997)				
Greatest obstacle	Industrialized countries	South and Southeast Asia	Latin America and Caribbean	Sub-Saharan Africa
1	Tax regulations and/or high taxes	Tax regulations and/or high taxes	Corruption	Corruption
2	Labor regulations	Inadequate supply of infrastructure	Inadequate supply of infrastructure	Tax regulations and/or high taxes
3	Safety/ Environment regulations	Inflation	Crime and theft	Inadequate supply of infrastructure

Studies looking at the effect of liberalization policies on improving the business environment for SMEs in Africa, show that the reduction in state monopolies and intervention in pricing and distribution made it easier for SME proprietors to obtain resources and market their products (Parker et al, 1995). In addition, the reforms fostered efficiency among SMEs and proprietors were able to adapt to the changing

environment, exploit opportunities and benefit from supply chain networks. However, not all effects were positive. SMEs also faced increased competition in the post-reform market, both from imports and domestic products. Moreover, they still considered taxation levels to be high relative to profits, though they were generally more concerned with economic uncertainty and government attitude towards private business than with specific regulations.

Clearly, development practitioners can and do influence policy direction. Encouraging government policies that support long term market development while, where relevant, reducing the level of corruption will help to provide a more enabling environment for SME business opportunity.

Infrastructure

Good infrastructure is vital for a business to develop and thrive. Well developed road and rail networks reduce transport costs and reliable communication networks reduce the costs of making and amending orders. In Tanzania (Case study 11) the lack of transport and communications infrastructure is a major hindrance to the development of private sector supply chains and markets in the RWSS sector.

In rural locations, basic communication and transport infrastructure may not exist throughout the year. Seasonal weather can disrupt roads and telephones, affecting product orders, deliveries, and payments. In Benin (Case Study 7), the main demand for spare parts begins after the rainy season. In most locations, businesses typically address this by making more deliveries to retailers and wholesalers before the rainy season begins. This can have an impact on the supply chain if such a coping strategy incurs extra costs (e.g., retailers and wholesalers holding stocks for longer) as these costs will invariably be passed on to the customer.

With a business such as handpump spare parts, in which profit is relatively low, dynamics like these add another dimension to the issue of viability and incentives, and the factors of scale. The ability to be paid in a reasonable amount of time has a significant bearing on cash flow, which is very important for small traders and a significant determinant of their continued existence.

Effective Support Mechanisms

Within a supply chain, individual stakeholders can often benefit from business development services (BDS) that provide the skills and training necessary to help such SMEs develop and expand. Support can include:

- labor and business management training (book keeping, inventory management, basic business operations)
- marketing and information services (as discussed in section 3.3)
- consultancy and counselling on business operations
- technology development and dissemination
- improving business linkages through subcontracting, franchising, and creating business clusters
- considering the whole supply chain and each stakeholder's role within it.

Traditionally, governments and donors have provided business development services (BDS) through public institutions or NGOs, often free or on a subsidized basis. However, these can suffer from being too general or supply-driven, with insufficient awareness of cost control (Hallberg, 2000). Since the amount of available subsidy also limits both the quantity and quality of publicly-provided or publicly-funded services, many SMEs may not be able to access the service.

In RWSS schemes, business development services are provided to differing degrees. In the projects studied, and where such services existed, none were independent of external development agency assistance. However, the demand for them existed in all of the other countries. (Box 3.17 highlights some

of this potential in a number of projects in Asia and Africa.) Considerable effort is now focused on developing an environment where BDS can be provided commercially by the private sector. Donors and governments, rather than providing BDS directly, can help facilitate this process.

Box 3.17 Existing and potential demand for business development services in RWSS

Afridev, Inhambane Province, Mozambique (Case Study 6)

The work of Care International has laid the foundation for an important supply chain for the delivery of Afridev pumps and market development in a country where private sector commerce is itself re-emerging after many years of civil war. The NGO provided business development support to the traders in developing this supply chain and there is potential for the private sector to continue this support function. One function of the BDS could be to help build confidence among banks and finance institutions so SMEs receive better access to finance.

Treadle pump, Bangladesh (Case Study 2)

International Development Enterprise in Bangladesh effectively provides free business development services to manufacturers who receive marketing and sales support from the IDE network. In return, manufacturers have to adopt quality standards for the Treadle pump as laid down by IDE.

Small Business Project, South Africa

The Small Business Project (an NGO) plays a BDS role by developing and screening small businesses to supply goods and services to large manufacturers and production companies, particularly in the mining industry. The Small Business Project currently benefits from external funding but there may be potential to develop its BDS role on a commercial basis. This model may have some application in the rural water sector.

Developing a commercial BDS sector within RWSS projects is a relatively new area. But Box 3.18 highlights some key findings on developing BDS from the Committee of Donor Agencies for Small Enterprise Development.

Box 3.18 Developing markets to provide business development services - guidance notes for practitioners (Levitsky, 2000)

1. Understand the existing market's characteristics. Assessing the dynamics of formal and informal sources of support should identify the existing levels of access SMEs have to this support.
2. Ensure government regulation allows for the international flow of technical and marketing resources in order to help support and provide BDS.
3. When developing BDS recognize that the needs and priorities identified by entrepreneurs are not always the same as those judged by outside observers. An important activity is to raise the level of information awareness about market opportunities and technologies among entrepreneurs so that they can accurately assess their own needs.
4. Efforts should be directed toward developing incentives and techniques that encourage banks, utilities, extension services, government agencies, and NGOs toward designing appropriate services that are demanded by SMEs and delivering them cost-effectively as these are most likely to be sustainable.
5. Subsidizing BDS to SMEs in their learning phases may be justified because of the impact on

employment and income growth. But it is important that these SMEs will eventually pay for such services and that these services are able to respond to changing market demand.

Recommendations for practitioners

Support development of the formal finance sector

- Facilitate access to finance for start-up, expansion and product diversification (though actual provision of financial services should be left to specialized agencies)
- Build capacity in the formal financial sector and confidence in the water sector (e.g., training people in financial institution on risk assessment to help build capacity and conducting market assessments to build confidence). Donors and governments are in a key position to implement strategies that improve the financial institutions' confidence in the market.

Encourage government policy to support long term market development

- Encourage policies that support long term market development, rather than short term tax revenue gains.
- Support policies that help to reduce corruption.
- Invest in transport and communication infrastructure as part of wider programs

Develop markets for business development service providers

- Assess existing and potential demand for services in all sectors (agriculture, transport, energy, water etc) to exploit economies of scale and maximise experience.
- In response to assessments, use the considerable body of worldwide experience to develop markets as appropriate, ensuring clear exit strategies for external assistance exist.

4 ACTION CHECKLIST FOR GOVERNMENT DEPARTMENTS, DONORS AND NGOs

WHAT	HOW
Encourage SME creation and development	
Understand the nature of demand	<p>Engage in discussions with SME professionals in other sectors.</p> <p><i>For Government departments specifically</i></p> <p>Consider appointing a development co-ordinator who will be a business development specialist to manage all SME areas while the project develops. Role will include co-ordinating between development agencies and the private sector, developing and implementing supply chain strategies and providing water sector development teams with business development skills necessary to engage the private sector in projects</p> <p>Help donors and NGOs conduct market assessments to determine the dynamics of the general business environment and the potential demand in the water sector.</p> <p><i>For Donors and NGOs specifically</i></p> <p>Fund and conduct market assessments in co-ordination with other development agencies, government and SME experts to determine the dynamics of the general business environment and the potential demand in the water sector. (See page 25 for market assessment terms of reference guideline.)</p>
Develop a coordinated donor approach to projects to maximise available market potential and demand in location	<p>Develop mechanisms where donors can co-ordinate their approach to projects in association with governments, i.e. a working party to achieve a targeted approach to geographical areas.</p>
Choose the right technology for the project	<p>Using the co-ordinated approach, conduct a technology assessment at the project outset to ensure the technology is appropriate for the market, satisfying customer demand. This will bring together technical expertise, market development experience and knowledge of end-user capacity and trends with a long-term perspective of sustainability.</p>
Encourage SME development through incentives	<p>Determine the profit levels existing SMEs operate with through SME surveys and inform SMEs of the potential for profit within the water sector (use findings from completed market assessments to do this).</p> <p>Encourage the procurement of equipment through local markets at local market rates.</p> <p>Encourage customers to stimulate private sector development by making their product demands known to SMEs by ensuring they know how and to whom to make their concerns known.</p> <p><i>For Donors and NGOs specifically</i></p> <p>Avoid activities that distort markets and act as disincentives to the private sector, such as providing free equipment or ordering centrally in block, paying large percentages in advance.</p>

<p>Improve access to information to customers and supply chain stakeholders</p>	<p>In coordination between implementing agencies and government, package combined information on consumer demand in an appropriate form for supply chain stakeholders, to present business opportunities. (Completed market assessment will provide much of the required information.) Ease the flow of information with the supply chain by: simplifying the supply chain which increases visibility of consumer demand and market dynamics optimizing the location of stakeholders; the closer they are to each other, the easier it is for them to communicate. <i>For Government departments specifically</i> Ensure that customers are aware of where to go to get spares, new equipment or repair services and periodically check this is still the case. <i>For Donors and NGOs specifically</i> Consider facilitating the creation of business development services (BDS) to act as a third party within the supply chain, providing a central hub of information to be passed among partners (see section 3.3)</p>
<p>Create and sustain supply chains</p>	
<p>Improve SMEs' access to finance by helping to develop the formal finance sector</p>	<p>Determine what the demand for finance and constraints to its access are. Determine what would be the most appropriate financial products that best meets SME demand and encourage financial institutions to increase the range of products that they can offer. Build financial institutions' confidence in the water sector using the findings from the completed market assessment. Build capacity in the finance sector by, for example, training people in risk assessment.</p>
<p>Invest in infrastructure</p>	<p>Invest in infrastructure as part of wider programs to help develop private sector supply chains within rural water projects.</p>
<p>Develop policies to support long term market development</p>	<p><i>For Government departments specifically</i> Develop policies that support long term market development, rather than just short term tax revenue gains.</p>
<p>Develop the supply chain management function</p>	<p>Encourage private sector supply chain operators to provide the resources needed for effective supply chain management within their organization. Identify the potential for SMEs to provide the supply chain management role on a commercial basis. <i>For Donors and NGOs specifically</i> Train project staff to provide these supply chain management skills during project implementation and develop mechanisms that will still be in place beyond the project.</p>
<p>Develop markets for business development services</p>	<p>Assess the existing and potential demand for business development support in all sectors (agriculture, transport, energy etc) to exploit economies of scale and maximise experience.</p>

	When developing business development support ensure clear exit strategies are in place for external assistance.
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5 DIRECTORY OF SMALL AND MEDIUM ENTERPRISE DEVELOPMENT AND SUPPLY CHAIN DEVELOPMENT RESOURCES

This list represents organisations that were identified during the research activities of the Supply Chain Initiative. It is not an exhaustive list. It is meant to provide development practitioners with a guide to organisations who are working in the area of SME and Supply Chain Development. Practitioners are encouraged to seek out the many other organisations that also work in this sector, for instance through the internet.

NGOs with supply chain and SME development experience	CARE International, Mozambique	Av. Matires de Mueda 596 C.P. (PO Box 4657 Maputo Tel: (258-1) 49 20 64/6 Fax: (258-) 49 20 77 Email: kevin@caremoz.uem.mz
	International Development Enterprises (IDE) HQ-USA	10403 West Colfax Avenue Suite 500 Lakewood, CO 80215 USA Tel: (303) 232-4336 Ex10 Email: AHerrmann@ideorg . Website: www.ideorg.org
	WaterAid, Mozambique	CP 276 Lichinga Niassa Province Mozambique Tel: 258 71 2935 Email: wateraid-mz@teledata.mz Website: www.wateraid.org.uk
Consulting Services	Bannock Consulting, UK	47 Marlebone Lane London W1M 6LD Tel: (44) 207 535 0200 Fax: (44) 207 535 0201 Email neil_ramsden@bannock.co.uk
	Intermediate Technology Consultants (ITC) , UK	Schumacher Centre Bourton Hall Bourton-on-Dunsmore Rugby Warwickshire CV23 9QZ UK Tel: 44 1788 661103 Fax: 44 1788 661105 Websites: www.itcltd.co.uk www.itdg.org
	Gamos Ltd, UK	152 Cumberland Road Reading Berkshire RG1 3JY

		UK Tel: 44 118 926 7039 Fax 44 118 935 1374 Email: simon@gamos.demon.co.uk
	Sibley International, USA	2121 K Street, NW, Suite 210 Washington DC 20037 USA Tel: (1) 202 833 9588 Fax: (1) 202 775 9416 Website: www.sibleyinternational.com
	Small Business Project, South Africa	P.O. box 1051 Houghton 2041 Johannesburg South Africa Tel: (27) 11 484 4666 Fax: 27 11 484 3897 Website: www.sbp.org.za
Donors With SME Development Programs	Department for International Development (DFID), (UK Government)	Chief Enterprise Development Adviser Enterprise Development Department DFID 94 Victoria Street London UK SW1E 5JL Tel: 44 020 7917 0263 Fax: 44 020 7917 0797 Website: www.dfid.gov.uk
	Donor Committee for Small Enterprise Development	Part of the International Labour Organisation: www.ilo.org/public/english/employment/ent/sed/bds/donor/index.htm
	InterAmerican Development Bank -	SME Forum,- an interactive site for the exchange of information on the small- and medium-enterprise sector in Latin America http://lanic.utexas.edu/pyme/eng/
	Swiss Agency for Development and Cooperation -	Small Enterprise Development (SED) Department Webiste: www.intercoop.ch/sed/
	World Bank/IFC – Small and Medium Enterprise Department	2121 Pennsylvania Avenue NW Room F2K 188 Washington DC 20433 USA Tel: (202) 473-8841 Fax: 202 522 3742 www.worldbank.org/business/01enterprise.html www.ifc.org/sme

6 REFERENCES

Case Studies carried out as part of the Supply Chains Initiative:

Published:

Water and Sanitation Program, 2000, Afridev Handpumps in Pakistan: Private demand emerges for an affordable and reliable pump. New Delhi: Water and Sanitation Program-South Asia.

Water and Sanitation Program, 2000, The Treadle Pump: An NGO introduces a low cost irrigation pump to Bangladesh. New Delhi: Water and Sanitation Program-South Asia.

Water and Sanitation Program, 2000, The growth of private sector participation in Rural Water Supply and Sanitation in Bangladesh. New Delhi: Water and Sanitation Program-South Asia.

Water and Sanitation Program, 2000, Arsenic Mitigation in West Bengal and Bangladesh: Helping households respond to a water quality crisis. New Delhi: Water and Sanitation Program-South Asia.

Water and Sanitation Program, 2001, The Rope Pump: Private Sector Technology Transfer from Nicaragua to Ghana. New Delhi: Water and Sanitation Program-South Asia.

Unpublished:

Vergnet (West Africa) based on discussions with staff at Vergnet headquarters

Afridev (Malawi)

Afridev (Inhambane Province, Mozambique)

Various Pumps (Benin)

Reviewing supply chain interventions over 20 years (Ghana)

Analyzing private sector and supply chain potential (Tanzania)

Bicycles and their spare parts (Niassa Province, Mozambique)

General References:

Arlosoloff, S. 1987. Community Water Supply: The Handpump Option. Washington DC: Rural Water Supply Handpumps Project, UNDP-World Bank Water and Sanitation Program.

Brunetti A, G Kisunko, and B Weder. 1997. "Institutional Obstacles to Doing Business, Region-by-Region Results from a Worldwide Survey of the Private Sector," (Background Paper for World Development Report 1997). Policy Research Working Paper No. 759, April. Washington DC: World Bank.

Cutter Information Corp. 2000. "Managing the Enterprise Value Chain," Arlington, MA [USA]: Cutter Information Corp., www.cutter.com/itgroup/reports/entvalue.html.

Diwi Consult and Bureau d'Ingénierie pour le Développement Rural. August 1994. "Etudes de Réhabilitation des Points d'Eau Existants."

Hallberg, Kristin. 2000. "A Market-Oriented Strategy for Small and Medium Scale Enterprises." Discussion Paper No. 40, April. Washington DC: International Finance Corporation.

Handfield, RB and EL Nichols. 1999. Introduction to Supply Chain Management. New Jersey: Prentice Hall.

Handpump Technology Network Conference. 1997. "Partnerships, Roles and Responsibilities." Proceedings of the Handpump Technology Workshop, Malawi, March 17–21, 1997. St. Gallen, Switzerland: Swiss Center for Development Cooperation in Technology and Management.

Lee, HL and S Whang. March 1999. "To Share or Not to Share: Information Sharing in a Supply Chain," Stanford, CA [USA]: Stanford University.

Lamb, JE. 2000. "Non-Farm Rural Enterprise Development," in D Giovannucci (ed), The Guide to Developing Agricultural Markets and Agro-Enterprises. Washington, DC [USA] World Bank

Levy, B. 1994. "Technical and Marketing Support Systems for Successful Small- and Medium-Size Enterprises in Four Countries." Policy Research Working Paper No. 1400, December. Washington, DC: World Bank.

Operations Evaluation Department. 2000. "Rural Water Projects, Lessons from OED Evaluations." OED Working Paper Series No. 3, March. Washington DC: Operations Evaluation Department, World Bank.

Parker RL, R Ripoche, and W Steel. 1995. "Small Enterprises Adjusting to Liberalization in Five African Countries." World Bank Discussion Paper No. 271, April. Washington DC: World Bank.

Levitsky, J. 2000. "Business Development Services; A Review of International Experience." London, UK: Intermediate Technology Publications.

Travers, SL. 2000. "Ideas from Outside the Bank: Time Preference and Discount Rates." Water and Sanitation Economic Review, 17:, May. Washington DC, USA: World Bank.

Tyndall, G, C Gopal, W Partsch, and J Kamauff. 1998. Supercharging Supply Chains: New Ways to Increase Value Through Global Operational Experience. New York, NY, USA, Wiley

World Bank. 1997. "Mali Rural Water Supply Project." Performance Audit Report No. 16511. April. Washington, DC: World Bank. (IBC)

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About the Water and Sanitation Program

The Water and Sanitation Program is an international partnership to help the poor gain sustained access to improved water supply and sanitation services. The Program's funding partners are the Governments of Australia, Belgium, Canada, Denmark, Germany, Italy, Japan, Luxembourg, The Netherlands, Norway, Sweden, Switzerland and the United Kingdom; the United Nations Development Programme and The World Bank.

Feedback

The development of sustainable supply chains for rural water supply and sanitation is an on-going process. The Water and sanitation program continues to support action research through pilot projects in East and Southern Africa. The program invites contributions of experience on supply chain development from practitioners, to be disseminated through its website and other material and coordinated through the WSP office in Washington D.C. Please contact Parameswaran Iyer (piyer@worldbank.org).