SUPPLY CHAINS

A supply chain relates all of the activities associated with the flow and transformation of goods and services from their source to the end-users, that is, from manufacturers, importers, and service providers, through a network of distributors, to customers (see below). Payment flows in the opposite direction. Goods and services include technology (such as latrine slabs, handpumps, and associated spare parts), training, repair services, financial and technical services, and facility management.

**BASIC SUPPLY CHAIN**

<table>
<thead>
<tr>
<th>CUSTOMERS (COMMUNITIES, INDIVIDUALS)</th>
<th>DISTRIBUTORS (RETAILERS, WHOLESALERS)</th>
<th>SUPPLIERS (MANUFACTURERS, SERVICE PROVIDERS)</th>
</tr>
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<tbody>
<tr>
<td>Payment</td>
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<td>Goods and Services</td>
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In the rural water supply and sanitation sector, the lack of sustainable supply chains for these goods and services limits the potential long-term gains from development initiatives. Schemes often fail because of a lack of spare parts and inadequate operation, management, and maintenance capabilities. Project-focused donor support and an emphasis on public sector provision have exacerbated the situation, paying little attention to building the capacity of viable supply chains for goods and services.

**THE SUPPLY CHAINS INITIATIVE**

- Recognizing the potential of the private sector in rural water supply and sanitation, (predominantly small and medium enterprises) while not dismissing the need for a coherent public sector role, the Supply Chains Initiative aims to:
  - Identify the principles that underlie successful private sector supply chains for goods and services in rural water and sanitation.
  - Develop tools that help development practitioners to create enabling environments for successful supply chains during project implementation.

The first phase of the initiative will focus on increasing understanding of supply chains for rural water supply and sanitation. A total of 11 case studies in nine countries will be conducted, presenting findings on:
  - The nature and dynamics of supply chains for rural water supply and sanitation.
  - Principal factors that trigger, encourage, and inhibit the growth of private sector involvement in service delivery.
  - Exit strategies for supporting agencies that have established supply chains in rural water supply and sanitation.

Case studies have been recently completed on the development of supply chains for handpumps, spare parts, and sanitation equipment in Bangladesh, Benin, Mozambique, Nicaragua, and Tanzania.

**INITIAL FINDINGS**

- Initial findings from the case studies suggest that effective private sector supply chains have developed in environments where:
  - There is an active rural private sector and minimal involvement of external support agencies (ESAs), (for example, in Bangladesh).
  - The supply chain is short, the technology is simple and relatively cheap, and ESAs are the main customers for the manufacturers (for example, in Nicaragua).

However, findings also suggest that private sector supply chains are often absent in environments where water-related private sector activity is limited, even though reasonable private sector activity exists in other markets, such as in mechanical hardware and foodstuffs (for example, in Tanzania). In these environments, ESAs often provide significant support in the provision of water supply equipment and spare parts.
The initial findings from case studies raise more issues for further analysis than they answer questions. However, what is emerging about the nature of supply chains for the rural water supply and sanitation sector converges with the accepted understanding of supply chains worldwide:

**KEY FACTORS FOR SUCCESSFUL PRIVATE SECTOR SUPPLY CHAINS**

- Effective relationships among all stakeholders
- Reasonable transaction costs, times, and arrangements
- Efficient information flow
- Adequate demand (market size) to sustain the supply chain
- Effective incentives for all stakeholders
- Access to credit at an affordable rate and payment period
- Human and technical capacity at each stage of the supply chain
- Unconstrained institutional environments.

This Progress Report presents the activities of the Supply Chains Initiative and spotlights key issues from case studies on:

- **NICARAGUA**: The rope pump supply chain
- **MOZAMBIQUE AND BANGLADESH**: Supply chains developed by non-governmental organizations (NGOs) for treadle pumps, handpumps, and spare parts
- **SOUTHERN AFRICA**: A regional approach to handpump supply.

**SPOTLIGHT:**

The rope pump (Bombas de Mecate)

The rope pump is a simple, appropriate technology that has significantly increased access to potable and agricultural water in Nicaragua and throughout Central America during the last 10 years.

The objective of the study was to determine the nature of the supply chain that delivers the pumps from manufacturers to customers.

Background: There are two main manufacturers of the rope pump in Nicaragua, plus up to 10 smaller ones. The pumps have been manufactured exclusively within the private sector. However, the influence of external support agencies is significant; they have funded the technological development of the pump and are also its primary customer. Most pumps are sold to NGOs, which either provide them free of charge or through credit arrangements to rural and urban people. A small percentage of pumps are sold directly to farmers. For the main manufacturers, the rope pump is their principal product.

Initial findings suggest the following factors have, in part, assisted the delivery of rope pumps to rural and urban residents:

- **ESAs and the government are the two main sources of demand for the pump.** These two groups place high volume orders and pay in advance, and provide greater assurance of payment than individuals do.
- **The technology is simple, easily repairable, and cheap;** at approximately US$75 per pump, the rope pump is one-third of the cost of its conventional competitor. **Limited spare parts are required and are locally available,** often for other purposes (for example, rope).
- **The pump is of high quality because the main manufacturers focus on quality and receive support from ESAs.**
- **Relationships between supply chain stakeholders are less problematic because there is no distribution network.** The majority of pumps are bought directly from manufacturers, who also provide installation training.
- **Communications infrastructure is good.** The average travel time to acquire a rope pump is three hours (one way).

Further analysis will consider how reductions in ESA involvement as the primary customer will affect the sustainability of the supply chain.

**BANGLADESH**

NGO develops private sector supply chain for treadle pump

International Development Enterprises (IDE), an NGO based in the United States, has supported the development, marketing, and distribution of a low cost manual irrigation pump by making strategic interventions in the private sector supply chain. These included capacity-building of manufacturers and dealers, network development, technology research and development, and demand creation through marketing support.

**KEY LESSONS**

IDE’s experience showed that even in a price-sensitive environment, quality was a major determinant of product success. Moreover, a focus on marketing and strategic interventions in the supply chain resulted in a high-quality product, increased demand, and fostered competition and affordable prices.

Further analysis will consider the lessons from IDE’s attempts to reduce its involvement and leave behind a self-sustaining supply chain.
The NGO, the handpump, and the supply chain

In Inhambane province in Mozambique, Care International has developed a supply chain for the delivery of Afridev handpumps and spare parts through the private sector. (More information is available through the SKAT website: www.skat.ch.)

Working closely with manufacturers, distributors, regional traders, and local shops (cantineros), Care International has established a potentially self-sustaining distribution network.

Features of the supply chain:
- Consumers buy spare parts at local shops.
- ESAs create demand through projects and help to develop relationships between stakeholders.
- Commercial arrangements exist between stakeholders in the supply chain.
- For all three manufacturers, sales of the Afridev pump are a small part of their entire business.
- The distributor operates in the Southern Africa region.
- ESA credit arrangements allow some manufacturers to avoid acquiring high cost local financing.

Beneficial factors include:
- ESA support in supply chain development
- Government and ESA support and promotion of the product
- Reasonable communications
- Existence of established, small local traders.

Further analysis is needed on:
- The viability of this supply chain in more sparsely populated areas of the province.
- The impact of reduced ESA support on the development of supply chains and the creation of markets.
- The true dynamics of credit arrangements between traders in the supply chain.
Exploring a regional approach to handpump and spare parts supply

Within Southern African countries, many manufacturers, importers, distributors, and service providers are associated with the supply chain for handpumps and their spare parts. External support agencies also play a significant role in this business.

Recent investigations concluded that:
- Stakeholders do not have equal access to information about the market (for example, on the locations and costs of galvanizing services). Greater access to information may increase the range of options available to stakeholders, resulting in more affordable and higher quality products.
- A regional approach to handpump and spare parts supply may be advantageous in Southern Africa, because of the potential to capitalize on the critical mass of experience, demand, existing stakeholders, and geographical logistics.

Through the Supply Chains Initiative, the Water and Sanitation Program is assessing the demand for a regional directory of water technology and service providers in rural water and sanitation. All stakeholders in the region are invited to contribute to this assessment and to advise on appropriate media and an owning-organization for the long-term management and dissemination of the data. It is hoped that the data collection process will stimulate stakeholders to consider a regional approach to supply.

COORDINATORS

The Supply Chains Initiative is led by a team of regional coordinators from the Water and Sanitation Program, representing the South Asia, East and Southern Africa, West and Central Africa, Andean, and East Asia and Pacific regional offices, Central America, and its headquarters office in Washington, DC. Collaborating partners include international NGOs, bilateral and multilateral agencies, and government departments.

Coordinators of the initiative are:
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UPCOMING EVENTS

August, 2000: Publication of field notes on supply chain studies from Bangladesh, Nicaragua, and Pakistan

August, 2000: Publication of Global Synthesis of all Supply Chains studies to date

2-3 November, 2000: Supply chains workshop, Dhaka, Bangladesh (prior to 26th WEDC Conference)