

Supply Chain Issues for WES Facilities



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1 Introduction

The Millennium Development Goals for Water Supply and Sanitation have the ambitious goal to half the proportion of people without access to safe water supply and sanitation facilities by 2015. An estimated 1.5 to two billion people need to gain access to improved water facilities, 85% of these people live in rural areas. Millions of water points are necessary to serve those numbers. However, such vast investments can only reach their intended impact if the facilities are kept in working order. In the past, goods and services were traditionally delivered by the public sector, with donors supplying spare parts and technical assistance through projects. Development projects have attempted either to 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 cases, spare parts have often been provided free to users or with subsidies.

Despite best intentions, post-project problems of O&M management coupled with the common inability to reach outlying poor rural areas, put supply chains management issues at the core of sustaining investments. Delivery mechanisms for spare parts and repair services have consistently failed because of limited resources, and a lack of incentives, resulting in a high percentage of non-functioning handpumps and water systems only a few years after their installation. This is a problem particularly acute in Sub-Saharan Africa.

Poor quality of construction and non-affordable systems also contribute to neglect of routine O&M and non-allocation of funds for it. Adoption of cost efficient technology solutions needs to be coupled with functioning O&M.

2 Background

Experiences from the last decades showed that technical maintenance alone cannot solve all problems. The whole approach has to be tackled in a comprehensive way, which RWSN summarizes under the term "Supply Chain". In their simplest form, supply chains transform raw materials to products, which are sold to customers. Payment for this process flows in the opposite direction in the chain.

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

The need to subsidise the investments for water systems makes the setting up of supply chains complicated. Project centred procurement is often at the core of broken down supply chains. The projects purchase on behalf of users. International importers supply the equipment, and the economically not lucrative sales of spares should be taken up by the local private sector. Buying directly abroad short circuits the essential lower links in the supply chain thus impedes the capacity of local spare parts dealers to support water systems.

The availability of spare parts is influenced by a number of inter-related factors including market size and segmentation; equipment standardization; existing base(s) for equipment; spares manufacture; efficiency of after-sales support; and the policy on involvement of informal service providers.

The underlying objective of a functioning and sustainable supply chain is to deliver a successful product to the customer, and all involved stakeholders make an acceptable profit. There has to be a demand for a product that:

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

Benefits have to satisfy both the suppliers as well as the customers. There is no doubt successful supply chains have their costs, "cheapest" is not always "best". Using commercial networks for supply of equipment and spare parts might mean that the goods may be a few dollars more expensive.

However, in order to achieve sustainability for the built facilities, investing in the development of independent and sustainable private sector suppliers is money well spent and worth its outlay.

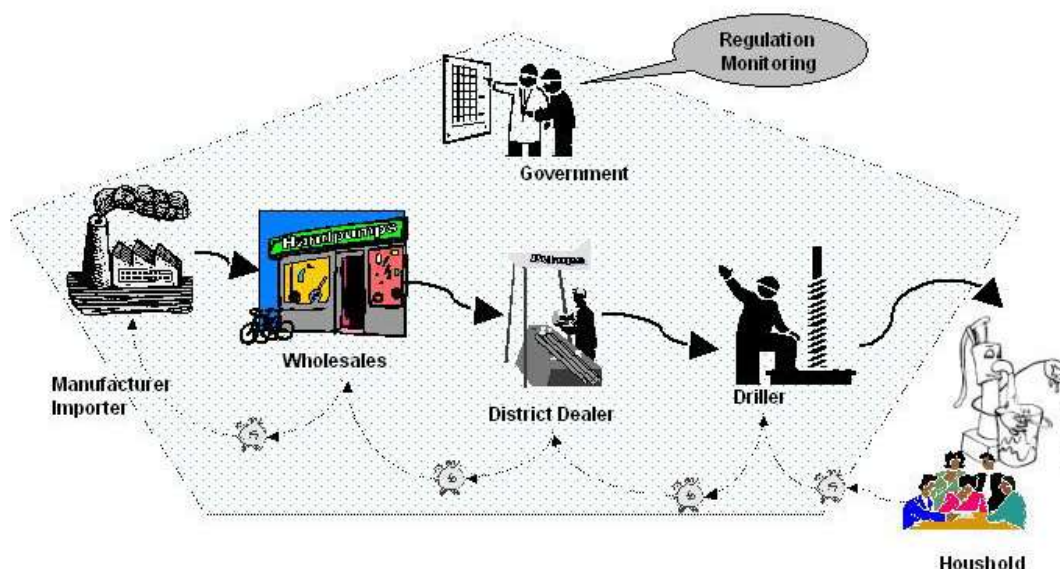
A paradigm shift is needed on part of all implementers of projects; emphasis has to be placed on setting up mechanisms to work with and through the local private sector.

In the past, project procurement officers were the customers. The suppliers focused primarily on delivering the goods to the warehouse and this point their responsibility ended. They had no relationship with the end users of the products. Accordingly, suppliers were not bothered about after sales services. When supply chains go right down to the users the suppliers must collaborate with dealers, mechanics and the customers to meet their requirements through product availability and responsive delivery. In such a relationship, there is an equal importance to information flow and financial flow amongst all stakeholders. Therefore the supply chain performance must not only measure how well the services are provided to the customers but also how the financial aspects are handled between stakeholders.

3 How does a Supply Chain work

Supply chains start at the raw material stage and are a process that adds value to the products in several steps until the products are sold to the customers. Payment for this process flows in the opposite direction of the chain.

3.1 Flow of Services and Finances



In the RWS sector, a possible supply chain exists from manufacturers, importers, local and regional dealers, service providers (repairers, installers, trainers, etc) to the customers (water committees, individuals, etc) for goods and services (equipment, training, repair services, financial and technical services, and facility management).

It should be noted that for more complex water facilities (motorised systems for small towns) the customer is often well defined. It is the operator of the system. For low cost, handpump based systems the client is frequently not well defined. Community based O&M allows for heterogeneous institutional arrangements in O&M management.

Therefore, the lower end of the supply chains becomes somewhat vague and no proper structures are set up.

The basic objective of all supply chains is to deliver a useful product at an acceptable profit at all levels. Benefits in the supply chain have to satisfy both, profitability for the suppliers as well as customer satisfaction.

In many countries (and especially in Africa), the situation is not always favourable. Geological and economic conditions make it difficult to provide safe water to rural houses. The flow of goods and services to rural areas is made difficult by:

- manufacturers of equipment may be distant from users, often, when the equipment is imported, they are based in other countries;
- the distribution (retail) market may be poorly developed;
- communication and transportation links are poor; and
- customers are isolated and poorly informed, and little is known about their demand.

An additional obstruction is the need to establish mechanisms to subsidise the construction of water systems, which makes the setting up of supply chains considerably more complicated. Stakeholders, particularly those in government agencies and NGOs, feel that they should meet basic human needs, often through the direct provision of heavily subsidised services.

NGOs often believe that using the market approach, with greater private sector involvement and the proper use of existing commercial networks is unacceptable, as the aim for profits in the private sector is at odds with the needs of the rural poor.

3.2 More complex Supply Chains

In rural water supply, the complexity of supply chains can vary considerably. In a simple supply chain (as shown above), the customer's demand is the only driver and the role of the government is only to provide an enabling environment.

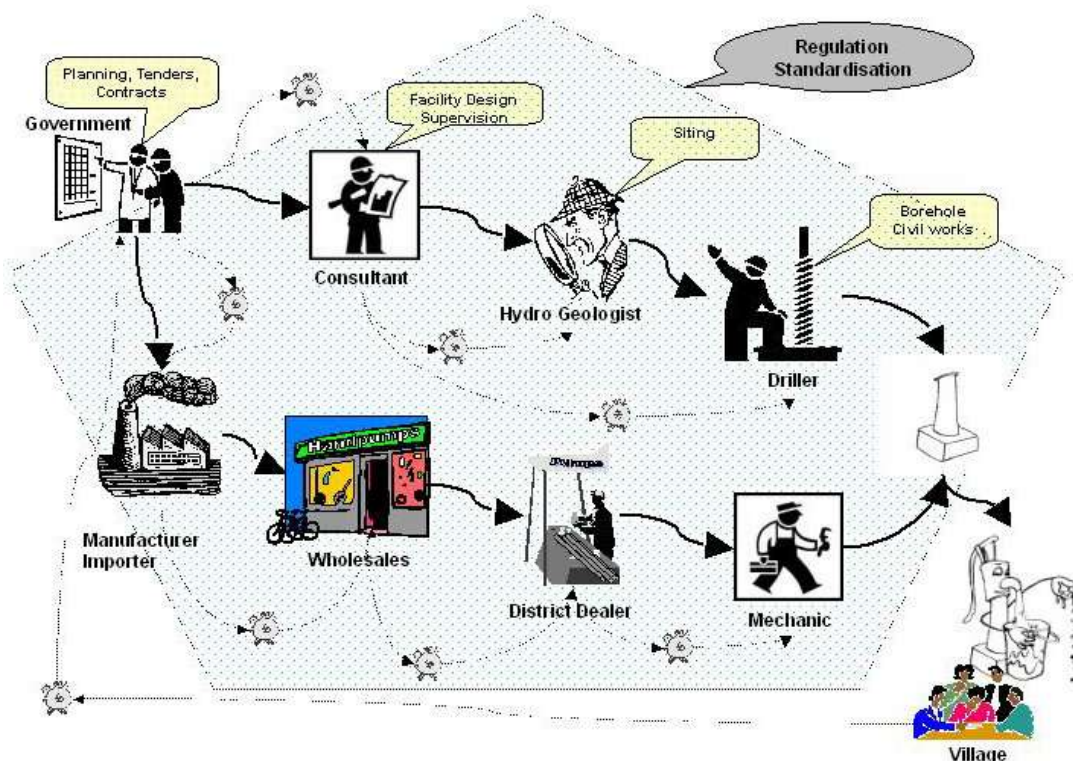
More complex facilities, with complicated technology and more players involved, have usually higher costs, which are too high to be affordable for a single household or a rural community.

In such supply chains, there are basically two drivers:

- The Government or the donor project
- The Community

The contribution of the community is supplemented by a (often heavy) subsidy from the government or the donor project. Money is mainly flowing "top-down" in the chain and not "bottom-up". The communities, for whom the WES facilities are built for have no direct control what is happening to their contribution – **they are not the customers**.

Special attention is therefore needed to make sure that the end users are included in the supply chain.



4 Business Approach to successful Supply Chains

Five key factors are essential for a successful “**business approach**” in a supply chain:

4.1 *Adequate Demand*

A continued demand for the goods and services, which are provided through a supply chain, is **the fundamental factor** for the sustained operation. Specific factors are important to generate such product demand. They include, primarily, the felt need for safe water supply and sanitation services by the users.

A supply chain only exists in response to customer demand. Without adequate demand, a supply chain will not develop and function sustainably. In complex systems, the operators (who might be running the systems on commercial basis) express the demand more explicitly. In community-based maintenance, the demand is often not so clearly articulated.

Development of self-supporting, sustainable markets with a continued demand for water supply and sanitation products (e.g. new equipment, spare parts and repair services) is not necessarily created by projects despite the fact that they might be the biggest buyers. Their interventions often have a distorting effect on the market. Project procurement does not reflect demand, and is detrimental to the creation of viable private sector markets.

Cost for investment and maintenance, appropriate products, simplicity of the technology are other important factors.

4.2 *Effective Stakeholder Incentives*

For the private sector to stay involved in business as a link in a supply chain, the suppliers must have sufficient motivation and confidence that the products offered will yield enough profit to make the initial investment and the continued effort worthwhile.

4.3 *Effective Information Flow*

To create and maintain the supply chain there must be adequate information flow between stakeholders, and improved communications. Customers need to know where they can get the products. Suppliers need to be aware of long-term policies and strategies in order to invest into the access to the market.

4.4 *Effective Supply Chain Management*

Useful supply chain management means to intervene as little as possible but to build effective relations between stakeholders, to identify and develop potential partners in the chain, to make partners aware of the 'bigger picture' and to create a collaborative environment for planning.

4.5 *Enabling Environment*

Policies of Governments, Donors, and NGOs should create an enabling environment, which does not inhibit the markets. Enabling environment also means stability of the market. Entering a market requires an investment, which should have a reasonable rate of return. If the prospects of staying in the market are short, the investment costs need to be recovered in this short period.

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

4.6 *The 5 P's in the Business Approach*

The establishment of consumer demand for any given product depends on five key criteria:

Product - the product achieves its intended utility and purpose and is of adequate quality for the consumer.

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

Place - the product is available in adequate volumes in the required location.

Promotion - consumer knowledge about the use and benefits of the product, and information where and how it can be acquired and maintained.

Policy – policy creates an enabling environment that allows the private sector to function with as little restrictions as possible and at the same time protects the customer's interest.

4.6.1 Product

A product must fulfil its intended purpose in order to create and sustain consumer demand. Product quality and reliability affect consumer demand. Poor consumers are not always willing to pay for quality improvements; often a compromise between price and quality is made. They might opt for the cheaper, less reliable technologies.

The product should be straightforward enough for people to understand how to use and repair it. If the technology is beyond the understanding of the customer, he might not attempt to repair it when it breaks down.

4.6.2 Price

To stimulate and sustain demand, the cost of a product must be within acceptable limits to the consumer. Ability and willingness to pay is a function of the added value the customer expects from the product and on the cash, he has on his disposal.

Low cost technologies can stimulate and sustain a demand from individual families or from small communities. Affordable, simple technologies can be produced near the users and allow therefore to establish short and uncomplicated supply chains.

Expensive, complex products have more players in the supply chain who need to make a living from selling goods or services. The components have to travel greater distances increasing the cost and thus having an adverse effect on demand.

4.6.3 Place

It may not be profitable if, as is the case in sub-Saharan Africa, private sector suppliers have to travel large distances, often on bad roads, to deliver products, perform maintenance and make repairs. The number and the density of customers per location is critical, they have a strong influence on the viability of business. Successful supply chain examples in South Asia usually profit from high population densities, which allow SME to operate due to short delivery distances and close suppliers. The availability of goods and spare parts is influenced by a number of inter-related factors including market size and segmentation; equipment standardization; existing production or utilisation base(s) for equipment; spares manufacture; efficiency of after-sales support; and the policy on involvement of informal service providers.

Development projects have the tendency to install large volumes of equipment in their project areas; all need to be supplied with after sales services. This project centred approach with little co-ordination between project of other implementing agencies results in a variety of small, limited and unsustainable markets for different technologies. Standardisation has the potential to create sufficient levels of demand for supply chains and viable markets. However, standardisation is an intervention by government, which interferes with free markets. Therefore, decisions to standardise should be well considered.

4.6.4 Promotion

To stimulate and increase demand, potential consumers need to have enough product information, such as the utility and benefits, the specific properties and qualities, as well as how it can be purchased.

In rural water supply, the promotion of products had traditionally been centred on intangible health benefits. Users often do not understand health as the main reason to invest in clean water, which means they have no motive to pay for maintenance. If water supply can be seen to have an economic benefit, it might be easier to motivate the customers to invest in keeping the systems operational.

In future it could be important to look at other ways of motivating people to believe that water is an essential commodity i.e. some social marketing might be necessary.

4.6.5 Policy

The business environment in supply chains operate should have secure macroeconomics, open trade, and unbureaucratic financial and fiscal sectors. When these aspects are not well-developed the private sector may be reluctant to invest and establish itself on a long-term basis.

Governments and ESA can create effective support mechanisms for small local enterprises to get access to finance. They also can create regulation mechanisms that are conducive to improving the environment in which to do business.

Often the local entrepreneurs are in distinct disadvantage towards the projects and NGOs because the tax legislation forces them to pay import tax and duties. In addition, they often might have to compete against state monopolies and they are hampered by interventions in pricing and distribution. Good infrastructure is also vital for business. Good roads and reliable communications reduce the costs and simplify cash flow management.

5 Problems and Challenges

Procurement/buying at factory level: In project-centred procurement, each project purchases its own equipment where it deems best and according to its own rules. Thus, suppliers have no market continuity and therefore only produce or import the specific equipment that is needed for the particular project. Buying directly abroad "short-circuits" the essential links in the supply chain. It deprives the intermediate traders and contractors of their income and in turn impedes their capacity to support water systems with after sales services.

De-linking supply of equipment from supply of spare parts: Generally, sale of spare parts only is not economically viable. Suppliers of spare parts are not interested in the business.

Separating supplies into different sections: Often the provision of goods and services is split up into various individual components. Instead of forming a chain, a conglomerate of parallel links is built. The suppliers are not linked but independently managed through a project. Thus, the accountability of the specific suppliers is reduced to the particular delivery. He has often no connection to the users.

Separating the customer from the supply chain: If the users have no say in the procurement of the equipment and are passive beneficiaries of received aid (heavily subsidised and/or free pumps or latrines), they are not part of the supply chain and cannot create a fruitful customer-supplier relationship. The facility is used for a while and later abandoned because nobody knows where or how to get repairs/replacements.

Give-aways or subsidies: This distorts the market and at worst can keep the lower links of the supply chain inoperative.

Non-affordable technologies: When high cost technologies are promoted, users are grouped into larger user communities to make the technology affordable (with all the social and management implications), rather than first seeking affordable solutions.

Neglecting the importance of legal ownership: (This applies especially to community facilities). Ownership does not start when a water system is "handed over". It is essential to create the full control through those who run the facility.

Promotion of community solutions: Because it is easier to control the construction of sizeable facilities than individual solutions, projects prefer to implement community water supplies also in areas where the customers would prefer household solutions.