AGWATER SOLUTIONS
Improved livelihoods for smallholder farmers

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*This briefing note summarizes the preliminary case study findings for discussion and comment*

# IMPROVING THE MOTOR PUMP SUPPLY CHAIN IN ZAMBIA

*Based on a report by Willem Colenbrander*

***Many more farmers could gain access to motor pumps if the supply chain was improved. This would require greater government support, better information, more pump suppliers in agricultural areas and appropriate finance. Farmers' associations could play a major role in all aspects.***

## The Opportunity

The increase in the use of motor pumps for small-scale irrigation in Zambia could lead to an agricultural boom similar to the one in Asia where large irrigation schemes have given way to extensive pump irrigation by individual smallholders. The estimated total area under small-scale irrigation in Zambia is more than 100,000 hectares. About 75% of this area is irrigated manually with buckets. Approximately 15,000 ha are irrigated by motor pumps. Profit margins for smallholders using portable pumps are considerably higher than for smallholders using other technologies. Many more farmers would like to use motor pumps but expansion is limited by imperfections in the supply chain.

## The Research

Researchers analyzed elements of the motor pump supply chain - the duty waiver, VAT rating, retail pricing, after-sales service, spare parts provision, credit facilities, subsidies and the farmer's position in the supply chain - with a view to making practical recommendations benefitting smallholder farmers (i.e., those who irrigate 1-2 ha).

Data and information were collected through in-depth interviews with staff of the Zambia National Farmers Union (ZNFU), smallholder farmers in peri-urban areas, three NGOs that support farmers in acquiring irrigation equipment and provide training, 21 retailers, the Customs Department of the Zambia Revenue Authority, Ministry of Finance and National Planning, a Customs Clearing Agent, two micro-finance institutions (MFIs) and one micro-finance membership organization.

## Main Findings

A number of factors affect the supply chain and influence whether a farmer will invest in a motor pump and continue to use it. These include government policies, provision of information about these policies and about the equipment itself, and whether pumps, spare parts, technical support and finance are available near-by.

### *Government Support*

Direct financial support from the government of Zambia to individual smallholder irrigation has been limited in the past and totaled just 2% of the US$ 842 million committed to small-scale irrigation over a 10 year period. However, the government is trying to address this, recognizing that there are over 1.1 million smallholder farmers who are an important part of the economy. In 2002 the government introduced a duty waiver on irrigation equipment, and in 2009 issued a zero VAT rating for small-scale agricultural equipment, including portable motor pumps. The Zambia Revenue Authority (ZRA) introduced the zero VAT rating *"to ensure that unregistered farmers who cannot claim input VAT on such equipment do not incur any VAT. The measure will … enable farmers to expand production and make farming a viable sector"*. These measures are yet to have significant impact on suppliers and the end-users.

### *Information*

The government's import duty waiver for irrigation equipment and zero VAT rating for agricultural equipment were published in the Government Gazette but there have been no information campaigns to give details to the public. The information that is provided by the ZRA is not always clear or complete and the rules and regulations can be confusing. Some importers guard their knowledge to maintain their competitive advantage. This lack of information puts smallholder farmers at a disadvantage.

**The Basics of the Zero VAT Rating and Duty Waiver**

The **VAT** in Zambia is currently 16%. Any company with a turn -over of >US$ 40,000 must pay VAT. Since February 2009, a variety of agricultural equipment and spares, including pump sets, receive a zero VAT rating. This means that the importer does not pay input VAT on these items and that the wholesaler or retailer does not charge the buyer output VAT.

**Import duty** on irrigation equipment is normally 15% but since 2002 duty has been waived on it. Information from customs clearing agents shows that pumps can only be considered irrigation equipment and brought in duty free if the correct Tariff Code (8413.81.00 "Pumps for Liquids") and the Correct Procedure code (4000416 "Irrigation equipment – pumps") are applied. This particular procedure code only applies when the organization that imports the pump has obtained prior permission through the Ministry of Finance.

***Proximity of Supply and Support***

The import, wholesale and retail of motor pumps are highly centralized in cities along the railway line that runs north-south across the country. The bigger companies sell spares and provide after-sales services but often only in their Lusaka headquarters.

Although there is demand for pumps in rural areas, it has not reached the critical mass required to encourage formal retailers to open new sales points in rural areas or to offer after sales support. Smallholders in remote areas complain that there are no nearby, reliable retail shops for pumps and spares and no repair facilities, and they are poorly informed about the range of available pump makes, models and prices. Travelling to a retailer in the city can cost as much as 30% of the price of the pump.

Few rural farmers have been trained in the proper use and maintenance of their pumps. As a result they are not always used optimally or maintained well.

***Costs and Financing***

The cost of pumps varies from US$ 200-1000 depending on the make and model. To cover these costs smallholder farmers usually require finance but most have little access to credit. There are 24 MFIs registered with the Bank of Zambia but most operate in urban and peri-urban areas and the cost of expanding into rural areas is high with little prospect for commensurate returns.

These MFIs obtain loans from Development Finance Institutions like the Development Bank of Zambia (DBZ) or African Development Bank (AfDB), at a reduced interest rate. Only a few MFIs deal specifically with loans to farmers and only one of them specializes in loans for irrigation equipment. The MFIs that provide credit to smallholder farmers usually charge high interest rates (4-5% per month) and offer short payback periods, usually of 6 months.

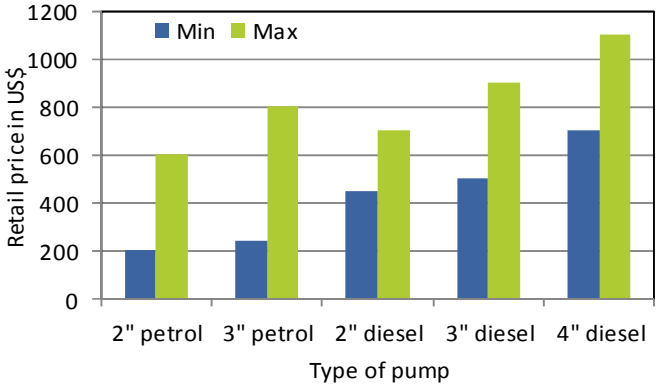


*Figure 1. Range in the cost of motor pumps*

Some NGOs provide discount vouchers for treadle pumps and a similar system could be viable for motor pumps.

## Solutions

A number of improvements can be made to the pump supply chain that would benefit smallholders and increase the extent of small private irrigation in Zambia.

**Information:** Farmer organizations are in a good position to redress the imbalance in information. An agency like the ZNFU, which is decentralized through its district associations, could undertake a number of activities to stimulate the information flow. They could, for example, confirm with the ZRA the exact procedures required to import portable pumps free of duty and with a zero VAT rating, and agree with the ZRA how best these procedures can be made public. Information could be provided on the range of pumps available, their specifications, the sources of supply and the retail prices.

**Goods and services:** It is not feasible for equipment retailers or MFIs to set up outlets in rural areas as long as the effective demand for pumps is limited. Government and NGOs can play supportive roles, but lack sufficient basis in rural areas to reach all potentially interested smallholders. Associations of farmers could again provide the solution - they could coordinate the supply of pumps and spare parts; they could approach MFIs and provide them with information for their market research; and they could assist pump suppliers who have already shown an interest in training local mechanics.

## Potential impact

Zambia has an estimated 400,000-600,000 ha of land that could be developed for irrigation. Small improvements in the motor pump supply chain could trigger significant increases in farm productivity similar to what has been achieved in parts of Asia.

Over exploitation of water resources could become a problem if there is a sudden and unrestricted expansion in the use of motor pumps. The use of fossil fuels could also be environmentally damaging. Participatory analysis of the likely impact of expanding the area irrigated using motor pumps in the Mwembeshi watershed found that the impact on the overall water balance of the watershed would decrease surface water by about 20% and groundwater baseflow by 25% of current annual flows.

Through a precautionary approach, however, the government may be able to mitigate some of these risks. For example, the government and ZNFU could promote water and soil conservation including efficient water conveyance and application techniques. They could also support rural electrification (currently 4% of the rural population have electricity) using cleaner fuels and renewable energy.

These findings and recommendations are preliminary and are reproduced here for the purposes of discussion. The AgWater Solutions Project welcomes all comments and suggestions. These should be directed to AWMSolutions@cgiar.org, please write "Zambia" in the subject line.