

# African Handpump Market Mapping Study

Summary Report for UNICEF WASH Section and Supply Division

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## 1. Introduction

The Africa Handpump Market Study has been conducted as part of the RWSN 'Sustainable Rural Water Supplies' (SRWS) Flagship, Workplan 2008. The objective of the flagship is to *increase the percentage of functioning community water supplies in rural areas through the application of improved policies and practices*. In order to map the African handpump market and to investigate different procurement options for increased supply chain sustainability, UNICEF WASH in New York and the UNICEF Supply Division in Copenhagen commissioned the Handpump Market Mapping Study in December 2008, which was carried out by Delta Partnership, based in the UK.

About 35% of the handpumps in Sub-Saharan Africa are reported to be non functional at any time, and in some countries the figures are as high as 50% (RWSN,2008, *ibid*). This is due to a number of factors, but an important reason is lack of availability of spare parts. The international procurement practiced by UNICEF and other international agencies, is reported to contribute to disrupting the supply chains of spares and handpumps. The main objectives of the Handpump Market study included the following:

1. Obtain a realistic estimate of the number of handpumps which are procured from outside the continent by non-profit organizations for use in sub-Saharan Africa;
2. Identify existing in-country retailers and local manufacturers that currently supply handpumps in Africa;
3. Compile estimates of the number of handpumps installed or procured in African countries each year;
4. Assess current in-country QA mechanisms and recommend how these can be strengthened.
5. Review future prospects for improved supply chains for handpump spares as a result of changing policies and practice in the use of the private sector for rural water supply O&M in Africa.

A survey of key stakeholders in Africa and India was conducted and seven countries were visited by the consultants for more in-depth study: Ghana, Mali, Mozambique, Nigeria, Southern Sudan, Zambia and Uganda. More detailed cases and analyses are contained in the volume 1 main report and the country reports for the seven countries visited, which are included in Volume 2 of the handpump market study report. A widely used marketing framework is the 4P's of marketing: price, place, product and promotion. This concept has been expanded to the 9Ps of marketing for the African the handpump market, refer to Table 1.

**Table 1 – The 9Ps for the African Handpump Market**

Components of the 9P's	Key handpump market issues
Products	<ul style="list-style-type: none"><li>• Modifications made locally to standard pumps in order to fit local conditions</li><li>• How to support alternative pumps that may be easier to maintain eg the rope pump</li></ul>
Price	<ul style="list-style-type: none"><li>• Life cycle costs, not just upfront cost of pumps</li><li>• Prices of different pumps with similar capabilities and opportunities for cost reduction</li></ul>
Processes	<ul style="list-style-type: none"><li>• How to develop local quality assurance (QA) systems</li><li>• Spare parts supply chains: practices and policies and how could they be improved</li></ul>
Procurement	<ul style="list-style-type: none"><li>• Innovative procurement approaches that are worth using, such as 'bundling of contracts' for aspects such as drilling, installation and maintenance</li></ul>
Promotion	<ul style="list-style-type: none"><li>• What innovative ways can be used to promote handpump products and services?</li></ul>
Presence	<ul style="list-style-type: none"><li>• Identifying existing and potential in-country suppliers</li><li>• Challenges faced by in-country suppliers and manufacturers and ways of overcoming these challenges.</li></ul>
Place	<ul style="list-style-type: none"><li>• Comparison of handpump markets in different countries and emerging trends.</li><li>• Opportunities for developing new markets for different handpumps in new areas</li></ul>
Policy	<ul style="list-style-type: none"><li>• How effective are interventions by government and development agencies to support an enabling environment for the handpump market and what more needs to be done?</li></ul>
People	<ul style="list-style-type: none"><li>• What are the best ways to stimulate and assess local demand for handpumps?</li></ul>

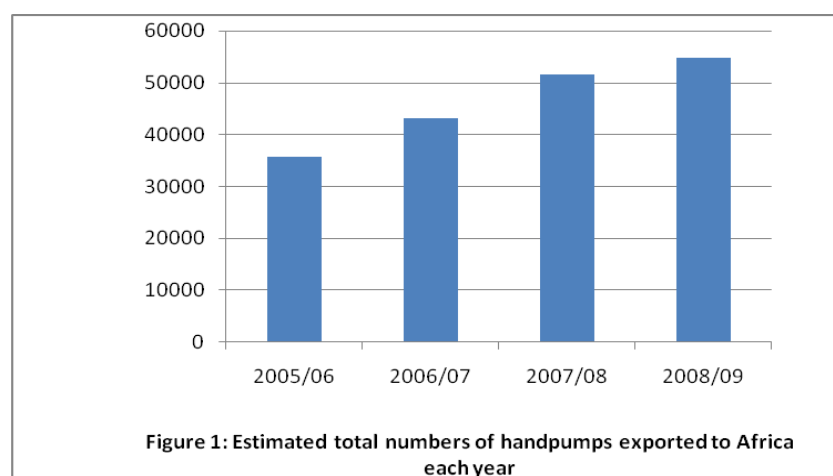
Some key handpump market issues in relation to each one of the P's are highlighted in Table 1. The 9Ps framework has informed the structure of the study; the aspects that have been covered in this summary report include: Procurement, Policy, Presence - refer to the list of suppliers in the Annexes and Processes in terms of supply chains and quality assurance (QA). This report provides an overview of the current Africa handpump market and assesses key current initiatives to improve performance. Recommendations are provided for UNICEF and other development partners to support governments in improving handpump functionality.

## 2. Overview of the African Handpump Market

Handpumps are considered to be the most appropriate technical option for rural water supply in Africa, in many situations. This is reflected in the high numbers of handpumps procured each year. The information presented in the following section is based on results from a survey of key stakeholders in the African handpump market including: international manufacturers, local manufacturers, suppliers and implementing agencies such as government, drillers, NGOs and international agencies. Support was provided to the consultants by UNICEF country offices in Africa and India.

### Handpumps exported to Africa

Figure 1 shows the estimated number of handpumps exported to Africa during the last 4 years, with a clear positive growth trend to date.



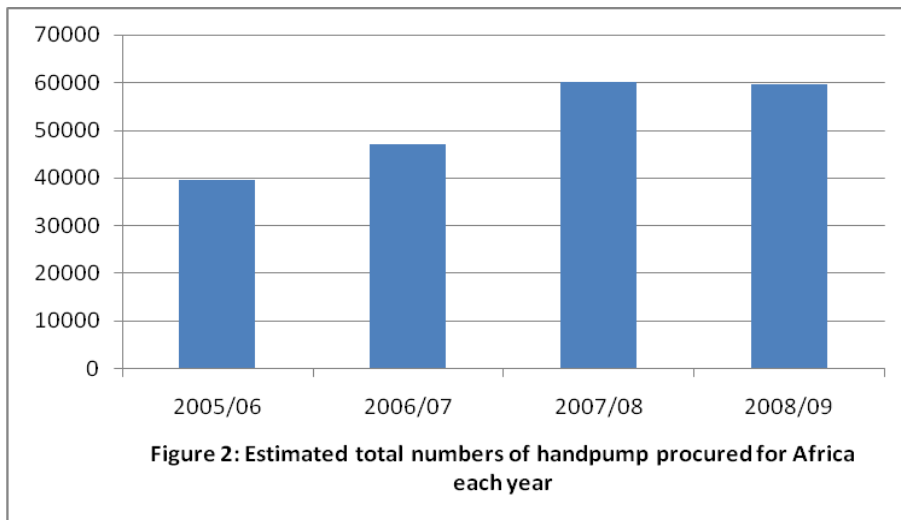
*Note: The results in figure 1 are based on the completed survey forms from 11 leading handpump manufacturers in India and 2 manufacturers based in Europe (Vergnet and Nira), as part of the UNICEF/ Delta Partnership handpump market mapping study, 2009.*

More than 50,000 handpumps were exported from India and Europe to Africa in each of the last two years, with an increasing trend during the last four years. The survey revealed that approximately 80% of all handpumps manufactured for Africa were produced in India. The Indian manufacturers are able to offer very competitive prices. The positive trend in Figure 1 on numbers of handpumps exported to Africa can be expected to continue at least while there is a priority on achieving the relevant MDG target on a sustainable basis.

UNICEF procures most of its handpumps for Africa and some Asian countries direct from India to obtain good prices and ensure quality. In 2008 the India UNICEF Country Office procured more than 10,000 handpumps for US\$5.5 million, including ancillary items. It would therefore seem that UNICEF currently procures approximately 20% of all the handpumps exported to Africa from India.

### Numbers of handpumps procured in Africa

As governments and international development agencies such as UNICEF plan future rural water supply programmes, it is important to know both the size and trends of the handpump market in Africa. As part of the survey, data was requested on handpumps sold in the last few years from both international and local manufacturers. Figure 2 shows the total numbers of handpumps procured in each of the last 4 years. It is assumed that all those pumps procured will eventually be installed.



*Note: The results in figure 2 are based on the completed survey forms from 11 leading handpump manufacturers in India and 2 manufacturers based in Europe, plus manufacturers based in Africa, as part of the UNICEF/ Delta Partnership handpump market study, 2009.*

There is a positive growth trend in Figure 2 with more than 60,000 pumps procured/installed in Africa in each of the last 2 years. It is likely that the 2007/08 figure is higher than usual because the Government of Nigeria procured 20,000 handpumps around 2007, which is not likely to be repeated each year. So it would seem reasonable to assume that the positive growth trend will continue, particularly as many countries in Africa, have substantial rural water supply programmes that are planned or underway. More than 4000 handpumps have been fully or partly manufactured in Africa in each of the last four years. This does not include the manufacturing of the rope pumps, which is currently taking place in about 12 African countries.

Although there are clear gaps in the survey data, particularly prior to 2005, the survey revealed that the number of total handpumps sold in Africa the last 10 years was 327,000. This would seem to be consistent to some extent with the RWSN estimate in 2007 of 368,071 handpumps installed in Sub-Saharan Africa. The main handpumps imported from India to the African market are public domain pumps such as India Mark II and III and the Afridev, which dominate the market. The study identified a large number of suppliers in Africa and India (refer to Annex 1). Normally, the Indian manufacturers tend not to have branches in Africa, but rather have business relationships with certain local suppliers. Other international manufacturers such as Vergnet prefer to establish their own permanent agents in each country.

### 3. Supply Chains

Maintaining effective supply chains for handpump spares from the main cities to rural communities has proved to be a persistent problem in Africa, despite efforts to support both publicly and privately managed supply chains. Of the 54 implementing agency offices (such as governments and NGOs) in Africa that answered the survey question on availability of spares, only 17% said spares are available in districts/local government or lower levels. When asked 'what are the main problems with supply chains' the most common response by far was availability of spares at all levels, especially at the local level and spares accessible to communities. The next most common answer was about the problems of communities to generate funds for spares.

In the past many handpump development projects attempted to support local government and communities in maintaining effective supply chains for spare parts. Generally this approach of having public local government managed supply chains has not worked well. In most situations the private sector is perceived as more effective at sustaining supply chains because of their incentives to replenish stocks and provide good customer services. But even the private sector local suppliers in Africa have faced problems, such as insufficient turnover and slow movement of stock. Five key factors are essential for a successful "business approach" in a supply chain (RWSN, Erpf and Bauman, 2004)<sup>1</sup>, refer to the first column of table 3. There are some other key 'local support' factors to be considered which are listed in the second column of table 2.

<sup>1</sup> Supply Chain Issues for WES Facilities by K. Erpf and E. Bauman, RWSN and SKAT, 2004

**Table 2 – Factors for sustaining effective supply chains**

Business approach factors	Local support factors
<ol style="list-style-type: none"> <li>1. Adequate demand for spares</li> <li>2. Effective stakeholder incentives</li> <li>3. Effective information flow</li> <li>4. Effective supply chain management</li> <li>5. Enabling environment and policies</li> </ol>	<ol style="list-style-type: none"> <li>6. Adequate distribution of spares to rural communities and area mechanics</li> <li>7. Adequate support to area mechanics and their associations</li> <li>8. Adequate support to rural communities to enable them to fulfill their roles</li> </ol>

Both sets of factors are borne in mind in the analyses of the examples of supply chain support programmes in the following sections, with the exception of factors 1 and 8 that are concerned with demand for spares and support to rural communities, which merit further investigation. Interesting cases are summarised in boxes below in the following sections on 1) primary spares supply chains (from the capital city to district towns) and 2) the local spares supply chains down to village level or to the area mechanics who undertake repairs.

### Lessons from primary handpump spare supply chains

A review of three current initiatives to improve the primary spare parts supply chains around Africa is set out below. The experiences of the pump manufacturer Vergnet in developing after sales services and supply chains in certain francophone countries in Africa is briefly described in Box 1.

#### Box 1 - The Vergnet supply chain support in Francophone Africa

The French handpump manufacturer Vergnet Hydro has established a local supply chain in most of the African countries to which it supplies handpumps (currently 23). The main incentive is marketing by demonstrating to customers that spares are readily available locally. In countries such as Mali, after-sales services play an important role in winning tenders for handpump supply, and the company is in competition with the local India Mark II supplier, which also keeps its own network of spare part dealers. The company also trains and supports handpump mechanics.

In each country where Vergnet sets up its business, it chooses a local company or creates its own representative (see list of local suppliers in the appendix). This company will stock pumps and spares at central level and distribute stock to local retailers, who sell them on to mechanics or communities. Prices are fixed by Vergnet. Arrangements do vary from country to country and are adapted to suit the local policy. In some countries where small retailers have cash flow problems, the central agent can give some credit. Vergnet also pays a small yearly allowance to each retailer and periodically provides some support.

The Vergnet model shows important strengths primarily because of its flexibility and adaptation to local conditions, despite the high initial costs of the units. A portion of the cost of the handpump goes to the management of these after-sales services, so in a way the implementing and donor agencies pay for sustainability and continuous operation and maintenance when they buy the pump. The example shows how a private company has managed to put in place supply chains in a number of African countries. However, the supply chain is exclusively for Vergnet pumps, and it depends on the sound management of the local agent.

The Vergnet model of private sector organised ‘after sales services’ is promising in terms of a business approach to supply chain management, with potential for replication elsewhere. But it would require the agencies who pay for the pumps to be willing to pay higher initial prices for the installed pumps to cover the after sales service costs. The percentage of non-functioning handpumps in Mali (34% - RWSN, 2007)) is relatively high, which would suggest limitations on the distribution of spares; further investigation is required.

An important supply chain support project in Ghana is the national handpump spare parts network. This is a contract between government and a single private supplier and is outlined in Box 2. It is clear that the CWSA in Ghana and its international partners have focused on ensuring a business approach in terms of having sufficient incentives and revenues for the private operator, as well as effective supply chain management, information flows and policies. The Ghana case is in effect a private monopoly; it would be advantageous to open the market up to at least one or two more suppliers. Competition can drive innovation and value for money. The regional outlets are still a long distance from many villages in Ghana, which presents logistical

problems for area mechanics and communities. UNICEF Ghana has been supporting projects aimed at providing spares closer to communities, together with NGOs.

### **Box 2- The national handpump spare parts network in Ghana**

A key initiative of the Ghana Community Water and Sanitation Agency (CWSA) in Ghana has been the development of the 'National Hand Pump Spare Parts Network'. This is a public-private-partnership between CWSA and a network manager (a private company FAM or Foundries and Agricultural Machinery Ltd). The contract was signed in 2000 and has been extended to 2009. Spare parts for the four standardised hand pump types are purchased and stocked in a central warehouse in Accra and in the 13 regional distribution centres, which cover all but one of the main regions. All parts are sold at the same price in all outlets.

The project has two elements 1) establishment of the network and 2) capacity building to manage and monitor the system. Technical assistance to the project focused on establishment of appropriate spare parts distribution structures; improvement of the operation of the spare parts distribution network; and development and introduction of monitoring and evaluation procedures. Identifying the distributors has been a long and slow process, due to the slow turn over and risks of money being locked up in stocks for long periods.

The capacity-building component concentrated on coding and cataloguing of all spare parts; establishing of stores procedures, pricing mechanism, accounting procedures and audit arrangements. Establishing of the network was financed through a grant from Danida for capacity building and establishing of the network and KfW provided seed funds for the procurement of spare parts. The network is reported to be working reasonably well with NGOs and area mechanics reported to be buying spares from the outlets.

*This case study is based on a RWSN note on the Spare Parts Network, the Review Report of the Handpump Spare Parts Network System in Ghana, for CWSA, Danida and KfW, 2004 and interviews with stakeholders.*

In Uganda a Sector Wide Approach (SWAp) for the water sector is operation, where the government are proactive in co-ordinating rural water services. Box 3 describes a promising approach where private companies were contracted to manage the distribution of both handpumps and spares in defined regions.

### **Box 3 - Contracts for regional suppliers of spares and handpumps in Uganda**

The government acknowledged that the business of spare parts was not attractive enough for the private sector in remote areas. A project was therefore created in order to encourage large handpump suppliers in Kampala to manage the supply chains. In 2004, the country was divided into four business-regions, and the supply of handpumps for the government in these regions as well as the management of a supply chain down to district level, was tendered. The contracts were awarded to three companies; Victoria Pumps, Multiple Industries and Buyaya Technical Services. The contract specified how many handpumps the government would buy from regional selling points during the year (between 250 and 600), and the companies had to team up with local retailers and ensure the availability of spares in 10-17 districts in the business-region<sup>2</sup>.

In 2005, 37 out of the 60 planned district outlets countrywide were established. The contract was intended to run for 2 years. The idea was that the district would then take over the procurement, and by that time the local outlets would be well established. However, when the government decided to delegate the purchase of handpumps to the drillers as part of the privatisation and decentralization process, it became very difficult for them to guarantee the purchase of a certain number of handpumps per year. The government purchase of handpumps was stopped in 2006, and this reduced the incentive for the suppliers to maintain their outlets open. In 2008, only 16 of the 37 outlets opened in 2005 were still functioning. Some suppliers have maintained relations with the district outlets, however, they are still not very active.

The Uganda case shows that an effective business approach was adopted initially. However, the government did not pay sufficient attention to maintaining the incentives for the private supply chain operators, when they allowed the drilling companies to purchase handpumps on behalf of government from elsewhere. The regional approach to establishing private sector supply chains has clear merits because it prevents a total monopoly and has an element of competition between suppliers.

<sup>2</sup> DWD (2006) *Status report on implementation of Supply Chains*, Directorate of Water Development, Ministry of Water and Environment, Luzira, Uganda

## Lessons from support to local spares supply chains and area mechanics

The local spares supply chains from district towns down to village communities or to the mechanics, is often neglected. In examining the handpump spares market we need to be mindful of how the spares are used by the area mechanics and what challenges they face. A number of current initiatives and pilot projects to support local spares supply chains are briefly described in Box 4.

### Box 4 – Examples of support to local spares supply chains and area mechanics

#### Supporting area pump mechanics associations in Zambia

UNICEF Zambia has supported the development of Artisan Associations (which include area pump mechanics (APMs)) together with District Councils in a number of districts. Assistance is provided in terms of training, terms of reference of the association, marketing of their services etc. Artisans can then support each other by working in teams to take advantage of different skills of individual APMs. In one district they reduced handpump downtime by 50%.

#### UNICEF Ghana support to the NGO - Church of Christ

Church of Christ (CoG) have set up spares stores in some areas and sell 'at cost' to communities and assist with transport. CoG have managed integrated WASH programmes in the Northern region for a number of years and were motivated to become involved in supporting O&M and spares distribution because they wanted to see the handpumps they installed to continue to operate. This approach seems to work well.

#### UNICEF Ghana support to the NGO – APDO

APDO have used a concept known as the *spare parts banking*, to supply communities. APDO have found that with high inflation when they came to replenish their slow moving stocks, there were insufficient funds to replace the stock, due to the higher prices. *Spare parts banking* overcomes the inflation problem to some extent. The communities retain a limited numbers of spares which they can use as the need arises. They can either swap spares with APDO or with other local communities who happen to have the particular spare that they need. APDO also assist with the transport of spares. This works because rural communities find it easier to retain spares for extended periods compared to keeping money.

#### WaterAid handpump mechanics (HPM) associations in Katakwi district Uganda

WaterAid, together with other NGOs, created an association of HPMs in Katakwi district in north-east Uganda. The main objectives were to improve the coordination of the work of the HPMs and improve the credibility and quality assurance of their work. The association supervises the work of the HPMs, supports them with transport such as bicycles, and report to the districts. The districts provide the associations with office space and stationary, and organise refresher trainings for all HPMs. The water sources are managed by a water committee who receive training from the districts each year. The district council also monitors the HPMs and they have regulated charges for preventive maintenance, minor and major repairs to avoid exploitation of the communities. The system is working well so far. The districts have seen a drastic increase in functionality of the handpumps. Due to the high concentration of handpumps, the mechanics are reported to make a living.

#### A Care pilot project in Mozambique supporting the supply of spares

CARE (HAUPA) found that selling spares only is not sufficiently lucrative for local retailers. The project combines the supply of spares with the supply of pumps. A network of handpump sellers at district level was created, and local retailers selected and trained. In order to make the demand more predictable, the retailers are involved in the yearly planning of the district, and the project guarantees that all pumps will be bought locally. This makes it possible for the retailer to organise the supply of pumps and travel to the nearest city (in this case Nampula) to buy the pumps. In addition, the project creates a link between the retailer and the customers; the communities. The goal is that the selling of pumps will keep the retailer motivated to keep selling the spares. It is too early to draw conclusions as the project has only been running for two years.

The cases above highlight the need for ongoing if limited support at the local level. There are other similar pilot projects; it is important that such projects be assessed and scaled up, where appropriate, in conjunction with government, in order to have significant improvement in the handpump services.

## Concluding comments on supply chains

There have been some innovative and worthwhile efforts to support both *primary and local spare parts supply chains* highlighted above. But it is fair to say all the pilot projects need some ongoing support, or protection

from competition, to maintain incentives and availability of spares. The question then becomes how best to support supply chain at various levels effectively with the minimum of inputs. In terms of the primary spare parts supply chains between the main city and the district towns, no one model or project was found to be the ideal solution, but emerging successful elements of a support project are:

- Where possible support suppliers to sell both spares and handpumps (integrated supply chains), in order to increase supplier turnover and incentives to sell spares.
- Working with government and other partners to support a limited number of suppliers so that each of their markets is sufficiently large to maintain supplier incentives.
- Each supplier can be allocated a particular region of a country to enable the main supplier to form good business relations with local suppliers and also limit unproductive competition.
- In many cases suppliers benefit from support projects that include an agreed minimum amount of business from governments and development agencies, plus capacity building support.
- Providing seed money for the spares supply chain for one year and then expecting it to be sustainable thereafter, is usually unrealistic. Assessments are required from time to time to check on the supplier's turnover and performance. Further ongoing support may be required.

Maintaining effective local supply chains of spares from the district towns to village communities and area handpump mechanics is often neglected. In addition, many area mechanics find it difficult to maintain viable repair operations. However, the study found some promising pilot support projects, such as those listed in Box 4, that are worth reviewing and replicating where appropriate. Factors that are worth considering in selecting appropriate supply chain support models for each country or region include the following:

- What are the key lessons from both local and relevant international supply chains support initiatives?
- The interest, capacity and outreach of suitable local suppliers.
- The interest and capacity of relevant government departments, policies are key in this respect.
- The potential viability of proposed supply chains, considering factors such as hand pump numbers and density in each region, as well as potential revenues or turnover for operators.

#### **Recommendation 1 - support to supply chains**

*It is recommended that UNICEF and other development partners provide increased levels of support to governments in developing integrated primary supply chains for handpumps and spares, from capital cities to district towns. More support is also required in supporting the local distributions of spares to communities and area pump mechanics.*

## **4. Procurement of handpumps and spares**

### **The case for local procurement**

Governments and NGOs in Africa often procure handpumps and spares through ad-hoc processes from local suppliers or drilling companies or with the support of donors. But there has often been concern about the quality of handpumps from such approaches. To ensure better quality handpumps UNICEF introduced worldwide centralised procurement of handpumps in 2003 for all UNICEF country offices. By far the largest orders are from India for the public domain pumps such as the India Mark II, Mark III, and Afridev pumps, while some Vergnet pumps are procured from France. Other donors also procure direct from India, even if they do so via drilling companies. In countries that are emerging from or continue to have conflict (such as DRC, Congo (Brazzaville), Southern Sudan and Somalia), other development agencies and NGOs often use the procurement services of UNICEF to import handpumps from international manufacturers. There are many potential benefits in UNICEF and other international development agencies changing from international procurement of handpumps to supporting procurement of handpumps and spares from capable local in-country suppliers in Africa, where they exist:

- *Local integrated supply chains of both handpumps and spares will increase the turnover and incentives for the local private sector to sustain supply chains*
- *Local procurement increases flexibility and reduces delivery times, particularly where stocks are held in the region.*
- *It can support and compliment local manufacture or fabrication of some of the handpump parts, where appropriate, for example in Nigeria.*
- *Joint local procurement of handpumps and spares can make it easier to do Quality Assurance (QA) on the importation of spares.*

- *As countries move towards water sector SWAs, governments will be increasingly ‘in the driving seat’ coordinating the sector. UNICEF and other development agencies can provide better support to government in effective local procurement, QA and policy development, if they themselves are doing local procurement. They can even develop joint procurement and QA procedures with government.*
- *As part of decentralisation processes many governments are supporting local procurement at lower administrative levels, Development agencies can provide valuable support to achieve this end.*

While local procurement may involve some marginal increase in cost of the initial purchase of handpumps in some cases, the life-cycle costs of handpump services in the country as a whole are likely to be less. This is particularly the case if local procurement is pursued and this provides a springboard for more effective support to government and other stakeholders, in developing adequate supply chains for spares. The case for UNICEF pursuing local procurement is strong. But careful attention will be required in developing local QA including third party inspections. There are some risks associated with maintaining the quality of handpumps if it is mainly done through local suppliers. But those risks can be managed with a carefully thought out risk management strategy, with associated support and capacity building.

### **Recommendation 2 – local procurement**

*It is recommended that UNICEF and other development partners approve and promote the procurement of large quantities of handpumps and spares from capable local suppliers in Africa, provided agreed guidance and procedures are followed. The process can be piloted in selected countries with a view to developing streamlined procedures and guidelines for future more widespread local procurement.*

#### **Piloting ‘bundled contracts’ for handpump services**

This report and other publications describe the challenges in achieving adequate maintenance and repairs of handpumps in rural areas of Africa. We should, therefore, consider alternative management and procurement options for the provision of effective handpump services. One way forward would be to pilot ‘bundled contracts’ in conjunction with government for both the provision of handpumps and their maintenance and repair. The following services could be bundled into one government contract for a particular area or district:

- Purchase of handpumps
- Surveys and drilling boreholes
- Handpump installation
- Maintenance and repair of handpumps for a period of a say 5 to 10 years, with communities paying an annual fee

For such contracts, the community or village WASH committees would still have important roles to play in the development of new schemes, cost recovery, overseeing the work of mechanics and monitoring and evaluation. The contractor/operator could be held accountable both for the performance of the installed handpump, but also for the levels of handpump reliability, eg using an indicator such as percentage downtime. This would then relate directly to an important sector objective that is to increase the percentage of functioning handpumps. These contracts could be BOT (Build Operate and Transfer) type contracts, but they would require development agencies and/or governments to meet capital costs and any O&M costs that communities are not able to meet. Existing non-functioning handpumps in the same area could also be rehabilitated and maintained by the contractor or operator, as part of the same contract.

It should also be possible to seek invitations from suppliers of different pumps. Suppliers of more expensive but more reliable pumps could then potentially compete with suppliers of cheaper pumps. This type of bundled contract would require:

- contractors to form consortiums of capable partners,
- carefully designed contracts,
- comprehensive monitoring and regulation of the operator performance against targets and provisions in the contract,
- Government and community commitment.

### **Recommendation 3 - contract options for provision and maintenance of handpumps**

*It is recommended that UNICEF and other development agencies assess the feasibility of ‘bundled contracts’ for both the provision of handpumps and their maintenance and repair, in conjunction with governments in specific countries, with a view to future piloting of these types of contracts*



## 5. Quality Assurance

The use of poor quality spares and handpumps is reported to be a significant problem. In many countries there are a variety of agents or suppliers importing handpumps and spares from a number of different international manufacturers, some of whom are distributing poor quality products. Most hand pumps and spares are imported through sea ports, but there is also some overland trade between countries in Africa. Good quality assurance (QA) systems improve the reliability of handpumps, but require sustained efforts to implement. The biggest challenge for governments is establishing effective QA systems for inspecting the increasing number of imports and preventing the distribution of substandard pumps and spares. Key elements of a QA system for handpumps and spares are:

- *Standardisation* – selection of a small manageable number of standard handpumps by governments that are suitable for the country in question. This many include adaptations to take account of local conditions, plus the agreement and dissemination of those standards.
- *Quality assurance of the manufacturers and their products.* UNICEF has taken a leading role in supporting QA systems for leading international manufacturers.
- *Quality assurance associated with project procurement* of handpumps and spares. This often includes third party independent inspections, particularly for larger orders.
- *Quality assurance of local importers and suppliers,* including distribution of handpumps and spares.

Each of these elements will include the development of standards and specifications, monitoring, capacity building, testing and enforcement, as required. The last two elements listed above require the most attention.

### Quality assurance by government agencies and local suppliers

In most countries, the quality assurance service provided by government agencies is not well developed. This is partly because of limited resources and capacity, but also because they rely, to some extent, on the QA systems set up by international manufacturers, with the support of UNICEF and others such as RWSN. One aspect where many African countries have made progress is in standardisation with the selection of a few approved handpump designs. Some countries have public agencies which are in charge of quality assurance, such as the national standards agency. Some of the main challenges for government are:

- There is often a lack of co-ordination between the standards agency and the water ministries
- Limited resources and staff available for monitoring, capacity building, testing and enforcement
- Limited checks on functionality of the pumps and spares.
- In some countries such as Mozambique the inspection by the public entity has to be paid for and by the importer/manufacturer. This means that many suppliers are not tested.
- Poor quality pumps and spares are not always perceived by some stakeholders as a serious risk.
- As part of ongoing decentralisation in many countries, procurement of handpumps is being delegated to local government. This presents a real challenge in terms of effective procurement and QA.
- Where pumps are manufactured or partly manufactured locally (as is common in Nigeria), additional local QA arrangements are required.

Significant capacity building support will be required to address the above issues and achieve good practices. When central government agencies procure handpumps and spares, they often use capable local in-country suppliers. Such suppliers who seek to import good quality products often establish a relationship with one or more international manufacturers who are assessed and recognised by UNICEF. They use systems such as sealed consignment packages and bonded warehouses to reassure clients of the quality of their products. They also may have agreements with those manufacturers to the effect that any components that are sub-standard can be replaced by the manufacturer at no extra cost. While there is room for improvement of local supplier operations, there are some good practices to build upon. This is more likely to be possible if most handpumps are procured through such local suppliers, who would then have more incentives to develop integrated supply chains for both handpump and spares, with the necessary QA systems.

### Quality assurance by UNICEF

UNICEF introduced worldwide centralised procurement and QA of handpumps in 2003 for all UNICEF country offices. UNICEF Supply Division (SD) have developed a robust quality assurance (QA) system for the central procurement of handpumps from India and France. One of the key elements of the UNICEF QA system is the supplier evaluation. The UNICEF India Country Office (ICO) also have developed Long Term

Agreement (LTA) with three handpump manufacturers in India and recently signed one with Vergnet. Such systems include pre-delivery inspections, work inspections, commissioning and post delivery inspections. These arrangements have improved the quality of the handpumps, but the systems will need to be adapted to support local procurement of handpumps through local suppliers in Africa.

### Strengthening local quality assurance for handpumps and spares

Development agencies have a key role to play in supporting governments in developing effective QA and addressing the constraints described above. An important approach is to raise the awareness of the importance of quality handpumps and spares amongst key stakeholders and buyers, including local government, communities, local suppliers and area mechanics. If local procurement of handpumps is widely adopted for UNICEF country offices in Africa, UNICEF would have good comparative advantages to support the government in many aspects of quality assurance.

#### Recommendation 4 – Quality Assurance

*It is recommended that succinct guidance be developed for effective Quality Assurance (QA) associated with local procurement of handpumps and spares in Africa, which can be used by UNICEF country offices and also preferably by governments and other key stakeholders. In developing such guidance, it would be necessary to consider how best to manage identified risks.*

### 6. Policies and co-ordination by governments

Government policies are important for achieving good functionality of handpumps in terms of creating an enabling environment for key stakeholders such as local government, communities, private sector and NGOs. Policies also establish the priorities and guiding principles for ensuring adequate resources, institutions and staffing. A number of countries have well-developed policies for operation and maintenance of rural water supplies (including handpumps), such as Ghana, Mali, Mozambique and Uganda. Political commitment is crucial for scaling up what has been learnt from local successful pilot projects and good practice elsewhere. For such countries the challenge now lies in fully implementing the policies. For other countries in Africa, policies still have to be improved.

Many countries have recognised the challenges of community managed operation and maintenance systems, and are allowing a higher degree of involvement of the private sector, although this has not widely been put in practice. Government co-ordination of handpump issues is rather limited in many countries. Hopefully this will be less of a problem when Sector Wide Approaches (SWAs) are fully implemented. Countries such as Mozambique, Ghana and Zambia are moving towards SWAs, while Uganda has been using this approach for a number of years. There is also evidence that where new policies and strategies are being implemented through projects, that there is insufficient assessment of such programmes, or lessons are not being learnt quickly enough in order to make corrections in reasonable time.

For effective and sustainable handpump services with good levels of functionality, a comprehensive approach is required that addresses the key elements and enabling factors in Table 3. These need to be done well by government working with other stakeholders and considered as part of future development programmes. It is generally more cost effective to improve the functionality of existing handpumps, than to keep on replacing pumps or developing new boreholes in the same area.

**Table 3 – key elements and enabling factors for sustainable handpump services**

Key elements	Enabling factors
<ol style="list-style-type: none"> <li>1. Manufacture and fabrication</li> <li>2. Surveys and drilling boreholes</li> <li>3. Handpump installation</li> <li>4. Primary spare parts supply chain (to main district towns)</li> <li>5. Local spare parts supply chain (to village level)</li> <li>6. Community cost recovery and cost sharing</li> <li>7. Maintenance, repair and rehabilitation</li> </ol>	<p>(These apply to many of the key elements)</p> <ol style="list-style-type: none"> <li>1. Appropriate policies</li> <li>2. Coordination by government</li> <li>3. Project planning and management</li> <li>4. Capacity building of stakeholders</li> <li>5. Adequate incentives and resources for key stakeholders</li> <li>6. Effective local procurement</li> <li>7. Quality assurance and standardisation</li> <li>8. Effective monitoring and evaluation</li> </ol>

The seven key elements of sustainable handpump services in the first column of table are the main technical aspects of handpump provision. While the enabling factors refer to what needs to be in place so that reliable and sustainable services can be provided. These issues need to be assessed in terms of how they can be best delivered in the local context, learning lessons from elsewhere. Policies need to promote and support workable solutions. This means that prior to agreeing on the policies and strategies, there needs to be a review of what options offer the best prospects for making improvements on key objectives. Another widespread trend in Africa is increased decentralisation, which involves devolving powers from central government to regional and local government. This can have beneficial effects on rural water supply as local government usually has more powers and resources to work with communities. Decentralisation also presents challenges for handpump services for aspects such as coordination, procurement and QA at district level. Appropriate organisational development and capacity building of staff is required to support such a transition.

#### **Recommendation 5 - policy and co-ordination**

*It is recommended that UNICEF and other development agencies provide more support to government and its agencies in policy development and implementation (where feasible), as well as sector co-ordination, in order to increase the percentage of functioning community water supplies in rural areas.*

## **7. Conclusion**

The key elements and recommendations for developing effective handpump services that are described in this summary report are all interrelated. Implementation of handpump services support initiatives, are generally best done in an integrated way, which increases prospects for achieving real impact. Carefully designed integrated programmes would typically have a number of components addressing issues outlined in this report. This implies the development of a new generation of integrated handpump market support programmes.

#### **Recommendation 6 - co-ordinated programmes to increase handpump functionality**

*It is recommended that UNICEF work with governments and other development agencies to develop co-ordinated programmes aimed at increasing handpump functionality and access. Such programmes need to have components or projects that address key issues such as the following:*

- *Support to primary spare parts chains to improve availability of spares in the district towns*
- *Support to local spare parts chains to improve availability of spares for area mechanics and in rural communities*
- *Procurement and installation (or rehabilitation) of handpumps*
- *Support to the development of local quality assurance systems*
- *Training and support to area mechanics and their associations*
- *Training and support to WASH committees on how best to work with area mechanics and paying for repairs.*
- *Work with central government on policy development and implementation to improve functionality of rural water supplies and co-ordinate and other stakeholders*
- *Work with local government to support communities and other stakeholders to improve functionality and operation and maintenance of rural water supplies*
- *Capacity building of key stakeholders and improved sharing of information on handpump development programmes in Africa*

These aspects can be considered when formulating new handpump programmes. If support to the supply chains is to be most effective, it would be better to develop integrated supply chains for spares and handpumps, where feasible, to increase the viability of the suppliers operations. This would mean linking larger projects for providing new handpumps or pump rehabilitation with initiatives such as those listed above. All the above initiatives may not be included in one project, but working with government and other development partners, it is important that such issues are addressed in a co-ordinated manner.

#### **Acknowledgements**

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## Annex 1 - Directory of in-country handpump suppliers in Sub-Saharan Africa and international suppliers

Collated by Delta Partnership for UNICEF WASH New York and Supply Division in Copenhagen, May 2009.

### Suppliers in Africa

<i>Name and address</i>	<i>Type of pump</i>	<i>Type of supplier</i>
<b>Angola</b>		
Technosoft Lda Rua Francisco Sá Miranda nº 30, Luanda +244 912242333, +244 222440673, <a href="mailto:Leitao_I@hotmail.com">Leitao_I@hotmail.com</a>	Vergnet	Importer
Intercal Painahas S.A	Volanta Vergnet	Importer Importer
<b>Benin</b>		
AGIRE BP 1138, Cotonou +229 97080608, +22921385737, <a href="mailto:Agire_deg@yahoo.fr">Agire_deg@yahoo.fr</a>	Vergnet	Importer
<b>Burkina Faso</b>		
Hydrass/BF: 01 BP 3036 Ouagadougou 01 +226 50 39 22 58/70 25 63 99, <a href="mailto:ahmedhydrass@yahoo.fr">ahmedhydrass@yahoo.fr</a>	India Mark II, Kardia, Inkar	Importer
Centre de la Sainte Famille Commune de Saaba : 01 BP 3905 Ouagadougou 01 +226 70-00-09-40/50-31-93-05, <a href="mailto:kalmilouis@Yahoo.fr">kalmilouis@Yahoo.fr</a>	Volanta	Manufacturer
SAIRA-International 11 BP 682 Ouagadougou 11 +226 50 30 15 20/ 50 30 23 08, <a href="mailto:sairaunderscore@pps.yahoo.com">sairaunderscore@pps.yahoo.com</a>	India Mark II	
Groupe Fadoul/ Afrique 01 BP 41 Ouagadougou 01 +226 50 30 62 92- Fax: +226 50 31 04 11, <a href="mailto:materiaux@diacfa.com">materiaux@diacfa.com</a>	India MK II, Diacfa	Importer and Manufacturer
Faso Hydro Zad Ouagarinter 01 BP 4391 Ouagadougou +226 76019266, +226 50373093, <a href="mailto:fasohydro@liptinfor.bf">fasohydro@liptinfor.bf</a> , <a href="mailto:m.dupuis@vergnat.fr">m.dupuis@vergnat.fr</a>	Vergnet	Importer
<b>Cameroun</b>		
GEOFOR BP 1883, Douala +237 77111285, +237 3429755, <a href="mailto:geofordouala@yahoo.fr">geofordouala@yahoo.fr</a> , <a href="mailto:info@geofor.org">info@geofor.org</a>	Vergnet	Importer
<b>Central African Republic</b>		
Hydro Centrafricain (HYDROCA) Av. Conjuguo, Bangui +236 75 50 35 37, +23675504549, <a href="mailto:mlebaramo@yahoo.fr">mlebaramo@yahoo.fr</a>	Vergnet	Importer
<b>Congo (Brazzaville)</b>		
UNICEF-Congo B.P 2110/ D-34 , Rue Lucien Fourneau, Brazzaville +242 5510809, <a href="mailto:bokandza@unicef.org">bokandza@unicef.org</a>	India Mark II and III	Importer
<b>Chad</b>		
ETS Mdak	India Mark II	Importer
Batifor MEM BP 250, N'Djamena, +2356262151, +2359148070	Vergnet	Importer
SOTCHAM BP 430, Moudou, +2356271582, +2359875089	Vergnet	Importer
<b>Côte d'Ivoire</b>		
SATH-COCITAM Km 6 Boulevard de Marseille, 04 B.P 608 Abidjan 04,	SAEH-SATH	

+225 21256797, Fax +225 21255155		
FORATEC Sarl 21 BP 1277 Abidjan 21 +225 7 98 98 74, <a href="mailto:diarraya@yahoo.fr">diarraya@yahoo.fr</a>	Vergnet, ABI	Importer
Génie Mécanique et Hydraulique pour le Développement Rural (GMHDR) 04 bp 1662 Abidjan 04 +225 20 37 32 34, +225 7 17 97 97, <a href="mailto:maithy20052006@yahoo.fr">maithy20052006@yahoo.fr</a>	Vergnet, ABI, India Mark	Manufacturer, Importer
FORACO CI Rue Thomas Edison, Zone 4C, BP 592 - Abidjan 11 +225 21353013, <a href="mailto:Testot-ferry@foraco.com">Testot-ferry@foraco.com</a>	Vergnet, SATH	Wholesaler
GEMA SA 6, Rue des Pétroliers - 04 BP 2274 Abidjan 04 +225 21 27 45 12 /21 27 12 63/ Fax +225 21 27 40 49 <a href="mailto:gema@aviso.ci">gema@aviso.ci</a>	ABI MN and ASM	Manufacturer
SAHER 17, bd de Marseille, BP 1229 Abidjan 01 +225 21 35 09 91 / +225 07 93 30 77 <a href="mailto:saher@aviso.ci">saher@aviso.ci</a> , <a href="mailto:bouariblah@yahoo.fr">bouariblah@yahoo.fr</a>	Vergnet	Importer
Margay Trading	India Mark II and III	Importer
<b>Democratic Republic of the Congo (DRC)</b>		
Africa Business Lubumbashi	Afridev	Importer
ACEPAC Bukavu	Afridev	Importer
GETRACO 7 Av Mgr Tshibangu, Lemba Righini, Kinshasa +243818998611, +243 816891380, <a href="mailto:lagetraco@yahoo.fr">lagetraco@yahoo.fr</a>	Vergnet	Importer
<b>Ethiopia</b>		
EMU General Trading Co	Afridev, India Mark II	Importer
A.M.Y General Trading Co	Afridev	Importer
<b>Gabon</b>		
ETE Glass derrière immeuble Hassan BP 11 102, Libreville +241 06269517, +241 722110, <a href="mailto:etejyfk@yahoo.fr">etejyfk@yahoo.fr</a>	Vergnet	Importer
<b>The Gambia</b>		
Jagne`s Electrical & Construction Company Ltd (JECCO) P. o. Box 1039, Banjul, The Gambia +220 9900580 / 7711399 / 6660580, <a href="mailto:jecco@qanet.gm">jecco@qanet.gm</a>	PB Mark II	Importer
Gambia Horticultural Enterprise, 16 Mamadi Manjang High way Old Jeshwang Kanifing +2204394819, +220 9905088, <a href="mailto:gamhort@qanet.gm">gamhort@qanet.gm</a>	India Mark II	Importer
Adams Trading Co. Ltd, 59 Mamadi Manjang High Way Serre- Kunda	PB Mark II	Importer
APEX Company Gambia Ltd 10 Cockway Street, Kanifing East Layout Old Jeshwang, P.O. Box 2004, KSMP, Serekunda +220 7793179, +220 7774880, <a href="mailto:nanjaafu@yahoo.co.uk">nanjaafu@yahoo.co.uk</a>	Vergnet	Importer
<b>Ghana</b>		
FAM (Farm Agricultural Machinery), Accra, Ghana	GIMI, MII, Afridev	Importer
Joissam (GH) Ltd P.O. Box AD 1188, Adabraka, Accra +23321325388, +233208186271, <a href="mailto:joissamghana@yahoo.com">joissamghana@yahoo.com</a>	Afridev rev 3&4, GMIMII	Importer
Ghanira Ltd 68 Sowa Gbobilor street, P.O. Box 23 TF, Accra	Nira AF-85	Manufacturer, Importer

+358 10 830 6735, +233 244 315005 <a href="mailto:pekka.pyykonen@nira.fi">pekka.pyykonen@nira.fi</a>		
Aquagro Ltd P.O.Box CT1289, Cantonments, Accra +23321769422, +233208173091, <a href="mailto:kforson@aquagro.com">kforson@aquagro.com</a>	GIMIMII, Afridev, Nira AF-85	Importer
Theodora and Jamamise Enterprise	Rope Pump	Manufacturer
ECM Ghana DTD Q8, Coastal Estate Baatsonaa, Accra +233 273462641, +233 21816068, <a href="mailto:kokobissi@gmx.net">kokobissi@gmx.net</a>	Vergnet	Importer
<b>Guinea</b>		
Entreprise Vergnet Guinée BP BP 8 Kindia + 224 60 29 39 98, +224 64650284, <a href="mailto:ngalu2002@yahoo.fr">ngalu2002@yahoo.fr</a>	Vergnet	Importer
<b>Guinea Bissau</b>		
Agua, Saneamento e Construções Bairro Plaque 2a fase Km 9 Estado Bissau/Biombo CP n*19, Bissau +2456623522, +245254017 <a href="mailto:ascon@gtelecom.gw">ascon@gtelecom.gw</a> , <a href="mailto:ascongb@hotmail.com">ascongb@hotmail.com</a>	Vergnet	Importer
<b>Kenya</b>		
Nairobi Ironmongers Ltd P.O. Box 43524 – 00100 ; Nairobi, +254 20 55 88 05 / 0720 521 625 / 0734 521 625, <a href="mailto:harshes@nil1949.com">harshes@nil1949.com</a>	India Mark II, India Mark II EDW, India Mark III, Afridev	Importer
Euro Waters P.O. Box 34910, Nairobi	Afridev	
Techno Relief Services P.O. Box 34910, 00100 Nairobi +254 20 651176/7/8/9 +254 722 200539 <a href="mailto:info@technorelief.com">info@technorelief.com</a> <a href="mailto:sales@technorelief.com">sales@technorelief.com</a>	India Mark II, India Mark II EDW, India Mark II with UPVC pipes, India Mark III, Afridev	Importer
<b>Liberia</b>		
National Hardware Centre		Importer
FATRA Bushroad Island, P.O.Box 10-1869 1000 Monrovia +3776519842, <a href="mailto:adsanvee2@yahoo.com">adsanvee2@yahoo.com</a>	Vergnet	Importer
<b>Madagascar</b>		
Emmaus vie madagascar Lot V F 78 Volotara Andoharanofotsy Antananarivo 101. Tel +261 22 572 02	Pompe Artisanale	
UNICEF	India Mark II	Importer
Atelier Rio lot 04 L 71 Ambohimena Est, Antrsirabe	Rope Pump	Manufacturer
Bushproof, Maibahoaka, Lot 21 A Maibahoaka Ivato BP 182 Antananarivo 105 <a href="http://www.canzee.com">www.canzee.com</a> , + 261 33 11 636 88 <a href="mailto:adriaanmol@bushproof.com">adriaanmol@bushproof.com</a> <a href="mailto:madagascar@bushproof.com">madagascar@bushproof.com</a>	Canzee pump, Moramora pump	Manufacturer, Importer
EAE lot NO 110 G, Ambodivona	Rope Pump	Manufacturer
Atelier de Maintenance Industrielle (ATEMAIN) Lot II J 91 N Ivandry – BP 436 Antananarivo 101 +261 32 07 700 84	Rope Pump	Manufacturer
Entreprise T plus individuelle Betioky Atsimo Maison Carlos c/o Organisation Taratra Tuléar 602 + 261 33 12 08 429 <a href="mailto:arsu.taratra@moov.mg">arsu.taratra@moov.mg</a> , <a href="mailto:taratra@moov.mg">taratra@moov.mg</a>	Rope Pump	Manufacturer
SOMECA	Vergnet	Importer, Manufacturer

BP 359, Antananarivo +261202225400, +261 20222320784, <a href="mailto:someca@simicro.mg">someca@simicro.mg</a>		
<b>Malawi</b>		
Church of Central Africa Presbyterian Synod of Livingstonia, P.O. Box 112, Mzuzu +265 8 323 651 , <a href="mailto:mcgill@africa-online.net">mcgill@africa-online.net</a>	Mark V	Manufacturer
Saifro Ltd Lilongwe	India Mark II, India Mark III, Afridev	Importer
Central Trading Company Blantyre	India Mark II, III, Afridev	Importer
Constantini & Compagny P.O.Box 40, Lilongwe +2658822346, +2651752953, <a href="mailto:sabelli@constantini.mw">sabelli@constantini.mw</a>	Vergnet	Importer
<b>Mali</b>		
SETRA B. P. : 1949 +223 20 21 37 63, FAX +223 20 21 51 36, <a href="mailto:setra@afribone.net.ml">setra@afribone.net.ml</a>	India Mark II	Importer
UNICEF Mali Niamakoro Cité UNICEF Bamako	India Mark II	Importer
Makan SACKO Daoudabougou , Bamako	India Mark II	
DDRK Kidal Kidal, Ville	Vergnet	
Quincaillerie de la Nation (QUINA) Boureima DEMBELE , Dibida, Bamako	Duba, India Mark II	
SOMAHER rue 132, Porte 763, Badalabougou, BAMAKO +223 20233109 / +22320223141 / +22320223113 <a href="mailto:jm.cousseau@vergnet.fr">jm.cousseau@vergnet.fr</a> , <a href="mailto:somaher@orangemali.net">somaher@orangemali.net</a>	Vergnet	Importer
Entreprise Malienne de Maintenance (EMAMA) Sikasso route de Bouaké, B.P. : 68 +22321622607, +22376463835, <a href="mailto:diarraemama@yahoo.fr">diarraemama@yahoo.fr</a>	India Mark	Manufacturer
Hydro Mali	India Mark	Importer
LPM	India Mark	Importer
Oumar Kouma, Bamako	India Mark II and Duba	Importer
Madou Traoré, Bamako	India Mark II	Importer
CICFD, Bamako	Duba	Importer
<b>Mauritania</b>		
GIE ACTIF BP 2116, Nouakchott +222 6303070, +222 5257492, <a href="mailto:myeslem@hotmail.com">myeslem@hotmail.com</a>	Vergnet	Importer
<b>Mozambique</b>		
Agro-Alfa Sarl Av. De Angola 2475 Maputo +25882 3007570, +25821465911, +25821465258 <a href="mailto:carlos.loforte@agroalfa.co.mz">carlos.loforte@agroalfa.co.mz</a> , <a href="mailto:jose.alves@agroalfa.co.mz">jose.alves@agroalfa.co.mz</a>	Afridev, Vergnet	Manufacturer, Importer
Kanes	Afridev	Manufacturer, Importer
SOTEMAQ Lda, Pemba, Cabo Delgado +258826122500	Nira, Afridev	Importer/wholesaler
Afridev International	Afridev	Importer
PROGEN Moz Lda, +258825413363	Afridev	Importer
Blue Zone Mozambique Lda, <a href="mailto:leif.bluezone@tvcabo.co.mz">leif.bluezone@tvcabo.co.mz</a>	Afri-pump	Importer
Serralharia Angelina Rua Josina Machel, Pemba +258820297460	Rope pump	Manufacturer
Aquafrica Lda Nampula	Afridev	Importer

<b>Niger</b>		
FORACO Niger, BP 2879, Quartier Terminus, Niamey	Vergnet and India Mark II	Importer
Vergnet Niger BP 10804, Niamey +22793933107, +22720340123, <a href="mailto:vgn@intnet.ne">vgn@intnet.ne</a>	Vergnet	Importer
<b>Nigeria</b>		
UNIPUMPS Nigeria Ltd., Km. 16, Ikorodu Road, Ojota, Lagos. +2348033138313, <a href="mailto:mohankbell@yahoo.com">mohankbell@yahoo.com</a>	India Mark III, Afridev	Manufacturer and importer
Panar Ltd Panar Limited6, Elsie Femi Pears Street, Victoria Island, Lagos. Factory site: Kano	Ruwatsan 1 (India Mark III), Ruwatsan 2 (Afridev), Tara	Manufacturer and imported
Moving Water Technology Nigeria Limited No3 Bouar Close off Bangui Street, Ademola Adetokunbo Crescent, <b>Wuse II</b> , Abuja +234803 311 5252, +234806 975 3311, <a href="mailto:tony7yao@hotmail.com">tony7yao@hotmail.com</a>	Ruwatsan 1 (India Mark III), Ruwatsan 2 (Afridev)	Importer and Manufacturer
OM Pipes Ltd. 55, Happy Home Avenue, Kirikiri Industrial Estate, Lagos	India Mark III	Importer
Armik Investment Nig., Kofar Ruwa Market, Kano, Kano State	India Mark II and III	
Johcon International Nig. Ltd., Kofar Ruwa Market, Kano	India Mark II and III	
Chumak Global Investment Nig., Kofar Ruwa Market, Kano	India Mark II and III	
Kenjust Nigeria . Limited, Kofar Ruwa Market, Kano	India Mark II and III and Afridev	Importer
Justice Valentine International, 1129-Kofar Ruwa Market, Kano	India Mark II and III and Afridev	Importer
Defelga International Co Ltd U15 Benue Road, off Ahmadu Bello Way, Kaduna State +234 8035876757 <a href="mailto:dfelga@yahoo.com">dfelga@yahoo.com</a>	India Mark II and III	Importer
Fechuks Nigeria Entreprises, AI 20, Zaria Road, Kaduna	India Mark II	
<b>Rwanda</b>		
Davis & Shirtliff (RW)Ltd Muhima Raod B.P. 7039 Kigali +250504039/+250788300746/+250788477434 <a href="mailto:sales@dayliff.co.rw">sales@dayliff.co.rw</a>	Afridev / Ecologic step pumps/ India Force Lift VLOM, India Mark II & III/ India Extra Depth	Importer
<b>Senegal</b>		
Afrique Technologie Industrielle Parcelles Assainies, Unité ZI N°250, Dakar +221338350802, +221 776452535	Vergnet	Importer
<b>Sierra Leone</b>		
Jetty Traders, Freetown	India Mark II	
Cardinal Investment Limited Water and Sanitation General Suppliers 25, Rawdon Street +232 22 220166/223326 <a href="mailto:hrasik@cardinal-sl.com">hrasik@cardinal-sl.com</a> , <a href="mailto:hrasik7@yahoo.com">hrasik7@yahoo.com</a> ,	Kardia, India Mark II	Importer
<b>Southern Sudan</b>		
UNICEF-Southern Sudan	India Mark II	Importer
<b>Sudan (Khartoum)</b>		
Omaski Sai	India Mark I and II	
Sainadu Infrastructure co. Ltd 15/15B Free Zone, Garri +249 91553576/ 0922296163, <a href="mailto:info@sainadu.com">info@sainadu.com</a>	India Mark II and India Mark II EDW	Importer
Aldoma Company, Khartoum	India Mark II	
Janawa Company, Khartoum	India Mark II	
Rans Company, Khartoum	India Mark II	



El-Kimier Company, Khartoum	India Mark II	
Balaji Industrial & Agricultural Castings (BIAC) Sudan	India Mark II	Importer
Fordan International	India Mark II	Importer
<b>Tanzania</b>		
TANIRA LTD P.O. Box 890, Dar es Salaam +255 22 2863851, +255 754 307 999 fax : +255 22 2864573 <a href="mailto:tanira@intafrika.com">tanira@intafrika.com</a>	Nira	Manufacturer, Importer
Tanzania Wells Service & Supply Co. Ltd (TWSSC) P.O. Box 7, Morogoro +255 23 2603433 <a href="mailto:twss@intafrika.com">twss@intafrika.com</a>		Manufacturer
Kalis Enterprises P.O. Box 1894, Morogoro +255 23 2603875, Fax: +255 23 2603875		Manufacturer
Simon Engineering P.O. Box 12374, Dar es Salaam Fax: +255 22 2700982		Manufacturer
Pumps international and Solar Ltd P.O. Box 2635, Dar es Salaam +255 22 2862544/2864185 Fax: +255 22 2864184 <a href="mailto:pumpsandsolar@gmail.com">pumpsandsolar@gmail.com</a>	India Mark II	Importer
Davis & Shirliff P.O. Box 10725, Dar es Salaam +255 22 2112515/6, Fax: +255 22 2112513 <a href="mailto:office@tzdayliff.com">office@tzdayliff.com</a>		Importer
Water Wells Services P.O. Box 72671 Dar es Salaam, Tanzania Kisutu Street, Plot no. 922/17 +255 22 2136604, Fax: +255 22 2135472		Importer
Hanja Engineering P.O. Box 156, Morogoro +255 754 816074, +255 713 214324 <a href="mailto:hanja.engineering@yahoo.com">hanja.engineering@yahoo.com</a>		Importer
Umque Enterprises (1985) Ltd P.O. Box 2793, Mwanza +255 28 2500940/2541715/2541580 +255 784 530650/+255 713 214324 Fax: +255 28 2500400 <a href="mailto:meridian2793@hotmail.com">meridian2793@hotmail.com</a>		Importer
Harness Africa Ltd	India Mark II and III	Importer
<b>Togo</b>		
Entreprise de Construction Mécanique (ECM) Bvd Jean-Paul II, BP 31277, Lomé +2289252104, +228 2267306 <a href="mailto:ecmpompes@yahoo.fr">ecmpompes@yahoo.fr</a>	Vergnet	Importer
<b>Uganda</b>		
Victoria Pumps Ltd, Plot 7/9/11 Kibira Rd, Kampala, <a href="mailto:vpl@infocom.co.ug">vpl@infocom.co.ug</a>	U2, U2 EDW, India Mark II	Importer
Nile Technicom Ltd, Plot 1&3 Main access road Namwungo, Off 7 <sup>th</sup> Street Industrial Area, Kampala + 256414 373544 /+ 256772 770948 <a href="mailto:niletechnicom@yahoo.co.uk">niletechnicom@yahoo.co.uk</a> <a href="mailto:niletechnicom@enlighten.net">niletechnicom@enlighten.net</a>	U2, U3M	Importer
Gentex Entreprises Ltd, Plot M513, P.O.Box :1494 Ntinda Industrial Area, Kampala +256 414 286980/1 <a href="mailto:gentex@utlonline.co.ug">gentex@utlonline.co.ug</a>	U2, India Mark II, India Mark II EDW	Importer

<a href="mailto:sales@gentexenterprises.com">sales@gentexenterprises.com</a> <a href="mailto:mukesh@gentexenterprises.com">mukesh@gentexenterprises.com</a>		
Karnataka Water Pumps (Afri) Ltd P. O. Box 24547, Plot 13, 1 <sup>st</sup> Street Industrial Area, Kampala +256 414344209, +256 414 230516, +256712 223237 <a href="mailto:sevenhills@siticable.co.ug">sevenhills@siticable.co.ug</a>	U2, U3M, Afridev	Wholesaler, Importer
Multiple Industries Ltd, Plot 13/23,8 <sup>th</sup> Street industrial area, Kampala <a href="mailto:sales@multipleindustries.com">sales@multipleindustries.com</a>	India Mark II	Importer
Buyaya Technical services, Plot 8,Luwum Street, Kampala	India Mark II	Importer
Davis and Shirtliff <a href="mailto:ftumwebaze@ug.dayliff.com">ftumwebaze@ug.dayliff.com</a> <a href="mailto:abulwadda@ug.dayliff.com">abulwadda@ug.dayliff.com</a>	India Mark II and Afridev	Importer and wholesaler
<b>Zambia</b>		
Sari Agro Equipment Limited, Lusaka With 7 outlets in Zambia	India Mark II	Importer
United Chemolide Industries (Zambia) Limited P.O.Box 30095, Lusaka Tel: +2601286538/289080, Fax: +2601287047/246052, <a href="mailto:ucizksb@zamnet.zm">ucizksb@zamnet.zm</a>	India Mark II	
Davis and Shirtliff, Zambia	India Mark II and Afridev	Importer
DAPP (Development Aid from People to People)	Rope Pump	Manufacturer
Balaji Industrial & Agricultural Castings (BIAC) Zambia	India Mark II	Importer
MESU-BEN B.O.Box 38665 and 41193, Lusaka, Mufulira +260955757976, +2601231322 <a href="mailto:chishimbabmesuben@yahoo.com">chishimbabmesuben@yahoo.com</a>	Vergnet	Importer
<b>Zimbabwe</b>		
Townsend International, RSA; P.O. Box 3412, Somerset West, 7129, Cape Town, South Africa Tel: +27-21-851-1007 Fax: +27-21-851-1044	B-Type Bush Pump	Manufacturer
Southern Region Trading Co, ZIM; 77 Coventry Rd., Workington, Harare	B-Type Bush Pump	Manufacturer
Factel, ZIM	B-Type Bush Pump	Manufacturer
Hammerloan, Harare	B-Type Bush Pump	Manufacturer
Killomatt Engineering, Bulawayo	B-Type Bush Pump	Manufacturer
Mild Engineering, Kwekwe	B-Type Bush Pump	Manufacturer
Progressive Marketing, Bulawayo	B-Type Bush Pump	Manufacturer
V&W Engineering 49, Leyland Road, Ardbennie, Harare, ZIMBABWE +263 11 211 863 <a href="mailto:vinodrv@rediffmail.com">vinodrv@rediffmail.com</a>	Bush Pump types B and C	Manufacturer
Westgate Engineering, Bulawayo/Harare	B-Type Bush Pump	Manufacturer
Wy Engineering, Harare	B-Type Bush Pump	Manufacturer
Kyloe Pty Ltd 49, Leyland Road, Ardbennie, Harare, Zimbabwe +267 395 3560 +263 912747474 <a href="mailto:kyloe@taj.co.za">kyloe@taj.co.za</a> , <a href="mailto:vwnima@zol.co.za">vwnima@zol.co.za</a>	B-Type Bush Pump	Wholesaler

## Directory of International Manufacturers

Supplier Name	Address	Contact Person	Contact Details	E-mail
<b>Indian manufacturers</b>				
Span Pumps Pvt. Ltd.	104, Arihant, 1187 / 26 Shivajinagar. Near Balgandharva Ghole rd. Pune - 411 002	Mr. Ajit Bhandari	020 2553 6371 - 2553 0499	<a href="mailto:spanpups@vsnl.com">spanpups@vsnl.com</a>
Ajay Industrial Corporation	4561 Deputy Ganj, sadar Bazaar, Delhi - 110 006	Nikhil Jain, Mr. Gurkirpal Singh	011 23612204, 011 23545307	<a href="mailto:ajaypump@airtelmail.in">ajaypump@airtelmail.in</a>
Oriplast Limited	40, Strand Road, 3rd floor, Rm # 9, Kolkata - 700 001	Mr. Ashish Agarwal Mr. S.K. Mookherjee	033 - 2243 3396 - 97	<a href="mailto:contactus@oriplast.com">contactus@oriplast.com</a>
Kawsar Engineering	Plot # 186 - A, Industrial parks - Hayatabad, Peshwar, Pakistan	Mr. Bismillah Khan Mr. Charahi Haji Yaqoub	0092 915822809, 0092 91 5830010	<a href="mailto:kawsar@psh-paknet.com.pk">kawsar@psh-paknet.com.pk</a> , <a href="mailto:info@kawsar-engineering.com">info@kawsar-engineering.com</a>
Vaishno Pro-Gen Pvt. Ltd	39, 1st lock East, Mountain Street, Jayanagar, Bangalore - 560 011	Mr. Suresh , suresh@vaishno.com	080 - 4121 3790 , 099450 02742	<a href="mailto:info@vaishno.com">info@vaishno.com</a>
Apex International	G - 47, Sector 39 Noida - 201 301	Mr. Lalit Khanna lkapex@gmail.com	0120 - 2500347, 098110 37640	<a href="mailto:apexint07@gmail.com">apexint07@gmail.com</a>
AOV International	C - 22 / 25 Sectro - 57, Noida - 201 301	Mr. Naresh Mehta, aov@airtelmail.in	0120 4292929, 17, 18, 19, 9811314308	<a href="mailto:aov@vsnl.com">aov@vsnl.com</a>
Balaji Industries & Eng Corporation	4 - 3 - 74 Hill Street Ghasmandi, Secudrabad - 500 003	Mr. Chandrashekar	040 - 2771 0698, 2771 3220	<a href="mailto:biec_pps@yahoo.com">biec_pps@yahoo.com</a>
Balaji Industrial & Agricultural Castings	4 - 3 - 140 Hill Street Secudrabad - 500 003	Mr. Subbaraja , Mr. Sivaprasad	040 - 2307 9248, 8614	<a href="mailto:info@balajicastings.com">info@balajicastings.com</a>
Apex Pressfabs Pvt. Ltd.	96 A Phase - III SVCIE Balanagar, Hyderabad - 500 037	Mr. Sonthalia pumps@vsnl.net	040 - 2377 4965	<a href="mailto:pupms@apexpressfab.com">pupms@apexpressfab.com</a>
Karnataka Water Pumps Ltd.	40/1, Patalamma Temple street, Basavangadi, Bangalore, Karnataka	Mr. K. Ramamurthy	080 - 2657 0711, 12	<a href="mailto:kwp@rediffmail.com">kwp@rediffmail.com</a>
Meera & Ceiko Pumps Pvt. Ltd	4 - 3 - 161, 2153/5 Hill Street, Raniganj, Secudrabad 500 003	Mr. Mahender Kumar	040 - 2761 5131, 7098	<a href="mailto:hyd1_meera@sancharnet.in">hyd1_meera@sancharnet.in</a>
Apex Continental Limited	9/51, Kirti nagar Industrial Area, New Delhi - 110 015	Mr. K. B. Gaur	011 - 2541 1459, 5548 1650	<a href="mailto:apexcont@mantraonline.com">apexcont@mantraonline.com</a>

Premier Deepwell handpumps Pvt. Limited	No. 42 & 43 A SVCIE, opp IDPL R & D, Balanagar, Hyderabad, AP		040 - 2377 0238	<a href="mailto:mdbr@rediffmail.com">mdbr@rediffmail.com</a>
Richardson & Cruddas (1972) Ltd	69B, 69D, 69E, SIDCO Industrial Estate, Ambattur, Chennai - 600 098		044 - 2625 4111, 114	<a href="mailto:R_cruddas@hotmail.com">R_cruddas@hotmail.com</a>
Arihant Industries	Khasra # 38, Street No. 2, Dabri Industrial Area, PO Palam, New Delhi - 110 045	<a href="mailto:arihant_india@vsnl.net">arihant_india@vsnl.net</a>	011 - 2358 2104, 2538 1360	<a href="mailto:reponse@arihantdeepwellpumps.com">reponse@arihantdeepwellpumps.com</a>
Ind-Tech Services	2 - 132/4 Road # 5, Shobana colony, Bala nagar, H'bad, 500 042	K. M. Munawer Khan , 09440499225	040 - 2377 0220	<a href="mailto:indtech@rediffmail.com">indtech@rediffmail.com</a>
Intec Tools Pvt. Ltd	A - 79, mangol Puri Industrial Area, Phase - II, Delhi - 110 034	Pawan Saxena	011 - 2703 1295, 96	<a href="mailto:intectools@yahoo.com">intectools@yahoo.com</a>
Lovson Exports Ltd.	B/901, Safal Pegasus, 100 ft. Anand Nagar rd, Prahlad Nagar, Ahmedabad - 38 0051 Gujarat	<a href="mailto:wse@lovson.com">wse@lovson.com</a>	079 - 4020 9898	<a href="mailto:lovson@vsnl.com">lovson@vsnl.com</a>
Padmavati Enterprises	31, Jaiprakash Society, Opp New Era School, Nizampura, Vadodara 390 002, Gujarat	Vijay Shah, 098251 81748	0265 - 2784465	<a href="mailto:vss36@yahoo.co.uk">vss36@yahoo.co.uk</a>
Mahabir Industries & Allied Works Private Limited	1, Barauni Industrial Area, Post Tilarth, Begusarai, 851101, Bihar, India	Saurabh Maskara	# 91-6243-243051	<a href="mailto:info@mahabirindustries.com">info@mahabirindustries.com</a>
<b>Other international manufacturers</b>				
Vergnet Hydro	160 Rue des Sables Des Sary, 45770 Saran, France	Jean-Michel Chabrais	003323822751 1	<a href="mailto:Jm.chabrais@vergnet.fr">Jm.chabrais@vergnet.fr</a>
Nira pumps	Subsidiaries in Tanzania and Ghana	Pekka Pyykonen	+358 10 8306735	<a href="mailto:Pekka.pyykonen@nira.fi">Pekka.pyykonen@nira.fi</a>