



GUIDELINE TO BUNDLING OF DEMANDS AND SUPPLY OF MECHANISED SERVICES

A STEP TO STEP GUIDE TO BUNDLING OF
DEMANDS AND SUPPLY OF MECHANISED
SERVICES FOR SMALLHOLDER FARMERS,
MECHANISATION SERVICE PROVIDERS,
AND FACILITATORS

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About RIU

Research Into Use (RIU) is a research and development programme designed to put agricultural research into use for developmental purposes and to conduct research on how to do this. The programme is funded by the UK Department for International Development (DFID). It follows earlier investments by DFID in agricultural and natural resources research supported through its renewable natural resources research strategy (RRNRRS). While this strategy delivered high quality research the uptake of this research and its impact on social and economic progress was modest.

RIU seeks to address this both by supporting activities that put research products into use, but also by investigating the wider question of the relationship between agricultural research and innovation. This wider investigation of the topic responds to extensive evidence that suggests that agricultural innovation is very often not the result of simply transferring research products to farmers, entrepreneurs and policymakers. More usually, research promotes innovation only when it is embedded in the wide set of relationships and processes involved in diffusing, combining and adapting ideas and putting them into use.

RIU Programme started in Tanzania in June 2008 and it is implemented by MUVEK Development Solutions Ltd. The programme works to explore ways of improving local innovation capacity for increased use of research, new knowledge and technologies in developing profitable agribusiness enterprises. From December 2008 to June 2010, the programme worked in Morogoro region to enhance farm productivity of smallholder farmers through increased access to and capacity to utilise mechanised services in Kilombero, Kilosa, Ulanga and Mvomero districts.

BACKGROUND

In December 2009, Research Into Use Programme started its activities in Morogoro region with a purpose of enhancing farm productivity of smallholder farmers through increased access to and capacity to utilise mechanised services.

Challenges in agricultural production

Over the past two decades, Tanzania's overall agricultural Gross Domestic Product (GDP) has been growing at an average annual rate of only 3.5 percent. The growth has been largely impaired by poor farming technology, unreliable weather conditions and declining land productivity. About 70 percent of Tanzania's crop area is cultivated by hand hoe, 20 percent by ox plough and only 10 percent by tractor. Majority of the farmers are smallholders, cultivating between 0.9 and 3.0 hectares each, annually.¹

Several factors hinder widespread use of modern farming technology and undermine the existing potential to increase agricultural production. They include high cost of hiring mechanisation services, shortage of quality machinery, inadequate auto maintenance services and expertise, poor quality of spare parts, fluctuations in fuel prices, inadequate knowledge among smallholder farmers about benefits of mechanisation, fragmentation of crop areas leading to high cost of mechanised cultivation, and most significantly demand and supply deadlocks in mechanisation hire. Moreover, smallholder farmers generally lack the understanding, unity and initiative to get self-organised to address their various needs and challenges towards increased agricultural production.

Demand and supply obstacles in mechanisation hire are a major hindrance to widespread use of modern farming technology for increased agricultural production.

RIU's intervention

In its efforts to increase utilisation of farm machinery, RIU introduced a regional mechanisation platform which included diverse members from the four target districts (Ulanga, Kilombero, Kilosa and Mvomero districts). Platform members ranged from District Mechanisation Officers, tractor owners, spare parts suppliers, garage owners, inputs suppliers and farmers. Through the platform an analysis of the main challenge was made, and it was proposed and agreed that the programme and stakeholders should first address the demand and supply deadlock in provision of mechanised services by mobilising farmers and tractor owners to bundle their demands and supply of mechanised services.

The process

Improving farm machinery supply side: The programme together with District Mechanisation Officers (who worked as district platform champions) identified all tractor owners within the districts and held mobilisation meetings in each ward. Through the meetings it was agreed that if farmers increased their areas of cultivation and purchased tractor hire services collectively, tractor owners will reduce their ploughing charges from approximately Tsh. 35,000 to 30,000 or 25,000 per acre depending on the size of land bundled, type of soil and distance. It was also agreed that tractor owners in each ward and district will form a network for coordinating service provision to increase efficiency. A price list showing reduction in prices per size of bundled area, type of soil and distance from tractor owners centres was made and was used as a main tool to entice farmers to start bundling their demands and hire mechanised services.

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“The programme supported and mobilised farm machinery owners and operators to better organise themselves in service provision in order to lower operational and machinery rental costs; increase efficiency; and work with more smallholder farmers so that they can improve the profitability of tractors through a higher running time throughout the year”

Improving farm machinery demand side: The programme team, a representative of tractor owners, district mechanisation officers; ward and village executive officers conducted mobilisation meetings in each ward to sell the idea to farmers. While most farmers were at first resistant to adopt the idea because it was something they have never done before, they eventually saw the benefits and were ready to try it out. Farmers who were ready in each ward were then linked with tractor owners in respective wards and they organised and agreed on working mechanisms.

“The programme worked to build the capacity of smallholder farmers and promote their self-organisation to enable them to break through the supply-demand deadlock; reduce ploughing costs; improve knowledge and entrepreneurship skills; expand areas under cultivation, access other improved inputs and improve overall productivity”

Enhance linkages with other service providers: The programme also worked to link farmers with input suppliers, mechanisation and extension workers; and tractor owners with spare parts suppliers, service centres and garages to ensure necessary support systems are in place for both sides.

Outcomes

In each district, the above process has

- Enabled smallholder farmers to be able to demand and access affordable mechanised services, some for the first time. This has enabled most farmers to expand their areas of cultivation from approximately a quarter of an acre to between 1 to 4 acres.
- Triggered demand and use of other modern farming technologies such as planters and the use of modern weeding technologies including herbicides among smallholder farmers.
- Triggered self-organisation and efficiency among tractor owners. Tractor owners have an increased desire to work with smallholder farmers and to work together as service provision groups in allocating jobs for themselves. In all districts, tractor owners were inspired and formed formal groups and networks which are used in communicating available demands from farmers, marketing their services, communicating challenges to district authorities, approaching credit unions and even bundling their own demands for spare parts, lubricants, quality fuel and training.
- Encouraged tractor owners to increase the number of smallholder farmers that they work with as well as their operational areas. Prior to this initiative tractor owners didn't work with farmers in remote areas, but due to increased collective demand in such areas, tractor owners are able to reach such marginalised groups.
- Motivated tractor owners to look into the options of purchasing other farm implements in order to provide other services beyond ploughing.

Based on lessons and experiences from Morogoro the programme has developed this process guide to create a better understanding and promote the process among target stakeholders in different parts of the country. The programme expects that, enhancing smallholder farmers' capacity to utilise farm machinery will result into emerging needs related to access to inputs and output markets and other post harvest management practices, that will trigger innovation; improve farming practices and increase production ability.

ABOUT THE PROCESS GUIDE

This Process Guide is developed based on RIU's experiences and successes from Morogoro region. It is a practical toolkit aimed at helping smallholder farmers and providers of farm mechanisation services to develop a sustainable system for increasing access to mechanisation. The tool describes step-by-step, how farmers and machinery owners can bundle demands and supply of mechanisation services and benefit from the resultant economies of scale.

Objectives

The main objective of the guide is to help target groups facilitate the process of increasing demand, access to and use of farm machinery through bundling of demands and supply in mechanisation hire. The guide is designed to help farmers, tractor owners, village, ward, district or regional authorities and other stakeholders in the agricultural system understand and engage in the process and make mechanised services accessible to smallholder farmers.

The primary objective is to facilitate increased access to farm machinery through bundling of demand and supply in mechanisation hire.

It includes examples, checklists and information to help you

- Understand the concept of bundling as a basic marketing strategy for accessing goods and services at affordable rates.
- Understand the benefits of bundling demand and supply for goods and services.
- Know and follow the process and steps that can be used to bundle demands or supply services to clients who have bundled demands.
- Understand how to manage your demands and supply of goods and services e.g. having information points or representatives to communicate the message to interested parties.
- Understand how to form and maintain linkages and networks among clients and service providers to facilitate availability of goods or services.
- Get responses to some of the frequently asked question regarding bundling of demand as supply in mechanisation hire.

The programme hopes that the guide will encourage smallholder farmers to come together as organised groups of consumers of mechanisation services (demand side) and enhance their capacity to negotiate favourably with providers of the services (supply side) who may not be necessarily farmers.

Target users

The primary target users of the guide are providers of mechanisation services (machinery owners) and smallholder farmers who are the main consumers of the services.

The secondary target users are individuals with relevant capacity to influence and/or support farmers and machinery owners to effectively engage each other in increasing access to mechanisation for mutual benefits. They include but not limited to: district or ward mechanisation officers, agricultural extension workers at the ward and village levels, local government officials (ward councillors, ward executive officers, village executive officers and village chairmen), representatives of NGOs and

CBOs working in the agriculture sector more so at the community level, and representatives of financial institutions supporting agricultural activities, among others.

How to use this guide

This guide is divided into two first introductory parts and three main sections.

- The first introductory part contains information that will help you to get a general background on RIU and its activities in Morogoro region. This part provides a clear picture of the origin of the guide.
- The second introductory part includes information on the process guide. It describes the guide's objectives, target users and information on how to use it.
- The first major section discusses the bundling concept and gives two main examples to help you understand the concept. It further explains the benefits of bundling citing situations from the two major examples.
- The second section (the process) illustrates 10 steps involved in bundling of demands and supply of mechanised services. Use this part to understand how to go about to bundle demands or supply of goods or services. As a secondary target group you can use this part to facilitate the process of getting the first target groups to bundle their demands for mechanisation services and other required goods or services within their system.
- The final section is a question and answer that aims to provide you with answers to some of the common questions related to bundling of demands and supply of mechanisation services.

1. UNDERSTANDING BUNDLING

WHAT IS BUNDLING?

Bundling is a popular marketing concept aimed at increasing competitiveness of a particular set of products or services. The concept is usually applied when it is thought that by packing certain products or services together as a single unit, they would appeal more to customers and cost less than when sold as separate units. Below are examples to help you get a clear understanding of the term.

Example 1: Malinyi Farmers

Mzee Valimba, Mzee Mng'ong'o and Rashid Juma are seasoned rice farmers in Malinyi Village of Ulanga District. Every year, Mzee Valimba cultivates about 4 acres of land, while Mzee Mng'ong'o and Rashid, each cultivates 3 acres. They all depend on mechanisation services from Mr. Manyama whom they consider a reliable service provider. Manyama is based at Lupiro trading centre, some 60kms away from Malinyi.

For a long a time, the three farmers had been contracting Mr. Manyama individually and at different times to cultivate their farms. Manyama would charge Mzee Valimba Tsh. 30,000 per acre, and Tsh. 35,000 per acre each for Mzee Mng'ong'o and Mr. Rashid because of their relatively smaller farms. The rate included Tsh. 10,000 for tractor fuel from Lupiro to Malinyi and back.

During the last rice growing season, Mzee Valimba invited Mzee Mng'ong'o and Rashid to his home to discuss how they could work together to reduce their cultivation costs. He implored them that since they are neighbours, they could combine their mechanisation needs and get Manyama to till their plots together as one unit. Mng'ong'o and Rashid welcomed idea. They together approached Mr. Manyama to negotiate a deal for cultivating their plots as a single unit which they called "Malinyi Combined". They convinced him that since he would be making one trip to Malinyi to work on a much bigger farm area, they deserved a better rate. Manyama did his calculations and agreed to offer them a price of Tsh. 25,000 per acre for the 10 acres. The offer was accepted. Mzee Valimba contributed Tsh. 100,000 (Tsh. 20,000 less than the previous season), Mzee Mng'ong'o - Tsh. 75,000 (Tsh. 30,000 less than the previous season) and Rashid - Tsh. 75,000 (Tsh. 30,000 less than the previous season). The bundling of mechanisation needs (demand) had paid off!

Manyama managed to cultivate the 10 acres in 2 days and made Tsh. 250,000 from a single trip. Before then, he would make 3 trips to the same area, spend more time and fuel on the road, till the same acreage for 3 different days and still earn an average of Tsh. 110,000 per trip. The "Malinyi Combined" deal proved to be a win-win arrangement for all the players!

Example 2: RIU Programme and Morogoro Farmers

The RIU Programme wanted to help smallholder maize and rice farmers in Morogoro region increase their farm productivity. However, the programme identified that most smallholder rural farmers ploughed very small plots of land mostly by hand hoe, and they planted, weeded, sprayed and harvested manually. Although farmers experienced other challenges (such as lack of adequate advisory services, quality inputs, poor post harvest management techniques, poor markets, etc...) which were contributing to their poor productivity, access to mechanisation was a major hindrance to expanding areas of cultivation. In its efforts to solve this challenge the programme took the following steps.

The programme team visited a few farmers in the districts to identify why they are not using farm machinery. Mzee Yakubona and his fellow farmers from Ifakara mentioned that they were not using farm machinery because of high prices for hiring the services from tractor owners. “Most tractor owners charged about Tsh. 35,000 to 40,000 per acre ploughed which is not affordable”, he said. Bi. Susana Hamisi and her group claimed that they have never known that there are farm machineries available in their village and even if they are available, tractor owners don’t work with smallholder poor farmers.

The programme team decided to visit a few tractor owners and get their opinions on the problem. Bwana Simba, a tractor owner from Kilosa, mentioned that it was not profitable for tractor owners to work with smallholder farmers because most of them are scattered therefore it takes a long time to reach them; they cultivate very small fragmented areas which are not profitable enough; and most of them are not able to pay for tractor hire services. On the other hand, Simba mentioned that most tractor owners in the ward were disorganised, they operated individually, and were not efficient in allocating jobs for themselves.

The programme team decided to call a meeting with a few tractor owners, farmers, and district mechanisation officers to discuss and find a suitable solution for enabling farmers and tractor owners to work together. Different solutions were proposed during the meeting, but all stakeholders agreed that if action is to be taken immediately, they should use currently available resources, i.e. use tractors that are currently available in the districts. It was therefore agreed that farmers should bundle their demands for tractor services and tractor owners should bundle their supply of mechanisation services to reduce costs and increase access to more farmers. During the meeting, the group selected district leaders – who were district mechanisation officers. District leaders and group members were tasked to identify all tractor owners and farmers within their districts.

*The programme and district mechanisation officers called the first mobilisation meeting with tractor owners in each ward to inform them about the idea and to mobilise them to work with more smallholder farmers. The team explained about the pricing and how to reduce prices in cases. By the end of the meeting, all tractor owners agreed that if farmers combined their demands for mechanised services ploughing charges will go down from **Tsh. 35,000 to 30,000 or 25,000** depending on the size of area bundled, distance from their centres and type of soil. Tractor owners and district mechanisation officers made a price list for different areas. And as a result of the initiative tractor owners decided to form*

their district and ward unions to coordinate activities and communication with farmers more efficiently.

Tractor owners, joined hands with district mechanisation officers, ward and village officers and the programme team and conducted second mobilisation meetings with farmers in each ward. The price list developed during the first meeting was used as a main mobilisation tool to demonstrate price reductions to farmers. Farmers discussed the price options and it was agreed that for farmers to be able to get the services they have to operate together and increase their areas of cultivation.

Through district mechanisation officers and tractor owners unions, more farmers have been able to get information on the available services and are continuing to seek for tractor hire services. Farmers that managed to access tractor hire services reported that they increased their areas of cultivation from 0.5 acres to about 2,3 and in some cases 4 acres. This has also contributed to their increased harvests.

BENEFITS OF BUNDLING

Experience has shown that bundling is most successful when there are economies of scale in production, economies of scale in distribution, marginal costs of bundling are low, production set-up costs are high, customer acquisition costs are high, and consumers appreciate the resulting simplification of the purchase decision and benefit from the joint performance of the combined product or service.

As we have seen in the examples above, bundling has several benefits to both the demand and supply sides. The examples show that:

- a. Bundling increases “delivered customer value” by reducing costs for goods and services** - we learn from the decision of Mzee Valimba, Mng'ong'o and Rashid (in *example 1*) that by bundling their mechanisation needs, they are able to access tractor services from Mr. Manyama at a much cheaper cost. Mzee Valimba who initially used to cultivate his 4 acre farm at Tsh. 120,000, in the last season used only Tsh. 100,000. Mzee Mng'ong'o and Rashid were able to save even much more – Tsh. 30,000 each.
- b. Bundling reduces supplier's costs** - Prior to being approached by Mzee Valimba, Mng'ongo and Rashid to cultivate their plots as a single unit (Malinyi Combined), Mr. Manyama would make three different trips to Malinyi to cultivate the individual plots of the smallholder farmers as separately units. Given the distance from Lupiro to Malinyi, he would cover a total mileage of 360km i.e. 120km per trip to Malinyi and back to Lupiro. This meant that he would spend quite some money on fuel for travel alone. However, this is not the case anymore. The “Malinyi Combined” package has provided him with a unique opportunity to also bundle his services to the three farmers and reduce total mileage covered on the road from 360km to only 120km. This implies a significant 67% reduction in his total expenditure on fuel for transport and a considerable reduction in the number of productive hours lost on the road.
- c. Bundling enhances the consumer's negotiation power** - the three framers in Malinyi were also able to increase their bargaining power by bundling their mechanisation needs into “Malinyi combined”. Through this, they managed to convince Mr. Manyama the tractor owner to charge

them a better mechanisation fee since his costs had been significantly reduced by virtue of making only one trip to Malinyi to till all the three farms as a unit.

- d. **Bundling Increases the supplier's profit margin** - we see in *Example 1* that as a result of bundling of demand and supply of mechanisation services, Mr. Manyama is able to increase his profit by saving about 67% on fuel for transport as well as productive hours which would have otherwise been lost on the road. Before bundling the mechanisation needs and services, he would make an average of Tsh. 110,000 per trip to Malinyi. However, with bundling of the needs/services he is now able to make Tsh. 250,000 per trip to Malinyi.
- e. **Bundling increases efficiency and optimises output delivery** - going by the example of Mr. Manyama, we notice that prior to bundling of the mechanisation needs of the three Malinyi farmers, he would make three different trips from Lupiro to Malinyi to cultivate their plots for a total of three days. However with bundling of the mechanisation needs and services, he is able to cultivate all the three plots as a single unit in just one trip of two working days. He saves an extra working day which he can use to plough for other farmers.

2. THE PROCESS: TWELVE STEPS TO BUNDLING DEMANDS AND SUPPLY OF MECHANISATION SERVICES

In this section, the Process Guide discusses the key steps in bundling demands and supply in mechanisation hire using lessons and experiences from RIU activities in Morogoro region, discussed in example 2 in the previous chapter and additional examples from the Malinyi farmers. The following observations from are significant to help you understand the process.

- Mzee Valimba, identified the problem and after getting an idea regarding the potential benefits of bundling their mechanisation needs, went out of his way to sensitise his fellow farmers, Mzee Mng'ong'o and Rashid about the idea and mobilised their participation in order to make it a reality;
- After Mzee Mng'ong'o and Rashid bought into the idea, the three held a meeting to share experiences and discuss possible solutions to their mechanisation challenges;
- They critically analysed their situation as part of the process of assessing their mechanisation needs;
- Mzee Valimba provided leadership by making the necessary initiatives to enable the idea move forward;
- They planned together on how they could overcome their challenges and access mechanisation with greater ease and at a lower cost;
- They agreed to combine their individual farms into a single unit which they called 'Malinyi combined';
- Further to that, they identified a reliable service providers to enable them meet their combined mechanisation needs;
- They settled on Mr. Manyama and met him to negotiate a competitive price for cultivation, using "Malinyi Combined" as their bargaining chip;
- Upon striking a deal with Mr.Manyama, they agreed to combine resources i.e. share the cost of cultivation, based on the acreage of their individual plots, and invited the tractor owner to cultivate the farms as a single entity;
- They were all happy with the outcome of the bundling process and decided to build their network for future agricultural activities.

SUMMARY OF KEY STEPS IN BUNDLING DEMANDS AND SUPPLY OF MECHANISATION SERVICES

1. Identify the problem
2. Identify stakeholders
3. Establish a working group / platform
4. Identify group / platform leaders
5. Conduct a detailed situation analysis
6. Inform, sensitize and mobilise wider stakeholders
7. Set mechanisation prices
8. Identify and select mechanisation providers & customers and combine mechanisation demands and supply
9. Share mechanisation costs
10. Define terms and conditions for service provision
11. Take action!! Provide and receive mechanised services
12. Build institutional networks for sustainability

The above observations summarise the key steps towards successful bundling of demand and supply in mechanisation hire. Use the detailed steps below to help you move forward with the process of bundling of demands.

STEP 1: IDENTIFY THE PROBLEM

The first crucial step is to identify a very clearly defined and specific problem that is affecting your operations and activities. Problems can range from poor access to seeds, mechanisation services, lack of fertiliser suppliers, poor access to markets etc... The best strategy is to list the main problems and then prioritise them in order of importance and start to solve the most important issue first. It is very important to prioritise problems because you can focus your time and resources on the most important problem i.e. something that maybe blocking the whole system from functioning.

For example, in the case of RIU, although farmers had other problems such as poor access to quality inputs, financial services, adequate extension and advisory services, markets, poor utilisation of mechanisation services etc... It was crucial for stakeholders to first solve the challenge of poor access to basic mechanisation services to enable farmers to reduce drudgery and expand their areas of cultivation. Solving this challenge made it easier for farmers to spend their extra time looking for better inputs such as seeds and fertilisers.

STEP 2: IDENTIFY STAKEHOLDERS

A stakeholder is a person, group, organisation or system that may affect or be affected by the problem or that may benefit from solving the problem. Do a thorough analysis, brainstorm and identify the primary and secondary groups who may benefit from solving the problem or who may be interested in solving the problem. Note that it is very useful to select stakeholders that have an interest in positively contributing to the solution.

For example, in the case of RIU, the programme team together with mechanisation officers for each district started by identifying mechanisation service providers i.e. tractor owners and operators and mechanisation consumers i.e. smallholder farmers, then later on moved to identify ward and village extension officers, local government officers, garage owners and spare parts dealers who may be interested to participate in other processes such as mobilisation or provision of technical support services.

STEP 3: ESTABLISH A WORKING GROUP OR PLATFORM

A platform can be described as a forum for a particular group of people with shared needs or objectives. After indentifying all necessary stakeholders, you can form a small group that can be used as a main discussion forum for addressing system challenges and needs. Some of the important things you should consider when forming a group or platform include,

- The group does not need to be large, therefore you can select a few representatives that can attend group meetings and deliver messages to other stakeholders. For example, one tractor owner from Ifakara can be in the group to represent other tractor owners in Ifakara.
- The group does not necessarily need to be formalised i.e. be officially registered. The group can be informal and can meet only when it is necessary to deal with a certain issue. This makes it easier to avoid bureaucratic procedures that may be associated with formal groups and also avoid unnecessary costs associated with formal meetings.

- For the group / platform to work efficiently, members need to be as committed as possible and be ready to work together for a common good. Each member should always have a task to complete and should give feedback to other group members.
- Where possible, smallholder farmers and mechanisation providers can have smaller separate groups and platforms. However both groups have to establish a structured mechanism for constructive engagement especially in removing barriers to equitable access to mechanisation.

From the above examples, we see that just as Mzee Valimba convened a meeting with his fellow farmers to discuss their mechanisation needs, other groups of smallholders and mechanisation providers can establish regular forums (platforms) for sharing experiences and exploring solutions to their mechanisation challenges. We also see how RIU established district platforms that brought together different stakeholders to find and implement solutions that will improve access to mechanised services by smallholder farmers.

STEP 4: IDENTIFY GROUP/PLATFORM LEADERS

Good leadership is essential for successful functioning of platforms and more so in addressing the needs of members. In identifying platform leaders, members should be conscious of the quality of leadership they need.

We notice in the example of the three Malinyi farmers that if it had not been for the dedicated leadership by Mzee Valimba, the farmers wouldn't have managed to bundle their demand for mechanisation. They would have missed on the opportunity to have their farms cultivated at a much cheaper price.

Also in the case of RIU, platform leaders, who were also District Mechanisation Officers, were very crucial in coordinating and following-up processes on the ground and ensuring that farmers in the villages are well informed about the platform activities and the challenges of tractor owners are forwarded to the right places e.g. Local Government Authorities.

The following are some basic qualities of a good leader.

- **Trustworthy** - one whose ways are characterised by integrity and honesty, such that when he calls out on people, they can follow him;
- **Visionary** - one who is capable of seeing what is good and beneficial to all in the long term;
- **Enthusiastic** - one who is capable of taking initiative to ensure that a particular course moves forward as intended;
- **Disciplined** - one who is capable of working in an orderly manner and takes decisions keeping emotions and personal matters aside;

Good leadership is essential for successful establishment and functioning of mechanisation platforms

- **Intelligent** - one whose thoughts are logical and analytical, one who looks at every situation critically before arriving at any decision and constantly thinks positively through different situations;
- **Committed** - one who keeps focus of the set objectives/goals and works consistently towards their realisation;
- **Inspiring** - one who can motivate his team to work towards shared objectives and lead to success;
- **Accommodative** - one who tolerates and accepts divergent views and is capable of negotiation;
- **Firm** - one who upholds certain shared values and principles and gives people direction and a voice;
- **Composed** - one who keeps a cool head in times of crises and finds solutions to get everybody out of any difficult situation;
- **Accountable** - one capable of taking responsibility for his actions, whether good or bad.

It should be noted that the above list is by no means exhaustive of the qualities of a good leader. Therefore, platform members are at liberty to consider other acceptable qualities (if any) when appointing their leaders.

STEP 5: CONDUCT A DETAILED SITUATION ANALYSIS

After establishing the group, identified leaders need to take an initiative to bring members together and facilitate a detailed situation analysis. At this stage, group leaders and group members can propose and select a date and call a meeting with representatives of stakeholders. In the meeting, stakeholders can critically analyse the problem and propose possible solutions and select solutions that will effectively respond to the challenge.

For instance, RIU held a meeting with representatives of farmers and tractor owners, where these stakeholders proposed a number of solutions to increase access to mechanised services by smallholder farmers. Some of the solutions suggested included provision of loans to enable farmers to buy tractors, having community tractors that can be used by the village etc... Some of these suggestions were rejected by some of the stakeholders since they were not sustainable, for example it was not possible to process and acquire loans for farmers to purchase tractors in time for the farming season, and in addition, most farmers lacked the technical and financial capacity to manage and maintain tractors which could have caused a great financial burden and loss. While use of communal tractors was rejected because of lack of ownership and responsibility and the approach had been tried before and failed. The group therefore proposed to use existing tractors by hiring tractor services from local tractor owners and operators since it will be a cheaper and will deal with the challenge immediately.

We also saw in the example of the three Malinyi farmers that when Mzee Valimba convened a meeting to discuss their mechanisation needs they critically looked at their situation including the size of their individual farms, the cost of cultivating them as

separate units and what they could save by cultivating them as a combined unit. After doing all their calculations, they realised that they were better off bundling their demand for mechanisation, than going the individual way.

Objective situation analysis is critical to effective planning and successful bundling of demand and supply in mechanisation hire

Likewise, mechanisation providers should also analyse their situation from time to time as a way of addressing some of the bottlenecks in delivery of the services. Such a process should lead to identification of needs which can be better met by addressing them collectively (as a group), not individually. It should be noted that objective situation analysis is critical to effective planning; and good planning is necessary for successful bundling of demand and supply in mechanisation hire.

STEP 6: INFORM, SENSITISE AND MOBILISE WIDER KEY STAKEHOLDERS

Sensitisation and advocacy are popular strategies for raising awareness and mobilising the participation of a particular group of people in a given process or agenda. This process is very important to get wider stakeholders to participate in activities.

You can use different approaches to sensitise and mobilise key stakeholders to engage in the process of bundling demands and supply in mechanisation hire. Approaches include but not limited to sensitisation and advocacy meetings at different levels (village, ward and district) targeting smallholder farmers and mechanisation providers; use of information education and communication (IEC) materials including posters, leaflets, information brochures, fliers, booklets; and dialogue among the key stakeholders regarding various challenges and possible solutions to mechanisation challenges.

The above approaches lead to one important question, "who should sensitise and mobilise the stakeholders?" The process can be led by anyone who wants to make a difference and see change happen, however those with the ability to convince and work well with the public should lead the process to get better and positive results. The process of sensitisation can be led by farmers, mechanisation and extension officers, community leaders, NGO workers, tractor owners amongst others.

From RIU's experience we see that district mechanisation officers took the lead role to identify all tractor owners and together with the programme team, they organised and conducted initial mobilisation meetings with tractor owners at ward level. During these meetings, tractor owners were informed about the idea of working with smallholder farmers through bundling of demands and supply of services. The programme team and mechanisation officers had to work closely and discuss with tractor owners how to reduce ploughing prices and other mechanisation hire services. As a result of this meeting, a price list with new reduced prices was made and it was used to mobilise farmers to bundle their demands for tractor services. In the second mobilisation meetings with farmers at ward levels, tractor owners, ward and village leaders also joined the RIU team and mechanisation officers. During these meetings, the idea of bundling was presented to farmers and after clarifying all the questions, farmers were ready to try it out.

RIU's experience has shown that dialogue among the key stakeholders is an effective way of raising awareness and mobilising the target group to participate. When mobilising stakeholders the following key points should be considered

- Have a clear idea of the problem you want to solve.
- Have dialogue with the right group of stakeholders.
- Present alternative solutions to stakeholders and show clearly what they will gain by engaging in the activity and what they will continue to lose by not taking any actions. For instance - RIU convinced tractor owners to work with smallholder farmers by encouraging them to plough more land therefore doing more business and increasing their profit margins.
- Subsequently, any stakeholder, whether tractor owner, smallholder farmer, NGOs or LGAs, who has received the "light", needs to become a change agent by sensitising and mobilising his/her colleagues into collective action towards equitable access to mechanisation.

Any stakeholder who understands the benefits and the process of bundling demand and supply in mechanisation hire, should be a change agent in promoting equitable access to mechanisation services

PLAN TOGETHER

After all key stakeholders have been reached with the information and are mobilised to start bundling, the group should make a good plan to lead the processes. Planning is an essential process for achieving a particular goal or set objectives. It can play a vital role in helping to avoid mistakes or recognize hidden opportunities. Planning also helps in forecasting the future. It bridges between our understanding of where we are and where we want to be. That way, it helps in deciding tasks and resources required in order to realise certain objectives. It is all about looking ahead! Some of the tasks/processes which could be part and parcel of a bundling plan are described from step 7

STEP 7: SET MECHANISATION PRICES

Pricing is an important process of deciding what a supplier of goods or services should earn in exchange for the goods or services. Pricing decisions are in most cases left to the supplier or producer of a given product. However, consumers can influence the decisions through their buying behaviour including ability to bargain. Among the factors which most commonly influence pricing decisions are cost of production/service delivery, demand in the market, competition, economic situation, government policies and social concerns.

In this section the process guide pays more attention to the pricing strategy most widely used by mechanisation providers in Tanzania.

During the mechanisation platform supported by RIU in Morogoro, it was learnt that most tractor owners in the region mainly based their pricing decisions on cost of service delivery including fuel wages, as well as the type of land and nature of preparation/cultivation needed. It was learnt that they generally charge more for cultivating virgin and fragment land. The average price for cultivating a virgin plot (commonly known in Kiswahili as

“Katua”) is Tsh. 40,000 per acre and that for a non-virgin land (commonly known as “Kibua”) is Tsh. 35,000 per acre. They also charge relatively more per acre to cultivate a rice field compared to maize field. The bottom line is the cost is attributed to intensity of the cultivation. Subsequently, these service providers determine mechanisation prices by calculating their operation costs and addition some mark-up as profit.

This method of calculating operation/production costs and adding a percentage profit (mark-up) to determine the selling price is referred to as “Cost-plus Pricing”. It is one of the simplest pricing strategies and easy to work with. However, it does not take into account demand and there is no way of determining if potential customers will be able to afford the calculated price. This partly explains why smallholders continued to complain of high cost of mechanised cultivation and many can't afford the services even though they are conscious of the advantages to agricultural production. Below is a cost breakdown provided by a group of tractor owners from one of the wards in Morogoro Region (name withheld) during an IRU-supported mechanisation platform meeting (June 2009), as a basis for charging Tsh.35,000/acre to cultivate a “kibua” field.

SN	Particulars	Amount
1	Diesel (7litres x Tsh.1,500 per litre)	10,500
2	Oil	1,000
3	Grease	600
4	Bolts	2,000
5	Driver	3,000
6	Assistant driver	1,000
7	Time and fuel loss due to distance	2,250
8	Maintenance charges	2,000
9	Loan repayment (where applicable)	7,000
10	Time value for supervisor	1,000
Total Costs		30,350
Mark-up (profit)		4,650
Cultivation Price		35,000

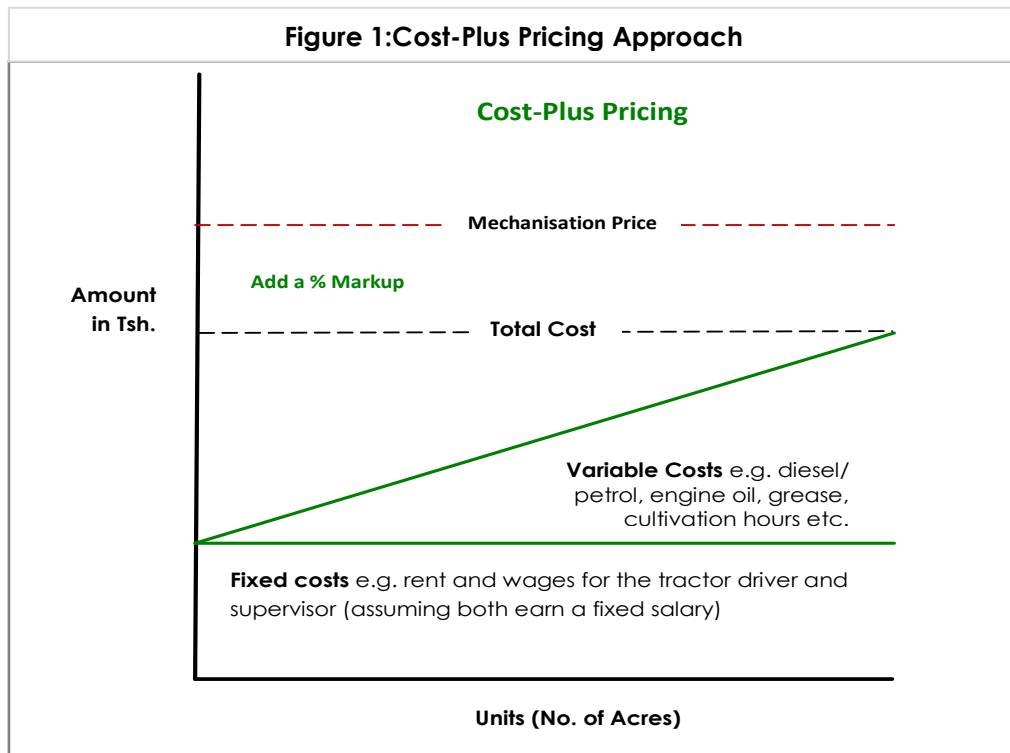
“Cost-plus pricing”, though the simplest method, does not take into account demand and there is no way of determining if potential customers will be able to afford the calculated price.

In setting the price, the tractor owners would have been more systematic by classifying the costs either as fixed or variable costs. This would put them in a better position to analyse the costs and work with them more strategically to determine prices that can stimulate potential demand and respond effectively to any changes in the market. This is particularly important because the Cost-plus pricing strategy which they adopted appears in two forms - “Full Cost” and “Direct Cost” pricing. Full cost pricing takes into consideration both variable and fixed costs and adds a percentage mark-up. Direct cost pricing only considers variable costs plus a percentage mark-up. The latter can be used in periods of high competition in order to remain competitive. However, continuous use of this method can lead to a loss in the long run.

Therefore, a clear understanding of fixed, variable and total costs is crucial in working with the cost-plus pricing method. Fixed costs can be described as business expenses which are not dependent on the level of goods or services produced by the business. They tend to be time-related, such as salaries or rents being paid per month.

On the other hand, variable costs are expenses that change in proportion to the activity of a business. They are volume-related and are paid per quantity produced. For example if a tractor required 7 litres of diesel to cultivate an acre of land, it is goes without saying that it would require 35 litres to cultivate 5 acres. The unit of production/output in this case is the acreage.

Variable costs, along with fixed costs, make up the total cost i.e. total cost is equal to fixed costs plus variable costs. Figure 1 below illustrates how mechanisation providers can use both fixed and variable costs as the key drivers of the cost-plus pricing approach to determine mechanisation prices.



STEP 8: IDENTIFY AND SELECT MECHANISATION PROVIDERS & CUSTOMERS AND COMBINE MECHANISATION DEMANDS AND SUPPLY

This is one of the most critical steps in the whole process of bundling. Without the service provider and the customer, there is no mechanisation. The choice of either of the two has a direct bearing on the outcome of their interaction. The interaction between the Malinyi three and the tractor owner is an important pointer to the fact that the choice of the service provider or customer should be highly objective and deliberate. The considerations should be as diverse as possible in order to benefit fully from the choice the stakeholders make.

- i. To **identify customers**, customers (farmers) can organise themselves into clusters according to their areas or mechanisation needs. For example farmers who are close or live in the same or nearby villages should be in the same cluster. Likewise, farmers that have the same mechanisation needs should also group themselves together e.g. rice farmers, maize farmers, potato or tomato growers etc...

We notice that when Mzee Valimba was in need of smallholders with whom to combine mechanisation needs, he went for his immediate neighbours with similar agricultural activities. The decision was both practical and strategic. It was practical in the sense that it made it easier for them to combine their plots which were close apart. Since all the farms were for rice growing, they needed the same type of preparation, hence similar machinery. The practicality of the decision was strategic in the sense that it enhanced their negotiation power with the tractor owner. The tractor did not have to move far from one farm to another during cultivation. This helped to minimise costs and improve efficiency.

- ii. Likewise, **mechanisation providers** can also form clusters based on their geographic locations, type of machinery they own and the services they provide. This would make it easier for them to regulate market prices for different services, prevent under-cutting and even stimulate demand for services which are not yet very popular with farmers by promoting them jointly. The clusters would also put the mechanisation providers in a better position to negotiate for other services such as auto maintenance and minimise costs. For example, instead of a tractor owner in Kilosa District calling a mechanic all the way from Morogoro town to come and service his harvester alone and go back, his cluster could invite the mechanic so that when he comes, he can also service machinery belonging to other members of the cluster. That would make it easier for them to negotiate for a more competitive price for the auto maintenance and share the costs.
- iii. After farmers' clusters and the mechanisation providers' clusters are formed, farmers can select mechanisation providers that can best meet their needs e.g. type of machinery, prices, distance, efficiency etc... Likewise, after farmers have grouped themselves, mechanisation providers can select a group that they would like to provide services to.

The above observations provide a useful link between the choice of a service provider or customer and the clustering approach to bundling. The mechanisation provider clusters would provide the smallholders with a unique opportunity to shop for the best service providers. Likewise, the smallholder clusters would create an organised pool from which the mechanisation providers would fish

Clustering of is a highly advantageous approach in bundling demand and supply in mechanisation hire

for customers that provide with the best opportunity to bundle their services and maximise from the potential commercial gains. Apart from the benefits already mentioned, clustering creates a unique opportunity for delivery of targeted interventions to both the farmer and mechanisation provider such as training, extension support, as well distribution of essential supplies such as seeds, fertilisers and pesticides through subsidy schemes by the government and other development partners.

The following considerations should be taken into account when selecting mechanisation providers and customers

- **Reliability and efficiency** - In the story of three Malinyi farmers, we saw that the farmers picked Mr. Manyama as their service provider because they knew him as reliable person with efficient machinery. Mr. Manyama readily accepted to provide services to the three framers because he saw in their combined need, an opportunity to minimise his costs and maximise his earnings from a single trip to Malinyi.
- **Accessibility** - For example, apart from reliability and efficiency, the Malinyi three would have considered accessibility of the tractor owner in terms of geographic distance and its implication in terms of cost of transportation. May it would have been much cheaper for them to shop for a different services provider with similar characteristics but stationed somewhere relatively closer to Malinyi than Lupiro where Manyama is based. The same logic applies to the service provider.
- **Affordability** – farmers should select a provider that they are able pay and providers should select consumers that are able to pay the required amount without causing losses. At this stage, both sides should have a win-win mind set where the farmer gets affordable prices for services and at the same time the provider is able to make enough profits to sustain his business.
- **Compatibility** - when bundling mechanisation needs, smallholders need to consider compatibility of their needs and the associated benefits. This calls for formation of clusters of farmers with identical needs. For example, in Malinyi Village alone, there could be clusters of rice growers, maize growers, tomato growers, etc whose crop areas are close apart. The clusters could have a network through which they share information and support each other. By so doing, they would also make it possible for the service providers to bundle their supply.
- **Cooperation** – in both cases, high level of co-operation, self-discipline and understanding are needed in order to make bundling work. If some members of either of the clusters failed to make their contribution in time or defaulted all together, they could easily delay cultivation activities, create mistrust and discourage other group members from the bundling system, and this would be a major drawback in the efforts to mechanise farming.

STEP 9: SHARE MECHANISATION COSTS

From the point of view of the smallholder farmer (demand side), mechanisation cost is in this context taken to mean the price charged by the mechanisation provider to cultivate a farm. From the mechanisation provider's point of view (supply side), it is taken to mean the expenses incurred in delivery mechanisation services. This section discusses how both stakeholder groups can share the costs with bundling of their mechanisation needs and services.

We saw in the example of the three Malinyi farmers that after agreeing on the mechanisation price with the tractor owner, they decided to share the cost of cultivation on the basis of the size of their individual farms. Mzee Valimba who had 4 acres paid Tsh. 100,000, Mzee Mng'ong'o who had 3 acres paid Tsh. 75,000 and Rashid who also had 3 acres paid Tsh. 75,000. The combined size of the three plots was 10 acres whose total cost of cultivation was Tsh. 250,000. Each of the farmers paid a proportionate share of the cultivation cost using the formula below:

$$\text{Cost per Smallholder} = \frac{\text{Size of Individual Plot} \times \text{Total Cost of Cultivation}}{\text{Total Size of the Combined Plots}}$$

However, it should be noted that the size of a plot should not be the only yardstick in determining how much an individual should pay in bundling of demand. We saw in section 3.8 above that other factors such as the nature of land and type of crop to be grown are also important price determinants. Thus, in the event that the combined mechanisation units require different levels of cultivation, other factors apart from size might come into play. This would require further negotiations among the stakeholders.

In the case of the mechanisation providers, cost-sharing would only be applicable if they choose to provide their services as a cluster. Such costs may include but not limited to wages (salaries for tractor drivers and supervisors), fuel and auto-maintenance services, spare parts and other essential supplies.

Subsequently, each cluster needs to come up with relevant rules for engagement, especially in this sensitive area of cost-sharing. Each should bear in mind that for any group initiative to successfully work, it must have a system for reward and punishment.

STEP 10: DEFINE TERMS AND CONDITIONS FOR SERVICE PROVISION

This is the stage at which farmers and mechanisation providers have to agree on modalities for bundling their needs (demand) and services (supply). Terms and conditions refer to general arrangements, requirements, rules, and standards that form a basic part of an agreement between the service provider (mechanisation provider) and customers (farmers). After selecting, customers and service providers both clusters should come together and,

- Identify roles and responsibilities of mechanisation providers, farmers and other key actors. For example, who should farmers call when they need tractor services? Or who should tractor owners contact to know there is demand for ploughing services in a certain areas.
- Agree on selected prices.
- Agree on terms of payments e.g. after cultivation; or 50% before cultivation and 50% after cultivation; or even cultivating on credit and paying after the harvest period.
- Identify and select convenient dates and timeframes for delivery of mechanisation services to the groups of farmers.
- Identify mechanisms for conflict resolution in case there is any misunderstanding or non-compliance to agreed conditions.

STEP 11: TAKE ACTION! PROVIDE AND RECEIVE MECHANISED SERVICES

After all is planned and agreed, mechanisation providers can go to the fields and provide services as agreed, and farmers can follow-up and supervise to make sure that services are rendered as agreed.

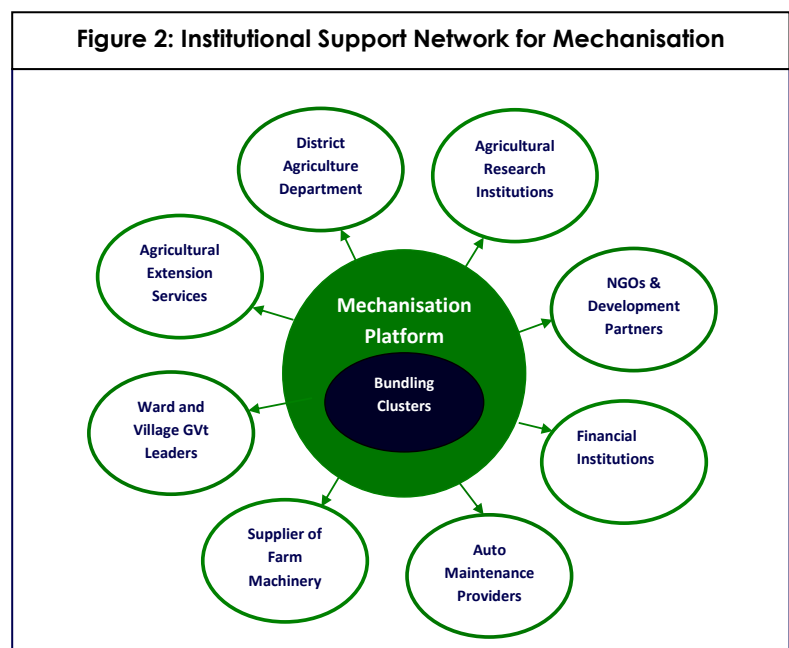
STEP 12: BUILD INSTITUTIONAL NETWORKS FOR SUSTAINABILITY

In order to establish and continuously benefit from the bundling system, mechanisation providers and smallholders need to build an elaborate network with a wide range of relevant stakeholders capable of providing them with the support they need. Such stakeholders may include the department of agriculture at district/council level, agricultural research institutions, agricultural extension workers, ward and village government leadership, NGOs and other development partners working in the agriculture sector, financial institutions and suppliers of farm machinery as well as providers of auto maintenance services.

In building the networks, the bundling clusters provide a useful starting point as the nucleus of the institutional support system. The clusters have the primary function of bringing together smallholders as well as mechanisation providers to combine their demand and supply respectively. The clusters can also serve as information points for the stakeholders at the community level.

Beyond the clusters is the mechanisation platform whose main role is to bring together both clusters from different areas in the district, to collectively address system challenges and find solutions for them. The Platform also has the following important functions:

- Linking the clusters with relevant institutions for technical, administrative, material and financial support, as shown in *Figure 2* below;
- Disseminating information and new knowledge by acting as an information point;
- Mobilising smallholders and mechanisation providers on different agricultural activities through their clusters;
- Providing a forum through which both clusters can speak together in one voice and advocate for various issues regarding the sectors;
- Regulating mechanisation prices by facilitating objective negotiations between the smallholder and mechanisation provider clusters;
- Providing a mechanism for conflict resolution in case of major misunderstanding or disagreements between any of the mechanisation clusters;
- Convening regular meetings for the members to discuss various issues regarding the sector.



3. FREQUENTLY ASKED QUESTIONS

During the various platform meetings organised by RIU in Morogoro Region, a number of questions frequently came up. This section highlights some of the questions and attempts to provide answers.

1. Do farmers clusters and mechanisation providers clusters need to be formalised?

It is not a must or a prerequisite to formalise clusters of farmers or tractor owners. Both clusters can operate as informal groups that come together to solve a particular issue. However, if the members of the clusters want to formalise cluster it is also ok. Formalising can help to make the clusters formally known for accessing other needs such as credit. For instance all tractor owner clusters that were formed during RIU activities decided to formalise their groups into 'Tractor Unions'.

2. What should be done to ensure that farmers pay for the services rendered by tractor owners?

The problem of defaulting or late payment for mechanization has been reported in some areas. This could be addressed by agreeing on certain conditions such as penalties for late payment or defaulting, prior to delivery of the service. The bundling clusters could also help to enforce such agreements by ensuring that none of the defaulters receive mechanization services from any of the providers until they settle outstanding payments.

3. What will be done to ensure that the tractor owners charge a constant price?

Considering that most mechanisation providers in Tanzania use the Cost-plus pricing approach in deciding how much to charge, the mechanisation platform can intervene by setting a standard percentage mark-up to be charged by mechanisation providers for different services. For example, it could be decided that for a virgin land (Katua) the providers should not charge more than 15% of the total operation cost as their mark-up (profit); and for non-virgin land (Kibua) – not more than 10%. Such a policy would also encourage farmers to utilise mechanisation services within their localities in order to minimise cultivation costs.

4. What should be done to solve the problem of high prices for cultivation?

As we saw in the example of the three Malinyi farmers, bundling of demand can be an effective way of reducing mechanization costs. In addition, farmers need to utilize the nearest mechanization services in order to minimize costs attributed to long movement of tractors.

5. How can smallholder farmers be helped to have a strong voice in negotiating prices with mechanisation providers?

Establishment of smallholder mechanisation clusters is the answer. The more divided the smallholders are, the more vulnerable they will be to mechanisation providers. The mechanisation platform is an ideal forum for the smallholder clusters to constructively engage the mechanisation providers in setting acceptable mechanisation prices.

6. How can the problem of shortage of qualified auto mechanics be solved?

In the short term, mobile auto workshops could be organized to bridge that gap. However, a long term plan for continuous training of auto mechanics is needed to building sufficient capacity for effective delivery of the services.

7. What should be done about the widespread availability fake spare parts in many areas?

This is a regulatory problem. The relevant government agencies especially Tanzania Bureau of Standards (TBS) in collaboration with the council authorities needs to be engaged in addressing the problem.

8. What should be done to curb the constant bickering due to cheating in setting measurements?

Cheating in setting measurements is a major problem amongst farmers and tractor owners. This problem could be addressed by seeking the services of agricultural extension offers or local government officials e.g. village executive officer or chairman in marking the cultivation areas and arbitrating in case of major disagreements.