FACASI NEWSLETTER

Farm Mechanization and Conservation Agriculture for Sustainable Intensification

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Review and Planning meeting Arusha Tanzania.

Communication workshop – Arusha- Tanzania.

Gender Training – Arusha- Tanzania.

FACASI

The overall goal of the project is to improve farm power balance, reduce drudgery, and minimize biomasstrade-offsinEasternand SouthernAfrica,throughaccelerated deliveryandadoptionof2WT-based technologies by smallholders.

Enabling Policies for Wider Adoption and Expansion of Smallholder Mechanization

The agricultural mechanization in Zimbabwe has evolved over time especially amongst small holder farmers. The land reforms played a key role in the mechanization needs of farmers. The land system was dualistic in nature with small scale and large scale farming sector s however the land reforms have created different categories of farms with different land holding sizes and varying machinery requirements.

The agricultural mechanization market is dominated by the four wheel tractor. The supply chain actors include importers/dealers, manufacturers, distributors and end users. The distribution network channel exists across the country with the two wheel tractor market characterized by few actors and low uptake. The Policy environment is supportive and currently offers free import duty on importation of agricultural machinery. The services provided by two wheel tractors range from ripping, planting, fertilizer application, boom spraying, transportation, grass cutting, shelling, threshing and water transportation.

Local manufacturers as they take the prototype CA planter for field testing

Australian Government
Australian Centre for International Agricultural Research

ACT

CIMMYT
International Maize and Wheat Improvement Center

Two wheel tractor being used to transport people

Local manufacturers' training

It was against this background that the FACASI- Zimbabwe project held a workshop to train and equip the local manufacturers' with skills and knowledge on the manufacturing of Conservation Agriculture planters. The local manufacturers' included ZIMPLOW, Baines, GrowNet, some Quasi-Government representatives and private sector players. This training was hosted at the University of Zimbabwe with trainers coming from Australia, Kenya and Ethiopia. ZIMPLOW has already adopted the designs and received an order to fabricate ten units for Farmshop, a leading supplier of Agricultural inputs to farmers in Zimbabwe Farm shop has already bought ten small four wheel tractors after this workshop They however opted for small four wheelers as the cost is almost the same price as the two wheel tractor. The training generated a lot of interest among other players like HASTT and PM manufacturing who also developed interest in the Conservation Agriculture planters. HASST, an agricultural machinery and equipment supply company has so far borrowed the planter prototype so that they can cost it and assess if they are better off importing and selling or manufacturing locally.

Challenges

The weather in Zimbabwe this year has been very erratic with low rainfalls and unusually high temperatures thus creating difficult planting decisions for most farmers. The FACASI project just like most of the farmers in Zimbabwe has suffered losses on the established demonstration plots. The project has had to replant due to poor germination. Some of the seeds got rotten underground after failing to germinate due to hardpan and the crop that geminated got burnt due to the exceptionally high temperatures. These adverse weather conditions have negatively affected the business of the Service Providers, with farmers not willing to take the risk of dry planting

Lessons learnt

A key challenge was the issue of liquidity crunch amongst the farmers, who were failing to pay for the services provided on their farms. This kind of situation has led the project to re-strategize and learn hard lessons. Perhaps the project should have focused on identifying best equipment options, getting manufacturers on board and developing business models for service providers. However initial project thrust failed to address farmer related issues like reluctance to dry plant, inability to pay for services among others. The project is in the process of reviewing its position and failure to generate demand amongst farmers. The current situation renders the whole supply chain unsustainable. It is expected that the "contracting company based business models" will address some of the farmer related issues particularly the inability to pay for services.

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National Policy Workshop on smallholder agriculture mechanization in Kenya

Background on mechanization policy development

In 1992 a research on mechanization was conducted focusing on sugar and wheat farming in western Kenya. From the analysis a draft mechanization policy was developed but was never adopted into a full policy document, to date Kenya does not have an Agricultural policy on mechanization in place.

This Policy workshop therefore comes at an opportune time. FACASI is a project sponsored by the Australian Agricultural Centre for International Agricultural Research and International Maize and Wheat Improvement Center. The overall goal of the project to improve access to mechanization, reduce labour drudgery, and minimize biomass trade-offs in Eastern and Southern Africa, through accelerated delivery and adoption of two-wheel tractor-based technologies by smallholders. The project is implemented in Ethiopia, Tanzania, Zimbabwe and Kenya. In Kenya, the project is implemented by the Kenya Network for Dissemination of Agricultural Technologies -KENDAT where it targets to address the needs of the smallholder mechanization, with success cases to report particularly in Laikipia and Bungoma Counties.

Participants at the National Policy Workshop

Workshop format

The workshop provided a forum for over twenty key agricultural mechanization stakeholders, who made contributions and proposals towards the upcoming Kenya mechanization policy dialogue.

Participants included partner organizations, researchers, development partners, academicians and policymakers. The format of the meeting placed an emphasis on sharing the expertise and perspectives of all participants, presentations, breakout groups, debates and networking.

Key note presentations were made by representatives from the Ministry of Agriculture, Livestock and Fisheries, Australian Agricultural Centre for International Agricultural Research, the CEO – KENDAT, CEO – Brazafric Ltd; an Enterprise that imports and distributes agricultural and energy conservation equipment from Brazil to East Africa, and a gender consultant who made a presentation on mechanization adoption and change.

Workshop conclusion - way forward

The workshop concluded that there was a need for;

☞ Political goodwill for implementation of the policy. National and County Governments need to invest resources to drive the policy formulation process.

☞ Strategy formulation for implementation of the policy once approved by the Government. This therefore called for a wide stakeholder engagement and approval.

☞ Awareness and sensitization to farmers and service providers who are central to the implementation process.

☞ Supportive financing from Government to work with private sector for structured financing especially for the youth and women who are less empowered.

☞ Government to facilitate private - public partnership to create linkages between academia/research with development partners and practice.

Further actions recommended were;

1. Outcome of the workshop will be disseminated to all Stakeholders involved in agricultural mechanization in Kenya.
2. Further inputs and ideas are to be provided to the draft government policy document regarding the gender dynamics of mechanization.
3. Promote and support NGO and Civil Society participation in regional workshops on Mechanization policies that will be held across Kenya.
4. Information and suggestions on the draft policy document are to be forwarded the Government. The Government website is - www.kilimo.go.ke or write to snyumoo@yahoo.com.

Participants session at the Policy workshop Nairobi-Kenya

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Appropriate mechanization: between contestations and farmers' reality

Appropriate mechanization the form of mechanization promoted by FACASI is being contested by two epistemic communities : the first one could be described as the 'agroecology-centered community', and the second one could be described as the 'large-scale mechanization community'. According to the former which typically has a bucolic vision of 'traditional' African agriculture (1) the promotion of any use of fossil fuel is unethical, (2) labor is plentiful in rural Africa, and (3) animal traction is the most sophisticated source of power African farmers can muster. According to the latter mainly composed of heirs of the Green Revolution

- two wheel tractors are only suitable for irrigated paddy conditions
- large mechanization (based on four-wheel tractors) is much more efficient than small mechanization (based on two-wheel tractors)
- mechanization requires consolidation for the efficient use of large machines and
- there is a Darwinian progression in mechanization (often referred to as the 'mechanization ladder') from manual agriculture, to agriculture using animal traction and finally mechanized agriculture.

Attempts to develop a third intermediate approach (as in FACASI) are regularly attacked by both communities. After more than three years of implementation of FACASI, what do we see on the ground?

In spite of the strong arguments of the 'agroecology-centered community',Labor power is a limiting factor to the productivity of many farming systems in Africa (both with high and low land to labor ratio). Self-organization through internal cycling of biomass, nutrients and energy in agro ecological systems is an interesting concept, but this cycling requires management (management is what differentiates agroecosystems from ecosystems), which means human muscle power, animal traction or engine power.

Animal traction may be part of the solution in areas where oxen are common, but it should be remembered that the estimated 16 million oxen in sub-Saharan Africa are concentrated in only a few regions (Ethiopia and Eritrea, Burkina Faso and Mali, the Lake Victoria region and parts of Zimbabwe, Zambia and Malawi). Elsewhere, diseases (e.g., trypanosomiasis, tick-borne diseases) restrict the presence of oxen.

Even in regions where draught animals represent the main source of farm power, their numbers have declined since the late 1990s, because of the combined effect of diseases, recurring droughts, and feed shortages. Thus, it could be argued that for many farmers in the region, increasing farm power supply would require motorized solutions. Animal traction is also not 'cheaper than small mechanization', as a two wheel tractor is about the same price as a ploughing team of oxen, but has a far lower maintenance cost (oxen should be fed every day, whether they work or not).

Mechanization is not new to African smallholders. Small engines have spread in rural areas, but largely unrecorded by FAOSTAT.

Look at grinding mills and water pumps. Look at the explosion in the number of motorbikes and auto rickshaws. As a result, supporting infrastructures for mechanization (availability of fuel, repair workshops among others) have developed.

Direct seeding using two wheel tractor, FACASI demo site- Laikipia- Keny

In spite of the strong arguments of the 'large-scale mechanization community,

Even if two wheel tractors may not be powerful enough to plough most soils in rain fed conditions, they are perfect to pull simple tines or discs through the topsoil, without inverting it. Thus, small mechanization is appropriate for rain fed dryland farming (most report stating otherwise are actually written in India, the largest manufacturer of four-wheel tractors!).

However, this would require adaptations in crop management, and in particular adopting direct seeding and foregoing tillage.

Four-wheel tractors can only be seen as more efficient than two-wheel tractors when looking at field capacity (i.e., the time required to complete an operation). But they are much less efficient when looking at fuel consumption. Moreover, the entry point cost to acquire a four-wheel tractor is much higher than to acquire a two-wheel tractor.

Field capacity should not be seen as the ultimate measure of performance, instead cost and fuel consumption may be more important parameters to our beneficiaries.

Because of the misguided assumption that large-scale mechanization is the only viable form, mechanization programs in Africa have often led to consolidation, and the disappearance of small farms that were otherwise prosperous. In the process, smallholders and hired labor have been displaced. FACASI argues for a form of mechanization that does not require consolidation (and labor displacement). Consolidation should be driven by economic development (in particular by labor cost), but shouldn't be a prerequisite to mechanization.

Patterns of mechanization have been very diverse in developing countries, and 'big tractors on big fields' is not the solution everywhere. In developing countries, a source of power is rarely completely displaced by another, and as such, manual labor and animal traction is frequently found in countries where motorized machines have become common.

We should aim at mechanizing operations that are critical for productivity gain (e.g., timely planting) and operations that are currently characterized by high drudgery (e.g., threshing), while recognizing that other operations will continue to be manually performed by laborers and draft animals.

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Business models- linkages with the private sector: Tanzania FACASI experiences

Introduction

A business model is the blueprint of how a company does business. As a conceptual framework it contains the elements and relationships that enable companies to express their business logic showing how a business can acquire its customers, service them and make money in doing so (Business model institute). It can also be understood as the way a business organizes itself to generate revenue and sustain itself. Business Models raise questions related to innovation, entrepreneurship, organization, marketing and strategic management and is the framework of rules and incentives within which the business operates.

The business models

The FACASI project in Tanzania established and upgraded several two wheel tractor based business models in the project areas of Arumeru and Mbulu districts. Another area outside the project jurisdiction where a linkage was established was in Babati district. The objective was to ensure and accelerate mechanization services to smallholder farmers. The two wheel tractor-models have been characterized into four main categories

- Group owned models,
- Individual owned models,
- Contractual models and
- Local manufacturers' and importers models.

Linkages with the FACASI project

The FACASI project in Tanzania has established business linkages with a number of private sector companies under the four different models identified above. Among the private sector companies that linkages have been established with include Farm Equip, Dorgo enterprises and EFTA a microfinance Company.

Farm equip is a renowned player in sales and services of farm machinery, spare parts, tools and equipment .The company deals with sales of farm machines mainly three models of small tractors: AMEG (India), Greaves (China) and Kubota (Japan) and works with the FACASI project to promote its machines.

The company has made linkages to financial institutions to support farmers buy equipment.The business linkage with Farm equip fall under the importer model where import and supply of two wheel tractors and its accessories is under taken.

Dorgo Enterprises is among the local artisans the FACASI project works with to locally fabricate farm equipment for small holder farmers and service providers. Equipment procured by the project is provided on a lease arrangement and locally fabricated. This equipment is then sub leased to the service provider under an arrangement where;

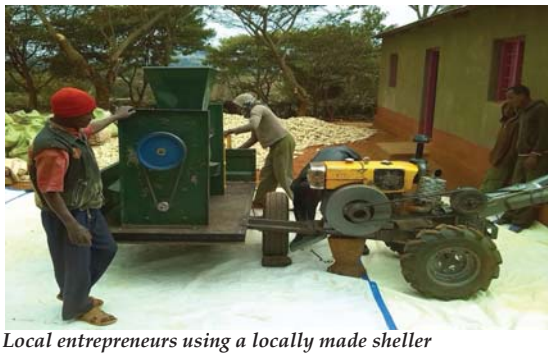
– 70% income realized from service provision remains with service provider,

– 30% is remitted back to the project,

– the service provider provides services to farmers on a cash basis and

– the most common service provided is shelling and transportation

Dorgo enterprises makes different kinds of maize shellers, modifies equipment like the direct planter to rectify the hitching section to fit the tractor design and had introduced wheels to the planters to increase the stability, makes improvements to the fabricated sheller-chopper



Local entrepreneurs using a locally made sheller

unit to make it compact and efficient. The local manufacturer has also developed hay balers and these are operated manually.

In addition the company fabricates two wheel tractor ripper attachments and makes motorised cane juice makers and hand carts. The Dorgo enterprise model falls under local manufacturers.

EFTA microfinance company offers up to 150 million Tanzanian shillings in financing for farm equipment to farmers with No collateral required. The company has a portfolio of trusted suppliers and some of it activities include small holder farmers benefiting through contract farming with large companies like AFROCADO and Kagera Sugar. The percentages of loan distribution is 31% for agriculture, 18% for Agro – processing, 17% for industry and 34% for businesses.

Farm equip model is a key supplier of two wheel tractors and its accessories to service providers and Dorgo enterprises is the local manufacturer are both important links to the service provider models especially in the provision of two wheel tractor equipment.

Challenges and interventions taken

Investment and operating capital are the main challenging issues to most rural entrepreneurs. Farm equip realized that most rural entrepreneurs cannot afford to buy two wheel tractor and the auxiliary equipment. One major intervention that the project has been taken to overcome this challenge is the linkage of clients to financial institutions (in most cases micro-finance) that offer financing packages for mechanization for small scale farmers. Institutions like Farm equip facilitate linkages to EFTA equipment loans (Micro-finance based on farm machinery) and through this linkage rural farmers can access farm machinery technologies from farm equip. This linkage to mechanization micro-finance has started to benefit rural entrepreneurs who want to invest in two wheel-customer hire services.

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News Briefs

FACASI Third Review and Planning Meeting – Arusha Tanzania

FACASI held its third review and planning in February, 2016 at Arusha, Tanzania. The objective of this meeting was to review the project implementation and plan for the year. More information about this meeting can be accessed at

http://facasi.act-africa.org/news.php?com=5&com2=14&item=96#.VwZxinqoMYE

FACASI Gender Training

The gender training on mainstreaming in projects and programs was held preceding the planning meeting. The objective was to understand the need for gender mainstreaming in projects. More information on this training can be accessed at

http://facasi.act-africa.org/news.php?com=5&com2=14&item=98#.VwZxunqoMYE

FACASI Communication workshop in pictures

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