RESEARCH PROGRAM ON Livestock

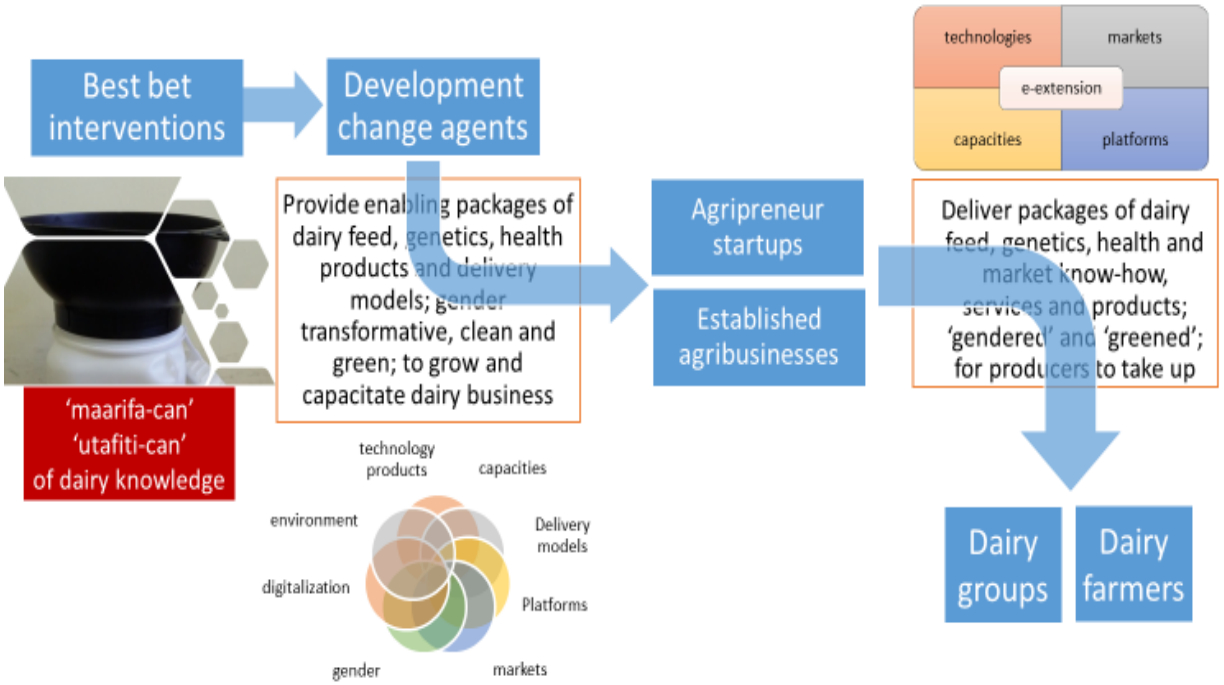
CGIAR

*More meat, milk and eggs by and for the poor*

# Identifying profitable dairy innovation packages for Tanzania agri-entrepreneurs

## Report from an agribusiness forum, Moshi, Tanzania, 16-18 October 2019

Compiled by Amos Omore, E.J.O. Rao and Peter Ballantyne




November 2019

MAZIWA ZAIDI

More Milk in Tanzania (MoreMilkiT)

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

SNV

CGIAR is a global partnership that unites organizations engaged in research for a food-secure future. The CGIAR Research Program on Livestock provides research-based solutions to help smallholder farmers, pastoralists and agro-pastoralists transition to sustainable, resilient livelihoods and to productive enterprises that will help feed future generations. It aims to increase the productivity of livestock agri-food systems in sustainable ways, making meat, milk and eggs more available and affordable across the developing world. The Program brings together five core partners: the International Livestock Research Institute (ILRI) with a mandate on livestock; the International Center for Tropical Agriculture (CIAT), which works on forages; the International Center for Research in the Dry Areas (ICARDA), which works on small ruminants and dryland systems; the Swedish University of Agricultural Sciences (SLU) with expertise particularly in animal health and genetics and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) which connects research into development and innovation and scaling processes.

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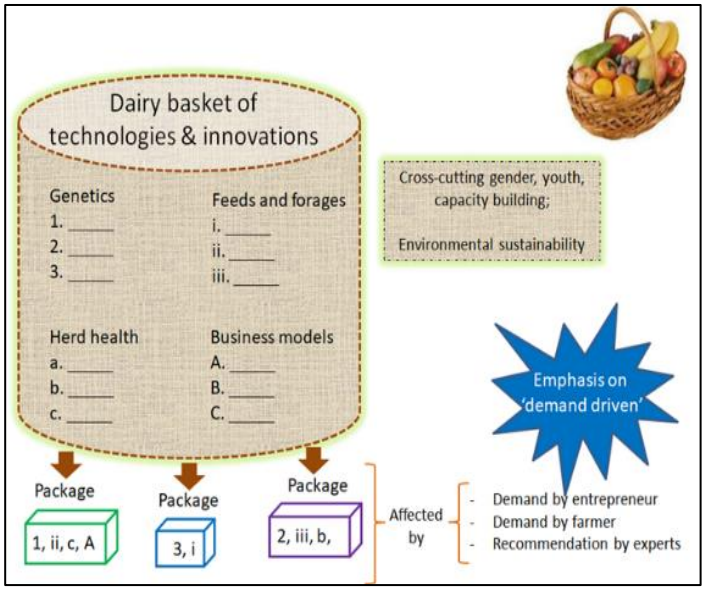
# Background

In October 2019, Maziwa Zaidi partners in association with the CGIAR Research Program on Livestock convened a workshop to identify integrated intervention packages to be tested and delivered in target districts as part of a project on '**agri-entrepreneurship, technology uptake and inclusive dairy development in Tanzania**.' The overall objective of the project is to catalyze uptake of dairy technology packages through institutional approaches that involve inclusive agribusiness models for improved livelihoods of smallholders and environmental sustainability. The hypothesis is that interventions involving empowered and appropriately skilled agri-entrepreneurs offer a promising avenue for enhanced uptake of profitable dairy technologies and services leading to increased smallholder competitiveness, household income and consumption of safe milk.

Growing out of research for development activities developed between 2012 and 2018, the project aims to catalyze enhanced uptake of 'proven' dairy technology packages that improve the livelihoods of smallholders and contribute to environmental sustainability in Tanzania.

The project will apply market systems approaches in which empowered agribusinesses enhance uptake of technology packages, facilitating the inclusion of women- and youth-led dairy agribusinesses, exploring how agribusiness incubation and mentorship can crowd in competitive and efficient agribusinesses leading to more competitive smallholder dairy farmers, and identifying and preparing to scale technology packages that deliver more impacts on productivity, incomes and consumption of safe milk.

An earlier project design and planning workshop in June 2019 identified a 'dairy basket' and the generic contents that would be needed. The recent workshop advanced this thinking by prioritizing the existing technical and institutional innovations and supporting activities and turning them into integrated 'packages' tailored to the needs of dairy entrepreneurs as well as other public and private service providers and delivery partners serving dairy producers. Reviewers of the proposal developed out of the June 2019 workshop called for this step sooner rather than later to **clarify the technical and institutional contents** of the proposed intervention packages prior to re-consideration of the proposal for approval.




The Forum that was co-hosted with SNV brought together agripreneurs, researchers, innovators, service providers, other NGOs and delivery organizations for the exercise.

# Objectives

The objectives and key elements of Forum were to:

- Showcase, assess and document the different technical and institutional innovations that could constitute a 'basket' suited to local needs;
- Identify promising 'packages' of interventions and necessary supporting activities that could be profitably delivered to producers and value chain actors;
- Determine critical market system constraints and opportunities facing agri-entrepreneurs and service providers, ensuring that interventions are demand responsive;
- Identify interventions as well as delivery and support models suited to the specific needs of women- and youth-led dairy agribusinesses;
- Specify priorities for agribusiness incubation, mentorship and other capacity development.

# Approach

## Preparation for the workshop

The approach taken was to develop a common template to guide proponents of best bet technologies and innovations for piloting in Tanzania (Annex 1). The template emphasised the **opportunities or benefits** of adopting a given intervention; what they will produce/result in; and what will be needed for it to have results. The template also required proponents to specify the types of agribusinesses that are best suited to use respective institutional innovation and deliver the technology to recipients – the farmers. Other elements were to succinctly state the 'problem' that the technology or innovation tackles and why it is significant; conditions that are needed for the intervention to succeed; any special agro-ecological or other aspects that may limit/facilitate the intervention; and, the underlying evidence that the intervention works. Scores for resource requirements, impact areas, and outcome difficulty were also requested on a scale for 1 (low) to 5 (high). Submissions were reviewed, edited and printed as posters for the forum.

A total of 12 technologies and innovations were presented in this template. These were complemented by 12 other posters showcasing related technologies and innovations that were developed from a similar exercise conducted in May 2017.

## Selection of agripreneurs

A two-stage process was adopted to select the agripreneurs who would be invited to participate in this interactive workshop. The first stage was to develop a long list of contacts for agribusinesses (individuals and groups) from the three regions in northern Tanzania targeted for piloting the interventions, namely, Kilimanjaro, Tanga and Arusha. The agribusiness contacts were obtained from representatives of NGOs implementing value chain development activities in the regions including SNV, Solidaridad and Land 'O Lakes Venture 37; organisations championing private sector development including Africa Agribusiness Academy (AAA) and Private Agricultural Sector Support (PASS); Ministry of Livestock and Fisheries; and, proponents of the technologies and innovations mostly from ILRI, CIAT, SUA and TALIRI. The next stage was to select a mix of start-ups and established enterprises with a bias towards those involving (or led by) youth and women.

## Workshop process

An interactive and participatory process was adopted for the workshop (Annex 2). The first session elicited information on constraints and opportunities for profitable dairy development, identified priority capacity needs and promising avenues to deliver to them (e.g., through mentoring, incubating, acceleration etc.).

The next session involved a market place organised as an open space on promising dairy agribusiness interventions. Proponents of the promising dairy technologies and innovations presented clusters of posters grouped as follows: delivery business models; digital targeting; breeding; forage opportunities; green dairying; healthy animals; and, market opportunities (Annex 3). The stands were visited by participants grouped according to their roles in the dairy value chain. The groups (with examples of members) selected the following names for themselves:

- ***Maziwa biashara*** **(Swahili for 'milk business')**: milk traders of various levels and capacity. Some of these are milk aggregators who consolidate milk at collection centres and later sell to processors while some are retailers selling milk via milk dispensers. Others are young women undertaking value addition;
- **Women dairy entrepreneurs**: largely women involved at various nodes of the value chain, including at the production end of the value chain;
- **Development agencies**: various development organizations working in the dairy value chain in Tanzania, including SNV, Solidaridad, Match Makers Association, and Agriprofocus among others;
- **Capacity developers**: agencies and consulting businesses working to enhance business and technical capacity of value chain actors;
- **Technical and market service providers**: technical service providers such as AI service providers, animal health assistants. The group also included conventional agro-input suppliers and groups and/or individuals involved in hay marketing and processing of silage for sale;
- **Officials**: government ministry bureaucrats, researchers (e.g., from Ministry of Livestock and Fisheries, TALIRI and SUA) and regulators such as Tanzania Dairy Board (TDB) and their agents and the local level.

During the market place, these groups moved around the cluster of posters, interacting with presenters who were 'pitching' to each group the opportunities and benefits described in each poster. The groups then assessed and created their choice interventions using standard sheets summarised in Annex 4.

The core team and some key partners reconvened the next day to review and recap the previous day, identify the package elements and their integration, roles of partners, research design and pilot sites. The key elements from these interactions would be captured in a revised proposal.

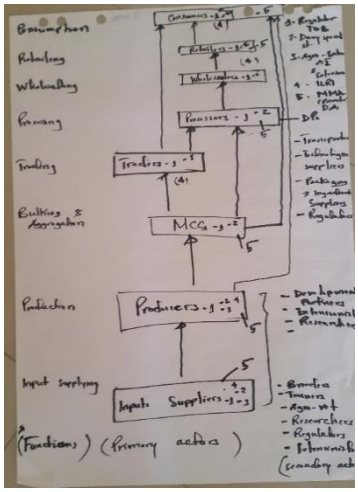
## Participants

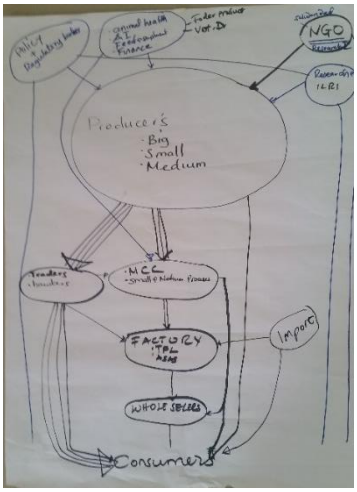
A total of 45 participants attended the workshop (Annex 6) on the first day comprising agripreneurs (17) mostly women or youth below 35 years old. The rest in the room comprised national researchers, service providers and delivery organizations (12); and CRP participants (16). The CRP participants and a few national researchers and delivery organizations re-convened on the second day to review outcomes from the interactions with agripreneurs on the first day.

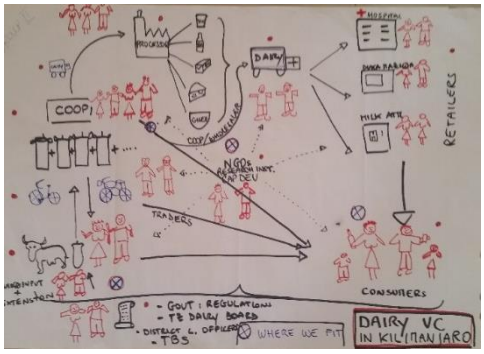
The main insights and results from the forum are presented in the following sections.

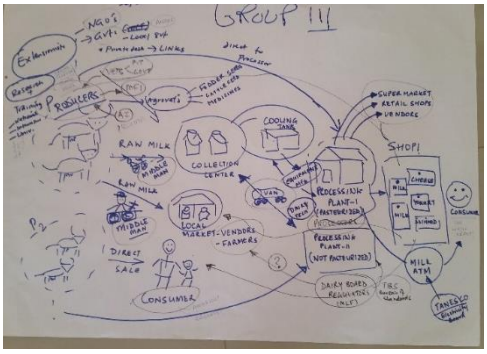
# Dairy value chains in northern Tanzania

For this exercise, participants formed seven groups to draw a diagram showing how they see dairy products getting from producers to consumers. The pictures of these diagrams are shown below; followed by a brief synthesis of what they reveal.

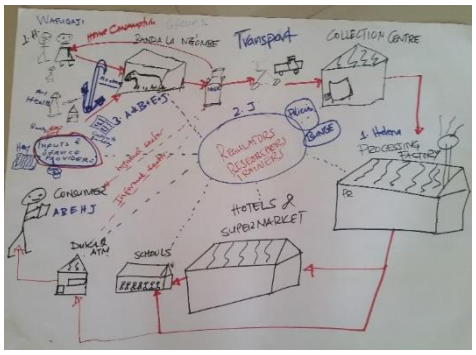


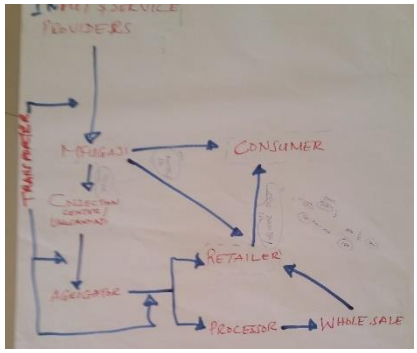



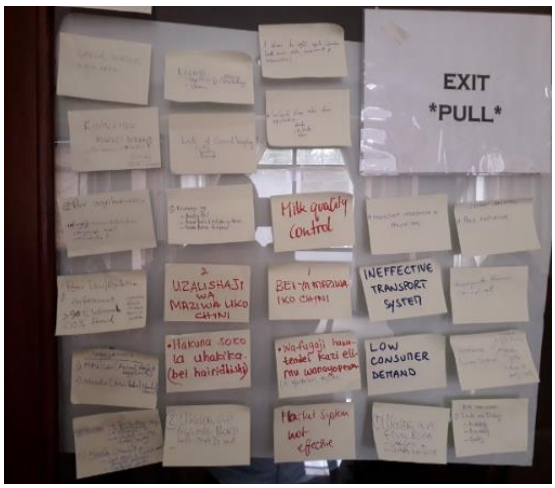


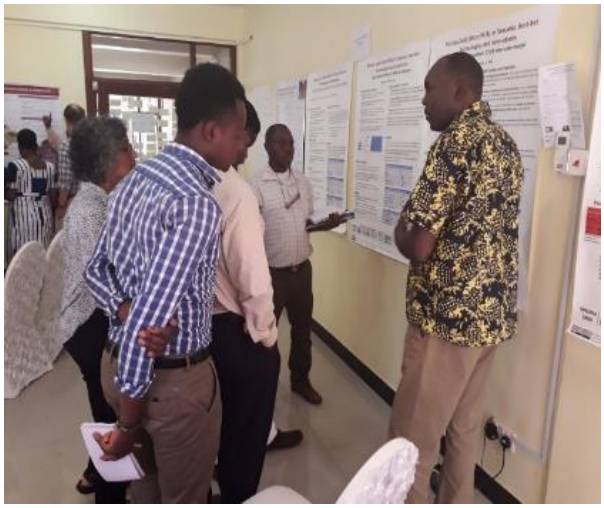


A small group reviewed the various pictures and drew these conclusions:

1. Most are linear and differentiate between informal and formal market channels
    a. With straight lines from producers' direct sale to consumers (neighbours)
    b. Producers linking to local traders/vendors
    c. producers linking to traders/aggregators/collection centers and thence to processors / Producer - Trader - Consumer (thick line)
2. All charts mention processing
3. Different levels of markets are mentioned: local, retail, supermarkets, wholesale, institutional buyers like schools, hospitals, hotels
4. Some diagrams mention input suppliers (pre-production)
5. Regulators appear in all the charts, indicating need to be mindful of quality control and safety
6. Producers are generally not seen as consumers
7. NGOs mainly see their role in capacity building
8. Research institutes mostly interact directly with producers
9. Only 2 out of 7 charts show transporters as a separate actor
10. Some indicate a wide range of dairy products beyond liquid milk.



# Challenges to dairy profitability

The next exercise asked small groups to identify what they consider to be the 2 biggest challenges holding back profitable dairying. The table below presents the information from the groups; the challenges generally included some additional detail.

| **Challenge** | **Details** |
|---|---|
| Health services | Private services providers are expensive |
| Labour shortages | To fetch fodder |
| Changing market demand | By season, supply, festivals (social calendar) |
| Poor agribusiness | Production that is not business oriented<br>Good quality cows<br>Feed and forages |
| Poor law/regulation enforcement | More than 90% informal, less than 10% formal<br>Poor leadership on laws, guidelines and principles |
| Animal feeds and supplement | Production stage<br>Availability<br>Storage<br>Skills in hay<br>Making feed |
| Markets and marketing chains | Low price of milk - not benefitting farmers<br>Marketing skills |
| Feeds | Quality |
| Lack of record keeping | Feeds, breeding, business |
| Knowledge gaps | Breeding (AI)<br>Animal health and production of diseases<br>Business development |
| Milk productivity is low | Mainly due to poor husbandry |
| No guaranteed market and prices are not satisfying | |
| Lack of good cows for milk production | Low availability of good genetic materials |
| Access to right inputs | Genetics, health services skills, equipment and information |
| Inadequate dairy value chain infrastructure | Roads, electricity, milk collection centers |
| Milk quality control | *Bei ya maziwa iko chini* (low milk price) |
| Farmers don't use knowledge given through training | AI, feeds |
| Market systems not effective | Informal outlets dominate |
| Inadequate enforcement of regulations | Mainly refers to milk quality |
| Ineffective transport system | Linkages between milk producers and processors |
| Low consumer demand | Many households are producing milk in the zone |
| Lack of good knowledge/training | To farmers and other partners |
| Price fluctuation | Due to seasonality |
| Inadequate business mindset | |
| Unconducive business environment | Inadequate infrastructure; regulatory system;<br>Access to quality inputs |
| Feeds and feeding | Availability, accessibility, quality |

# Dairy agripreneurship capacities

The third exercise asked participants to identify the key skills needed for dairy agripeneurs to succeed. They were also asked to pinpoint examples of current initiatives that could be role models in delivering support needed for these entrepreneurs.

| **Technical skills** |
|---|
| • Business development/planning—financial literacy and record keeping |
| • Dairy cow management including breeding skills |
| • Feed production and processing |
| **Soft skills** |
| • Information access—on inputs, various practices, market policies, market information service/intelligence |
| • Networking skills |
| • Regulations, laws, acts awareness |
| • Dairy farming as a business including costing and pricing |
| • Marketing skills |
| • Interpersonal skills—leadership, entrepreneurship (EMPRETEC), mentorship and training |
| • Communication skills |
| • Facilitation skills |

# Technologies and innovations for packaging

As part of the innovation and technology marketplace, participant groups visited different stands and identified, according to their interests, the package of interventions they preferred. The table below shows which interventions were prioritized by which groups. Annex 4 shows the detail from each group, also why they selected each intervention and what motivated them as a group.

| **Intervention (poster)** | **Dev agencies** | **Service providers** | **Capdev** | **Women entrepreneurs** | **Entrepreneurs** | **Officials** |
|---|---|---|---|---|---|---|
| ***Institutional models for delivery of inputs and services*** | | | | | | |
| Agent network model | | X | X | **X** | **X** | X |
| Dairy farmer assistant | | X | X | | **X** | X |
| Upgrade dairy value chain | X | | | | | X |
| Dairy Market Hubs | X | | X | **X** | **X** | X |
| AI business centres | | X | | **X** | | X |
| Public-Private health delivery | X | | | | | X |
| ***Digital solutions*** | | | | | | |
| Digital platforms | | X | X | **X** | **X** | X |
| ***Feed and forage technologies*** | | | | | | |
| Brachiaria grass | | | | **X** | **X** | X |
| High yielding improved forages | X | | X | | | X |
| Irrigated Improved forages | | | | | | X |
| Compounded feeds | | | X | | **X** | X |
| Forage hay production | X | | | | | X |
| Rumen8 total mixed rations | | | | | **X** | X |
| Maize silage | | x | | | | |
| ***Green dairy production*** | | | | | | |
| Greening dairy value chains | X | X | X | | | X |
| Manure management | | | x | **X** | **X** | X |
| ***Animal health solutions*** | | | | | | |
| Control East Coast Fever | X | | X | **X** | **X** | X |
| Feed processing | X | | X | **X** | | X |
| Fodder marketing | | | X | | | X |
| ***Milk marketing technologies*** | | | | | | |
| Solar milk cooling systems | | | | | **X** | X |
| Mazzican | X | | X | | **X** | X |
| ***Capacity development*** | | | | | | |
| Capdev models across most interventions | | | X | | | |

# Day 2 – reflections and synthesis

A smaller group of participants comprising researchers and development partners reflected on how to prioritize the packages based on the discussions, feedback and choices technologies/innovations revealed during the market place the previous day. There was a consensus that the types of people participating were a good reflection of the types of actors the project want to engage with. Participants represented the reality of the dairy value chain in Tanzania (e.g., formal vs informal) and included key enabling players and projects working in the area. Observations and reflections shared by a small group of team members included:

- Participants recognised that the choices by participants were too wide to be packaged as such (too many for project design) and a way to summarize was needed.
- The value chain maps showed different paths from producers to consumers, reflecting especially the dominance of informal milk market chains.
- Women and youth group were interested in ICT-based solutions to help close knowledge gaps.
- Accessing feeds and forages appears to be the most important constraint; though not all partners in the room are working on this component.
- While there was no agreement on specific packages, participants actively provided preferences that are critical to designing potential package of technologies and delivery models.
- While it did not emerge clearly during the market place, food safety concerns should be included as an integral part of technology packaging. Tanzania Dairy Board representative and a few other participants underscored the need for considering food safety issues as a public health concern.
- It is important to include the crosscutting issues like gender and environment.
- Technology innovations must go hand in hand with social innovations

In response to questions, Amos Omore noted that packages would be refined based on detailed site selection and baselines and market level. This will be followed by baseline at farm level in catchment areas of the market agents. Missing partners will be identified based on packages identified for piloting. Three parallel assessments are planned to support the piloting and its evaluation: environmental assessment on selected packages, participatory system modelling and scaling readiness.

The rest of the time available was spent tackling two critical issues: first, what constitutes an ‘integrated package’ and how do we specify these, and second, where should the project target its efforts and what criteria should drive these decisions.

# Integrated packages for piloting

After several rounds of discussion and examples of the ways that different partners 'package' their interventions, a residual group developed a possible approach for the project.

This essentially sets out a basic architecture or protocol characterizing the two principal types of packages the project will deliver – guided by their target group focus. It also begins to specify what each package will comprise and be delivered. The likely priority technologies and innovations in the packages are also identified.

Each package has three main elements:

1) a set of technical products, innovations or interventions determined by the target situations, outcomes and actors (typically anchored around feed, genetics or health products, market-oriented, with substantial 'green' and 'gender' elements);

2) a set of institutional and delivery components that enable access to the technologies by the target groups;

3) a set of actions to grow the technical and business capacities of the target actors to effectively take up and deliver the packages.

The two types of packages are:

1) '**Enabling**' packages are aimed at agripreneurs and agribusinesses working in the dairy value chain. The main purpose of these is to grow and capacitate these actors to successfully deliver their businesses so that dairy producers benefit from inclusive market systems that improve their livelihoods. These integrated, clean, green and gender transformative, technical-capacity packages are delivered in innovative, impactful ways to the agripreneurs and agribusinesses by development 'change agents' – public, private or civil society – working closely with research and knowledge providers.

2) '**Delivery**' packages are aimed at groups of smallholder dairy producers, but potentially also individual producers. The main purpose of these is to improve the livelihoods of smallholder dairy producers by growing inclusive market systems that deliver value for money inputs and services they can trust. These integrated product-service and knowhow packages are delivered with attention to the environment and gender by the dairy agripreneurs and agribusinesses that themselves have been enabled by the project to perform better.

## Enabling packages for agripreneurs and agribusinesses

A key criterion for technologies or innovations for delivery by agripreneurs is that the package should have a strong appeal in the agribusiness market. The package that should be 'cleaned' prior to delivery (environmental assessment), integrate health, feed, genetics, and gender depending on context, type of agribusiness and preference. Combinations would be customized based on two main types of targets – startup agripreneurs and established agribusinesses.

The enabling packages, delivered to the target businesses by development change agents, will look something like this table (illustrative):

| **Package elements Delivered by change agents*** | **Startup agripreneurs – individuals, women, youth in groups (e.g., those mentored by SNV, MMA or Solidaridad)** | **Established agribusinesses – individuals, companies, collectives (e.g. Agricare Enterprises in Tanga)** |
|---|---|---|
| **Technologies –** specific interventions with **products** and activities suited to the business models and capabilities of the target businesses | Market oriented, safe, profitable technology **products** demanded by producers (e.g., clean milk production like mazzicans/ ATMs), combining health, feeds, genetics and markets.<br><br>Strong focus on clean, green and gender so the ultimate interventions are sustainable and inclusive. | Market oriented, safe, profitable technology **products** demanded by producers (e.g., clean milk production like mazzicans/ ATMs), combining health, feeds, genetics and markets.<br><br>Strong focus on clean, green and gender so the ultimate interventions are sustainable and inclusive. |
| **Capacities** – skills, expertise, inputs necessary for the target businesses to sustainably grow and deliver | Focus on what they need to perform: business and soft skills (e.g., personal initiative training), certification, market systems approach and linkages, using digital platforms; technical know-how, group dynamics, gender, greening, effectively reaching producers, access to finance ... | Focus on what they need to perform: business and soft skills (e.g., personal initiative training), certification, market systems approach and linkages, using digital platforms; technical know-how, group dynamics, gender, greening, effectively reaching producers, access to finance … |
| **Delivery** – institutions or other approaches and mechanisms to reach the target businesses | Delivered through business incubation, mentoring by 'established entrepreneurs' in win-win linkages, digital platforms, etc. | Delivered through business accelerators, training, DDF, KDCJE platform, etc. |

* The capacity package and the delivery mechanisms will be different for each target group

## Delivery packages for producer groups

Feed and forages innovations were identified as the main component for packages preferred by producers given the common constraint of under-feeding. The feeds and forages package would integrate health, genetics, market, environment, gender factors depending on context and preference. Packaging and delivery mechanisms would depend on whether the recipients are collectives or individuals.

The delivery packages, delivered to the target producers by agribusinesses and agripreneurs, will look something like this table (illustrative):

| **Package elements Delivered by agripreneurs and agribusinesses*** | **Producer collectives, farmer groups, cooperatives etc** | **Individual dairy farms (micro-enterprises)** |
|---|---|---|
| **Technologies –** specific interventions with know-how and **products** suited to the dairy systems of the target producers | Feeds as the core intervention; plus health, genetics, markets, certification<br><br>Interventions will have been 'greened', 'gendered' and have necessary safety elements | Feeds as the core intervention; plus health, genetics, markets, certification<br><br>Interventions will have been 'greened', 'gendered' and have necessary safety elements |
| **Capacities** – skills, expertise, inputs necessary for the target producers to have sustainable livelihoods from dairy | Group dynamics<br>Digital collective platform<br>Farming as business | Individual digital profiling<br>Profitable dairy farming |
| **Delivery** – institutions or other approaches and mechanisms to reach the target producers | Delivered through, dairy hubs, dairy Farmer Assistant (DFA) extension model, AI business center, networking, e-extension | Delivered through buying clubs, agent Network (ANM) extension model, e-extension |

* The capacity package and the delivery mechanisms will be different for each target group, mostly targeting collectives in order to reach more people more quickly.

## Priority technologies and innovations in the packages

The priority technologies and innovations to be included in the packages to be piloted were determined based on choices by agripreneurs in the previous section on "Technologies and innovations for packaging", Annex 4 on "Further details on selected technologies and innovations" and the tabulation across the 'enabling' and 'delivery' stages.

The technical products for the **delivery packages** targeted to producers will be: **Brachiaria grass (or other forage options)**, **manure management**, **East coast fever vaccine, and AI.** These will be delivered through capacitated agripreneurs and agribusinesses, using **digital platforms for farmer profiling and e-extension**, and capacity development supporting market access, safer products and effective collective action.

To deliver these, the various change agents and partners in the project will provide a custom set of associated **enabling packages** to the agripreneurs and agribusinesses. These will enable them to provide the services the producers need – combining technical knowhow, clean, green and gendered expertise, as well as business and soft skills necessary to be profitable.

Underpinning the packaging and delivery of these technologies and innovations by the agripreneurs and agribusinesses will be delivery/markets/platforms involving the **agent network model** and the **dairy farmer assistant model**. The related approach of **dairy market hubs** that is being championed by a potential partner will also be part of the delivery platforms.

It is important to emphasize that specific combinations of these 'priority' innovations (and others) depends on further engagement with the agripreneurs that the Maziwa Zaidi will work with, e.g., from the survey of agripreneurs. It is anticipated that several packages will emerge depending on specific agribusinesses contexts. For example, an agro-input supplier working with a network of AI service providers could end up with a package of AI technology, digital platform and agent network models, all embedded in a dairy business hub setup. Likewise, empowerment with various capacities will depend on the knowledge/skills gaps and preferences of each target group.

The diagram below tries to show the different elements and stages.

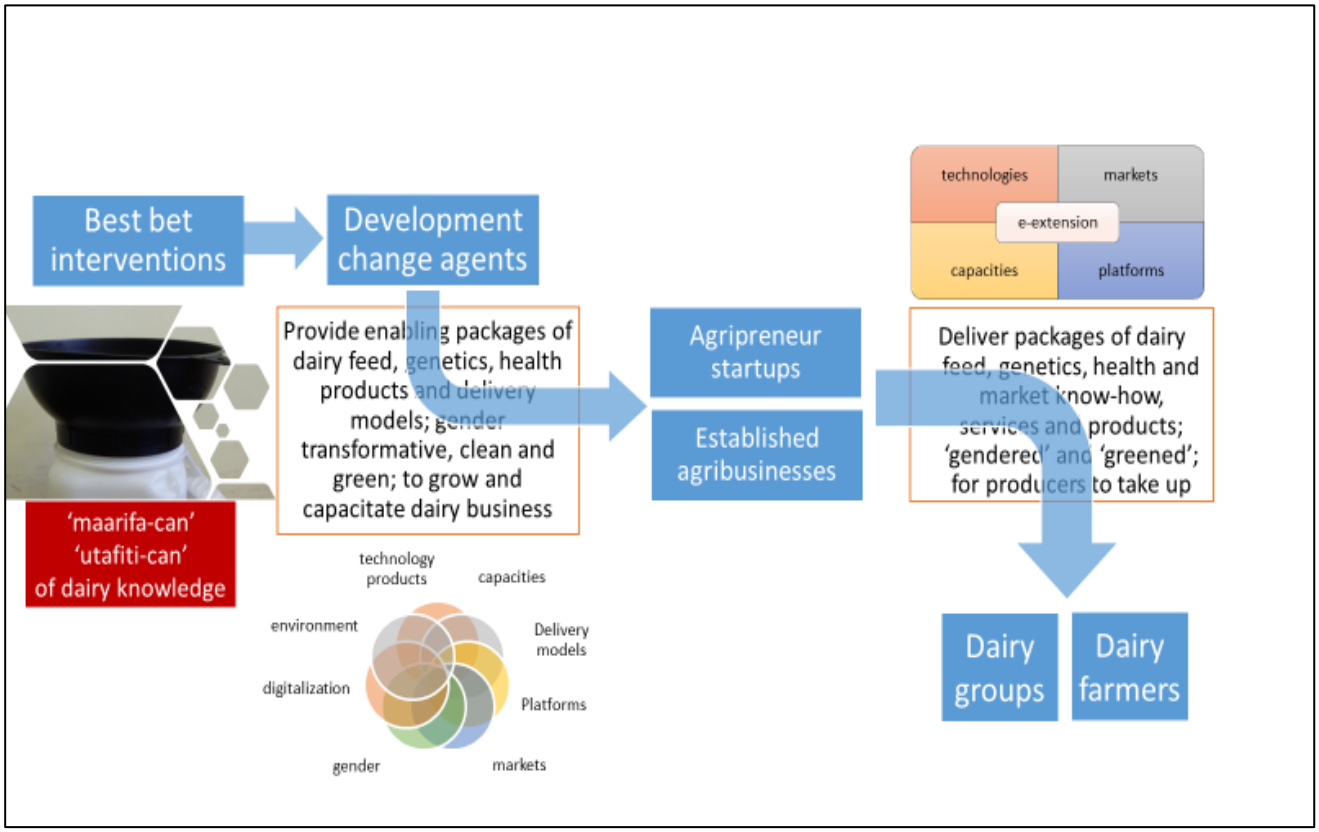



*Illustration: P. Ballantyne*

# Proposed impact sites

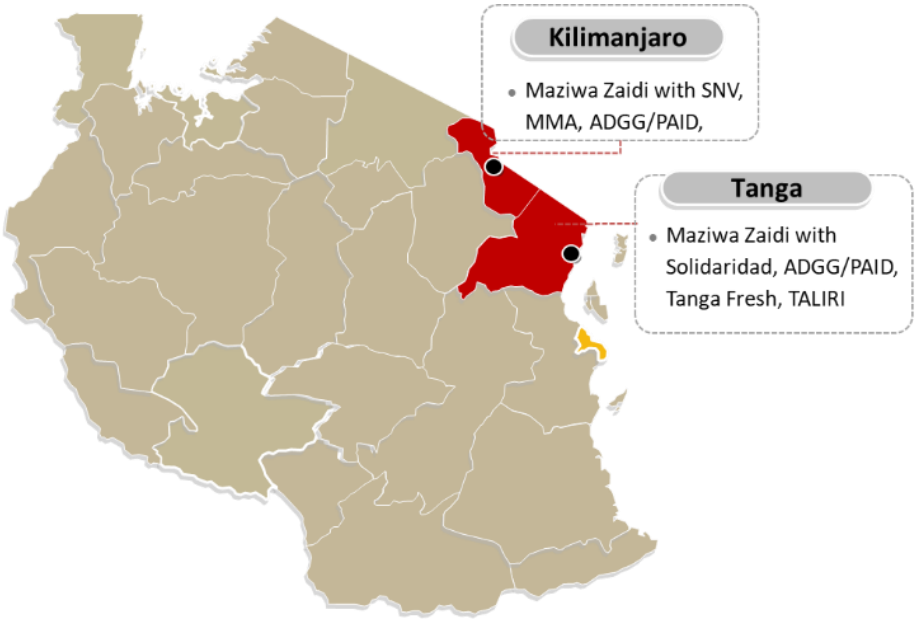
Criteria for selection of regions/districts were discussed and the following elements were proposed as key elements to be considered.

1. Partners presence – synergize with development partners
2. Partners NOT present (control)
3. Where dairy has growth potential
4. Where partners are working
5. Where there's sustainable markets
6. Closeness to processors
7. Where there's unmet demand
8. Where there's conducive agro-ecological factors for dairying

**Selected regions and districts**

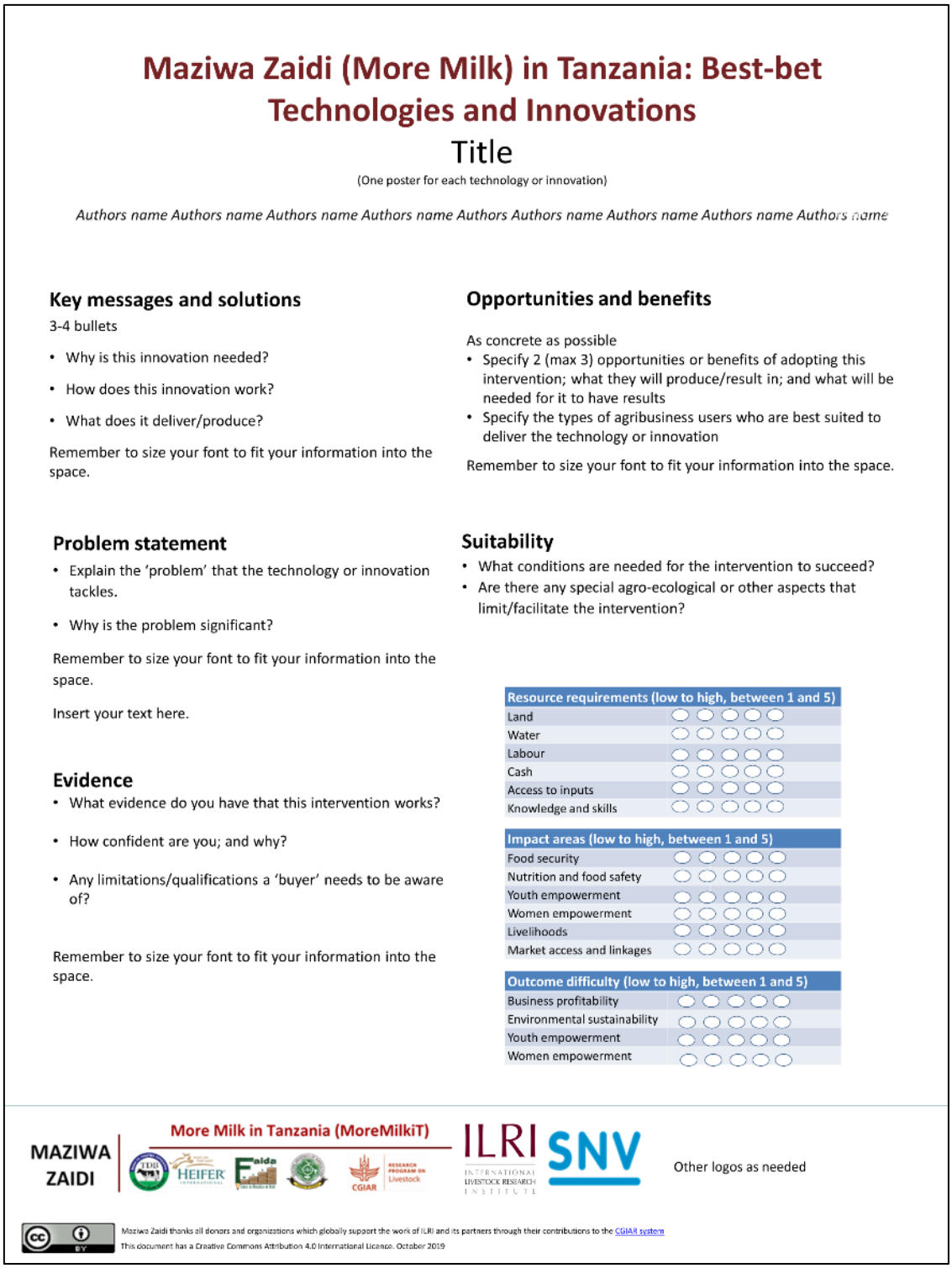
| **Region** | **Kilimanjaro** | **Tanga** |
|---|---|---|
| **Intervention districts** | Hai, Siha | Korogwe, Mheza |
| **Control districts** | One district to be determined (TDB)<br><br>The district will be one where the packages will NOT be delivered, but with potential for scaling | One district TBD<br><br>The district will be one where the packages will NOT be delivered, but with potential for scaling |
| **Partners present** | SNV, MMA, PAID/ADGG, KDCJE | Solidaridad, PAID/ADGG, Tanga Fresh, TALIRI |

NB: ADGG/PAID is also present in the neighboring Arusha Region which is not selected but considered as having potential for scaling the business-led models to be piloted



# Annexes

## Annex 1. Template to document technologies and innovations



**Maziwa Zaidi (More Milk) in Tanzania: Best-bet Technologies and Innovations**

Title

(One poster for each technology or innovation)

*Authors name Authors name Authors name Authors name Authors Authors name Authors name Authors name Authors name*

**Key messages and solutions**

3-4 bullets

- Why is this innovation needed?
- How does this innovation work?
- What does it deliver/produce?

Remember to size your font to fit your information into the space.

**Opportunities and benefits**

As concrete as possible

- Specify 2 (max 3) opportunities or benefits of adopting this intervention; what they will produce/result in; and what will be needed for it to have results
- Specify the types of agribusiness users who are best suited to deliver the technology or innovation

Remember to size your font to fit your information into the space.

**Problem statement**

- Explain the 'problem' that the technology or innovation tackles.
- Why is the problem significant?

Remember to size your font to fit your information into the space.

Insert your text here.

**Suitability**

- What conditions are needed for the intervention to succeed?
- Are there any special agro-ecological or other aspects that limit/facilitate the intervention?

**Evidence**

- What evidence do you have that this intervention works?
- How confident are you; and why?
- Any limitations/qualifications a 'buyer' needs to be aware of?

Remember to size your font to fit your information into the space.

| Resource requirements (low to high, between 1 and 5) | |
|---|---|
| Land | ○ ○ ○ ○ ○ |
| Water | ○ ○ ○ ○ ○ |
| Labour | ○ ○ ○ ○ ○ |
| Cash | ○ ○ ○ ○ ○ |
| Access to inputs | ○ ○ ○ ○ ○ |
| Knowledge and skills | ○ ○ ○ ○ ○ |

| Impact areas (low to high, between 1 and 5) | |
|---|---|
| Food security | ○ ○ ○ ○ ○ |
| Nutrition and food safety | ○ ○ ○ ○ ○ |
| Youth empowerment | ○ ○ ○ ○ ○ |
| Women empowerment | ○ ○ ○ ○ ○ |
| Livelihoods | ○ ○ ○ ○ ○ |
| Market access and linkages | ○ ○ ○ ○ ○ |

| Outcome difficulty (low to high, between 1 and 5) | |
|---|---|
| Business profitability | ○ ○ ○ ○ ○ |
| Environmental sustainability | ○ ○ ○ ○ ○ |
| Youth empowerment | ○ ○ ○ ○ ○ |
| Women empowerment | ○ ○ ○ ○ ○ |

MAZIWA ZAIDI | More Milk in Tanzania (MoreMilkiT) | ILRI | SNV

Other logos as needed

Maziwa Zaidi thanks all donors and organizations which globally support the work of ILRI and its partners through their contributions to the CGIAR system

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## Annex 2. Agenda for the workshop

| 16 October 2019 | | |
|---|---|---|
| Arrive Moshi | | |
| 1600 | Core team meet to review final plans for the forum / agenda / process/ roles / deliverables | Panama Garden Resort Hotel, Moshi |

| 17 October 2019 | | |
|---|---|---|
| 0830 | All participants - Registration | Beauty Liundi |
| 0900 | Welcome | Amos Omore, Lusato Kurwijila and Tanzania Dairy Board (TDB) Representative - Justa J. Kahumba |
| 0910 | Objectives and process | Facilitator – Peter Ballantyne |
| 0930 | Introducing the forum organizers and sponsors; Maziwa Zaidi 2 | ILRI/CGIAR – Amos Omore<br>SNV – Gemma Kavishe |
| | Relevance to National Livestock Research Agenda (short comment) | Angello Mwilawa, Director of Research, Training and Extension, Ministry of Livestock and Fisheries (MLF) |
| 1030 | BREAK | |
| 1100 | Exercise: Dairy agripreneurship and delivery – constraints and opportunities | • Group work: 1) types of 'businesses' 2) capacity constraints and opportunities<br>• Identifying a 'typology' of situations/models for dairy agribusiness development<br>• Identifying priority capacity gaps and promising avenues to deliver to them – mentoring, incubating, acceleration etc. |
| 1230 | LUNCH | |
| 1345 | Exercise: Open space on promising dairy agribusiness interventions | Short session for participants to identify any interventions they encounter locally |
| 1415 | Exercise: Identifying profitable dairy innovation packages for Tanzania agri-entrepreneurs | Interactive session based around intervention posters; participants form groups to assess and create their choice intervention baskets |
| 1600 | BREAK | |
| 1615 | Recap: Profitable dairy innovation packages – feedback and assessment | Review what the groups produced<br>How feasible the packages<br>What's in and out<br>Priorities for testing<br>Roles for incubation/mentoring/capdev |
| 1715 | Synthesis and next steps | |
| 1730 | Closing then a social | |

| 18 October 2019 | | |
|---|---|---|
| 0900 | Core team<br>Review and recap of previous day | Identify the Basket elements / Identify the Integrated packages (ideally NOT around flagships) |
| 1030 | BREAK | |
| 1100 | Work on the integrated packages | Group work: What has to be done for the proposal<br>Finalise budgets / roles of partners / Outputs etc |
| 1230 | LUNCH | |
| 1400 | Report back on packages | |
| 1500 | Completing the proposal – actions and POWB | Simon Turere + Flagships |
| 1630 | Close | |

## Annex 3. Clustering of technologies and innovations

| Poster Title | Theme | Presenter |
|---|---|---|
| Dairy Farmer Assistant (DFA) extension model | DELIVERY BUSINESS MODELS | James Rao |
| Agent Network Model (ANM) for extension | | |
| How to upgrade the smallholder dairy value chain in Tanzania's Kilosa district | | |
| Public-Private-Partnership in Animal Health Delivery | | |
| PPP Health 2 | | |
| Digital platforms to enhance animal productivity | DIGITAL TARGETING | Julie Ojango |
| Artificial Insemination (AI) business centres | BREEDING | |
| Make money from forage hay production as a business | FORAGE OPPORTUNITIES | Birthe Paul |
| Brachiaria Grass for Improved Livestock Productivity | | |
| Rumen8 a tool to specify Total Mixed Rations for dairy cattle | | |
| Irrigated Improved forages for smallholder dairy in Kilosa, Mvomero and Babati Districts, Tanzania | | |
| Improved forages can boost milk production in Tanzania's Highlands | | |
| High yielding improved forages: | | |
| Increased Napier cultivation in Lushoto could increase milk production 103% | | |
| Manure management improves soil structure and food security and mitigates greenhouse gas emissions | GREEN DAIRYING | Todd Crane |
| Greening Dairy Value Chains: Realizing Environmental and Social Benefits of Intensification | | |
| Control of East Coast Fever by Immunization | HEALTHY ANIMALS | Henry Kiara |
| The potential of Dairy Market Hubs to improve smallholder farmers' income in Tanzania | MARKET OPPORTUNITIES | Amos Omore / Florence Mutua |
| Feed Processing to enhance feed quality for dairy cattle: | | |
| Off-grid solar milk cooling systems offer technical and market opportunities for remote dairy producers | | |
| Enhancing investment in the compounded feeds subsector in Tanzania | | |
| Fodder market opportunities for smallholder dairying in Tanzania | | |
| Using Mazzicans for safer milk | | |

## Annex 4: Further details on selected technologies and innovations

As part of the marketplace exercise on day 1, groups of participants interrogated the different potential technologies to create 'packages' reflecting their interests. As well as the individual choices and comments on why they were selected; the various objectives and priorities of the groups show the differing outcomes that packages will need to address.

| | **Group Name: Development Agencies** | |
|---|---|---|
| | Group Objectives: identify potential interventions for partnership | |
| | Profitability - what we look for: Increased farmer income; Increased farmer | |
| | Productivity - what we look for: Interventions that enhance farmer productivity | |
| | Sustainability - what we look for: Climate-smart interventions | |
| | Equity - what we look for: Inclusive packages/programs | |
| **Intervention** | WHY selected | Actions to Guarantee success |
| **Agent network model** | | |
| **Dairy farmer assistant** | | |
| **Upgrade dairy value chain** | Makes services accessible, available and affordable for scaling | |
| **Public-Private health delivery** | Improve quality; Transportation | |
| **Digital platforms** | | |
| **Brachiaria grass** | | |
| **High yielding improved forages** | Increases production | |
| **Irrigated Improved forages** | | |
| **Forage hay production** | Diversifies income; Increases production | |
| **Rumen8 total mixed rations** | | |
| **Greening dairy value chains** | Increases production; Makes dairy farming sustainable | |
| **Manure management** | | |
| **Control East Coast Fever** | Bundled services | |
| **Dairy Market Hubs** | Improve bargaining power of producers | |
| **Compounded feeds** | | |
| **Feed processing** | Reduce postharvest losses; Reduce costs of production | |
| **Fodder marketing** | | |
| **Solar milk cooling systems** | | |
| **Mazzican** | Improves milk quality; Reduces labour costs | |
| **AI business centres** | | |
| **Capacity approaches that work** | | |
| **Forage chopping and maize silage** | | |

| | Group Name: MAZIWA BIASHARA | |
|---|---|---|
| | Group Objectives: Activities that will lead us to profit | |
| | Profitability - what we look for: Enhanced product quality, value addition, enage in other businesses like selling of fertilizer | |
| | Productivity - what we look for: Better feeds, good extension and input services, good quality heifers | |
| | Sustainability - what we look for: Development of AI stations, to use the technologies that were are being exposed to here | |
| | Equity - what we look for: To create a harmonious environment between men, women and youth | |
| **Intervention** | WHY selected | Actions to Guarantee success |
| **Agent network model** | Because the model can link women and youth into other networks; the model can increase awareness and livestock management | |
| **Dairy farmer assistant** | Same as above for ANM | |
| **Upgrade dairy value chain** | | |
| **Public-Private health delivery** | | |
| **Digital platforms** | It simplifies monitoring and improvement of livestock | |
| **Brachiaria grass** | High level of protein; it's a promising business opportunity for young people | |
| **High yielding improved forages** | | |
| **Irrigated Improved forages** | | |
| **Forage hay production** | | |
| **Rumen8 total mixed rations** | It simplifies /facilitates better feeding; It simplifies understanding of the nutrient content of feeds | |
| **Greening dairy value chains** | | |
| **Manure management** | Protect the environment; opportunity to increase income; it's renewable energy | |
| **Control East Coast Fever** | Vaccination is an employment opportunity to for youth; redction of calf mortality | |
| **Dairy Market Hubs** | The dairy market hub simplifies access to services including inputs; enhances assurance of market for milk | |
| **Compounded feeds** | It increases the nutritional content and quality of milk; business opportunity within a milk hub | |
| **Feed processing** | | |
| **Fodder marketing** | | |
| **Solar milk cooling systems** | It can be applied to areas that have no electricity; It saves cost of milk cooling; it is an opportunity for youth and women | |
| **Mazzican** | Easy to know if a cow is sick from mastitis); it simplifies milk handling/management | |
| **AI business centres** | | |
| **Capacity approaches that work** | | |
| **Forage chopping and maize silage** | | |

| | Group Name: women dairy entrepreneurs | |
|---|---|---|
| | Group Objectives: awareness on technoligies and innovations that are good for | |
| | Profitability - what we look for: learn good ways to increase profits - how to | |
| | Productivity - what we look for: learn how to access good qualit cows and feed; | |
| | Sustainability - what we look for: learn about good business plans and | |
| | Equity - what we look for: tell others that women need support to collaborate | |
| **Intervention** | WHY selected | Actions to Guarantee success |
| **Agent network model** | helps get organized and access services | need to have a voice as a group by organizing meetrigns and having common business |
| **Dairy farmer assistant** | helps get organized and access services | need to have a voice as a group by organizing meetrigns and having common business |
| **Upgrade dairy value chain** | | |
| **Public-Private health delivery** | | |
| **Digital platforms** | help be updated; recognition through organization; safe and trusted info source | facilitators needed for some to enter data |
| **Brachiaria grass** | helps produce more milk; selling seedlings a business opportunity | need seed; need info on hot to grow |
| **High yielding improved forages** | | |
| **Irrigated Improved forages** | | |
| **Forage hay production** | | |
| **Rumen8 total mixed rations** | | |
| **Greening dairy value chains** | | |
| **Manure management** | Good for business - increases productivity of crops on farm; reduce GHGs | some bio-gas already being produced |
| **Control East Coast Fever** | prevent animal mortality; many of their animals die | governemnt to impose vaccination for all new born cattle |
| **Dairy Market Hubs** | helps them know who to trade with | need training it how it works and how to better connect with others |
| **Compounded feeds** | | |
| **Feed processing** | like the chopper to increase feeding efficiency; reduces losses; easier to store | some already have choppers; need cash to buy; group ownership? Groups to rent? |
| **Fodder marketing** | | |
| **Solar milk cooling systems** | | |
| **Mazzican** | | |
| **AI business centres** | AI essential to increase production | |
| **Capacity approaches that work** | | |
| **Forage chopping and maize silage** | | |

| | Group Name: capacity developers | |
|---|---|---|
| | Group Objectives: Profitable agribusinesses | |
| | Profitability - what we look for: Dairy entrepreneur profitability | |
| | Productivity - what we look for: Enhanced efficiency of dairy entrepreneurs, | |
| | Sustainability - what we look for: Ownership and management of | |
| | Equity - what we look for: Purposeful inclusion; Sharing of profits | |
| **Intervention** | WHY selected | Actions to Guarantee success |
| **Agent network model** | Fits well the cooperative mode | |
| **Dairy farmer assistant** | Increase access to advice; Facilitates learning and experience sharing | |
| **Upgrade dairy value chain** | | |
| **Public-Private health delivery** | | |
| **Digital platforms** | | |
| **Brachiaria grass** | | |
| **High yielding improved forages** | Feeds account for 70% of production costs; Improves yields | Build awareness; Priority commercialization of feeds; Enhance seeds availability close to farmers |
| **Irrigated Improved forages** | | |
| **Forage hay production** | | |
| **Rumen8 total mixed rations** | | |
| **Greening dairy value chains** | | |
| **Manure management** | Increases sustainability | |
| **Control East Coast Fever** | Encourages integrated farming; Increases profitability | |
| **Dairy Market Hubs** | Reduce mortality by 95% | Needs government investment, interventions; Training for last mile service providers; Mass campaign |
| **Compounded feeds** | More efficient management and value chain efficiency | Establish and strengthen formal groups and cooperatives |
| **Feed processing** | Drives increased dairy efficiency | Build awareness; Promote commercialization of feeds |
| **Fodder marketing** | Increases efficiency | Build awareness; Promote commercialization of feeds |
| **Solar milk cooling systems** | | |
| **Mazzican** | | |
| **AI business centres** | | |
| **Capacity approaches that work** | No sector growth without proper business skills and strong groups/cooperatives management | Identify actors with proven models; Enforce coop regulation that 10% of income is for skill development; Government subsidies for skills development; Capacity builders to be proactive/sell their models and successes |
| **Forage chopping and maize silage** | | |

| | Group Name: technical and market service providers | |
|---|---|---|
| | Group Objectives: identify innovations, solutions, interventions that can be | |
| | Profitability - what we look for: economic gains for business partners for | |
| | Productivity - what we look for: increase production per unit in a sustainable | |
| | Sustainability - what we look for: climate-smart and sustainable innovations | |
| | Equity - what we look for: innovations that encourage women and youth | |
| **Intervention** | WHY selected | Actions to Guarantee success |
| **Agent network model** | fits for tangible products; increases profitability; increases productvity; more inclusive | |
| **Dairy farmer assistant** | Fits both products and services; inclusive; productivity; sustainability; requires few resources; suits cooperatives as well as medium an large farms | |
| **Upgrade dairy value chain** | | |
| **Public-Private health delivery** | | |
| **Digital platforms** | helps measure performance; make evidence-based decisions; includes youth; integrates with different interventions; promotes demand for products and services | |
| **Brachiaria grass** | | |
| **High yielding improved forages** | | |
| **Irrigated Improved forages** | | |
| **Forage hay production** | | |
| **Rumen8 total mixed rations** | | |
| **Greening dairy value chains** | knowledge gaps; inclusive impact areas | financing model? |
| **Manure management** | | |
| **Control East Coast Fever** | | |
| **Dairy Market Hubs** | | |
| **Compounded feeds** | | |
| **Feed processing** | | |
| **Fodder marketing** | | |
| **Solar milk cooling systems** | | |
| **Mazzican** | | |
| **AI business centres** | can integrate with the other extension models; digital platforms; increases productivity and profitability | |
| **Capacity approaches that work** | | |
| **Forage chopping and maize silage** | uses crop residues | |

| | Group Name: officials, researchers, regulators | |
|---|---|---|
| | Group Objectives: inclusive growth and livelihoods improved in the dairy sub | |
| | Profitability - what we look for: improved efficiency | |
| | Productivity - what we look for: increased quality and quantity of supply | |
| | Sustainability - what we look for: commercialization, environmentally-healthy, | |
| | Equity - what we look for: social inclusion (women, youth, people with | |
| **Intervention** | WHY selected | Actions to Guarantee success |
| **Agent network model** | sustainability; productivity; profitability; dissemination | easy access to input services; shared management costs; employs youth; saves time and costs |
| **Dairy farmer assistant** | productivity, profitability; equity; sustainability | increase milk yield; institutional aspects of dairy market hubs; improves knowledge |
| **Upgrade dairy value chain** | productivity; profitability; equity | offers PPP and market opportunities; employment; information |
| **Public-Private health delivery** | sustainability; productivity; profitability | saves time and costs |
| **Digital platforms** | productivity; profitability | linked data on many farmers and animals is a benchmark to increase productivity |
| **Brachiaria grass** | profitability; productivity; sustainability; equity | business potential from both seeds and feed |
| **High yielding improved forages** | profitability, productivity, sustainability | increased income and entgrepreneurship opportunities; social inclusion |
| **Irrigated Improved forages** | profitability, productivity, sustainability | assure year-round forage availability; feed conservation |
| **Forage hay production** | profitability, productivity, eqiity; sustainability | commercialization; market opportunities |
| **Rumen8 total mixed rations** | productivity; profitability | income; access to nutrients |
| **Greening dairy value chains** | sustainability; equity; productivity | social benefits; supports national commitment to GHG emissions |
| **Manure management** | sustainability; productivity | social benefits; potential for feed and seed production |
| **Control East Coast Fever** | productivity, equity; profitability; sustainability | reduces risk of losses; employment opportunities for agro-dealers; reduces production costs; |
| **Dairy Market Hubs** | equity; profitability; sustainability | market opportunities; income; PPP; investments; employment; solar as substitute for electricity |
| **Compounded feeds** | productivity; profitability; equity | reduce feed wastage; efficient residue use; employment; sustainability |
| **Feed processing** | productivity; profitability; equity; sustainability | efficient residue use |
| **Fodder marketing** | sustainability; productivity; profitability; equity | efficiencey mixing of crop residues; use of wide varieties |
| **Solar milk cooling systems** | sustainability; profitability | deliver safe milk; vendor employment; reduce electricity costs |
| **Mazzican** | sustainability; does not scratch | deliver safe and quality milk; mastitis testing becomes easy |
| **AI business centres** | sustainability; productivity | AI business opportunities; increase access to breeding services and genetic materials; offers employment for youth |

## Annex 5. What researchers will deliver for the integrated packages

Researchers reflected on what deliverables (tangible evidence or proof of completion of a set of activities) are needed as part of the research process or may be useful to various clients. The deliverables need to be integrated as much as possible. For example, the feed interventions need to contribute to animal health and breeding objectives (e.g., fertility) and vice versa. Some of the deliverables listed below may be further revised or consolidated given this consideration and following consultations with partners and agribusinesses.

| Year | Deliverable | Flagship |
|---|---|---|
| **2019** | Report on forage seed system based on a review, needs/capacity assessment and stakeholders' workshop | Feeds & Forages |
| | Poster on the potential for integrating East coast fever ITM vaccine into packages of productivity enhancing technologies in Tanzania. | Health |
| | Poster on PPPs as a potential avenue for integrating animal health with other productivity enhancing technologies in technologies. | |
| | A report identifying animal health entrepreneurs in pilot sites | |
| | Poster on integrated livestock data platforms to support agribusinesses in Tanzania | Genetics |
| | Poster on AI business centres as a business model for delivery of integrated AI services | |
| | A concept on embedded private sector extension approaches for enhanced delivery of integrated technologies, inputs and advisory services to smallholder dairy farmers in Tanzania | Livelihoods |
| | A report identifying profitable dairy innovation packages for Tanzania agri-entrepreneurs | |
| | Gender-responsive packages of technologies and innovations | Genetics |
| | A synthesis report on the role of the various digital advisory services in promoting uptake of integrated technology packages for upgrading the dairy value chain. | Capdev |
| | Proposal that consolidates CRP research to date and translates it into a pilot integrated package of interventions | Mgt |
| | Survey protocol for agripreneurs | |
| | | |
| **2020** | Workshop report on training on TMR- Rumen8 | Feeds & Forages |
| | Outcome note on forage demonstration farm - Youth/women | |
| | Report on stakeholders' workshop on Forage seed system in Tanzania | |
| | Report on packages of synergistic productivity enhancing technologies and the rationale for their combination | Health |
| | Report of training needs of agripreneurs to deliver packages of technologies to users in Tanzania | |
| | Training manual for trainers of agripreneurs on combined animal health interventions with other technologies in Tanzania | |
| | Report of an evaluation of delivery of technologies packages by different entrepreneurs | |
| | Report on actor profiles for smallholder dairy systems to enable better targeting and actor linkages in Tanzania | Genetics |
| | A note on business models for delivery of integrated genetics services | |
| | Modules for training on the integrated livestock data platform for agriprenuers | |
| | Working paper on youth and gendered opportunity spaces for green technologies in the dairy sector | Environment |
| | Market actor survey report with profiles and performance of agribusinesses for delivery of integrated packages of technologies to farmers in Tanzania | Livelihoods |
| | Baseline survey report describing the state of technology uptake, productivity level and opportunities for applying technology packages to enhance profitability of smallholder dairy enterprises in Tanzania | |
| | Lessons learnt in rolling out integrated packages of technologies and associated delivery models in Tanzania dairy value chain | |

| | | |
|---|---|---|
| | Protocol for participatory building of systems dynamic models for influencing policy and investment in the dairy value chain in Tanzania | |
| | Assessment of gendered constraints faced by agripreneurs and interventions that can address the constraints | Gender |
| | List of approaches/activities that can create a conducive environment for women agripreneurs to operate effectively | |
| | Report on gender-responsive activities (accommodative or transformative) that create a conducive environment for women agripreneurs to operate effectively | |
| | Gender-responsive Maziwa Zaidi research tools and approaches | |
| | Training needs assessment report to inform the capacity building plan | Capdev |
| | A training needs assessment tool to be embedded to the baseline household survey data collection tool | |
| | eLearning training course on dairy cow management that includes breeding, feeding and health (adapted from Kenya's KCD work) | |
| | Training package on soft skills adapted from EMPRETEC targeting farmer groups, agripreneurs on business management skills, interpersonal skills etc | |
| | Multimedia/digitised extension communication materials (animation videos, skit audios, messages) for use as extension tools for producers and agripreneurs | |
| | Synthesis of capacity building approaches with promising potential to target agripreneurs on various capacity needs identified in the project. | |
| | Map of current capacity development approaches and actors currently in use in the project area | |
| | A synthesis of self-assessments and reviews conducted ahead of the scaling Scan/ ASAT workshop. | Scaling Readiness |
| | Workshop report with main findings and initial scaling priorities, challenges and opportunities for the Tanzania dairy value chain | |
| | Detailed Scaling Readiness assessment, including mapping across the innovation's readiness / use matrix | |
| | A detailed Scaling Plan that incorporates the findings from these two assessments | |
| | Report on partner landscaping | Mgt |
| | Survey protocol for producers | |
| | Market actor and farm-level survey report(s) | |
| | | |
| **2021** | Report on training on forage conservation including appropriate equipment | Feeds & Forages |
| | Brief on forage business opportunities in Tanzania | |
| | Final report of recommendation of combination of technologies and delivery approaches that can be effectively delivered through entrepreneurs | Health |
| | Optimized digital data platform for use by value chain actors in Tanzania | Genetics |
| | Report on appropriate business models integrating genetics into productivity enhancing packages piloted in Tanzania | |
| | Policy brief on youth and gendered opportunity spaces for green technologies in the dairy sector | Environment |
| | Set of articles (or 1 book) on technology packages and management strategies for enhanced livelihoods and resilience published, based on field testing and impact assessment | Livelihoods |
| | Set of articles (or 1 book) on organizational and business approaches for improved livestock value chain performance | |
| | Publication on identified policy and investment options for improved performance of dairy value chain in Tanzania | |
| | Article on most effective gender-responsive activities that create a conducive environment for women agripreneurs to operate effectively | Gender |
| | Report on the effectiveness of women-led dairy businesses in reaching women dairy farmers | |
| | A tool to assess the effectiveness of various digital capacity building solutions | Capdev |
| | Assessment report on effectiveness of the various digital capacity building solutions | |
| | Report on Maziwa Zaidi role in enabling national partners to take forward supporting the development and stewardship of the value chain - to also serve as exit strategy | Mgt |

## Annex 6. List of participants

| | A. Dairy agripreneurs | Sex | <35 yrs? | Email contact | Business/Organization | From |
|---|---|---|---|---|---|---|
| 1 | Evarest Maguo | M | N | emaguo@gmail.com | Agrovet | Arusha |
| 2 | Ester John Alfayo | F | Y | | Milk trader | Arusha |
| 3 | Dathiva Joseph Rimoy | F | Y | | Milk trader | Arusha |
| 4 | Steven Massawe | M | Y | stevenmassawe@gmail.com | AI services | Kilimanjaro |
| 5 | Christopher J. Mbwanje | M | Y | mbwanjechris16@gmail.com | Animal feed | Kilimanjaro |
| 6 | Elitruda Kweka | F | N | | Dairy farmer/milk trader | Kilimanjaro |
| 7 | Paulina Ndanshau | F | N | | Dairy farmer/cap builder | Kilimanjaro |
| 8 | Vickyneema Dickson | F | Y | | Milk sales using ATM | Kilimanjaro |
| 9 | Julius Shoo | M | N | shoojulius@hotmail.com | Agricare Enterprises | Tanga |
| 10 | Charles Tumaini | M | N | manchazy@yahoo.com> | Dairy Link Ltd | Tanga |
| 11 | Elia Machange | M | Y | ellmachange1960@yahoo.com | Veterinarian | Kilimanjaro |
| 12 | Emmanuel Lema | M | N | | Veterinarian | Kilimanjaro |
| 13 | Elisante Swai | M | Y | elisanteswai@gmail.com | AI technicians | Kilimanjaro |
| 14 | Hellen Ussiri Ainea | F | N | hellenainea@gmail.com | Nronga Dairy Coop | Kilimanjaro |
| 15 | Flora Kimaro | F | N | | HAI District Council | Kilimanjaro |
| 16 | Shose A. Mmary | M | N | | KDCJE | Kilimanjaro |
| 17 | Calvin K. Urocky | M | N | klvin.uroki@gmail.com | KIVIWAMA | Kilimanjaro |
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