Fantaye, her daughter and newly born lamb Menz, Ethiopia
Photo: ILRI/Zerihun Sewunet

RESEARCH PROGRAM ON Livestock

CGIAR

APPLYING A THEORY OF CHANGE BASED APPROACH TO LIVESTOCK RESEARCH FOR DEVELOPMENT:

LEARNINGS FROM THE CGIAR RESEARCH PROGRAM ON LIVESTOCK AGRI-FOOD SYSTEMS

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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 and profitability of livestock agri-food systems in sustainable ways, making meat, milk and eggs more available and affordable across the developing world.

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Sheep Market in Doyogena, Ethiopia. Photo ILRI/Zerihun Sewunet

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Photo ILRI/Brian Kawuma

INTRODUCTION

Okurut, a pork butcher in Uganda

The CGIAR Research Program on Livestock Agri-food systems (CRP Livestock) provided research-based solutions to support the transition of smallholder farmers, pastoralists and agro-pastoralists into sustainable, resilient livelihoods and towards productive enterprises that will help feed future generations. An important component of the CRP Livestock research agenda is to demonstrate how livestock research can translate into impact through livestock value chain transformation in four selected priority countries, namely Ethiopia, Tanzania, Uganda, and Vietnam. In these priority country projects, the ambition was to integrate a range of research outputs (referred to as a package, bundle or basket of interventions) and pilot these bundled interventions in each site with the intention to eventually take them to scale.

To promote integration, achieve development impacts, and work towards the eventual scaling up and out of these interventions, a Theory of Change-based approach was promoted. This approach uses the project Theory of Change in multiple ways, i.e. for planning, monitoring, reflection and checking the intervention logic, adaptive management, and evaluation. This report provides reflections on this process, which was supported by KIT Royal Tropical Institute (KIT). Section 2 provides the theoretical underpinnings of this approach, and Section 3 explains how this was implemented in practice. In Section 4, four case studies are presented of the priority country projects of the CRP Livestock. Finally, in Section 5 we present a discussion of the approach and how this could be implemented in other agricultural research for development (AR4D) and Livestock Research for Development (LR4D) programs.

Photo: ILRI

Training on genetic selection and breeding, Buom Khoang village, Chieng Luong Commune, Son La Province, Vietnam

BACKGROUND

Bibi feeding improved cattle with chopped maize crop residues at Babati, Tanzania

THEORY OF CHANGE BASED APPROACHES

The Theory of Change (ToC) finds its origins in the 1980s in theory-based evaluation approaches, which focussed on explaining how and why an intervention achieved or contributed to impact, rather than only on measuring whether or not an intervention had achieved stated outputs and outcomes (Vogel, 2012). In the 1990s, ToCs also started to be used to reflect on and evaluate community initiatives (Connell & Kubisch, 1998), and nowadays, ToCs have become widely used in international development programs. The approach is being used to map out how activities lead to outputs, outcomes and ultimate impacts, and to articulate assumptions of how these changes happen and the ToC is used as a basis for evaluation (Vogel, 2012). Some ToCs also include the context in which the program is embedded and which hinders or supports the ability of the program to generate the desired outcomes (Mayne, 2012). It is often referred to as both a *product*, i.e. a diagram detailing the impact pathways and their assumptions, and a *process*, i.e. the reflective process leading to detailing assumptions behind how change happens (Vogel, 2012).

AR4D and LR4D, such as CGIAR is involved in, typically take place in complex environments with multiple influencing factors and partners and non-linear processes (Tomich et al. 2019). In such complex systems, ToCs are a particularly important tool to enhance effectiveness, as they should make explicit what needs to be done to achieve the desired impact and what could prevent this from happening (Maru et al., 2018). While the use of ToCs has become a common requirement in AR4D and LR4D, the way they have been applied may still have limited value (Maru et al., 2018). Challenges that have been identified in fully mainstreaming the approach relate to 1) the different interpretations of the ToC, namely as a tool for theory-based evaluation, or as an instrument for the design of effective interventions and to promote reflection and adaptation, 2) limited grounding of ToCs in social, behavioural, economic, institutional and/or biophysical theories, 3) conflation of ToCs and project "logframes", and 4) limited skills, incentives and commitment for stakeholder engagement and the design of and reflection on interventions, and inter- and trans-disciplinary ways of working (Maru et al., 2018).

The above challenges mean that ToCs are often formulated in a 'top-down' manner, meaning that they are formulated by 'experts' rather than through a participatory and reflective process (Maru et al., 2018). This results in them being vague and overly generic (Freer & Lemire, 2019) and make it difficult to striking a balance between the perceived need for simplicity and the complexity of implementing programs, and the challenge of identifying all the assumptions underlying such complex programs and the risks that threaten their success (Freer & Lemire, 2019).

TOC AS A PLANNING, MONITORING, REFLECTION AND ADAPTIVE MANAGEMENT TOOL

ToCs are a useful tool for program planning in LR4D because of their explicit focus on involving all the key stakeholders (Thornton et al., 2017). It can, therefore, also become an important tool to generate buy-in, ensure that different stakeholders' perspectives and incentives are considered and that the program is realistic for the local context.

A ToC-based approach can also support adaptive management in programs because ToCs can be used for learning, and the original assumptions and hypotheses that underpin a ToC can be modified along the way. This, therefore, assists in dealing with uncertainty and emergent priorities and opportunities (Thornton et al., 2017). Regular reflections with stakeholders on the logic in the ToC and the underlying assumptions are needed to facilitate adaptive management, and the visual diagram of a ToC is a useful tool with which to do this.

TOC FOR EVALUATION

As described, ToCs have their origin in theory-based evaluation approaches. Theory-based evaluations have become more popular in recent years in response to the

inability of impact evaluation methods (e.g. Randomised Controlled Trials) to determine the mechanisms by which interventions and research for development can achieve impact and generate institutional lessons on research and innovation processes (Hall et al., 2003). While (semi-) experimental evaluation methods can determine whether an intervention works, they do not explain why and how. However, this knowledge is crucial to scale innovations beyond test locations (Maru et al., 2018). Impact assessments, therefore, need to be complemented with analytical frameworks that allow for institutional learning (Hall et al., 2003).

Realist evaluation is a sub-stream of theory-based evaluation approaches which seeks **to improve understanding of how and why interventions work or do not work in particular contexts and why different contexts yield different outcomes**. This approach is specifically based on the assumption that there is no one-size-fits-all solution, as the context strongly influences program outcomes. This implies that understanding context is an important part of understanding how and why programs work or not so that informed decisions can be made about which programs or policies to use and how to adapt them to local contexts. A realist evaluation thus looks at **what works for whom, to what extent, under what circumstances, and over what duration** (Westhorp, 2014). It is, therefore, particularly appropriate for evaluating pilot programs that are being scaled out.

A realist evaluation tries to explain causation through observable and non-observable processes. In essence, the program activities (observable) influences the reasoning, norms, capacity, and collective beliefs of the participants or stakeholders (non-observable), which determine decisions and choices of the same actors that result in program outcomes (observable). This underlying causal process is called a 'mechanism', which may function differently in one context compared to another (Westhorp, 2014; Pawson and Tilley, 1997).

A realist evaluation thus tests how mechanisms initiated by a programme should cause desired outcomes (White and Phillips, 2012). A well-developed ToC that unpacks the complexity of a program is, therefore, an essential basis of a realist evaluation.

In a realist evaluation, to evaluate whether a program has achieved its objectives, its ToC is compared against the evidence through a process called *contribution analysis* (Koleros and Mayne, 2019). A contribution analysis is constructed by building up evidence that demonstrates the contribution of an intervention while also establishing the relative importance of other influences on observed outcomes (White and Phillips, 2012).

In contribution analysis, two concepts are important to build evidence of attribution: 1) *necessity*: the intervention actually caused the change, i.e. nothing would have changed in the absence of the intervention - the intervention was necessary, and 2) *sufficiency*: the intervention was the only cause of the change, i.e. nothing else was needed to bring about the change - the intervention was sufficient. If evidence can be found that the intervention was both necessary and sufficient, the achieved change can be attributed to the intervention (Mayne, 2012). The evidence base can be built using quantitative methods, but also by eliminating plausible alternative explanations for the change at the outcome level (e.g., other donor interventions, new policies, market forces). Causation is often directly experienced or observed by project staff, participants, and stakeholders. Views from different key informants is, therefore, essential qualitative data to be used in contribution analysis. They can be asked (i) *whether*, (ii) *to what extent*, and (iii) *why* they attribute a particular change (outcome) to the intervention (Mayne, 2012). Four different levels of contribution can be identified (i.e. none, weak, fair, strong) and can be characterised through four key questions (Table 1).

Table 1. Distinctive levels of contribution

Level of Contribution				
Question	**none**	**weak**	**fair**	**strong**
Did the change occur?	Yes			
Did it result from a process in which project support was used?	No	Yes		
Did this support contribute to the acceleration or scaling of the change?		No	Yes	
Was this support a necessary (non-redundant) causal factor?			No	Yes

Source: Based on Ton and Glover (2019).

Photo ILRI/Andrew Nguyen

IMPLEMENTATION OF THE METHODOLOGY

A smallholder's pig in Chung My, Vietnam

IMPLEMENTATION OF THE METHODOLOGY

In the priority country projects, a ToC-based approach consisting of four main steps was implemented: 1) Validation of the project's ToC, 2) Reflections on this ToC with project staff and partners (two rounds); 3) Assessment of knowledge, attitudes and practices among next users; 4) Contribution analysis (Figure 1).

STEP 1: VALIDATING THE INITIAL THEORY OF CHANGE

The country teams and stakeholders identified the change pathways and underlying assumptions during the inception phase of the projects. These ToCs were used as the basis for the project proposals. These original ToCs were reviewed, populated with assumptions, and validated by the country teams. This step had as an output a new ToC diagram for each country, depicting the change pathways and underlying assumptions at the start of the priority country projects. In addition, the process reflected on specific groups of 'next users' (following Douthwaite et al., 2008), i.e. those who are using the research outputs, looking at the changes in the knowledge and attitudes required to achieve a change in a certain practice and a mapping of assumptions against the scaling ingredients (based on Dror and Wu (2020)).

STEP 2: REFLECTION ON THE THEORY OF CHANGE

Virtual reflection workshops were held for each country to reflect on the ToC, using the revised versions developed in Step 1. The focus was on validating the change pathways and the underlying assumptions and assessing the progress towards achieving outcomes. At the start of the projects, it was anticipated that there would be in-country workshops, however, due to the COVID-19 pandemic, these were moved online using the web-based platform MURAL. The first reflection sessions took place in each of the four countries in the first or second quarter of 2021 (depending on the country), and the second and final reflections were held during the country stakeholder meetings in the third or fourth quarter of 2021. The latter also focused on an assessment of the extent to which the ToCs held true, and the contributions of the priority country projects to the achievement of (or working towards) impact at scale. The sessions in Ethiopia and Uganda were hybrid meetings combining online and in-person discussions.

STEP 3: KAP OUTCOME HARVESTING

Outcome harvesting was implemented through a KAP survey (Knowledge, Attitudes and Practices Survey) to assess perceived changes among next users, at the (early) outcome level in the ToCs, including their perceptions on the contribution of the projects to those changes. Table 2 provides an overview of the sample of respondents included in each country.

While the approach was uniform, the questionnaires were customised for each country based on the project's

Figure 1. Steps in the contribution analysis process

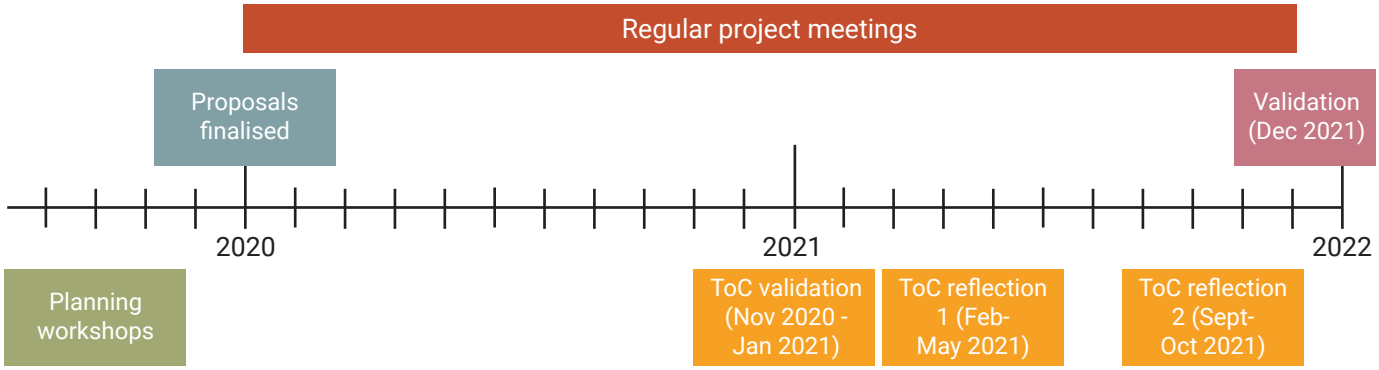


Table 2. Sample of KAP survey in the four priority country projects

Next user group	Ethiopia	Tanzania	Uganda	Vietnam
Livestock producers	90 producers & 88 youths	-	20	63
Agripreneurs*/input and service providers	-	50	11	-
Vets and extension-workers	18	-	15	12
Aggregators	-	-	16	-
Policymakers	3	12	9	3
Total	199	62	71	78

Note: *Agripreneurs are agricultural entrepreneurs that provide inputs and services for livestock producers.

ToC and the knowledge attitudes and practices that were expected to change among the next user groups as a result of the project (see Step 1). Questions on knowledge aimed to assess what respondents identified as the most important learnings related to crop-livestock systems and whether they perceived these learnings as applicable to their situation. These questions were either open-ended or were Likert-type questions with five levels of (dis)agreement. Questions on attitudes were about the agreement with statements about key areas of relevance to the ToC and the assumptions part of the ToC. They also used the agreement scale and had open-ended follow-up questions to understand the motivations behind respondents' answers. Finally, questions on practices, were aimed at assessing which practices respondents have implemented, which were open-ended and Likert-scale questions with a frequency scale.

STEP 4: VALIDATION WORKSHOP

A virtual validation workshop was held with the CRP Livestock program staff, including the Program Management Unit (PMU) at the ILRI headquarters and representatives from the project teams in the four priority country programmes. The focus of the meeting was sharing a) the lessons learned on LR4D and the integrated intervention packages with respect to the benefits and challenges in project design, planning, managing, implementing, and forging partnerships (see also Kruijssen et al., 2021); and b) the findings of the contribution analysis per priority country projects in order to validate them. The anticipated outcomes in the ToC were assessed with regard to (i) *whether* they occurred, (ii) *to what extent*, and (iii) *why* they can be attributed to the country projects.

Photo ILRI/Stevie Mann

A local farmer and her cattle in Son La Province, Northwest Vietnam

Photo: ILRI/Apollo Habtamu

COUNTRY CASE STUDIES

Cross breed sow and piglets on a farm in Masaka district, Uganda

BENEFITS OF INTEGRATION

Using the process described above, the KIT team constructed the contribution analysis in consultation with the project teams in the four priority country projects, each piloted an integrated livestock development approach for a different species of livestock. The following sections include a brief introduction to the priority country projects, their objectives and activities, and a comparison of their interventions' ToC against the evidence gathered through the ToC reflection workshops and KAP surveys carried out in each country. For a complete analysis, these findings need to be triangulated with the results of endline surveys (not yet carried out when this publication was developed).

ETHIOPIA

The CRP Livestock project "Small Ruminant value chain Transformation (SmaRT) in Ethiopia" was implemented in four areas consisting of three sheep value chain sites (Doyogena, Bonga and Menz) and one goat value chain site (Abergelle) sites where target and control villages were identified (ToC in Annex). The core package i.e. SmaRT pack was consolidated in the current target villages and implemented as an integrated package in the new target villages. The SmaRT Pack is a set of best-bet interventions delivered as a package. The core interventions in the SmaRT pack include packaging of improved genetics and integrated interventions in animal health, and disease prevention and management, improved feeding and business oriented sheep fattening, and sustainable use of communal grasslands. The SmaRT Pack primarily targets small-scale sheep and goat producers in Ethiopia, focusing on local markets for sheep and the international market for goats. It was delivered through community associations like marketing cooperatives and farmer producer participants. The project team and external partners piloted the package and tested it for sustainable productivity improvement. Specifically, the project aimed to improve the livelihoods of women and men small ruminant producers through the consolidation, testing and promotion of the SmaRT Pack at the producer level while facilitating equitable access to input supplies and services through community action and policy support.

Based on the ToC reflections, the KAP survey carried out in Ethiopia, and the validation workshop with the project team, the following results were observed regarding changes in four major groups of 'next users' namely a) Small Ruminant Producers, b) Development Agents, and c) Policymakers (Table 3). The next user group, 'input suppliers and service providers' and 'youth groups'(added later) were not considered in the contribution analysis.

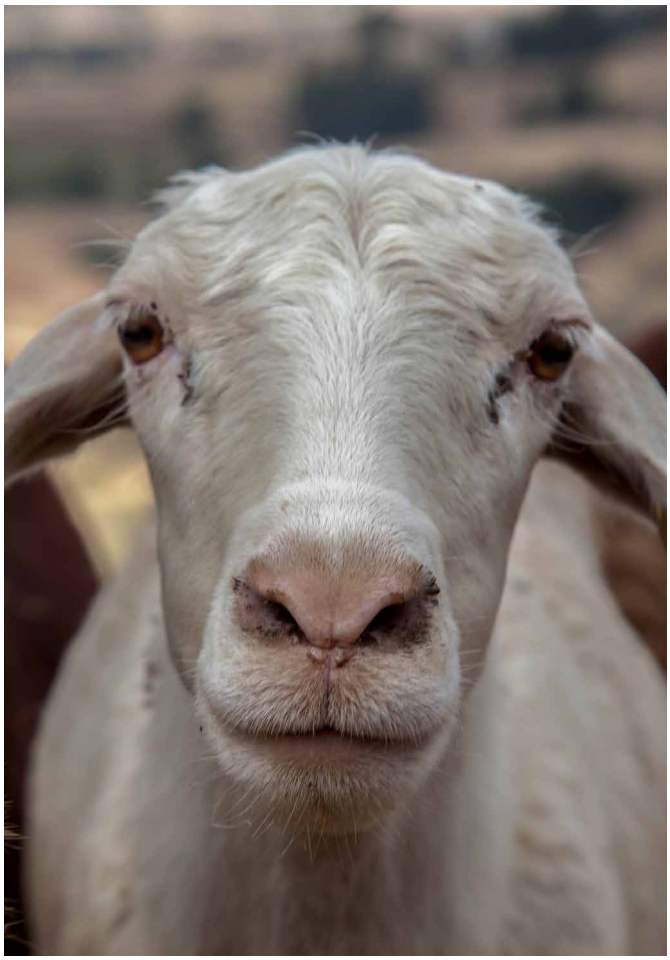


Photo ILRI/Zerihun Sewunet

Ethiopian Sheep

Table 3. Contribution analysis Ethiopia

Early or intermediate outcome	ToC Reflection	KAP survey	Additionality	Necessity
Small Ruminant Producers				
SR producers (male and female, equitably) adopting SmaRT Pack to increase their productivity while lowering their environmental footprint and consequently increasing their income	Some changes in knowledge and practices observed	Confirmed	Yes	Yes
Commercialisation of small ruminant production through sustained value addition, and ensuring availability of inputs and services (like feeds, vaccines, extension support, access to finance)	Capacity building initiatives especially with youth groups have contributed to this	Producers need access to finance to procure resources to sustain value addition	Yes	No
Collective action fostered in the cooperatives to create sustainable market linkages to equal benefits for men and women producers. More women members and women taking on leadership positions in cooperatives. Women active in providing-receiving information, and in decision-making	• Some areas need more support to improve market linkages • Price regulation is weak and could be a threat • Demand affected by COVID-19 and Tigray conflict. • Slaughterhouses operating at 40% due to low supply	• Recognise the potential of youth in service provision • Women participation better when they are part of groups/ cooperatives, and in collectives that have women role holders	Yes	Yes
Development Agents (DAs)				
DAs use extension methods and support implementation of SmaRT Pack	To some extent in specific sites. DAs and enumerators (paravets) learn by doing, from experience on the ground	All producers do not agree – they think DAs focus more on crop extension and/ or are busy with other government duties		
New and current private input suppliers and service providers operating successful businesses	Animal health component is still weak-private sector in the country is underdeveloped therefore this is a big challenge. Project keen on working with private enumerators and/or champion farmers	Not specifically mentioned by SR producers or included in KAP survey		
Promotion and support of implementation of SmaRT package is fully integrated in extension system	Community knowledge exchange within and across villages, needs institutionalisation. Has potential for change if DAs are fully involved and/ or local enumerators associated with the project are formally recognised by the system	Change not visible Can be done if/when the livestock DAs are (made) more available		
Improved uptake of complete package and new farmers outside project move towards SmaRT Pack	Uptake of package by non-project farmers – need to build extension capacity outside project area	Not checked (KAP study only with respondents within project area)		

Policymakers				
Knowledge of higher officials about SmaRT Pack improved and they are supportive	Not discussed	Small changes in the right direction visible. Policymakers expressed ownership of SmaRT Pack		
Integrated SmaRT pack in workplans; packages jointly implemented with regional governments	Not discussed	Small changes in the right direction visible- there are signs of interest. Regional governments interested but not all of them might have the resources to implement SmaRT pack fully		

In the ToC strategy, the project envisaged that the government development agents (basically extension workers) would have and use the knowledge, skills and tools to promote and support the implementation of the SmaRT Pack. They were trained by the project but were not seen as contact points by farmers on information and advice on sheep production and management (KAP survey). In most locations, the DAs could not be involved in promoting SmaRT pack as they were busy with other government duties. Nonetheless, the project was able to develop new and private service providers and/or extension agents in the form of research enumerators and champion farmers to take up identified opportunities for market-oriented services and inputs.

TANZANIA

The priority country project "Agri-entrepreneurship, technology uptake and inclusive dairy development in Tanzania" was implemented in two pilot sites in Tanga and Kilimanjaro regions with the goal of catalysing the uptake of dairy technology packages through institutional approaches that involve inclusive agribusiness models for improved livelihoods of smallholders and environmental sustainability (ToC in Annex). Following a market systems approach, the project interventions were built on the earlier experience of facilitating multi-stakeholder processes through a platform called Maziwa Zaidi, involving pre-commercial dairy market hubs and innovation platforms as mechanisms to steer the smallholder dairy value chain towards more commercial dairying. The interventions focused on capacitating agribusinesses in the dairy value chain (including feed and fodder value chains) to bundle and promote proven dairy technologies and innovations using a market systems approach. A total of 94 agripreneurs were selected, of which 50 were treated as the intervention group, whereas 44 agripreneurs formed the control group. The intervention group underwent a visioning and boot camp as part of their incubation process and thereafter continued to receive coaching and mentoring support from the project. They were introduced to a basket of best-bet technologies and innovations related to animal genetics, feeds and forages, herd health and testing contextually relevant business models. The two groups were monitored to capture the impact of the capacity building processes on their individual business performance and corresponding uptake of innovative dairy packages and their use among farmers leading to increase dairy productivity and income.

Based on the ToC reflections and the KAP survey carried out in Vietnam and the validation workshop with the project team, the following results were observed with regard to changes in two major groups of 'next users', namely a) Agripreneurs and b) Policymakers (Table 4).

Photo ILRI/Ben Lukuyu

Selling milk by the roadside in Tanzania

Table 4. Contribution analysis Tanzania

Early or intermediate outcome	ToC Reflection	KAP survey	Additionality	Necessity
Agripreneurs				
Increased financial support and literacy for entrepreneurs	Too early to say	Agripreneurs face challenges to access finance		
Enhanced agripreneurs' technical and marketing skills	Yes, the capacity building initiatives have contributed to this	Confirmed by the agripreneurs, they see it as value addition and helps build trust (of customers)	Yes	Yes
Improved agribusiness networks	Participation in training activities helped to explore partnerships and network with one another	Most agripreneurs see value in exploring linkages in order to build complementarity of services	Yes	Yes
Agribusinesses have knowledge and skills to deliver integrated packages	Incubation process is complete, agripreneurs yet to apply knowledge and skills	Agripreneurs aware of which innovations can be bundled together	Yes	Yes
Increased agribusiness performance for men women and youth	Some women led start-ups visible; Forage trials are owned by women and youth	Agripreneurs recognise the potential of youth in service provision	Yes	Yes
Policymakers				
Institutionalising evidence-based decision-making by stakeholders	Incubation, bundling activities are creating evidence; being supported by TALIRI, LGAs and international NGOs	Small changes in the right direction visible. Policymakers are now prioritising the dairy sector in their development plans	Yes	No
Improved business enabling environment (policy level)	Not discussed	Collaboration among government extension agents, dairy farmers and other service providers has increased. Increased collaboration seen as a visible indicator of (potential for) change	Yes	No

While it was difficult to assess if the project support was the only causal factor leading to the change, it was evident that the changes were a result of the contribution of several initiatives of different stakeholders directly and indirectly supported by the project. For example, the national banks in Tanzania are dedicated to supporting the growth of the private sector and schemes like the Private Agricultural Sector Support (PASS) to which the agripreneurs were linked to foster their growth. The project sites were also deliberately selected in order to synergise research activities with the development actions (especially BDS activities) of SNV and Solidaridad who were also project partners.

It was evident that following an integrated development research approach motivated the agripreneurs as well as the researchers to address complex challenges in livestock value chains by bundling technologies and/or innovations. The latter required CG researchers to exchange findings and ideas with other disciplinary areas resulting in close collaboration with several other partners from government, NGOs, universities, and the private sector with complementary strengths and experience. Together they operated as Maziwa Zaidi, a multi-stakeholder process/platform for strengthening relationships, coordination, co-learning and co-innovation to strengthen the dairy value chain. On the other hand,

the agripreneurs realised that while some interventions might take longer to achieve results, for their business models to sustain and be profitable in the longer term, it was important for them to create demand for a diversity of inputs and services together. For example, while analysing their business models, the agripreneurs understood that even if offering A.I. services bundled along with other services (such as pregnancy diagnosis, sale of mineral mixture, deworming, mobilising farmers for ECF vaccination) increased operation costs – the gross margin they earned from bundling was also higher. Therefore, it increased the likelihood of such business models being profitable. Likewise, there are indications that the project has made significant contributions towards institutionalising evidence-based decision-making by policymakers in terms of prioritising the dairy sector in their development plans and recognising the effectiveness of bundled technologies and services – the latter being confirmed by increased collaboration among government extension agents, dairy farmers and other service providers.

UGANDA

The objective of the project 'Improving pig productivity and incomes through an environmentally sustainable and gender-inclusive integrated intervention package in Uganda' was to improve pig productivity and strengthen marketing arrangements with a view to increasing the market linkage between aggregators and pig farmers, and by linking farmers to input and service providers (ToC in Annex). The focus was on the following areas:
The project was implemented with 800 households in six sites, each site with 200 sows. Farmers and input suppliers were linked to the digital 'PigSmart' platform, where they had access to information on best practices pig husbandry, disease monitoring and reporting, a feed calculator, a gross margin calculator, and possible market outlets. The pig aggregators, input suppliers, and service providers were trained to strengthen their entrepreneurial capacities and market system development. About 59 aggregators and 24 feed and drug stockists from the project sites were trained as part of market development. The project strengthened advisory services to the value chain actors (farmers, traders, butchers) on herd health and best practices in biosecurity with value chain actors. The health package was delivered by input suppliers (veterinarians). To improve pig quality, awareness of artificial insemination was improved and subsidised artificial insemination was offered.

To overcome the constraint of poor quality pig feeds, the project used a business development services (BDS) approach to develop the capacity of feed compounders to provide better quality feeds. To access good quality forages, farmers were linked with forage seed distributors' network in Uganda.

The project worked with pig aggregator and pork joint owners to stimulate market pull via market arrangements, and where possible also provided linkages to input suppliers as well as other necessary business development services. National and regional pig multi-stakeholder platform meetings were organised to share learnings on productivity enhancement, marketing and environmental interventions. The results are presented in Table 5

Photo ILRI/Chi Nguyen

Community engagement in Mai Son District, Son La Province Vietnam

Table 5. Contribution analysis Uganda

Early or intermediate outcome	ToC Reflection	KAP survey	Additionality	Necessity
Input and service providers				
Volumes of compounded feed increased	Yes. Quality has gone up, but price still high	Yes, only slightly	No	No
Feed compounders self-regulate quality of feed	No. Associations providing incentives, but concerns remain around standards	Feed quality has increased for all feed stockists.	Yes	Yes
Increased trust leads to more investment in value chain	No. Trust is increasing, but not yet leading to more investment	Lack of finance cited as major constraint		
Increased profitability and return on investment for input and service providers	Not discussed, but not likely	Not asked		
Aggregators				
Improved oversight, management of aggregators and value chain, including pricing	Yes. Limited use of digital tools. Most are members of an association	Yes, only slightly	Yes	Yes
Quality and weight standards adhered to, improved hygiene	No. There are no official quality standards yet	Feed quality has increased for all feed stockists.	No	No
Contracts or supplier agreements ('allegiances')	No. Aggregators are unwilling to work with contracts	Lack of finance cited as major constraint		
Increased market opportunities and income through contractual arrangements	No. No evidence of any contractual arrangements	Not asked		
Pig producers				
Farmers can access credit as a result of links and arrangements	No. Interest rate too high and pigs not accepted as collateral	Not asked		
Improved availability of relevant inputs and services	Yes. AI services, compounded feed, veterinary services are available	Not asked. Limited use by farmers of promoted products and services.	No	No
Farmers adopt integrated package	Not discussed	Yes. Limited use by farmers of promoted products and services.	Yes	No
Improved access and use of relevant inputs and services	Not discussed	Not asked		
Improved market organisation	Not discussed	Not asked		
Improved pig productivity	Not discussed. Likely too early to tell	Not asked		
Farmers supply better quality pigs	Not discussed. Likely too early to tell	Not asked		

VIETNAM

In the district of Mi Son, Son La province, CRP Livestock implemented the 'Li-chan' project. This project promoted research-based interventions, to support smallholder livestock farmers in achieving equitable livelihoods, and reducing environmental degradation. The project works across three farming systems, with different socio-economic and ecological characteristics and corresponding with different geographical locations: 1) intensive system with good access to markets and relatively better capacity for innovation (lowlands); 2) mixed crop-livestock systems (mid-lands); and, 3) remote extensive systems with low access to markets (uplands). The project's ultimate goal was that farmers in Mai Son in the three systems, in particular ethnic minorities (both women and men), have: sustainably intensified, equitable crop-livestock smallholder systems, commercialised livestock smallholder production, and an enabling policy environment for sustainable livestock intensification. Four key groups of stakeholders or 'next users' were identified and targeted with interventions: livestock farmers, vets, extension workers, and policymakers (ToC in Annex).

The project implemented a variety of training, community engagement and other activities, including training farmers on genetics and artificial insemination, biosecurity, farm management, feeds and forages, and environmental impacts of livestock keeping. Part of the training approach was practical training, demonstration farms and forage trials. In addition, community interest groups were formed, which were intended to form the basis for enhanced collective action among community members. Vets and extension-workers were also trained on artificial insemination and animal health. Finally, the project used PhotoVoice (a qualitative method used in community-based participatory research to document and reflect reality which uses photography and story-telling) for community engagement, organised an art exhibit, and reached out to the general public through newspapers and other media coverage.

Based on the ToC reflections and the KAP survey carried out in Vietnam and the validation workshop with the project team, the following results were observed (Table 6). Because of the relatively short time-frame of the project in Vietnam (two years from the final proposal), ToC reflections and KAP survey only assessed early and medium-term outcomes.

Table 6. Contribution analysis Vietnam

Early or intermediate outcome	ToC Reflection	KAP survey	Additionality	Necessity
Farmers				
Change in knowledge, attitude, and skills for basket of customised interventions among men and women farmers (all)	Yes	Yes to some degree, not all for AI, some feel they need more training	Yes. Li Chan is only intervention	Yes
Increased awareness of environmental degradation and soils erosion among men and women farmers (all)	Yes	Some, not all relate this to their own practices	Yes. Li Chan is only intervention	Yes
Improved collective action among smallholders and private sector actors (m/w) for marketing of livestock (products) (all)	Improved collective action but not necessarily for marketing	37% member of a collective		
Improved business skills among private sector (value chain) actors (all)	Stopped	-		
Smallholders (m/w) adopt flexible combinations of customised interventions	Not discussed	Some	Yes. Li Chan is only intervention	Yes
Smallholders adopt improved marketing practices	Not a major focus	-		

Input & service providers				
Improved skills and capacity among local vets for disease diagnostics and rational antibiotic use, breeding, AI (all)	Yes some changes observable	Yes	Yes, training content and approach were unique to Li-chan	
Improved skills among extension workers in crop-livestock management, nutrient flows, disease diagnostics and rational antibiotic use, breeding, AI, marketing (all)	Yes	Yes		
New cattle AI service providers have the skills, and knowledge to provide AI services to farmers	More AI workers, coverage?	Skills yes, but not the equipment, good quality semen, credit		
Extension workers support farmers integrated crop-livestock through the bundle of customised interventions	Not discussed	Limited trust of farmers in extension workers		
Local vets diagnose animal diseases correctly more frequently and apply more rational antibiotic use, apply AI, proper breeding practices (all)	Not discussed	Yes	Definitely for AI, would not have happened otherwise. Not the case for diagnostics, this may have happened eventually	
Cattle AI service providers provide AI services to farmers	Not discussed	No, pigs a little		
Policymakers				
Awareness raised among decision-makers about livestock and the environment (all)	Slowly, going from commune up. Also unintended awareness round the participatory approach used by project.	Yes	Yes, policymakers exposed by project.	Yes
Decision-makers at district and provincial level understand the needs for livestock development, including vaccination programmes and antibiotic use	Yes	Yes		
Decision-makers from livestock and environment departments at district and provincial levels have improved dialogue for environmental management	Not yet	-		

CONCLUSION ABOUT THE PRIORITY COUNTRY PROJECTS

Despite COVID-19 and associated delays and travel restrictions, all the priority country projects were able to achieve early outcomes related to increase in knowledge and skills of livestock keepers, extension workers and service providers, improved collective action, and raising awareness among policymakers. While there were some early signs of the acquired skills being translated into improved practices, more time will be needed for them to qualify as intermediate outcomes. Projects where commercialisation was planned as an early outcome depended on linkages with financial institutions to design and create financial products suitable for smallholder producers – this was largely not achieved. This could be because this was beyond the project scope or the technical ability of the team involved, in which case additional external support needed to be sought to address the bottleneck. This led to inadequate time, resources, and priority to identify and forge partnerships with appropriate agencies to achieve this goal. In case of changes envisaged within policymakers as a next user group, across the projects there were small indications that policymakers were using the evidence generated by the projects. However, in hindsight, expecting 'institutionalising evidence-based policymaking' to be an early outcome or 'improving enabling business environment' as an intermediate outcome may have been too ambitious in the given project timeframe (3 years).

In all country projects, it was evident that the changes observed and outcomes visible resulted from processes supported by projects – it is, however, difficult to determine if and to what extent the same changes would have taken place if the project interventions were absent. For instance, fostering collective action or cooperatives to create sustainable market linkages has been mentioned as an intermediate outcome in almost all country projects – however, there are no early outcomes and activities leading up to this – and, therefore, it is difficult to ascertain the role of the projects in making this happen. On the other hand, inducting women as members and role holders, thereby increasing women's participation in the value chains, appears to be a direct outcome of the project interventions. In the subsequent section, we reflect on the implications of this for applying a ToC-based approach.

Photo ILRI/K. Dhanji.

Feeding pigs in Masaka district, Uganda

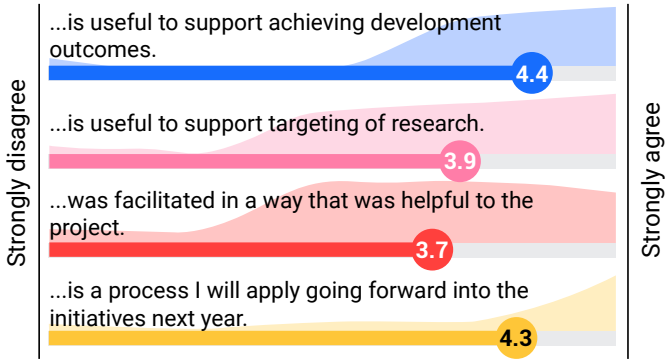
Photo ILRI

DISCUSSION: USING A TOC-BASED APPROACH

Training on genetic selection and breeding, Son La Province, Vietnam

The process of applying a ToC-based approach was evaluated by CGIAR scientists during the validation workshop and the KIT team during a separate session. Overall, CGIAR scientists found the ToC-based approach useful to help achieve development outcomes, but slightly less useful when it came to support the targeting of research, i.e. using the approach to decide on which type of research to conduct (Figure 1).

In the future, the ToC-based-approach for project implementation, adaptation, monitoring and evaluation is likely to be used by One CGIAR[1] in its next phase. Effective use of this approach hinges on good facilitation of this process. The experience with the CRP Livestock priority country projects provides a useful opportunity to learn about how to facilitate this. The remainder of this section provides some of the KIT team's reflections and suggestions of how to improve on this going forward.



Source: Mentimeter during validation workshop, N=19.

Figure 1. CGIAR scientists' perceptions of the ToC-based approach

STAGE 1. DEVELOPMENT/VALIDATION OF THE TOC AND ASSUMPTIONS

Implementation

In three of the four priority country projects, ToCs were already developed, KIT helped to validate these ToCs and add assumptions to them. In the fourth country project, KIT participated in a planning workshop and supported the process of developing the ToC.

Output: ToC diagram (in Visio) and narrative, with assumptions, and table with KAP changes among user groups.

Reflections on implementation

At first, there was insufficient clarity on how to go about the ToC-based process and its goals. The buy-in from the country teams was an important prerequisite to facilitate this stage. KIT did not take sufficient leadership over the process. Getting the different flagships (disciplinary groups) to understand each other and work together was challenging. In particular, there were challenges around identifying and achieving changes in social behaviours. Defining early outcomes in terms of changes in knowledge, attitudes and practices in 'next user' groups was helpful to achieve the behavioural changes expected.

The ToCs developed were not granular enough and the goals were unrealistic to achieve within the timeframe of the projects. Being complete in formulating assumptions in between the different stages of the ToC was also challenging.

Suggestions for future application

To ensure that the ToC is an integral part of the project from the start, including a detailed ToC could be a requirement of proposals. This ToC can (and should) be further refined during the process of implementation and reflection. There is a need to budget sufficient time for the initial planning stage to ensure appropriate contextualisation, and partners and key stakeholders are engaged in this process.

1. From 2022, the new One CGIAR is a reformulation of CGIAR in which its capabilities, knowledge, assets, people, and global presence are integrated, and a portfolio of new initiatives will be implemented. See: https://www.cgiar.org/how-we-work/strategy/

A reality check is needed to ensure the ToC is reasonable for the timeframe and granular enough to be used for monitoring. This means including more gradual changes in the ToC (in smaller steps) and more specific outcomes, rather than lumping outcomes together, making them harder to monitor. A rule of thumb to follow could be not to include two different target groups or different types of results into a single outcome. Another helpful tip to ensure that outcomes are granular enough to be monitored is to develop specific indicators. If an outcome requires several indicators for monitoring progress, then it may not be granular enough. Formulating early outcomes in terms of knowledge, attitudes and practices can be helpful to ensure the social and behavioural changes required are taken into account.

The people facilitating the ToC-based process need to have the mandate, trust and rapport with project teams and partners to make it work effectively. They also need to be somewhat independent of the actual project, and at the same time, there is a need for some embedding of the process in the project teams (i.e. identifying an 'owner' or champion of the ToC-based process within the project team). Training the MEL staff on the process could also be useful.

STAGE 2. REFLECTION AND ADAPTATION OF THE TOC AND ASSUMPTIONS

Implementation

Two virtual reflection workshops were held per country in which project teams participated using MURAL to facilitate the reflections. The online platform was populated with the outcomes and assumptions as listed in the ToCs. Workshop participants were divided in sub-groups each of which discussed a specific next-user group (impact pathway) in the ToC and reflected on the outcomes and assumptions in each pathway in detail.

Output: Adjusted ToCs and action plans.

Reflections on implementation

The frequency and number of formal ToC reflections in the priority country projects was insufficient. There were other regular project meetings where updates were being presented, and these could have been used in a better way for more regular, shorter reflections. There was also a disconnect between the ToC process and other monitoring and evaluation mechanisms/efforts. Better integration could have made the ToC reflections more efficient and less of an extra burden.

Making the ToC reflections useful requires an openness to changes in the ToC and the project work-plan, as well as the M&E framework. However, existing reporting systems (i.e. MARLO, the reporting system used by CRP Livestock) blocked such adaptive management. In addition, the results of the reflections should have been shared in a more structured way by the KIT team through short meeting reports, to enable concrete adaptations to the project plans and ToCs to be made. Reflections and monitoring would also have benefited from more regular visits to the countries, which was planned but made impossible by the COVID-19 pandemic. The reflections should also have focused more on the unintended outcomes and assumptions. If assumptions are seen as conditions for outcomes to emerge, they ought to be monitored as well. In other words, in the TOC reflection, it was important to check whether the assumptions held good during implementation and/or if any assumptions were missing and make adaptations to project plans and ToC based on these reflections. While scaling research was an important driver for these projects to be implemented, there was insufficient capacity for scaling to achieve this. Some assumptions, e.g. creating access to finance , would have required new activities and partners that might have been outside the scope of the teams implementing them. While it is recognized that an LR4D or AR4D project is unable to tackle every single aspect required to make a value chain function, critical bottlenecks that limit wide adoption and use of research outputs will need to be addressed, for impact to be achieved.

Suggestions for future application

Including regular reflections as part of the project plan (milestones) and anchoring this in the implementation and reporting processes, the monitoring and evaluation and learning systems, as well as in incentive structures for project teams, could help to ensure that the ToC-based approach is embedded in ways of working. Reflection sessions, formal and informal, virtual and on-site, should take place on a more frequently for example, every quarter. This allows for projects to be more responsive to (changes in) reality and to new insights. These reflections should be documented with clearly defined implications for implementation. More regular (field)visits would allow for collection of more evidence to understand whether and how outcomes are emerging. For example, the KAP survey tool could have been implemented at more regular intervals with a small sample of project participants to have evidence to feed into the reflections, and consequently revise the ToC.

For these reflections to result in better outcomes, an adaptive management system, i.e. flexibility to change project activities and outcomes based on ground realities and periodic reflection, is required. This should also include space to accommodate emergent and/or unintended outcomes that are conducive or unfavourable to project goals. Such an adaptive management system also requires some flexibility in the allocation of resources to allow for changes to be

made. This also means that achieving the outcomes, as defined in the ToC, needs to be leading over particular research interests. The above-mentioned documentation of regular reflections will also allow for a case to be made to donors for more flexibility.

A set of standardised tools to facilitate the reflection process could help to make them more user friendly: e.g., scaling scan, partnership scan, ToC reflections, KAP survey, etc. ensuring that outputs of such tools are available to be used by all involved. In addition, to ensure that all involved have the capacities needed for systems research, enhancing adoption, and scaling, requires more capacity strengthening.

STAGE 3. EVALUATING PROGRESS ON OUTCOMES AND DOCUMENTING LEARNING

Implementation

The two reflection workshops of Stage 2 were also meant to collect information on the degree to which outcomes were being achieved, from the perspective of project implementers. The KAP survey was developed to assess KAP changes among the next users. A validation workshop was held to validate findings from these two methods and to carry out the contribution analysis.

Output: Contribution analysis.

Reflections on implementation

The contribution analysis methodology was promising but could not be used to its full potential. This would only have been possible if it had been better integrated with the other monitoring and evaluation methods used in the project. The KAP survey tool was a useful tool to assess behavioural changes but could have been consulted on more widely in the research teams to ensure that other data could have been collected, useful to the scientists. At the same time, there is a fine balance between ensuring the interviews were short and collecting sufficient data. The KAP survey should also have been applied at regular intervals to enable monitoring of changes and unintended consequences and using this as evidence for the reflection workshops.

Suggestions for future application

In the inception stage of the project, more thought should go into how different methods for monitoring, evaluation and learning methods are applied, for what purpose and with which frequency. This allows for better linkages to be made between those different sources of information for this purpose. This should then also include wider consultation on the types of KAP outcomes to monitor. The KAP survey (and other tools to measure behavioural outcomes) should be applied more regularly (e.g. at 6-month intervals) with a small sample of next users to be used for tracking of changes and as input into the reflections of Stage 2. For a complete contribution analysis, the evidence from reflections and KAP changes should ideally be combined with quantitative data on (long-term) outcome indicators.

Photo ILRI/Ben Lukuyu.

Moving milk by motorbike in Tanzania

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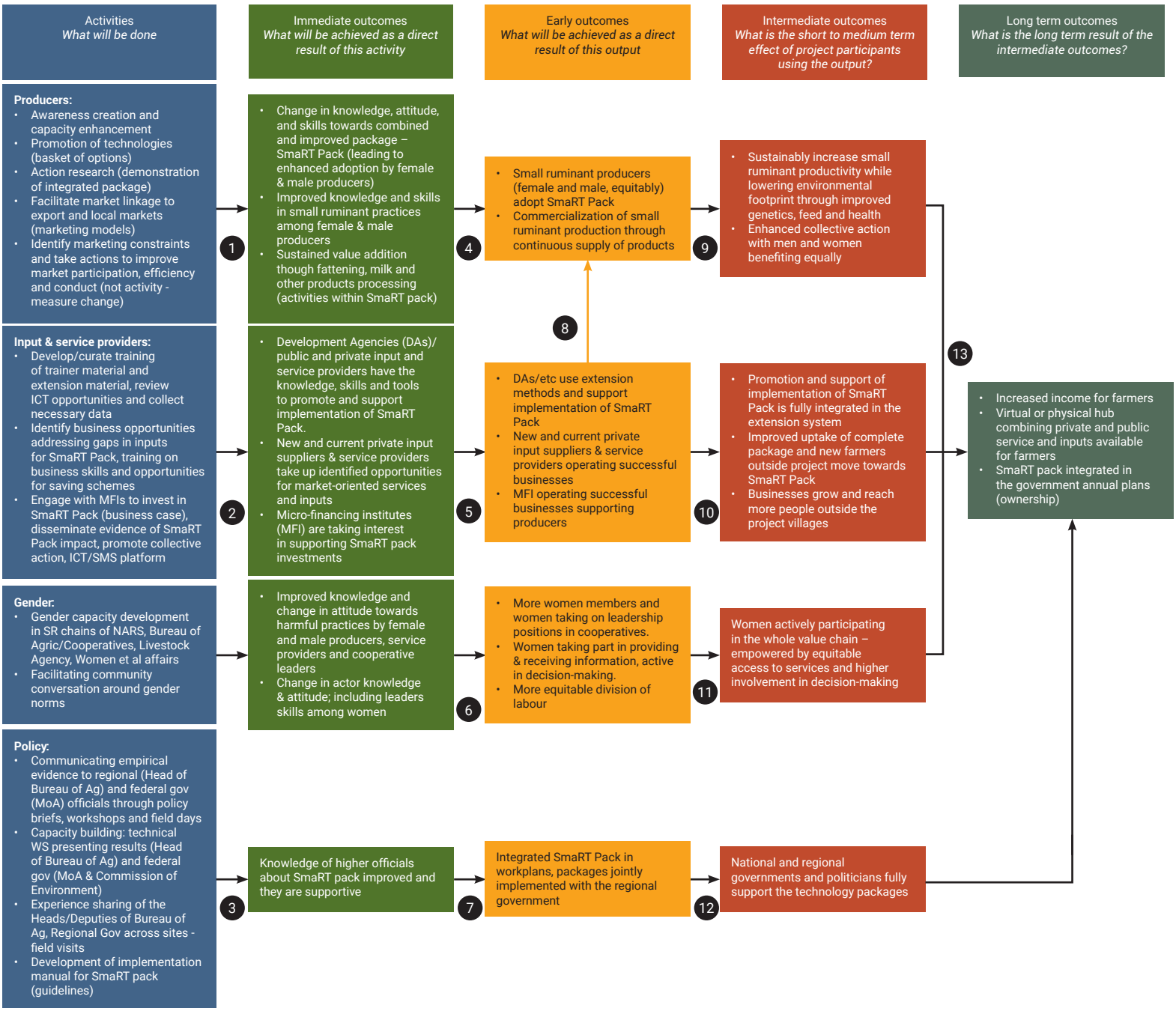
ANNEXES

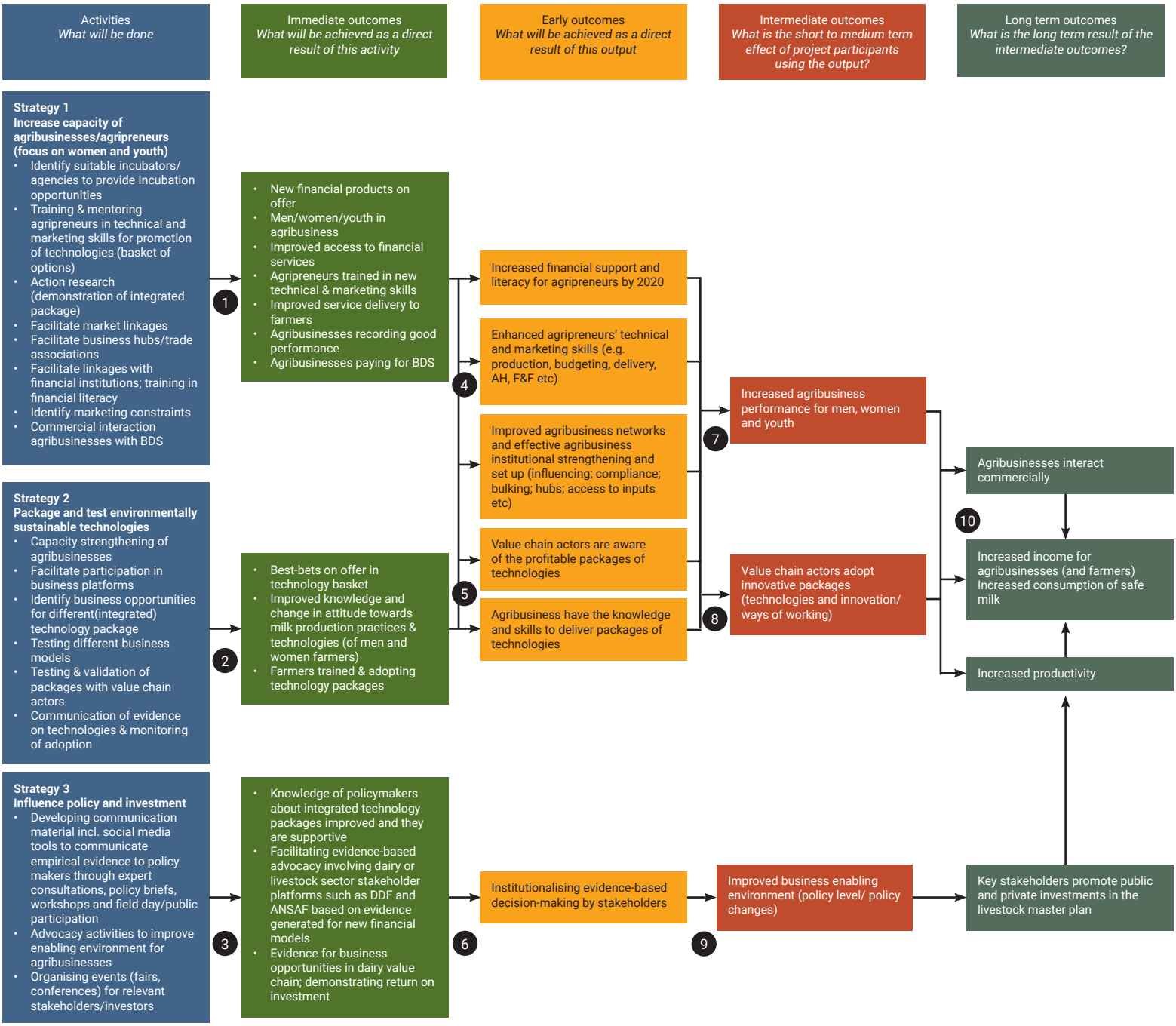
Theory of Change: Ethiopia



Assumptions:

1. Relevant issues have been identified; Interventions can be identified in project timeframe that are able to tackle the relevant issues; Farmer priorities can be addressed by interventions the project is able to offer; SmaRT Pack is providing tangible benefits to producers.
2. DAs etc have the required capacity to apply and provide trainings; Business owners and other service providers, and farmers, appreciate need for coordination of inputs/services; There is a convincing business case for the SmaRT Pack.
3. Environmental and livestock department at district and provincial level are open to dialogue.
4. SR producers are positive about the combined and packaged technologies; Trust exists among SR producers.
5. DAs use new methods and promote SmaRT Pack, they find it useful and are motivated, not in conflict with other training priorities; Input suppliers & service providers see the benefit to their business of supporting SR production; There is effective (and mutually beneficial) coordination among input suppliers & service providers.
6. The existing cultural norms can be positively influenced in the target communities to encourage equitable access; Extension system and community leaders are willing to change.
7. Influential champions willing to promote our SmaRT Pack; Regional government have resources to invest.
8. SR producers engage in DA training; Business owners address needs of farmers.
9. Favourable weather conditions in dry sites; Availability and accessibility of essential inputs and services: feeds, guaranteed quality of drugs, support from research and extension; Functional linkages between producers and market (from gender pathway); Availability and accessibility of essential inputs and services: access to MFIs.
10. Interest of extension system to accept this sort of training material; Input suppliers & service providers see the benefit to their business of supporting SR production; There is effective (and mutually beneficial) coordination among input suppliers & service providers; Business owners address the needs of farmers; Marketing of SmaRT Pack is appropriate; Producers willing to use SMS services; MFIs willing to engage & support.
11. The existing cultural norms can be positively influenced amongst service providers to encourage equitable access; There is equitable access to (and presence of) extension services, input suppliers and service providers.
12. Regional government have resources to invest.
13. Market demand for increased supplied of products; Price will not reduce drastically with higher volumes.

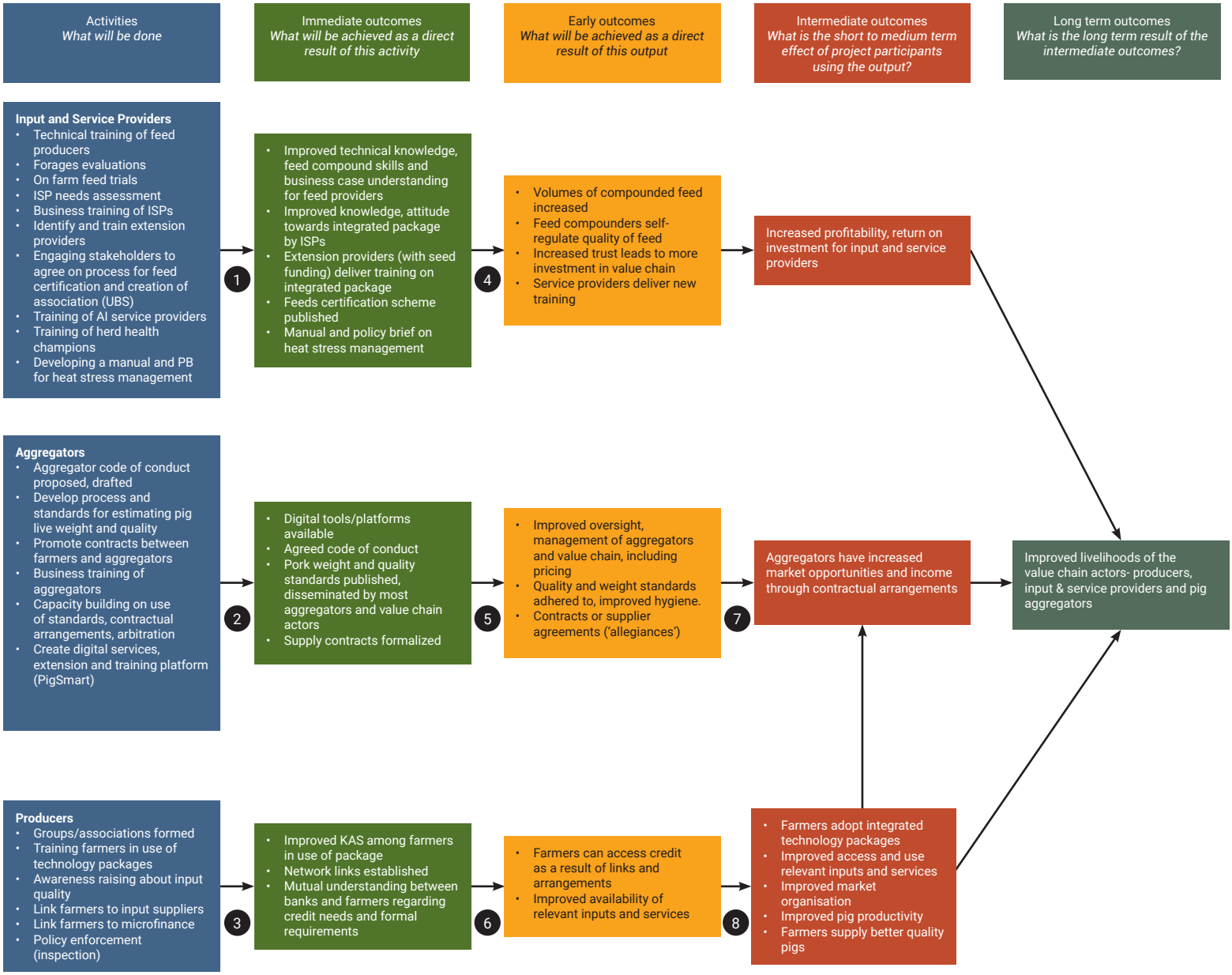
Theory of Change: Tanzania



Assumptions:

1. Relevant technologies that address farmers' needs/ priorities are (tested and) available; Different technologies/innovations are suitable for delivering in an integrated manner; Incubation agencies have the required technical capacity and attitude to apply and provide trainings; Agripreneurs appreciate need for coordination of inputs/ services; Agripreneurs are open to skill development and training in their field of operation; Agripreneurs apply acquired skills to grow their business; There is a convincing business case for integrated technology packages; Financial institutions/ MFIs are open to change and willing to support agripreneurs; Creating new and strengthening existing business linkages will contribute to the growth of agribusinesses.
2. Value chain actors demand and are interested in the technologies and innovations or best-bets that are offered; There is an enabling policy environment for their uptake.
3. There is ability of the decision makers to use tools in generating evidence; Need /demand for evidence-based policy reforms is generated.
4. Agripreneurs are motivated and positive about promoting/marketing the integrated/ packaged technologies; Trust exists among agribusinesses: Agripreneurs are interested in and able to organize in groups; Creating new and strengthening existing business linkages will contribute to the growth of agribusinesses.
5. Agripreneurs (incl. extension workers) are motivated to use new methods and promote integrated technology packages; Agripreneurs see the benefit to their business of supporting smallholder dairy farmer; There is effective (and mutually beneficial) coordination among agripreneurs and (other) value chain actors; Existing business models can be positively influenced to encourage equitable access to integrated technology packages.
6. There is willingness to use evidence in making policy decisions; Policies are implemented/ enforced when credible evidence/robust is available; Resources are available to do promotions, there is policy stability and investors build trust; Regional government have resources to invest.
7. Inclusive agribusiness approach will enhance uptake of technology packages; Incubation/ marketing of integrated packages is well understood by agripreneurs; The selected approaches are effective in creating a conducive environment; BDS training to agribusinesses generates value; BDSs are able to show value propositions to businesses.
8. Value chain actors interested in technology/innovation packages ; Value chain actors willing and able to use integrated technology packages; Agripreneurs see the benefit to their business of delivering integrated (technology/ innovation) packages; Agripreneurs address the needs of farmers; There is effective (and mutually beneficial) coordination among technology providers and agripreneurs; Marketing of integrated packages is well understood by agripreneurs.
9. Policies are implemented/enforced; In 2.5 years it is possible to start change the normative environment equitable access.
10. Integrated technology packages contribute to increased productivity, income and consumption of safe milk; Profitability of agribusinesses is not affected by market fluctuations; Changes in productivity are translated into higher income and milk consumption

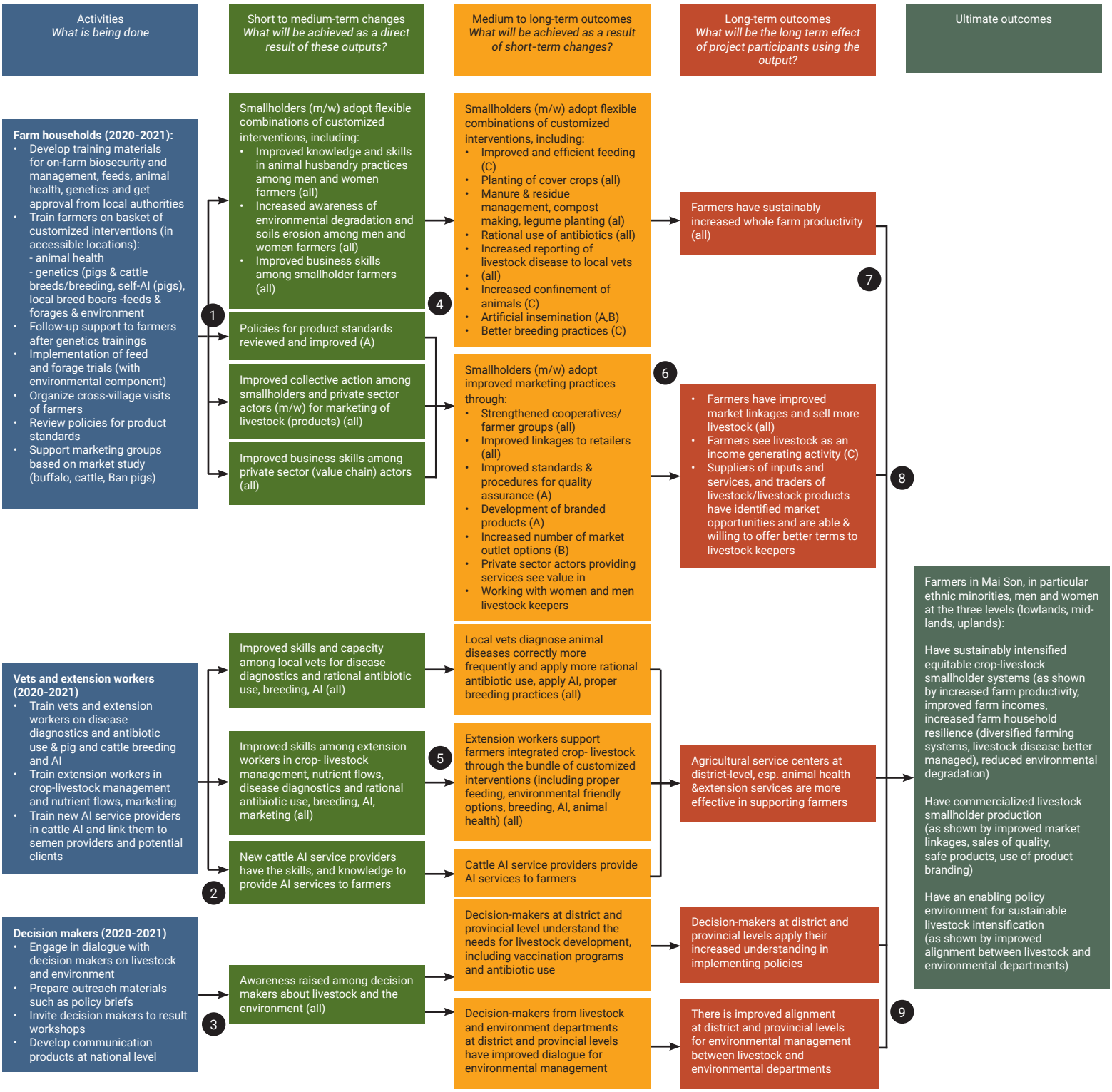
Theory of Change: Uganda



Assumptions:

1. Criteria for identifying service providers leads to correct identification
2. Funding is adequate; Evaluations of forages climate independent; Small feed producers willing to participate despite operating illegally; Goodwill of government and support to formalize feed producers provided; Availability of liquid nitrogen for cooling semen.
3. Buy-in from aggregators for code of conduct.
4. Feed is cost effective; Providers willing to adopt integrated package, and willing to pay for extension services; Providers willing to change the way they do business; Trust between extension/aggregators allowing services on credit.
5. Aggregators will use digital platforms; Likely financial benefits are understood or perceived; Reduction in perceived risks; Pigsmart can attract more players; Users willing to pay for PigSmart digital services.
6. Farmers and traders are willing to adhere to contractual arrangements.
7. Aggregators can access market niches; Aggregators can respond to market demands.
8. Farmers willing to adopt best practices.

Theory of Change: Vietnam



Assumptions:

1. The appropriate partners can be identified; Project meets the interests of local authorities and partners in the long term to ensure sustainability; Consistent bundle of interventions can be identified (linked to issues in the value chain); Market study identifies options that relate to collective action; Farmers are interested in the trainings and interventions; Concept of 'core' farmers includes women; Trainings are accessible to farmers, especially women; Activities are planned taking into account rainy season for accessibility; Activities and training are planned to accommodate participation of women; COVID-19 does not limit markets to operate and trainings to take place; Local authorities support the activities and allow meetings of groups.
2. Vets and extension workers are interested in improving their skills and trainings are relevant to their work; Partner organizations support their staff to be involved in trainings
3. Environmental and livestock department at district and provincial level are open to dialogue.
4. Farmer priorities can be addressed by interventions the project is able to offer; Farmers have the (control over) resources to apply the interventions; Farmers trained have the decision-making power in the household to adopt interventions; There are no other barriers to adoption (e.g. time constraints, policies, etc.); Demand for traditional/ niche livestock products exists that motivates some private sector actors and/ or coop or groups in experimenting with new market linkages.
5. Vets and extension workers have the resources and incentives to apply what they have learned; Vets and extension workers have the support of their organizations to apply the knowledge; New cattle AI service providers have the resources to provide AI services to farmers.
6. The right set of interventions were identified; Markets have not changed radically since the market study (e.g. due to COVID-19)
7. Social and gender norms do not prevent members of ethnic minorities and women from participating in, and benefiting from, improved market opportunities.
8. Demand for traditional livestock products does not decline.
9. Province level policies are flexible/ amenable to change.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