

Climate Smart Agriculture Research and Innovation Support for Dairy Value Chains in Eritrea (CSARIDE)

PIP Process and Planned Interventions

September 2021



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1. INTRODUCTION

1.1 The Context

The livelihoods of more than 63% of the Eritrean population are based on subsistence agriculture, which accounts for less than 20% of the country's gross domestic product (GDP). The performance of the agricultural sector is hampered at national level by macroeconomic, land ownership and other policies which tend to act as disincentives to enhancing productivity. Innovation and change is further held back by an over-reliance on traditional farming practices and a fragile natural resource base resulting from land degradation, deforestation, overgrazing, soil erosion, unsustainable land management practices and loss of biodiversity. These environmental challenges are exacerbated by climate change manifested in climate variability and extremes, recurring drought, depletion of groundwater, and flash flooding, all of which have significant impact on agricultural production and the livelihoods of the rural population. Projected climate change impacts are significant and include a temperature increase above the mean global value, increasing variability in rainfall, more frequent dry spells and more severe droughts. The effects of these impacts on water resources and agriculture will worsen food insecurity.

The sector is also hampered in its development by underdeveloped value chains, which are constrained by deficiencies in input supply (seed, fertiliser, knowledge, equipment, finance, etc.) and market access (price information, aggregation, transport, value addition, trading finance etc.). Moreover, research and innovation systems are not impacting to the extent needed by smallholder farmers and other value chain actors.

Livestock production represents an important element of Eritrean agricultural systems, with almost every rural family having at least one animal, with more than 11 million animals in total. The main livestock are goats, sheep and then cattle, covering almost 9 million head (Table 1). There are also camels, donkeys and poultry. Most of the livestock are local indigenous breeds, with indigenous breed improvement potential. However, Eritrea's livestock productivity remains low compared to the respective potential yields. Domestic food production is estimated to meet only 60%-70% of the population's needs. Accordingly, the country depends on imports to satisfy a large portion of its food needs. In 2017, the value of food imports accounted for 40.3% of all Eritrea's imports

Table 1: Total number of livestock, estimation 2018

Livestock	No of head
Cattle	1927457
Sheep	2128944
Goats	4661785
Total	8718186

Source: MoA

There is little evidence of any rangeland management planning among pastoralist and agro-pastoralist farmers, resulting in overgrazing and degradation of pastures. This situation has worsened in the recent years due to an increase in land use for crop production. Grassland management systems need to be improved and stocking intensity needs to equate with land carrying capacity. Research and extension services will need to focus on these issues.

Livestock production is not specialized; animals are used for different purposes: draught, milk, meat, eggs and meat in case of poultry. Livestock feed is a limiting resource both for intensive and pastoralist systems. Most of the farmers do not grow high quality forage, but depend mainly on cut and carry, or feed derived from crop residues. Later in the season, animals graze on cropland consuming the residues left as fallow, removing the soil protection and organic matter, increasing land degradation and accentuating soil erosion.

Animal health services rely on decentralized health clinics; there is usually one for each Sub-Zoba. Considering that there are approximately 35 villages per Sub-Zoba, 1000 people per village and an average of 20 animals per households in the lowlands, these clinics are not enough. In addition, the health workers from the clinics do not normally go to the villages to vaccinate or treat the animals; instead, they treat animals that are brought to the clinics. This means that either farmers must be close enough to the village to take their animals, or they have a mean of transportation. In effect, this means that most of the farmers are unable to bring their sick animals for treatment. For ruminants, the most common illnesses are: Foot and Mouth Disease, Brucellosis, rinderpest, and mastitis.

Dairy farming in the country has undergone significant change since the attainment of independence in 1991. Traditionally, dairying was mainly confined to urban and peri-urban areas such as Asmara, Dekemhare, D'barwa, Elabered and Keren. However, over the past 25 years, the sector has spread more widely, driven both by supply and demand factors. Production is mainly driven by small-scale producers who own almost 90% of dairy animals and is mainly subsistence in nature. Improved dairy cattle numbers are very low (23,500 in total in 2018) and are kept by 5,700 households, 60% of which are found in Maekel and Dehub regions. These two regions accounted for 65% of the 25.35 million litres of milk produced in 2018.

Average milk production for cattle is low, varying between agro- ecological zone: 1 litre for arid, semi-desert areas; 2 litres in moist highlands and 4 litres per day in sub-humid midlands and moist lowlands. The variations between areas are mainly due to low forage availability, and the total low productivity is also due to unimproved breeds and weak management practices.

Over 50% of the total milk produced is sold informally in the local market and less than 20,000 litres are processed daily by five processing plants. Seasonality of demand linked to the two

big fasting seasons represents a significant challenge for both farmers and processors. The annual per capita consumption of pasteurized milk is about 12 litres, i.e. about 33 ml/capita/day, which is lower than the 200ml recommended by FAO. Assuming that about 75% of the 400,000 Asmara residents require milk, about 45,000 litres of pasteurized liquid milk should be made available in the market daily so as to meet this assumed level of demand.

According to IFAD, while acknowledging the various limitations, there are good opportunities for agricultural development. Lessons from previous investments in the sector have demonstrated that opportunities for agricultural productivity enhancement can be exploited through: a) adoption of proven and affordable technologies; b) multiplication and distribution of improved seeds and animals breeds; c) expanded and improved irrigation; d) innovative approaches to soil and water management and promotion of sustainable natural resource management; e) integration of small ruminants; and f) better management of grazing practices¹. The livestock sector, in particular, has the potential to make a significant contribution to economic development, food security, and poverty reduction in Eritrea. The export of animals and animal products used to provide significant earnings and could again in the future. Although the potential for livestock is high, Eritrea must overcome significant constraints if it is to satisfy domestic needs and penetrate foreign markets.

The Eritrean Government has, in recent years, begun to focus its agriculture strategy on the livestock sector and, in particular, on seeking to address the factors constraining the dairy sector from achieving its potential. A key thrust of the strategy is to formalize the dairy value chain and, considering its health benefits, increase national consumption of processed milk instead of the raw milk currently being consumed. It also seeks to improve value addition, based on the use of the anticipated increases in milk production. National policy also seeks to increase the number of improved breeding cows and further improve their productivity.

Government policy has also focused on developing the knowledge and production capacity of smallholder farmers through the transformation of traditional production systems using modern technologies, including newly-constructed irrigation dams, and initiatives such as the Minimum Integrated Household Package (MIHP)², which has been implemented since 2009 to improve household income and nutrition.

The overall vision of the Government for economic development is set out in the National Indicative Development Plan (NIDP) 2014-2018, which places high priority on exploiting the country's natural resources for sustainable socio-economic development. NIDP foresees

¹ IFAD (2020), Integrated Agriculture Development Project. Project Design Report. <https://www.ifad.org/documents/38711624/40089492/Eritrea+2000002081+IADP+Project+Design+Report+October+2020.pdf/fe65a909-16dd-7a4e-932e-73a9f86cfb7a?t=1602513093000>

²<https://www.dropbox.com/s/mowm8qgvu9z3lkt/Minimum%20Integrated%20Household%20Package%20%28MoA%29.pdf?dl=0>

trade prospects with Middle Eastern and Asian countries. The country's policy and strategic framework for the agriculture sector is included in the following: a) the 2019 National Agriculture Development Policy and Strategy; b) the Five-Year Strategic Agricultural Development Plan 2019-2023; c) the Small and Medium Commercial Farmers Strategy (SMCFS) May 2019. The latter aims to develop, by 2023, farm enterprises that engage in highly productive and profitable agriculture value chains linked to domestic and international markets.

In this positive policy context, Teagasc has been working to develop the Eritrean dairy sector over the past six years. Its Community Pilot Dairy Project in D'barwa, which is supported by the MoA, is an initiative that aims to strengthen local food security through improving access to a reliable source of milk and higher household incomes by implementing a cooperative dairy model that could be replicated across Eritrea. The lessons learned from the pilot project and the experience gained from the MoA's MIHP initiative will help guide the interventions proposed in the DeSIRA project.

Despite these and other interventions, dairy production has declined in Eritrea in recent years due to ongoing structural and institutional weaknesses. Moreover, climate change and increased climate variability are severely affecting Eritrea, through significant impact on crop and livestock production and rural livelihoods generally. Unfortunately, mitigation options are limited, in part by inadequate investment in irrigation, despite the potential for irrigation development in several parts of the country. Significant reductions in already low crop yields are projected for most staples across the country³ due to climate change, thereby exacerbating a historic trend of declining land productivity.

Hence, every opportunity will be need to be explored to sustainably increase productivity and, more generally, strengthen resilience of smallholder agriculture and food systems. Adaptation to climate change is essential in view of changes in rainfall patterns and increasing temperatures in the country. This will require innovative and transformative measures to assist the sector to deal with the effects of current and projected change in climate patterns and other sustainability, technology, market and social constraints. Climate Smart Agriculture (CSA) has been identified as a viable alternative to provide the necessary solutions.

1.2 The DeSIRA Initiative

It was precisely to address these challenges that the EU launched the Development Smart Innovation through Research in Agriculture initiative (DeSIRA) in 2018. The objective of the initiative is to contribute to climate-relevant, productive, and sustainable transformation of agriculture and food systems in low and middle-income countries. DeSIRA aims to put more

³<https://www.ifad.org/documents/38711624/40089492/Eritrea+2000002081+IADP+Project+Design+Report+October+2020.pdf/fe65a909-16dd-7a4e-932e-73a9f86cfb7a?t=1602513093000>. Annex 5.

science into development considering that the solutions to achieve the Sustainable Development Goals (SDG) are context specific.

Among the underlying principles of DeSIRA are:

- Research for innovation needs to combine **fundamental research and participatory or action research based on a plausible theory of change** in order to achieve desirable impacts at scale. This means that the research and knowledge transfer process must be conducted **in partnership with stakeholders** and be underpinned by other activities including **capacity building**.
- To support innovation processes, there is a need to **strengthen the capacity of researchers and research organizations** to design, monitor and assess research to achieve impacts and address the urgent challenges. There is also a need **to strengthen the capacity of a much larger group of actors to innovate**: farmers, farmers' organizations, local communities, NGOs, private sector, and public sector.
- The top-down model of knowledge transfer is no longer valid to address the systemic changes needed to promote sustainable food systems in a context of rapid transitions. Because innovation is a complex process, including technical, organizational and institutional dimensions, and requiring the mobilization of a wide range of actors (farmers, farmers' organizations, NGOs, advisory services, private firms, etc.), **public policies need to rely on multi-stakeholder approaches to produce new knowledge** drawing on both scientific and local knowledge, mobilizing resources and synergizing competencies.

1.3 The CSARIDE Project

The CSARIDE project will promote market-led agricultural development, building on the experience of the Irish partners who have been working on a pilot dairy project in Zoba Dehub over the past eight years. The pilot project will be fully absorbed into CSARIDE with the overall objective of promoting inclusive, sustainable and climate-relevant transformation of the Eritrean dairy value chain to enhance food and nutrition security, reduce poverty, create job opportunities for young people, and promote resilience to climate change while mitigating greenhouse gas emissions.

Following the signing of a contract between the EU and Teagasc-the lead applicant-the project formally kicked off on 3rd February 2020, and will continue for a period of 52 months. The total budget is €4,250,000, of which the EU contribution is €4,000,000.

The project will target the following dairy value chain actors and the key public sector support agencies:

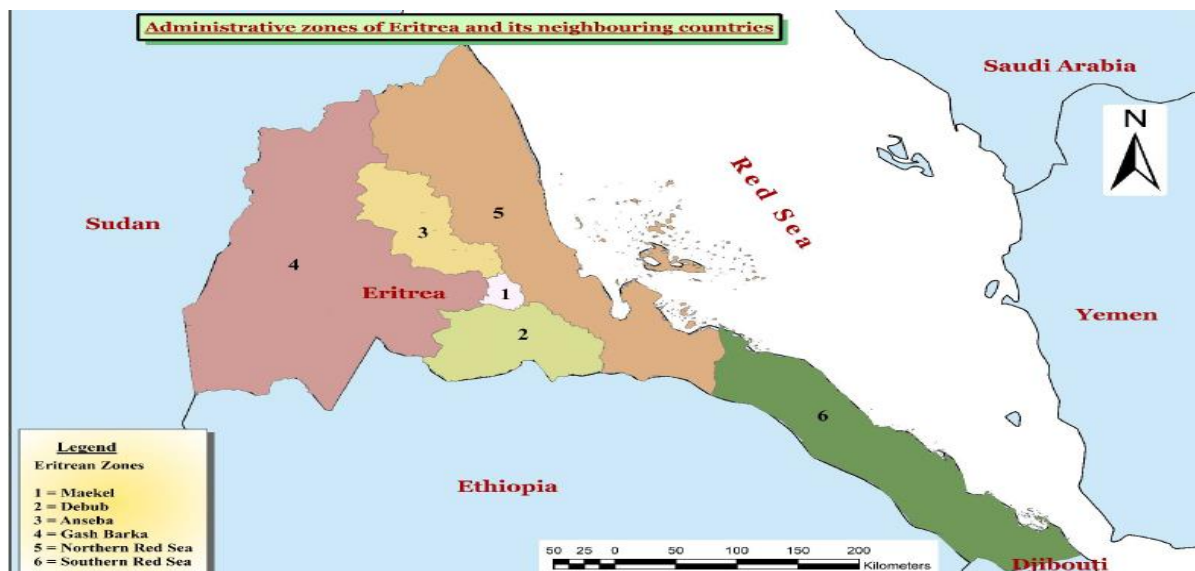
1. resource-poor dairy farmers;

2. other dairy value chain actors, including private and cooperative input and output market agents and service suppliers, milk collection and processing entities and dairy farmers' associations, as well as AI and veterinary services;
3. small-scale entrepreneurs supporting the dairy value chain; and
4. public-sector bodies, including the Ministry of Agriculture (MoA) and its agencies/departments, i.e. National Agriculture Research Institute (NARI), Agriculture Extension Department (AED), and AI service; Hamelmalo Agricultural College (HAC); and regional governments (Zobas).

Moreover, the project will particularly focus on empowering and creating opportunities for women in agriculture, livestock and agribusiness.

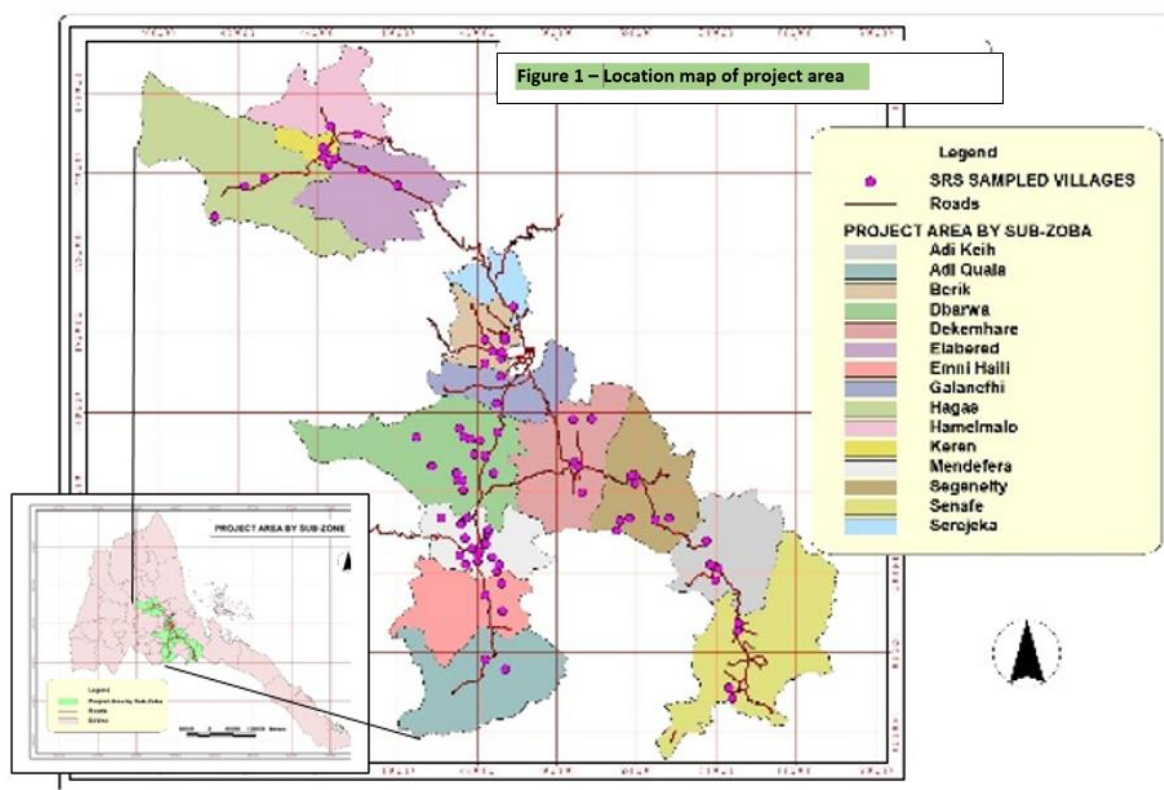
A further key aspect of the project will be to focus on capacity building in the various public sector support organisations, initially to strengthen their capacity to effectively manage and coordinate large development projects. They are constrained in this regard by a history of little investment in such projects; lack of resources such as transportation means for field visits; and limited access to internet and electricity, which affects the use of ICT-based management and information systems. These constraints will inevitably lead to a slow build-up of project actions in the early years, but with more effective implementation in the later years. A second element of public sector capacity building in the longer term will be to strengthen the potential of the MoA agencies to support the development of a productive and profitable agriculture sector in Eritrea.

Figure 1: Administrative regions of Eritrea



CSARIDE will focus on the entire dairy value chain from farm to market in three Zobas, namely Debub, Maekel and Anseba (Figure 1). (These are the main dairying areas in the country). The primary target population is about 1,573 dairy farmers from 208 villages spread across 15 sub-Zobas of the three target regions. The project will also target about 68 commercial service/input suppliers in the value chain as well as engaging with all of the key State support agencies. Figure 2 presents map of the project target area.

Figure 2: Location map of project areas



To achieve its objectives, the project has brought together national and international partnerships involving:

- EU-based research organisations-Teagasc (Ireland) and LUKE (Finland)
- Irish universities-University College Dublin (UCD) and University College Cork (UCC)
- Irish NGOs-Self Help Africa (SHA) and Vita
- Eritrean Ministry of Agriculture (MoA)-including its research institute (NARI), extension service (AED), AI service (AI), veterinary, animal health and laboratory services
- Local government in the three study Zobas
- Hamelmalo Agricultural College (HAC)
- Eritrean Women in Agri-Business Association (EWAA)
- International consultants.

The project will build on and complement ongoing MoA actions in the area of dairy and livestock development, as well as linking in with existing and proposed internationally-funded development projects in Eritrea, in particular the proposed IFAD Integrated Agriculture Development Project⁴. The project teams will also work closely with the EU Delegation in

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<https://www.ifad.org/documents/38711624/40089492/Eritrea+2000002081+IADP+Project+Design+Report+October+2020.pdf/fe65a909-16dd-7a4e-932e-73a9f86cfb7a?t=1602513093000>

Eritrea (EUDE), ILRI, FAO,⁵ all private sector value chain actors, including Hagaz Agro-Technical School, and civil society organisations. As part of the capacity building element of the project, the teams will collaborate with universities in Africa and Europe. At present, the graduate school of the University of Nairobi has enrolled a number of MoA staff funded under DeSIRA in its MSc programme.

2. THE PIP

2.1 PIP Process

In accordance with the terms of the grant contract between the EU and Teagasc, the PIP was scheduled to be completed over the four-month period of February to May 2020, with input by international project staff and consultants in partnership with MoA and Zoba staff. In preparation for the task, the MoA seconded a staff member to fill the role of Project Manager (PM) and assigned three further staff members to progress the formation of the National Project Management Team (NPMT). The Minister seconded four further staff members to the NPMT in August 2021, thereby filling all of the remaining roles in the team.

The PIP process commenced with the holding of an inception workshop in Asmara on 25th February 2020 attended by 60 delegates, including project partners and associates, staff from FAO, UNDP and the EU Delegation. The principal output was an agreed schedule of actions intended to culminate in the submission of the PIP document and Year 1 work plan and budget by the due date. Among the specified actions, it was agreed that the NPMT would take the lead in setting up project teams in the three study Zobas and that the Eritrea-Ireland Development Programme Office (EIDP)⁶ would provide all necessary accounting, logistical, recruitment and procurement services to the project.

In advance of the workshop, the project team met informally on a number of occasions in Asmara and team members also met with farmers and other value chain actors to build on their knowledge and understanding of the value chain. The project team also held meetings with MoA officials, the EUDE and FAO. Ministry officials expressed their support for the project, noting that it complemented their own initiatives and those of international donors. The Minister, who was out of Asmara during this period, conveyed his strong personal support for the project.

On 26th February, Dr Stephen Onakuse (UCC) facilitated a workshop on value chain mapping and presented a methodology to be used by the Zoba teams in their planned value chain mapping work. Guided by the NPMT, introductory/consultative meetings were held with value chain actors in each Zoba to introduce the project and secure their interest and support.

⁵ FAO completed a complementary DeSIRA-funded project in 2021: ***TAP-FAO DeSIRA: Developing capacities in agricultural innovation systems: scaling up the Tropical Agriculture Platform Framework.***

⁶ EIDP Office was established in Asmara in 2016 following signing of strategic agreement between Government of Eritrea (GOSE) and Irish partners-Teagasc, SHA and Vita. The EIDP Office represented replaced the Vita office which had existed for a number of years previously.

The Zoba teams also commenced the process of selecting study villages and farmers using agreed criteria and they collected some initial value chain data.

Unfortunately, the teams had to stop work on the project in mid-March due to the national lockdown resulting from the detection of positive cases of Covid-19 in the country. In particular, the lockdown prevented the team from proceeding with the baseline survey and other data collection actions. These delays had very negative consequences for the PIP process.

As a result of the disruption caused, the Project Co-coordinator wrote to the EU Delegation on 28th April requesting a one-month extension to the PIP phase. The EU agreed to grant the extension request on 30th April. While field work came to a halt in March, both the international team and the NPMT continued to develop other aspects of the PIP, drawing on a range of outputs which were completed prior to the lockdown.

2.1.1 Self-assessment reports and implementation plans

In preparation for the PIP process, the following State organisations, in association with the NPMT and MoA, prepared self-assessments of their capacities and needs:

- NARI (**Annex 1**)
- Extension Service (**Annex 2**)
- AI service (**Annex 3**).

In addition, the ministries in the ~~three-two of the target study~~ Zobas (Anseba and Dehub) prepared assessments of their dairy value chains. (**Annex 4**).

Building on the foregoing self-assessments, the international team led in the preparation of the following draft implementation plans:

- Strengthening the National Agricultural Research Institute (NARI) (**Annex 5**)
- Developing the Extension Service (**Annex 6**)
- Developing the curriculum, teaching function, farm and laboratories in Hamelmalo Agriculture College (**Annex 7**)
- Strengthening other MoA services (**Annex 8**)
- Interventions to strengthen the entire dairy value chain (**Annex 9**)
- Introducing dairy commodity platforms to facilitate stakeholder input (**Annex 10**)
- Delivering a programme on capacity development and knowledge management (**Annex 11**).

To finalise the PIP process, the team developed plans/templates/documents:

- Gender policy (**Annex 12**)

- Communications plan (**Annex 13**)
- Tender document for baseline study (**Annex 14**).
- Revised Risk Register (**Annex 15**).

A summary of the plan was prepared and forwarded for comment to senior MoA officials, including the Acting Minister. It was also circulated to project partners (international and local).

2.2 Completion of the PIP

In view of the ongoing lockdown in Eritrea and its negative impact on the PIP process, a further Zoom meeting was held with the EU Delegation on 11 June at which it was agreed to postpone further work on the PIP pending the lifting of the lockdown and to submit to the EUDE the draft documents mentioned above along with an overall summary of progress and proposals for starting the implementation phase. This preliminary PIP draft and related documents were submitted to the EUDE on 30th June 2020.

With the ending of the lockdown and the easing of restrictions on internal travel in Eritrea, the consultant hired to undertake the baseline survey commenced field level data collection at the beginning of May 2021, and completed all field work at the end of June 2021. The consultant submitted the draft report in early August, and with the availability of this detailed survey data, the project team completed this final version of the PIP in September 2021.

3. PROJECT DESIGN

3.1 Context and Rationale

Teagasc, along with its Irish NGO partners Vita and SHA, has been one of the few international development partners that remained active in the Eritrean agricultural sector. The Irish organisations have been supporting the country's transition from reconstruction to structured development through the implementation of a range of development projects, including a dairy development and seed potato projects.

The potato seed multiplication initiative aims to provide rural and struggling farmers with better-quality seed, climate-smart agronomy training, storage facilities and new technologies, and a route to viable markets where they can sell their seeds and crops. This programme is highly successful in enabling communities to build resilience to climate change and establish secure, sustainable, and thriving livelihoods that lift families out of poverty. The dairy farming project is helping to improve the knowledge and management capacity of model dairy farmers through transfer, sharing and dissemination of new technology and knowledge to farmers through the adoption of 'group technology circles'; and transfer of practical knowledge from Irish dairy farm specialists to model small-scale and medium-scale dairy farmers. In both projects, a priority emphasis has been placed on capacity building, ranging from short-term skills training to PhD level training.

As mentioned earlier, while dairy farming in Eritrea has expanded over the past 25 years, production continues to be mainly subsistence in nature, normally involving small-scale producers who own almost 90% of dairy animals. The Government's national agriculture strategy seeks to address the factors constraining the sector from achieving its potential. A key thrust of the strategy is to formalize the dairy value chain and, considering its health benefits, increase national consumption of processed milk instead of the raw milk currently being consumed. It also seeks to improve value addition, based on the use of the anticipated increases in milk production. The national dairy sector aims at both increasing the number of improved breeding cows and further improving their productivity.

The DeSIRA project aims to support the Ministry of Agriculture (MoA) in transforming the smallholder agriculture sector. Using a value chain development framework, the project will work with public and private sector partners to develop selected dairy value chains in three regions (Debab, Maekel and Anseba) through introduction of integrated technological and institutional innovations. Such a framework recognizes that value chain actors add value at different stages of the value chain and that individuals and groups provide inputs and services to producers and other users. This approach is aligned with the 'Small and Medium Commercial Farmers Strategy (SMCFS)' operated by the Ministry of Agriculture⁷.

"The Vision of the SMCFS is to ensure the prevalence and development of sustainable and more prosperous SMCFs that in turn contribute to the achievement of the national objective of food and nutrition security, employment generation, poverty elimination, export promotion, rural transformation and economic growth."

The rationale and justification for this project is therefore based on: a) the need to consolidate and leverage the successful investments made over recent years to improve agricultural and livestock sector performance as a means of rural poverty reduction and import substitution; b) support the country's agricultural development plans; and c) strengthen the integration of mainstreaming themes, in particular, climate change adaptation, women and youth empowerment, improved nutrition, enhanced resilience of livelihoods and food systems, social inclusion and capacity building.

This project, therefore, proposes a package of differentiated and innovative interventions suited to the agro-ecological conditions and topographical uniqueness of the Eritrean rural areas. Planned interventions will focus on strengthening rural livelihoods in dairying. This will build on the experience to date and will be informed by the work and knowledge residing within the sector, the lessons learned from previous and ongoing projects in the country, as well as from other development projects (principally LIVES Ethiopia)⁸ and the wider international research literature.

⁷ MoA (2019) Small and Medium Commercial Farmers Strategy

⁸ <https://www.ilri.org/research/projects/livestock-and-irrigation-value-chains-ethiopian-smallholders-lives>

3.2 Logical Framework

Ultimate outcome:

Increased economic benefits, enhanced food security and strengthened capacity to deal with climate change among male and female small holder dairy producers and other dairy VC actors in the Dehub, Maekel and Anseba Zobas through the development of well-functioning dairy value chains.

Intermediate outcomes:

The ultimate outcome will be achieved by way of two linked intermediate outcomes:

- Increased use of **improved knowledge and capacity** by dairy VC actors to develop gender sensitive and environmentally sustainable market-oriented dairy value chains
- Increased adoption of gender sensitive and environmentally sustainable market-oriented **value chain interventions** by dairy VC actors.

Immediate outcomes:

Intermediate outcome will be achieved through four immediate outcomes, which take account of gender equality and environmental sustainability:

1. Improved capacity of dairy VC actors to participate in improved gender-sensitive and environmentally sustainable VC development models in project areas – referred to as **capacity development**
2. Increased access to knowledge by dairy VC actors in project areas on improved gender-sensitive and environmentally sustainable VC development models, referred to as **knowledge management**
3. Increased access to project-generated gender-sensitive and environmentally sustainable results and lessons learned by VC actors outside the project area – referred to as **promotion/scaling out/documentation and monitoring**
4. Increased access to improved gender-sensitive and environmentally sustainable VC interventions by dairy VC actors in the project areas – referred to as **value chain development**.

Outputs /activities:

At the outset, the project team will ascertain gaps in knowledge and skills of VC actors and service providers in order to design relevant capacity building interventions (outcomes 1 to 3). The project will collaborate with the Research and Extension Unit (AGDR) of the FAO to use the Tropical Agriculture Platform⁹ (TAP) common framework approach for demand-

⁹ <https://www.cabi.org/Uploads/CABI/about-us/4.8.5-other-business-policies-and-strategies/tap-synthesis-document.pdf>

driven and effective capacity development. The common framework proposes a five stage approach (galvanizing commitment, visioning, capacity needs assessment, capacity development strategy and implementation). The approach is applicable at the three levels of capacity development (i.e. individual, organizational and enabling environment). The team will identify progress and new gaps annually and incorporate these into the proposed annual work plans.

The project will use participatory approaches to match potential generic interventions with broadly defined diagnosed problems and/or opportunities with a view to underpinning the development of the value chain (outcome 4), including primary production, supply of inputs and services and processing and marketing to add value. Participatory approaches will also be used in the implementation in which detailed interventions will be designed with the stakeholders using diagnostic tools. All interventions will be documented (outcome 4) through diagnostic, action and impact research.

The complete logic model is shown in **Annex 16**

3.3 Reach and Beneficiaries

Details of the direct project beneficiaries, disaggregated by gender and Zoba, are provided in the following pages. Additional information and targets are included in the Logical Framework. The indirect beneficiaries include: unemployed youth who will benefit from additional employment opportunities flowing from a more productive farming sector and stronger overall value chain; consumers of the new high-value dairy products who will enjoy greater availability of more cost-effective, quality products; and the Eritrean national economy which will benefit from increased employment, additional food exports and reduced food imports.

3.3.1 Private sector

The largest group of value chain actors who stand to benefit from CSARIDE are smallholder dairy farmers in the three selected Zobas. Table 2 lists all target sub-Zobas with the targeted number of villages and households.

Table 2: Distribution of target dairy farming households by village and sub-Zoba

Zoba	Target S/Z	Targeted Villages	Targeted HHs
Anseba	Hagaz	5	46
	Keren	14	88
	Hamelmallo	5	63
	Elabered	9	60
Debub	Dekemehare	11	162
	Adikeyih	18	72
	Senafe	9	45
	Mendefera	32	367
	Emnihaili	14	35
	Segeneiti	11	85

	Dbarwa	35	253
	Adiquala	12	71
Maekel	Berik	10	141
	Serejeka	9	27
	Galanefhi	14	58
		208	1573

Source: Baseline

On average, between 10 – 15% of these households are expected to improve their dairy enterprise (at the intermediate outcome level) through CSARIDE-supported value chain, capacity development and knowledge management activities.

Table 3: Project target area dairy farmers and number of dairy cattle owned by sub-Zoba *

Targeted S/Z	Smallholders		Medium Scale Farmers (MSF)		Large Scale Farmers (LSF)		Total Dairy Farmers within Targeted Area	
	No of dairy farmers	No of dairy cattle	No of dairy farmers	No of dairy cattle	No of dairy farmers	No of dairy cattle	No of dairy farmers	No of dairy cattle
ZOBA ANSEBA TOTAL	182	393	60	597	15	498	257	1488
ZOBA DEBUB TOTAL	964	2216	105	925	21	877	1090	4018
ZOBA MAEKEL TOTAL	130	437	73	703	23	1069	226	2209
PROJECT AREA - TOTAL	1276	3046	238	2225	59	2444	1573	7715

*Categories based on size of herd (stratum)

Table 4: Participation of women in dairy value chain by Zoba (%)

Zoba	Farm HH			
	MHH	FHH	Companies (orgs)	Total
Debub	937	143	10	1090
Maekel	197	28	1	226
Anseba	225	19	13	257
Total	1359	190	24	1573

Source: MoA

Female-headed households (FHHs) account for 12.1% of all farm households (Table 4). Comparing the proportion of FHHs among the category of dairy farmers, the baseline survey results (Table 5) show that 85.7% (N=12) of the total female-headed are smallholding farmers and only 14.3% (N=2) are medium scale farmers. All large scale dairy farms (N=5) are headed by males. CSARIDE will aim to increase the involvement of women by 25%.

Table 5: Gender of household heads by size category

Dairy farmers category by size	Count	Gender of the Head			
		Female (FHH)		Male (MHH)	
		No	%	No	%
Smallholding farmers	101	12	85.7	89	80.9
<i>Rural</i>	72	9	75.0	63	70.8
<i>Peri-urban</i>	10	1	8.3	9	10.1
<i>Urban</i>	19	2	16.7	17	19.1
Medium scale farmers	18	2	14.3	16	14.5
Large scale farmers	5	0	0.0	5	4.5
TOTAL	124	14	11.3	110	88.7

Source: Baseline

Service/input providers deliver commercial services and inputs to other value chain actors which enables them to add value to their product. These are suppliers of physical inputs and services such as seed/seedlings, forage and other feeds, pump repair, veterinary drugs, agro-chemicals, trading, processing, wholesaling and retailing of milk and milk products. Details are presented on Table 6. These actors will benefit indirectly from project activities as a result of the expected increase in production. The project will directly influence 75% of such actors (25% female) (immediate outcome) performance by facilitating linkages with the producers through training, coaching and mentoring and involvement in knowledge sharing activities.

Table 6: Commercial service and input suppliers in the dairy value chain

Zoba	No. service/input suppliers				Total
	Input suppliers (e.g. seeds, chemicals, feeds)	Milk collection/cooling points	Milk processors	Others (e.g. animal health)	
Debub	Agricultural input supply centres of MoA, D'barwa feed processing, Mother feed processing, Debub dairy cooperatives feed processing (15 in total)	Mendefera milk collection & cooling centre (MCCC), D'barwa MCCC, Dekemhare MCCC (3 in total)	Azieb Dairy, ZAC Dairy, Mengis Dairy (3 in total)	Sub-regional clinics (12) and one regional laboratory (13 in total)	34

Maekel	Agricultural input supply centres of MoA (4) and one private agric. input distributor (5 in total)	0	Asmara milk factory (AMF), Asmara Meat and Dairy Products (AMDP), Mantay Dairy, Freweini (Laza), Mos Dairy, MY Dairy, Abier Dairy, Barka Dairy (8 in total)	Sub-regional clinics (3), one private veterinary pharmacy and one National Animal & Plant Health Laboratory (5 in total)	18
Anseba	Agricultural input supply centres of MoA (3 in total)	Encode MCCC (1 but not operational)	Elabered, HAC (not operational) and Hagaz (3 in total)	Sub-regional clinics (8) and one regional laboratory (9 in total)	16
Total	23	4	14	27	68

Source: MoA

3.3.2 Public sector service providers

A key objective of CSARIDE will be to enhance the performance and effectiveness of the public sector institutions providing services to the dairy value chain. These include NARI, AED, Cattle Breeding Centre, AI service, Animal and Plant Health Diagnostic Centre, and Hamelmalo Agricultural College. The focus of this work will be on the organisational strengthening of the research and development capacity of NARI so that it can conduct demand-driven research, generate knowledge, technologies and innovations to support the improvement of the dairy value chain; reorienting the AED towards a demand-driven, market-led and CSA focus; and supporting HAC through curriculum development and upgrading of laboratory and farm facilities so that it is equipped to train graduates and post graduates to support a changing agri-food industry.

A total of 447 public sector staff are involved in dairy value chain development in the project areas and will be targeted for critical capacity building over the course of the project. See Table 7 for details.

Table 7: Gender disaggregated public sector staff to be targeted by CSARIDE

Area	Staff Numbers (no. females in brackets)				Total	% Female
	NARI	Extension	HAC	Others		
National	14 (6)	9 (4)	62	15 (1)	100 (11)	11.0
Debub	0	203 (76)	0		203 (76)	37.4
Maekel	0	71 (41)	0		71 (41)	57.7
Anseba	0	73 (0)	0		73 (0)	0.0
Total	14 (6)	356 (121)	62	15 (1)	447 (128)	28.6

Source: MoA

3.3.3 Geographical areas

The project area is defined as the geographical locations in which dairy value chains will be developed. During the PIP, target intervention areas were identified within each of the three selected Zobas involving the use of objective criteria and a participatory process.

Besides the targeted intervention areas, the project will also influence dairy development in learning districts/zones, which are closely linked to the project areas through irrigation schemes and government programmes. Moreover, as CSARIDE aims to disseminate the approaches, methods, tools and lessons learned beyond the project's immediate public and private beneficiaries, activities will be undertaken that collate, compile, promote and disseminate these outputs to a much wider audience. These activities will influence regional and national policy and decision-makers elsewhere in Eritrea and in national and international research and development agencies outside of Eritrea.

3.4 Gender Equality Strategy

Globally, women make important contributions to the agricultural and rural economies. In Sub-Saharan Africa, about 50% of the labour for small-scale farming systems, which produce about 60-70% of the food in the region, comes from women. Women play a major role in all phases of the dairy value chain from production, to processing and marketing and through to retailing. As against this, however, women's access to and control over productive resources is greatly constrained due to inequalities derived from patriarchal norms.

In Eritrea, women contribute a considerable amount of labour in the agricultural production system, estimated to average 80%. Even though both men and women work together in farming, the gendered division of labor is prominent. For example, in livestock production,

men tend the livestock, but women do the milking, conduct traditional milk processing, sell Ghee and keep poultry.

There is a growing concern that women and other disadvantaged groups may miss out on the benefits arising from the enhancement of market-oriented production and marketing of high-value commodities. If this gender concern is not properly addressed, it will impact the long-term sustainability of the anticipated growth and transformation of the agricultural sector in Eritrea. Gender concerns will, accordingly, be a primary concern of the CSARIDE project implementation phase, with the overall objective of empowering women and other groups to participate more fully in all aspects of the dairy value chain and thereby contribute to the attainment of project outcomes and outputs.

3.4.1 Policy issues and gender targets

Apart from the importance of equity, efficiency, and women's empowerment, a key driving force for the gender strategy is the State's commitment to gender equality and mainstreaming in all its policies, programmes and operations. The country's constitution gives due recognition to the rights of women and is committed to international conventions like The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). The 2005 National Gender Policy identifies equal participation of women in agriculture as being crucial in reducing poverty. The MoA pledges to target its programmes and projects to deliver benefits to women at least on a par with those enjoyed by men. Moreover, the Ministry acknowledges that gender mainstreaming is a priority and requires that staff take it into consideration in all aspects of their work, and holds them accountable for doing so. Most particularly, within its areas of influence, the MoA is committed to working towards establishing an effective legal and regulatory environment for equal ownership of, and access to, assets such as land, water, agricultural inputs, credit and other financial services.

One of the overarching goals of CSARIDE is to empower local farmers to innovate and develop their practices to support livelihoods, wellbeing and the food security of their households. Women play a crucial role in dairy farming. For example, in the baseline report, although there are fewer female-headed households (FHH) engaged in dairying, more FHH keep exotic and crosses (71%) compared to the male-headed households. This is a welcome development in that these few women who engage in keeping improved breeds can serve as the seed to propagate dairying and address the gender disparity. Thus, by the end of the project if we are able to have more women going into dairying using exotic or cross-bred animals we will have achieved one of the objectives. As such, ensuring participation of women and other groups in all project activities will significantly enhance the outcomes and long-term impacts of the project. A cross-cutting gender strategy will, therefore, be implemented, guaranteeing that a gender perspective will be integrated into all project components and that climate smart agriculture and dairy value chain approaches will be evaluated on their capacity to promote gender equality.

Table 8: Participation of women in dairy value chain by Zoba (%)

Zoba	Farm Households		Inputs/service suppliers	Trading/processing	Other
	Male-headed	Female-headed			
Debub	95	5	0	33	N/A
Maekel	95	5	0	12.5	N/A
Anseba	95	5	0	0	N/A

Source: Baseline

Table 9: Gender and educational level of public sector support staff¹⁰

Zoba	PhD		Master's		Primary Degree		Diploma/Cert		DVM		Other ¹¹	
	M	F	M	F	M	F	M	F	M	F	M	F
Debub	0	0	1	0	17	5	93	66	1	0	15	5
Maekel	0	0	1	0	2	1	6	11	0	0	0	5
Anseba	0	0	0	0	3	0	16	13	1	0	0	1
TOTAL	0	0	2	0	22	6	115	90	2	0	15	11

Source: MoA

The data collected during the PIP (see Tables 4, 7, 8 and Zoba profiles in Annex 4) indicate the level of involvement of women in different aspects of the dairy value chain. Although the data confirm the general trend, some more in-depth studies will be conducted during the project implementation phase. This is because the available statistics mostly reflect participation in commodities by female-headed households, excluding participation of women in male-headed households. Participation of women in supply of inputs and services as well as in trading/processing and selling to consumers is limited.

¹⁰ Refers to staff working in dairying only.¹¹ 12th grade completed and lower.

In order to ensure a more gender-balanced development of the value chain actors, CSARIDE will strengthen the role of women and others in production (25% increase), input and service supply (25% increase), and other value chain activities (25% increase).

The focus on empowering and creating opportunities for women in agriculture, livestock and agribusiness will be operationalized through: i) a gender needs assessment as part of the socio-economic survey to be carried out at project start-up to guide the roll out of gender mainstreaming activities and to develop a revised draft gender action plan. The project will also build capacity for gender mainstreaming for the implementing officers and project teams. Household methodologies (including the SHA Family Life Model)¹² will be explored to empower communities and address gender equality issues at household level and in the communities; ii) dissemination of information on project opportunities, and ensuring that women have access to project support; iii) establishment and strengthening of women-based groups/associations; iv) creating targeted income-generating opportunities for women; v) training in entrepreneurship skills and enhance women's participation in social and economic activities by applying a quota; (vi) promoting access to time and labour saving technologies (TLST), aimed at decreasing women's workload; and (vii) monitoring the implementation of the above actions through the capturing and reporting of sex and age disaggregated data.

Village administrators, in collaboration with the NUEW that has a well-structured presence at Zoba, Sub-Zoba and Kebali levels, will be instrumental in community awareness and information mobilization, direct or self-targeting of women and women's groups as well as in identifying economically and nutritionally vulnerable women-headed households in the intervention villages. Also, the Eritrean Women Agribusiness Association (EWAA) will be a partner to reach out to women groups and facilitate formation of associations with economic purpose.

More detailed targets and actions will be developed once context-specific data can be collected in the project areas. The data requirements to develop targeted actions to be integrated into the project work include: role of women in dairy production, work burden, demographic composition of household, ownership (land, cattle, other resources), participation (in dairy sector in general, and in dairy cooperatives), employment in the public sector support services, access to information, knowledge and training in dairying, access to financial services, decision-making and coping mechanisms.

The capacity of the extension system to assist in increasing the capacity of women value chain actors and service providers is limited by the fact that female staff are under-represented at all levels. Table 7 indicates that on average 34% of the staff is female. Further analysis of the data indicate that female participation varies considerably by level of education (Table 9), with female representation being the highest at the lowest level (diploma and certificate

¹² <https://selfhelpafrica.org/ie/wp-content/uploads/sites/4/2020/11/SHA-Family-Life-Model-web.pdf>

level). This information will be used during the implementation phase to specifically target women's training needs to include upgrading the educational level of women from certificate and diploma to undergraduate degree and postgraduate degree levels. The annual work plans will need to ensure that women are fairly represented on the postgraduate training programme and that, if necessary, they will be given additional support to qualify them for entry to postgraduate programmes. The project will aim for 40% selection of female candidates (also see capacity development).

To address gaps in skills and knowledge of the public sector service support system, a program of in- service training will be conducted on approaches for value chain development which will include gender mainstreaming as an integral part of the value chain development training.

3.4.2 Gender research and learning

Once interventions have been introduced, more in-depth studies will be conducted on different components of the value chain. Gender studies to be considered may deal with more in-depth gender diagnosis of the value chain, action research on gender sensitive interventions, and impact studies of various interventions on gender equity. Every year, progress in research will be reviewed through general or topic specific meetings. Furthermore, the project's M&E system will be used to measure the gender disaggregated targets for each of the indicators set for the outcomes and outputs. The gender strategy will be a living document that will be updated during the course of the project. It will form the basis for developing a gender- sensitive dairy value chain framework and will also lead to development of tools and resources to assess CSARIDE from a gender perspective.

3.5 Youth empowerment

A detailed youth needs assessment will be incorporated into the initial project studies as part of the socioeconomic survey to determine the youth groupings for targeted interventions, such as young people from minority groups, youth returnees and deportees. The project will target young women and men, including those with disabilities, to acquire entrepreneurship and technical skills, as well as training programmes in environmental protection and water conservation agriculture. In addition, the following will be done: i) enhancing vocational skills and entrepreneurship capabilities; ii) explore business opportunities to empower and motivate youth, related to the provision of services in agriculture (para-vets, lead farmers, employment in cooperatives, etc.) and environmental protection; iii) use youth lead and peer educators in project activities to empower their leadership skills; vii) ensure that the M&E system collects, analyses and disseminate youth sex disaggregated data as a means of monitoring participation and impact on demographic categories.

In addition to new jobs that will arise as a result of improvements in the value chain, CSARIDE will also establish a job creation seed fund of €100,000, which will be applied in the form of grants and technical support for projects which fulfil grant support criteria and will help create

extra jobs for young people and women in particular. The availability of a fund is important as it will permit greater flexibility and will facilitate the team to fast-track opportunities that emerge to create jobs and strengthen the value chain. Opportunities will be created at input, production, processing, storage, packaging, marketing, and in value addition areas. The fund will build on a long and still prevailing tradition in Eritrea of commercial agriculture and agribusiness entrepreneurship. The overall target is 300 new jobs.

3.6 Environment

A critical action early in the life of CSARIDE will be to undertake an environmental impact assessment (EIA) to provide information on the likely environmental impacts of project interventions and to provide a baseline against which to measure progress.

The use of irrigation infrastructure for the development of dairy and fodder value chains can potentially have negative environmental influences. Similarly, intensification of livestock production can have negative environmental impacts. On the other hand, more intensive livestock keeping can also have positive environmental effects, including reduced land degradation as a result of less trampling of grazing areas when animals are stall fed.

The focus of CSARIDE on sustainable agricultural development incorporating CSA initiatives will aim to ensure that the natural resource base (soils and water) is not depleted and that activities at local and Zoba levels will be consistent with sustainable land management (SLM) and agro-ecological strategies. Elements of natural resource management will be carefully integrated to support the intensification of smallholder agriculture in ways that increase land and labour productivity and that are both sustainable and profitable. In this regard, we will work closely with the IFAD IAD Project which has a strong focus on integrated watershed management.

During the location specific diagnosis of the value chains in the project areas, value chain interventions will be assessed in more detail. During implementation, environmental impacts will be monitored. The regular project reports will include reporting on environmental effects and best practices will be posted on the CSARIDE website.

3.7 Managing Risk

The revised project Risk Register listing identified risks, rating of risks and mitigation strategies is contained in **Annex 15**.

3.8 Exit Strategy and Sustainability

Exit strategy – The project exit strategy is embedded in the strategic approach of working directly with administrative structures and community leaders at the Zoba, Sub-Zoba and Kebali levels. At the conclusion of the project, beneficiaries will have at their disposal items of infrastructure, equipment and knowledge sources with the capacity to fully and effectively use them into the longer term. In addition, the participatory approach used throughout will

ensure that the project responds directly to community concerns, private sector priorities and national development policies and strategies. The communities/ producer organizations, private sector agencies and State bodies will assume full responsibility for planning and implementation of interventions and operation and maintenance of equipment by the fourth year of the project.

Critical to successful development outcomes and sustainable impacts are the processes through which innovation is developed, triggered and enhanced, and how the capacities of the private sector and the public institutions supporting the changes are strengthened. In this regard, it is crucial a wide range of local stakeholders are involved from the outset, including in joint problem analysis and identification of possible solutions. Moreover, the integration of gender as a key principle in the design, implementation, monitoring and evaluation of interventions is vital. Finally, focused and demand-led capacity building and development and the implementation of knowledge management and dissemination plans to promote good practices and principles widely are all important in ensuring lasting outcomes.

The emphasis on human and institutional capacity building in the three Zobas will enhance the availability of, access to, and utilization of knowledge systems to support innovation by producers and market agents and by the relevant public-sector bodies. The development through this process of self-reliant farmers and cost-effective institutions, particularly in the private sector, is the key strategy for promoting both sustainability and impact. Therefore, facilitating private-sector partners to complement the public-sector is an important sustainability strategy. Within the wider Eritrean rural community, households will benefit from a more effective and responsive knowledge system that supports innovation relevant to improving rural livelihoods through market-oriented agriculture.

Sustainability will be further strengthened by ensuring that policy makers will have increased knowledge on how best to support market orientation in rain-fed and irrigated smallholder agriculture and the requirements of the market for high-value (and often perishable) commodities. At the conclusion of the project, the MoA and institutions contributing to rural development will be better integrated with the private sector and better placed to develop and deliver their services to support agricultural development through market orientation.

We will further aid continuity through the development of a coherent communication and exit strategy to guide knowledge management, dissemination, advocacy and scaling up. We will implement activities that will collate, compile, promote and disseminate outputs approaches, methods, tools and lessons learned beyond the project's immediate public and private beneficiaries,. These will be integral to the communications and exit strategies, which will contribute to building the critical links required to sustain the institutional developments supported by the DeSIRA project.

4 PROJECT MANAGEMENT AND GOVERNANCE

4.1 Management Approach

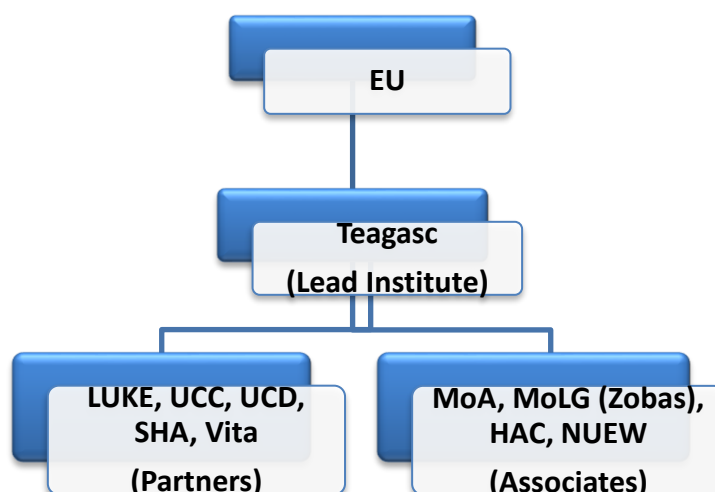
The work of the project is structured around a series of activities flowing from the outputs and outcomes outlined in the Log Frame. The project staffing structure and capacities of the staff are geared towards ensuring that the targeted results are obtained efficiently and effectively. Most staff will have cross-cutting responsibilities, but specialist expertise will also be hired during the project to address specific activities.

The overall approach to project management stresses the need for the active participation of stakeholders at all levels. This approach reinforces DeSIRA principles and values and those of the implementing partners and associates. The participative approach will support the need for strong links between all actors in the value chain, both public and private. The approach will also facilitate meaningful community involvement while ensuring that the project is fully aligned with national plans and frameworks.

4.2 Roles and Responsibilities of the Project Stakeholders

A consortium of international and national organizations is responsible for implementing the project. The lead organisation is Teagasc, which with co-applicants LUKE, UCD, UCC, Vita and SHA, is providing international-level inputs. MoA departments, Hamelmalo Agriculture College (HAC) and Zoba administrations are associates (Figure 3) and are fully responsible for day-to-day project implementation.

Figure 3 Project partners and associates

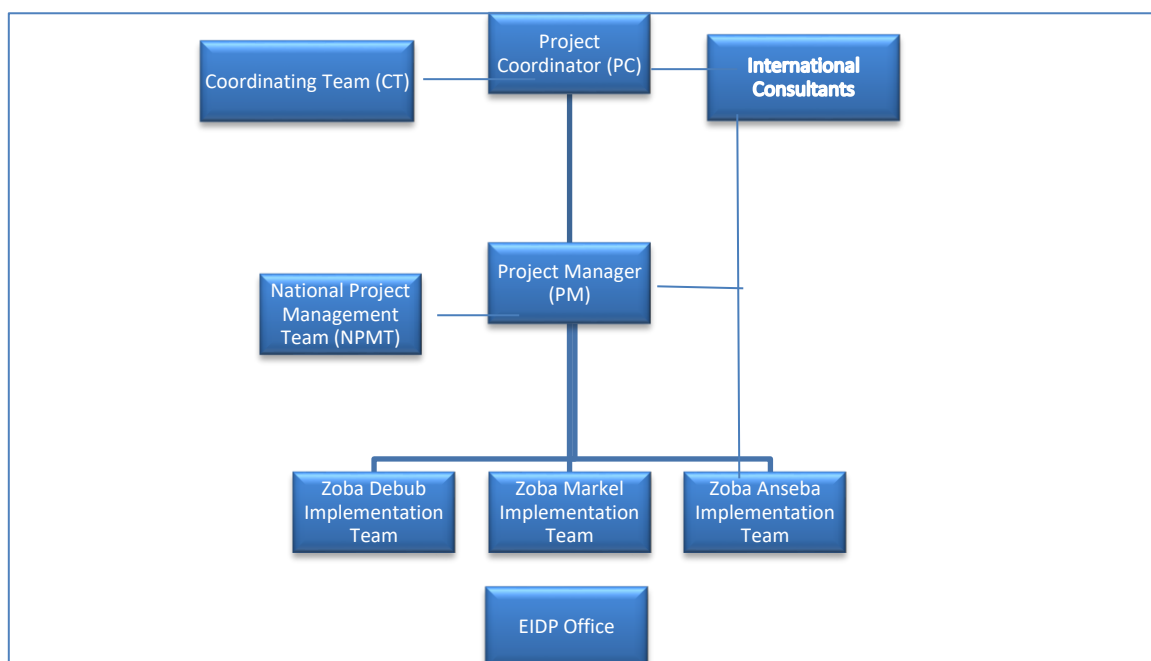


4.3 Management Structure

The general programme management structure was outlined in the project proposal. This structure is evolving to meet the specific needs of the project and the requirements of programme delivery as it unfolds.

The MoA has seconded Mr Kahsay Negash as Project Manager and leader of the National Project Management Team (NPMT). He reports directly to the overall Project Coordinator located in Teagasc. The NPMT comprises a range of specialists in research, extension, capacity building, and agribusiness, all of whom have been seconded to the project from the MoA. The technical team is supported by a financial officer/accountant, communications officer, an M&E specialist and gender expert. In addition, the NPMT has access to additional financial, procurement and administrative support from the EIDP staff located in the same office. The NPMT works directly with implementation teams located in each of three target Zobas. (See Table 10 for full list of local staff). In addition, to the support and input from the international team members, international consultants with expertise in dairying and value chain development provide technical support to the teams on the ground in Eritrea. Support for the NPMT will also be provided by IFAD, FAO and ILRI.

Figure 4: Project management structure



As mentioned above, an implementation team has been established in each of the three Zobas. These teams are responsible for working with the NPMT and in partnership with local stakeholders to develop and implement interventions in the dairy value chains in the target Zobas. Each team comprises a Zoba coordinator, livestock expert and support staff. International team members will be assigned to support each of these local teams.

NPMT staff will travel to the Zobas at regular intervals to provide coaching and mentoring support. Depending on the nature of the interventions, regular scheduled visits will be prepared for each Zoba as part of the annual work plans for each staff member. As implementation progresses, many of these visits will take place around learning/planning events. Once implementation commences, we will review the suitability and adequacy of staffing regularly and make adjustments as necessary.

Table 10 Proposed CSARIDE staffing

National Level	Zoba Level		
	Dehub	Maekel	Anseba
Project Manager	Project Coordinator	Project Coordinator	Project Coordinator
Livestock Farming Systems Expert	Livestock Systems Expert	Livestock Systems Expert	Livestock Systems Expert
Education/Capacity Building Expert	Forage Expert	Forage Expert	Forage Expert
Agribusiness Expert	Agribusiness Expert	Agribusiness Expert	Agribusiness Expert
Gender Expert	Admin. Assistant	Admin. Assistant	Admin. Assistant
CSA Agriculture Expert			
Human Nutrition (50%)			
Communications Expert			
Accountant			
M&E Expert			
Programme Assistant			
Drivers			

4.4 Project Governance Committees

A Project Steering Committee (PSC), chaired by the Minister of Agriculture, aims to ensure cross-sectoral coordination as well as strategic oversight of project implementation in accordance with the set objectives across the three Zobas. Its functions include: a) providing oversight of project implementation; b) ensuring that the project is implemented within the national policy and strategy framework; c) approving the AWPB; and d) providing strategic guidance and resolving critical implementation bottlenecks.

A National Project Advisory Committee (NPAC), chaired by DG Extension and including DG NARI, Dean of HAC, senior livestock expert (MoA) and private sector representatives, meets

monthly to review project progress and impacts and to make recommendations to the PSC for inclusion in the annual programme of work and budget.

Zoba Project Coordination Committees (ZPCCs) will provide oversight of operations at Zoba level, review and endorse the Zoba AWPB implementation progress and financial reports before forwarding to PM and NPMT for consolidation. The ZPCCs will meet on a quarterly basis and will be chaired by the Zoba Governors and comprise, inter alia, the Directors of Zoba Administration Departments and Heads of Agriculture Divisions. Their functions are similar to that of the PSC at national level.

A Coordinating Team (CT) comprising the Project Coordinator, Project Manager, work package leaders and international consultants, meets fortnightly to review project progress and requests, deal with issues arising and plan future activities.

4.5 Financial Management, Procurement and Governance

The overall responsibility for financial management (FM) lies with Teagasc, while the NPMT has recruited qualified and experienced specialist financial staff and will also be supported by the finance team in the EIDP office. Further financial support is provided from the finance team in Vita Ireland. EU funds will flow into a designated account opened by Teagasc in Ireland and operational accounts will be opened at each implementing entity level to receive advances managed by Teagasc, following payment approval and justification mechanisms which are detailed in the contract. Contracts with service providers and MoUs with implementing entities will require the funder's approval and will be subject to audit.

5 PROJECT IMPLEMENTATION

5.1 Introductory Comments

Our plan for the implementation of agreed interventions is significantly influenced by the context of working in Eritrea, including our assessment of the risks involved. There are significant challenges involved in attempting to develop the dairy value chain in a context where value chains generally are not well organised and, for the most part, operate in a highly informal manner.

For these and other reasons, we propose to begin implementation on a phased basis. In this regard, our initial focus will be on Zoba Debub, where we will pilot a number of new initiatives before subsequently rolling them out to the two remaining Zobas. In line with discussions held with the EU Delegation, our focus in Years 1 and 2 will be on:

1. Making initial capital investments to upgrade farm and laboratories in HAC and laboratories in NARI.
2. Renovating existing milk collection and cooling centres subject to economic, market and business assessments.

3. Upgrading existing liquid nitrogen plant and supporting purchase (with IFAD funding) of new larger LN plant.
4. Purchasing supply of AI straws from Ireland
5. Commencing MSc training for members of NARI, HAC and MoA staff.
6. Conducting participative value chain mapping and assessment of the dairy value chain in the three study Zobas and developing a series of interventions to address challenges and opportunities.
7. Establishing a training and knowledge centre to begin a programme of training-of-trainers (ToT) for a small group of extension staff and others who will provide training to the general body of extension officers.
8. Piloting the proposal for a dairy commodity platform in Zoba Debub as a vehicle around which to build an initiative on commercial forage production and also as a focal point for participative approaches in developing and implementing other project interventions.
9. Commencing organizational strengthening in NARI based on the initial self-assessment document and results from the FAO DeSIRA project scoping study and assessment of AIS¹³
10. Developing a national research programme to be jointly delivered by NARI and HAC, developed through a participative process involving all major stakeholders in Eritrea and supported by Teagasc, LUKE and ILRI.
11. Commencing training of AI technicians (public and private) at the National Animal Genetic Improvement Institute in Ethiopia; and training for laboratory support services.

5.2 Work Breakdown

The CSARIDE work breakdown structure (WBS) corresponds with the four immediate outcomes identified in the Log Frame, with the addition of project management activities.

5.2.1 Capacity Development (immediate outcome no. 1)

CSARIDE capacity development will focus on producers and other VC actors, including private/cooperative input/service suppliers and the public sector actors. Preliminary investigations along with knowledge from the ongoing pilot dairy project indicate that these actors have limited capacity to engage in participatory action and research, multi-stakeholder processes and market-oriented agriculture, and therefore need specific capacity building. Also, women's participation in production is very low, and a particular focus needs to be directed towards meeting their specific needs and demands to enable them participate effectively in new value chains.

¹³ <http://www.fao.org/in-action/tropical-agriculture-platform/commonframework/en/>

To fill the gaps in capacity, a programme will be developed comprising training, mentoring/coaching and follow-up and institutionalization. Actions implemented will aim to strengthen capacities for innovation and the collective learning capacity of VC actors to develop sustainable and profitable dairy value chains. We will use participatory processes to assess capacity gaps and needs, identify and implement specific and tailored capacity development interventions. Project staff will design and implement these interventions in close collaboration with partners and beneficiaries. A key focus will be capacity building for innovation, climate smart and gender sensitive technologies and practices, as well as a focus on resilient and sustainable value chains and market-oriented extension approaches. In addition, training is required in technical subjects such as dairy management, milk quality and hygiene, milk processing, integrated agricultural research for development, fodder production and management, as well as facilitation, coaching, mentoring and leadership skills.

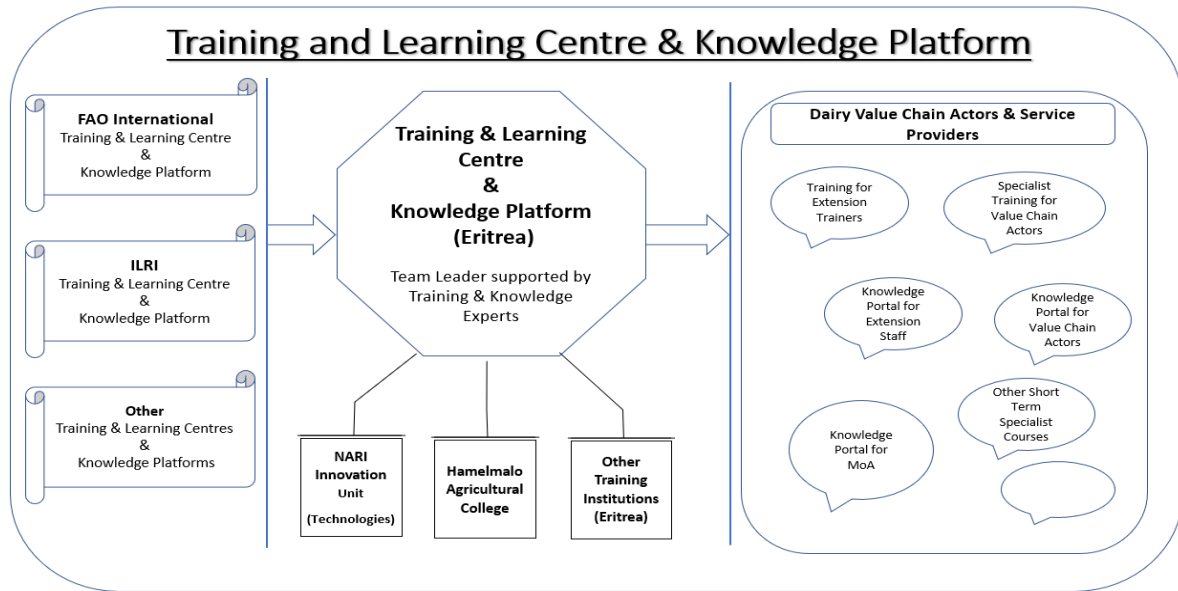
The specific programme actions to be implemented will be updated in response to annual reviews of interventions and updates on gaps. While public sector agencies will play a key role in delivering these interventions, support will also be provided by the international team and external consultants. In addition, we will partner with FAO and will use the Common Framework on Capacity Development for Agricultural Innovation Systems (CD for AIS)¹⁴ to support the needs assessment, design and implementation of specific and tailored capacity development interventions, programme planning and monitoring/evaluation of the interventions.

5.2.1 (i) Establishment of a capacity development/knowledge management unit (CDKMU)

Fundamental to our strategy for delivery of CDKM initiatives is a proposal to establish a Capacity Development/Knowledge Management Unit (CDKMU). This initiative will provide an opportunity for CSARIDE and TAP-FAO DeSIRA (FAO project) to collaborate on developing and strengthening local capacity through cultivating strong links with institutions such as NARI, HAC, etc. It is envisaged that the CDKMU will be managed by a team leader and will comprise staff with knowledge of training and knowledge management. The DeSIRA project will provide financial support, while FAO will make available material from its Training and Learning Centre (TLC). Other training providers with expertise in dairy value chains will also provide training and learning material (e.g. ILRI and Teagasc).

¹⁴ <http://www.fao.org/in-action/tropical-agriculture-platform/commonframework/en/>

Figure 5: Capacity Development/Knowledge Management Unit (CDKMU)



5.2.1 (ii) Capacity development for public sector staff

Extension Services

There is a need to conduct a pre-survey and analysis of the current extension models in place in Eritrea. The self-assessment report produced by the public extension organisation (AED) in 2020 (**Annex 6**) highlights that the works through “contact producers” to reach more producers. The service is production focused with limited access to value chain development or market-oriented extension approaches. In addition, services are also provided by private and non-governmental organizations.

The theory of change for extension is that long-term institutional relationships between EU and Eritrean partners, supported by initiatives (in extension) for the delivery of capability-building and the development of new skills (from pilot initiatives) from participation in value chain work and related activities, will increase the ability of farm families to produce increased volumes of milk in a profitable, sustainable and climate-resilient way. However, this needs to be well-grounded in a comprehensive assessment of the current extension system and development of a vision for a pluralistic, demand-driven and market-oriented extension and advisory service.

In the case of training for extension, it is proposed that the CDKMU will focus on training the trainers and that these trainers will then have the responsibility for training the general body of extension staff who, in turn, will provide training for the main body of dairy farmers.

Training the general cohort of extension staff and farmers is outside the scope of the project. A small cohort of MoA (including gender and environment specialists) and extension staff will be selected to be trainers for general extension staff and others working at Zoba and Sub-Zoba level. The project will support the training of these staff members (train-the-trainers). The approach adopted should promote a shift from in the service from the production of classical extension agents towards staff who operate as innovation brokers and facilitators. There is a need to expand the role of extension from linking research to farmers to that of facilitators and catalysts of innovation. The new FAO extension training kit could be used. <https://www.g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html>.

The focus of this training is likely to be on:

- Training on value chain development approaches and market-oriented extension approaches
- Climate smart approaches to agricultural extension (e.g. <http://www.fao.org/3/a-bl361e.pdf>)
- Facilitation of multi-stakeholders and inclusive innovation processes (i.e. innovation brokers¹⁵. Innovation brokers to act as “systemic intermediaries” in innovation systems, forging many-to-many relationships)
- Training on gender mainstreaming in the value chain and in facilitation
- Knowledge management
- New approaches on technical subjects such as dairy management, milk quality and hygiene, milk processing, fodder production and management, etc.
- Preparation of training materials for use by extension staff and others.

The final shape of the technical content of training programmes will emerge once the Zoba project teams have completed a quick assessment of existing capacities, capacity gaps and needs, and identified an initial set of value chain interventions using participatory methods. The interventions identified by the Zoba teams will be assessed and agreed by the overall project team.

A wide range of relevant training materials and guidelines developed by FAO, Teagasc, GFRAS, MoA, and the LIVES project will be used. Materials used will be tailored to the needs of the training and be made available widely through the CDKMU unit and HAC. E-learning modules will also be developed through the training and made available to all extension staff.

The initial training in Year 2 will be followed by refresher training in the following years and will be supported by knowledge sharing and mentoring. The mentoring/coaching of staff will

¹⁵ Innovation brokering expands the role of agricultural extension from that of a one-to-one intermediary between research and farmers to that of an intermediary that creates and facilitates many-to-many relationships

take place in the Zobas. On-the-job training and learning-by-doing approaches will be used, including participatory evaluation.

Among additional training activities that could be considered are the following:

- Involve extension agents, producers, and other VC actors in discussions on research programme development in NARI and HAC to help ensure programme relevance to farmers
- Focus on supporting the use of soft skills for facilitating farmer engagement and learning and in planning extension programmes to make a real difference at farm level.
- Set up a small but effective 'Mentoring and Support' unit to support the extension officers
- Extension agents are based in the rural areas and do have a relationship with the farmer – set out how to build on this to work towards the goal of climate smart dairy farming.
- Create opportunities for researchers and extension staff and other stakeholders to meet for 'knowledge exchange' every 2-3 months

National Agriculture Research Institute (NARI)

The project team will prioritise postgraduate training in order to strengthen NARI's capacity, in association with HAC, to develop and deliver the necessary research to underpin the future sustainable dairy value chain in Eritrea. The focus will be on the provision MSc and PhD fellowships, with training in African and EU-based universities. Eventually, the team envisages a situation where HAC will be able to provide MSc-level training and the international team will work with HAC to develop the resources and capabilities necessary to deliver Masters'-level qualifications. The team will focus short-term training on areas such as innovation platform facilitation and management.

A key intervention for NARI will be to support wider research collaboration with HAC, specifically through the development and implementation of a **national research programme**, which will be developed in collaboration with industry stakeholders and which will prioritise the needs of stakeholders. The international team will work with NARI and HAC to support them in all aspects of research programme development, including stakeholder consultation, programme development, proposal writing, experimental design, project management, research delivery, report writing, etc.

Hamelmallo Agriculture College (HAC)

Teaching staff at HAC will benefit from the MSc/PhD training programme (see below). In addition, they will participate in short-term training programmes on teaching methods, curriculum development and learning which will be organised as part of the upgrade of the curriculum and teaching programmes in the college. In order to support the necessary upgrading of the college farm and laboratories, critical training will be provided in areas of

farm management and in general laboratory skills and operation of specific equipment. HAC staff will also be included as trainers in the TOT and specialist training in the Zobas.

Ministry of Agriculture Services (MoA)

Training of AI technicians (public and private) and training for laboratory services.

BSc/MSc/PhD training

With a view to strengthening the professional capacity of the public sector extension system, NARI, HAC and the MoA, the project will support BSc/MSc/PhD education for over 30 staff members. The project will also, where necessary, support female candidates to take preparatory courses in order to meet the minimum qualifications for entry to graduate and postgraduate degree programmes. Research projects undertaken as part of MSc programmes as well as all PhD research will support the new national research programme described above.

At the outset of CSARIDE, it was planned that the international team would prioritise the re-introduction of an MSc degree programme in HAC and that most of the proposed MSc-level training would be delivered through this. Unfortunately, it has become clear that it will not be possible to re-establish this programme in the short term, meaning that MSc students will have to be registered in universities outside of Eritrea at least for the initial years of CSARIDE.

5.2.1 (iii) Capacity development for the private sector

Suppliers of inputs/services

A key component of the value chain development approach is to ensure an adequate supply of agricultural inputs and services which, in turn, will benefit producers of primary products.

Pending a more detailed assessment of private input suppliers of goods and services in the three study Zobas, the preliminary assessment based on the insights and knowledge of the project team is that very little private/group production of inputs is taking place. To support the development of a more efficient input/service supply system, the project will pay particular attention to capacity building with these actors in and the early years of the project. Interventions will mostly be delivered by way of mentoring and coaching, complemented by knowledge management activities such as field trips, study tours and platform meetings. CSARIDE will target the following private sector input and service supply system/participants:

- Forage seed/planting materials multiplication
- Pump repair services for small-scale village-level entrepreneurs and cooperatives
- (Community) management of irrigation schemes/water user groups
- (Community) management of grazing areas

- Veterinary services
- Forage seed/planting materials suppliers
- Animal feed suppliers
- Veterinary drugs suppliers
- Agro-chemical suppliers
- Milk collection/cooling centres
- Milk processors.

CSARIDE will also assist input and service suppliers through mentoring and coaching to create linkages between the different levels, in particular for establishing agro dealerships.

A summary of the estimated number of input/service providers affected directly is shown in Table 6. The project will form extension circles of trained and coached suppliers designed to facilitate the spontaneous dissemination and scaling out of knowledge and skills within and beyond project districts. In addition to training and coaching, the project will develop learning materials to support self-learning of market-oriented producers and service providers.

Farmers

The capacity development of extension agents in gender sensitive, dairy value chain development will ultimately result in better trained staff at Zoba and Village level, who will be able to support farmers to introduce more advanced commercially-oriented production technologies and create linkages with improved input suppliers. The trained extension staff in the Zobas will provide in-depth training on best-practice technologies. The specific technologies will be identified in consultation with the MoA, NARI, and extension service. CSARIDE will support the efforts of the extension services by making available training materials, as well as providing qualified manpower from its own staff or partner institutions including the Dairy Associations. Details of such trainings will be available after the preparation of Zoba work plans.

Training/mentoring of other value chain actors

The project will target the small number of small scale agri-business/cooperatives in processing and marketing of products. Such training will mainly target District/Zonal level dairy processors, informal milk traders, and traders in animal products. Emphasis will be on improving food safety and food quality. Details of such training will be provided after some rapid diagnostic studies in year 1.

5.2.2 Knowledge Management and Learning (immediate outcome no. 2)

The agriculture sector is increasingly characterized by new policies, actors, and relationships that influence the ways in which information and knowledge are generated, accessed, and used by extension staff, producers, and other users. Improved flow of information and knowledge to, from, and within the extension system is key to realizing agricultural transformation. A well-functioning knowledge management system is critical for market-oriented agricultural development, enabling it to increase access to and use of knowledge about markets, improved technologies, innovations and new organizational forms.

KM&L will serve as a foundation for replication of successes, provide the analytical basis to resolve challenges and help to adapt activities to changing social and economic circumstances in the target areas. A KM action plan will be prepared to: a) identify knowledge gaps and prioritization of knowledge products to be developed; b) systematically document methods to ease the up-scaling of best practices in Eritrea or repackaging of innovative approaches developed elsewhere; c) disseminate knowledge using various communication tools (MoA newsletter, brochures, websites, radio, FFS). We will organise regular reflection workshops, drawing on M&E data to improve performance, and we will develop information sharing mechanisms (internal and external).

5.2.2 (i) Knowledge gaps identified

Assessment of knowledge gaps for value chain development is a continuous process, which will take place through assessments, learning and knowledge sharing. Specific location gaps in knowledge at different levels and the way/format they can be addressed will be identified during the baseline study and follow-up workshops.

5.2. 2 (i) Knowledge interventions identified

Knowledge management interventions will be reviewed annually in Zoba stakeholder meetings together with a review of value chain and capacity development interventions. Also, project implementation committees at national and Zoba level will review knowledge management interventions at a higher level.

Wherever possible, the activities will build and strengthen linkages with the private sector. Experiences from other projects (e.g. LIVES) have shown the value of face-to-face knowledge sharing supported by investments that improve access to IT-based knowledge services. During the early stages of project implementation, an information-needs assessment of men and women producers, traders and other actors in the value chain will be carried out and the extent to which existing services are meeting these needs will be evaluated. The ME&L framework will assess impact pathways as a way of monitoring and improving the balance between the various components of the knowledge management (KM) strategy.

Knowledge platform

FAO has developed a global sustainable food value chain knowledge platform which provides a user-friendly gateway to practical guidance and information on the development of sustainable food value chains (SFVC). SFVC development is a market-oriented and systems-based approach for measuring, analysing and improving the performance of food value chains (FVCs) in ways that help ensure their economic, social, and environmental sustainability. Underpinning the platform is a community of members, which facilitates networking and the exchange of ideas among policymakers, project designers, field practitioners and other people working on topics related to SFVCs.

The availability of the FAO Knowledge Platform, along with similar resources from other providers (e.g. ILRI), will greatly support the development of food value chains in Eritrea. Access to the internet, however, will present challenges in the Eritrean context and so off-line solutions will have to be found as part of this project.

Other KM initiatives

At the national /Zoba level we will:

- Develop an information system to facilitate the production and dissemination of dairy market information.
- Organise agricultural and agri-food system technology exhibitions to help create awareness and promotion amongst a broad audience.
- Organise workshops, seminars, and expert consultation sessions to help create networks among “knowledge generators” in the agriculture sector.
- Organise farmers’ field days – utilizing FTCs (wherever or whenever feasible).
- Conduct targeted study tours to enhance exposure to new technology or methods.
- Create learning linkages which will lead to opportunities to integrate into already established structures.
- Transmit regular programs on mass media (radio, TV, newspapers).
- Arrange national workshops/seminars.

At the project level:

- Continue to develop the project website (<https://www.teagasc.ie/about/international-food-security/current-projects/eritrea/csaride/>) which will be an interactive site that will highlight the planned, current and completed activities of the project – utilizing “rich media” (text, video, audio) whenever feasible. All relevant documentation developed by LIVES will be uploaded on this site for use by project partners and others.

- Disseminate publications including working papers, newsletters, brochures, tool kits, guidebooks/manuals.
- Conduct experimental initiatives in the use of innovative processes and tools (mobile phones, mp3 audio players, social media tools, etc.) for knowledge sharing, especially for time-sensitive information (market prices, seasonal advice on various farm activities, etc.).

5.2.3 Value Chain Development (immediate outcome no. 3)

5.2.3 (i) Pilot approach

The recommendation from the preparatory stages of this engagement (PIP process and earlier missions to Eritrea) is that CSARIDE can support the development of dairy value chains in selected dairy catchment areas. Since this type of initiative is new in the Eritrean context, it is proposed that some large initiatives be applied in one Zoba initially (Zoba Debub). The lessons learned can then be applied in the implementation process in the remaining two Zobas.

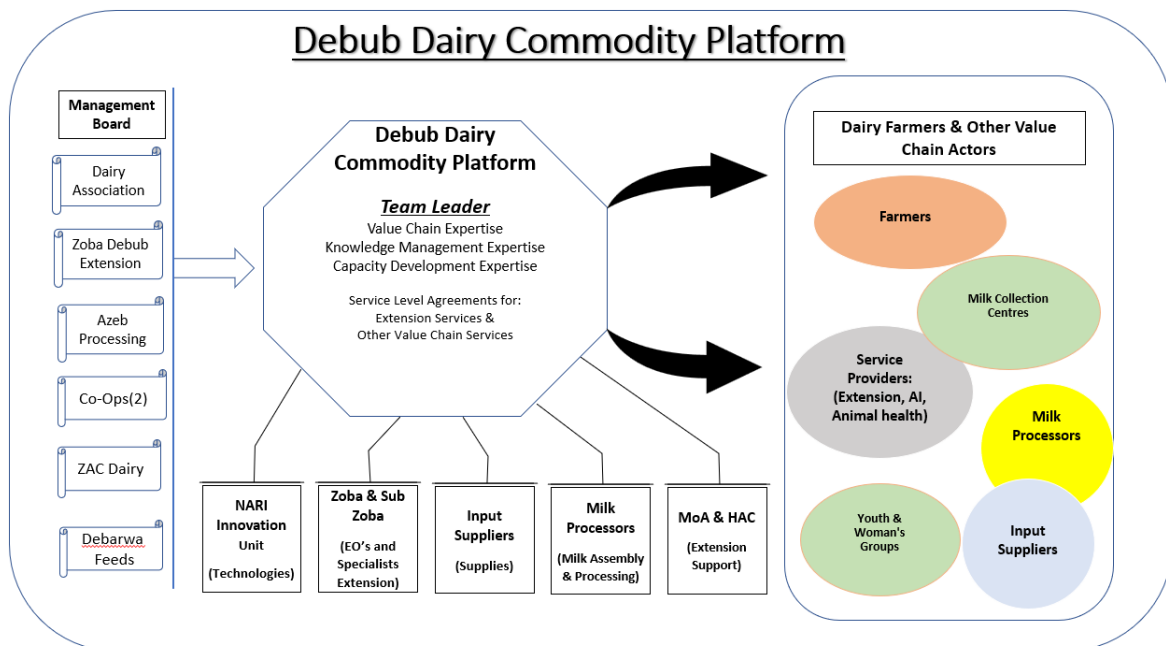
5.2.3 (ii) Value chain interventions identified: commodity platforms

VC actors and the enabling environment need to be better connected and dialogue between VC actors and the enabling environment is required to promote market-oriented development in Eritrea. To this end, CSARIDE will support the establishment of commodity (dairy value chain) platforms in the three Zobas, initially in Zoba Debub to test the model. Experience from other countries shows that commodity platforms have helped enhance confidence among smallholder producers to establish and maintain business relationships with input suppliers and service providers¹⁶. The purpose is to bring together VC actors to jointly analyse the existing situation of the value chain and develop support strategies and plans and to assess development impact. The approach proposes to develop a stakeholder vision for the value chain and then develop integrated upgrading strategies and practical development plans that create synergies and that can realistically realize the stakeholder vision for the value chain. <http://www.fao.org/3/a-i3953e.pdf>).

In the Eritrean context, it is anticipated that commodity platforms can play a significant role in facilitating linkages that offer new business opportunities as well as job creation potential. In addition, they will help the project team and partners understand the existing situation, identify challenges and constraints, prioritize interventions, and maximize opportunities.

¹⁶ Lemma, M. and Tesfaye, B. (2016) From research-extension linkages to innovation platforms: Formative history and evolution of multi-stakeholder platforms in Ethiopia. *Journal of Agricultural Economics, Extension and Rural Development* 4 (7): 496-504.

Figure 6: Dehub Dairy Commodity Platform



Pending the completion of detailed value chain assessments, the knowledge and experience of the project team suggest the following as being significant challengers for the dairy value chain in Eritrea:

- shortage of animal feed
- prevalence of livestock diseases
- lack of milk cooling and transport facilities, inadequate processing plants and inconsistent AI service
- weak connections between research, extension and education services, and under-resourcing of the services and weak linkages with broader development processes
- very limited/no use of improved genetic livestock resources, in part due to an inadequate service delivery system
- absence of a detailed assessment of livestock husbandry practices
- low level of participation of female-headed households
- State sector domination of input and service supply system with little or no alternative (private) systems
- traditional trade/processing system at the Zoba level and dominated by small-scale businesses
- weak linkages between producers and other VC actors (traders, processors and outlets) and have resulted in poor market transparency/participation by producers
- lack of access to credit/seed money.

To address these problems, a set of generic gender and environmentally friendly value chain interventions will be developed for consultation within the Dairy Commodity Platform. Generic value chain interventions are broadly defined interventions emphasizing the objective of the interventions and some general characteristics. Location specific design will be developed in discussion with the VC actors and service providers in the Commodity Platform as an integral part of the implementation process. All such interventions will also be analysed in terms of their capacity to contribute to CSA, their potential environmental impact, cost/benefit analysis, gender outcomes and capacity of the VC actors. We plan to use this approach because it intends to benefit from the innovation capacity of the VC actors and service providers involved and is fully in line with the recommendation from the FAO DeSIRA-funded project- *Assessment of Agricultural Innovation System in Eritrea Report*.

This process is intended to get a better (location specific) understanding of the value chain problems and development potentials, including the role of women and impact of interventions on the environment. During the platform discussions, the menu of potential interventions will be reviewed with these stakeholders and priority interventions will be identified for immediate implementation. Since value chain development is a continuous process, as a result of lessons learned (outcome 4) and new knowledge becoming available, such discussions will be organized annually by each Zoba. Furthermore, project governing structures at national and Zoba level will contribute to the annual review of value chain interventions.

The potential value chain interventions identified will be implemented by the VC actors, in particular the producers (farmers) and other VC actors and the public and private sector suppliers of inputs and services (other than extension). The extension services will facilitate the introduction of the interventions by creating linkages between producers, other VC actors and service/input suppliers and building their skills and knowledge (see capacity development).

CSARIDE will partner/support this implementation process through improving the capacity of the extension system to perform these new tasks through in-service and formal training, coaching and mentoring, as well as by taking part in extension and knowledge management activities (see 5.2.1 (ii) and 5.2.1 (iii)).

5.2.3 (iii) Development of the forage value chain

All of the experience of the lead partners in this project point to the conclusion that access to forage is generally the most difficult challenge facing Eritrean dairy farmers. In particular, there is a requirement to bring in forage from outside the farming system in the highlands. Native grass hay for harvesting is mainly grown in protected marginal lands, school compounds, etc. In a few cases, cooperatives are allotted some area of land for forage production and individual members buy fodder at a reasonable price. Generally, commercial fodder production has not been a common practice in Eritrea. It is obvious that farmers have

a great need for fodder to feed their animals, particularly during the dry season. However, the fodder supply chain and the challenges and opportunities associated with it are not well understood. The construction of dams in recent years offers new possibilities. The possibility of moving forage from mid-altitude and lowland regions to the highlands needs to be explored. Due to the particular nature of the forage value chain in Eritrea, and the problems arising in livestock farming systems due to the acute shortage of forage, it was decided that CSARIDE should prioritise this issue. Another related challenge is the issue of access to land. The baseline study shows that 77% of the respondents in the study indicate land access as a constraint. Of those households that have access to land, close to 50% have allocated part of their land for improved forage production. This is a welcome development and paves the way for sustaining household level needs as well as forming the basis for selling forage.

Accordingly, it is proposed that in order to support the creation of effective commercial forage markets, we will pilot the concept of a forage commodity platform to bring together forage value chain actors and support services to jointly identify the fodder value chain challenges and solutions, to share new ideas and information, and to facilitate business linkages among forage value chain actors and service providers. In the Eritrean context, it is anticipated that a forage commodity platform can play a key role in facilitating linkages that offer new business opportunities as well as job creation potential. In addition, it will help the DeSIRA project team and partners understand the existing fodder situation, identify challenges and constraints, prioritize interventions, and maximize opportunities.

5.2.3 (iv) Potential value chain interventions

The potential value chain interventions identified will be implemented by the value chain actors, in particular the producers (farmers) and other value chain actors and the public and private sector suppliers of inputs and services (other than extension). The extension services will facilitate the introduction of the interventions by creating linkages between producers, other value chain actors and service/input suppliers and building their skills and knowledge (see capacity development).

CSARIDE will partner/support this implementation process through improving the capacity of the extension system to perform these new tasks through in-service and formal training, coaching and mentoring, as well as by taking part in extension and knowledge management activities (see 5.2.1 and 5.2.2).

5.2.3 (v) Demonstration materials provided

CSARIDE will support value chain development through making available research and development demonstration material for some of the interventions such as solar pumps, feed supplements, hormones, improved animal genetics (semen), etc.

Research and innovation interventions- NARI and HAC

The recommendation from the preparatory stages of the PIP is that the DeSIRA project can support the strengthening of demand-driven research and development to be delivered jointly by NARI and HAC through a national research programme that will focus on:

Climate smart forage-based technologies (including forage seed production) in relation to milk production; (ii) components of animal health and animal breeding; and (iii) on-farm adaptive research.

CSARIDE will also support the strengthening of research relationships between institutions within Eritrea and the building of long-term institutional relationships between research institutions in EU countries and Eritrea underpinned by shared interests. Notable progress has been made in forging strong partnership between NARI and HAC leading to development of research proposals that are now ready to be undertaken.

NARI will also focus on the establishment of an innovation support unit including a demo farm. This unit will incorporate the current dairy pilot project work. The key focus of this unit will be on developing technology support for dairy value chain development as well as other service providers (e.g. extension). Additionally, NARI will make some investment in infrastructure improvement, including in animal and laboratory facilities and in research facilities at Halhale, and Shambuko Ranch.

Education and training interventions - HAC

Hamelmallo Agriculture College produces the graduates (degree and diploma) who are deployed around the country to provide technical support to farmers and other VC actors. The knowledge (technical & practical) of these graduates is of critical importance to the success of the agri-food industry. It is proposed that the main focus of the intervention would be on:

- ***Curriculum development:*** the focus here will be on matching the curriculum to the needs of the industry, particularly the introduction of more practical modules into the curriculum.
- ***Reactivation of the Master's Degree Programme:*** A revised Master's programme will support graduate training for staff at NARI, extension service, MoA, and other service providers in-country. It is envisaged that the topics for graduate studies will focus on issues of importance identified by the project implementation plan. It is envisaged that this programme will facilitate collaboration between HAC and NARI as well as with other institutions. As mentioned earlier, it will not be possible to advance this action until late on in the life of the project.
- ***Support for improvements in the practical training infrastructure:*** the project will invest in upgrading the College farm, including livestock purchase, farm management practices, and also in the College laboratories.

Additional extension services

- **Extension service providing service to dairy commodity platforms:** The extension service within the selected Commodity Platform catchment area will provide services using a contract-for-service agreement system. The experience working within this framework will provide knowledge and skills in value chain development which can be integrated into the general extension service.
- **Extension service pilot initiatives in relation to new methods of service delivery:** The DeSIRA project offers the opportunity for the extension service to share ideas with project partners in relation to extension methods, etc. It is proposed that a pilot extension initiative be carried out to investigate some of these initiatives, including: (i) innovation platforms; (ii) discussion groups; (iii) technology circles; (iv) farm field school or some combinations of these. These will be tested on a pilot scale in some selected areas. The lessons learned from this approach can then be integrated into the general extension service.
- **Growing futures – a focus on supporting youth in rural areas:** There is a particular requirement to develop initiatives in support of youth, including job creation for young people. A particular focus of this initiative (which can be initiated by the extension service) will be on supporting the social and personal development of young people while also providing technical support.

MoA support services

- Some infrastructure support for the **AI service** in relation to: (i) importation of appropriate genetics (AI straws); (ii) facilities for the storage of AI straws; (iii) upgrade of liquid nitrogen plant including backup plant; (iv) purchase of some AI equipment; (v) development of facilities for the distribution of AI straws around the country (to AI technicians, farmers etc.).
- Technical support for MoA to develop a dairy breeding strategy; training of AI technicians (TOT)
- Support for the private sector (including the supply of necessary equipment) in relation to providing AI services to farmers. This will form a critical part of the support, as the level of AI usage on-farm needs to increase significantly and a seven-day-a-week service is required. It is likely that AI technicians (private operators) could combine this service with some veterinary service provision.
- Community-based synchronization programme with the objective of producing F1 cattle (Baraka * Fr).

5.2.4 Promotion, Documentation and Monitoring (outcome no. 4)

5.2.4 (i) Promotion and scaling out

A strategy for promoting project approaches and interventions was developed during the PIP planning phase and will be reviewed annually. Two main targets are envisaged for promotional activities, i.e. location specific promotion/scaling out in learning Zobas; and non-location specific promotion for programmes in and outside Eritrea. In addition, a programme will be developed annually to generate evidence/knowledge/lessons on the dairy value chain and actions undertaken.

Promotional interventions and distribution of materials in near-by learning Zobas

Since the level of engagement of CSARIDE in these areas will be limited, linkages with government/donor-funded programmes, where possible, will be made to improve the effectiveness of such efforts for the learning Zobas.

The promotion of approaches and interventions in learning Zobas will involve facilitation of field trips/study tours to CSARIDE sites by actors and partners from those Zobas and participation in CSARIDE field days. Learning Zobas will also receive some of the project documentation and benefit indirectly from the ToT training of Zoba staff on approaches to dairy value chain development.

Promotional interventions & distribution of materials more widely

The non-location specific promotion will target agricultural research and development partners in general through presentations by CSARIDE staff and partners in seminars, workshops, conferences, meetings and publications.

Also, CSARIDE will organize three regional conferences and one national conference to share the results with wider audiences. Such events will be integrated as much as possible into regional and national events organized by the MoA. Where situations permit, efforts will also be made to share the project output in international conferences.

5.2.4 (ii) Promotional strategies

Content/structure of EAP developed

To promote market-oriented agriculture in general, CSARIDE will support the development of an Eritrean Agricultural Portal (EAP) within the MoA. This support will come in the form of additional media and content and promoting the use of the EAP. Attention will also be paid to creating linkages with potential contributors.

Video, radio programmes prepared and broadcast

CSARIDE will experiment with Participatory Agricultural Radio Programmes Series (PARS) with Farm Radio International and local radio stations to promote its approaches and interventions more widely. Similarly, videos will be developed on the value chain and or key interventions.

While PARS and videos will be used for promotional purposes, use will also be made in the project areas by reproducing PARS on DVD for use in FTCs.

5.2.4 (iii) Documentation and monitoring

CSARIDE management team will coordinate monitoring and evaluation processes, reporting, and knowledge management, and will be responsible for the preparation of consolidated annual progress reports. A baseline study has already been undertaken to provide a benchmark for assessment of outcomes. The team will also conduct impact evaluation and knowledge management activities, produce regular progress reports, conduct annual outcome surveys and implement review workshops, carry out special/thematic studies, mid-term review (MTR) and project completion report. The project will adopt a results-based management and check systematically the contribution of each planned activity to outcome achievement. The international team will undertake periodic monitoring, evaluation and supervision missions to assess the project status implementation and evaluate the project's direction with respect to its objectives, outputs and outcomes. The M&E strategy will be to establish an iterative process for identifying issues and problems to ensure that the project focus is maintained and expected outcomes are achieved. This will rely on data from periodic monitoring within the context of the operational M&E framework and on specific thematic surveys, such as adoption, household and outcome surveys. THE PMT will also explore innovative ways to collect qualitative and quantitative data, including GIS, focus group discussions, structured interviews and longitudinal panels. This will guide the consolidation of input and output data provided by implementers and reporting on efficiency of implementation.

Quarterly, bi-annual and annual reports will be produced by the NPMT with information such as: a) overview of intervention activities undertaken in the last quarter and cumulatively over the fiscal year; and b) progress and outputs in terms of the agreed M&E indicators, provide lessons learnt, and knowledge gaps identified. The reports will also seek to identify any constraints encountered so as to seek guidance (where needed) for addressing the constraints. The project will strengthen MOA's M&E capacity (tools and methods) for data collection and analysis to enhance reporting of project results.

Research priorities identified

Good documentation and monitoring are essential components of CSARIDE, as they provide the principal method of quantifying what worked well or conversely failed/performed poorly so that lessons and guidelines for rolling interventions outside of the project can be justified. The formal monitoring consists of diagnostic, action and impact studies. In the annual meetings, research priorities will be established and reviewed. The formal studies will be fitted into a multi-site research framework which will enable partners to conduct cross-site analysis.

Diagnostic studies completed

Diagnostic studies aim at quantifying identified problems/generate knowledge to better understand problem causes. Such studies are targeted at policy makers to contribute to policy formulation as well as to design/improve interventions.

The following diagnostic studies may be considered:

- Structure, conduct and performance (SCP) studies of the dairy value chain, which can also serve as a baseline
- Special animal disease studies using rapid diagnostic tools developed by ILRI
- Studies on existing input supply/services for livestock
- Gender specific studies documenting/quantifying the role of women in the value chain as a whole as well as in components thereof (e.g. role of women and user rights of women in grazing land)
- Environmental studies on particular aspects of value chain interventions such as food safety and human diseases resulting from interactions with animals (zoonotic diseases).

Diagnostic studies will be selected after the first research meeting in autumn 2020 and will be prominent during the first two years of the project.

Action studies completed

Action research studies will focus on individual and/or combinations of interventions initiated by the project partners. Particular attention will be paid to studies aimed at developing alternative input service supply systems. Such studies will look at the technical and economic viability of the interventions as well as distribution/sale of inputs/services to different target groups including government programmes, gender, and type of farmer. Since the number of alternative/service suppliers is relatively small, use will also be made of recording systems to obtain data. Studies will also be conducted to document alternative knowledge management/capacity development interventions.

Targeted production interventions, in particular on improved dairy breeding, will also be monitored on selected farms.

Action research studies will be initiated after the first research planning meeting (autumn 2020) and continue over the life of the project.

Commodity impact studies completed

Impact studies will consider individual and/or combinations of production interventions and measure impact on income, value chain performance (VCP), gender, nutrition, diet diversity and others. Data for such studies will mostly be obtained through surveys.

Project baseline and final impact study

CSARIDE has already established the baseline against which project progress will be measured, in particular at the ultimate outcome level and the intermediate outcome level.

Project M&E

During the project life, annual monitoring of project immediate outcomes and outputs will take place, for which a database will be developed to store the information for analysis and reporting. From Year 3 onwards, selected intermediate outcomes will also be measured. Information thus obtained will also be used for learning.

The basis for the results-based M&E is the results chain (RC) or intervention logic which illustrates the causal or logical relationships between the inputs, activities, outputs, and outcomes of the project. As per previous experience working in Eritrea, including on EU projects, results will be measured at three levels; outputs, outcomes and impact. Following the theory of change, a results framework will be elaborated which demonstrates the logical links between the results at their different levels and thereby enables the meaningful analysis of whether the project is on-track towards its planned results even in the first few years of implementation when higher-level results are not then expected. The project log frame will be extracted from the results framework and linked to the economic and financial analysis as per EU's guidelines on log frame preparation.

An external evaluation at mid-term and project end is intended to critically examine the findings of the internal/regular reports and provide the EU with independent verification of project achievements and impact based on specified performance indicators. A recognised consultant will undertake the evaluation and allow for the engagement and input of all stakeholders. Starting in Year 1, regional staff will conduct input and activity monitoring of the project on an ongoing basis. Output and outcome monitoring and evaluation will be conducted starting from Years 2 and 3 of the project life, respectively. Year 4 M&E activity will focus on measuring changes related to outcome and end-of-project performance outcome quality indicators will start in the beginning of Year 2.

6. Stakeholder Communication Plan

Success of the CSARIDE project can only be achieved if there is a high level of awareness and buy-in to its aims and objectives among all of the value chain stakeholders. There is, therefore, need for timely and sustained flow of information and messages across all stakeholders in the project, including those in both the private and public sector and all of the project partners and associates. Information and awareness on key concepts and successful interventions needs to be carefully targeted to the project value chain stakeholders as well as to wider national and international audiences. Effective communications require that important messages are packaged in a systematic way and communicated in a timely manner using appropriate methods.

The Communication Plan will be used for building effective and coordinated project activities as well as creating national and international awareness of the project results. This is an initial communication plan that will be updated annually based on analysis of past activities, their effectiveness, including planning new activities, responding to new technology trends, suggestions from local communities and demands from stakeholder groups.

The purpose of the Communication Plan is to capture ‘how’ communications will be managed throughout the project life cycle.

The CSARIDE communications strategy targets four main groups:

1. **Direct Value Chain Stakeholders:** The first group is comprised of the value chain actors and service providers involved in the dairy value chain– referred to as the project value chain group
2. **Indirect Value Chain Stakeholders:** The dairy value chain stakeholders elsewhere in Eritrea who could potentially benefit from similar interventions and approaches.
3. **Project Implementation Group:** national and regional staff and other team members and governance structure.
4. **Wider Research and Development Community:** National and international research organisations, extension and education bodies that could benefit from the knowledge and technologies created.

Different types of communications and approaches/tools are used for communications with the groups. An overview of the main formal and informal communications planned in CSARIDE is summarized in Table 11.

Table 11: Communication Strategy/Tools for Target Groups

Communication tools/approach	Project value chain group	Non-project value chain actors	Project implementation partners	External communication group	Resources
Project field days, study tours, exhibitions	X				
Project workshops, seminars	X				
Project regional and national conferences				X	

Internal project meetings implementers			X		
Steering committee meetings			X		
Project videos			X		
DeSIRA website	X		X	X	
Eritrean agricultural portal	X			X	
Project publications	X			X	
Participatory radio series/podcasts	X			X	

The project will also maintain a repository of all project documentation which will be uploaded regularly on the project website.

