



**FAO/GLOBAL ENVIRONMENT FACILITY
PROJECT DOCUMENT**



| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROJECT TITLE: Promotion of climate-smart livestock management integrating reversion of land degradation and reduction of desertification risks in vulnerable provinces | |
| PROJECT SYMBOL: GCP/ECU/085/GFF - GCP/ECU/092/SCF | |
| Recipient Country/ies: Ecuador | |
| Resource Partner: GEF - SCCF | |
| FAO project ID: 615693 | GEF/LDCF/SCCF Project ID: 4775 |
| Executing Partner(s): Ministry of Environment (MAE), Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) | |
| Expected EOD (starting date): August/2015 | |
| Expected NTE (End date): August/2019 | |
| Contribution to FAO's Strategic Framework¹ | a. Strategic objective/Organizational Result: Strategic Objective 2 (SO2): Outcomes 1 (OO1) and 2 (OO2) b. Regional Result/Priority Area: Climate Change and Environmental Sustainability ² c. Country Programming Framework Outcome: Priority Area 4: Comprehensive Management of Natural Resources and Climate Change Mitigation and Adaptation (PCF-4), outcomes 4.1; 4.2; and 4.4 ³ |
| GEF Focal Area/LDCF/SCCF: Climate Change Mitigation (CCM), Climate Change Adaptation (CCA), Land Degradation (LD). | |
| GEF/LDCF/SCCF Strategic Objectives: CCM-5, LD-1, LD-3, CCA-1, CCA-2, CCA-3 | |
| Environmental Impact Assessment Category (insert √): A B√ C | |
| Financing Plan: | |
| GEF allocation : | USD 2 393 977 |
| SCCF allocation: | USD 1 462 083 |
| <u>Co-financing:</u> | |
| MAE (cash): | USD 11 566 891 |
| MAE (in-kind): | USD 191 300 |
| MAGAP (cash): | USD 6 107 069 |
| MAGAP (in-kind): | USD 3 159 895 |
| FAO (in-kind): | USD 320 000 |
| Beneficiaries: | USD 811 400 |

¹ For projects operated by country offices, it is necessary to link projects in FPMIS at OR level. For all other projects, linkage at product/service level is necessary

² Based on *Areas of Priority Actions for Latin America and the Caribbean for the Following Biennium (2014–2015)*, taking into account the summary of recommendations of regional technical commissions, FAO 32 Regional Conference for Latin America and the Caribbean. Buenos Aires, Argentina, 2012.

³ Based on the National Priority Framework for FAO Technical Assistance in Ecuador (2013-2017). Source: http://www.cooperacioninternacional.gob.ec/wp-content/uploads/downloads/2013/12/Marco_Nacional_Prioridades_FAO_Ecuador.pdf

| | |
|------------------------|-----------------------|
| Subtotal Co-financing: | USD 22 156 555 |
| Total Budget: | USD 26 012 615 |

EXECUTIVE SUMMARY

Ecuador is located in the northwest of South America, bordered by Colombia on the North, Peru on the East and South, and by the Pacific Ocean to the West. The country is divided into 24 provinces, distributed in four natural macro-regions: Amazonia, Coast, *Sierra* or Andes, and the Insular Region.

In Ecuador, livestock is a major economic activity. The average contribution of the agriculture to the national economy during the period 1985-2005 was 13%⁴. In 2008, agriculture's participation in the GDP was 10.7%, ranking secondly after oil production. The livestock sector is fundamental to achieve food security in Ecuador. It is also an important source of employment and income in selected provinces, characterized by the predominance of small- and medium-scale farmers. Small- and medium-scale farmers implement the traditional production system, which is extensive cattle ranching.

The main problem of extensive cattle ranching is related to the lack of milk and meat productivity. Large tracts of land are occupied, the pastures are poorly exploited, and CO₂e emissions per unit of milk or meat are indirectly proportional to the level of productivity. Livestock production is still highly unsustainable in some provinces, generating three main threats to the local and global environment: i) soil losses and desertification risks; and ii) increasing pollutants and GHG emissions; and iii) extension of the livestock frontier.

Land degradation is a key problem in some provinces located in the *Sierra* and at the Coast, due to land dryness and seasonal rainfall scarcity, whereas in the Amazon (Napo and Morona Santiago) land degradation is caused by unsustainable livestock practices.

Climate change is affecting livestock production and productivity, through increased heat stress and reduced water availability, and indirectly through reduced feed and fodder quality and availability, the emergence of livestock diseases and competition for natural resources with other economic sectors. Small-scale livestock producers have been the most affected by climate impacts in the rural sector.

The livestock sector has been identified as one major source of GHG emissions at national level. Emission reduction policies should therefore be directly connected with the dynamics of this economic sector.

The proposed Project seeks to overcome three macro-barriers that hinder the spread of the sustainable livestock approach in the country: i) The institutional framework lacks an integrated livestock approach to reverse land degradation, increase climate change adaptation and reduce GHG emissions. There is a poor institutional knowledge on interactions between climate change mitigation and adaption in the livestock sector. Institutional capacities to implement integrated livestock management at field level are limited; ii) Livestock producers apply unsustainable livestock management practices and technologies that worsen land degradation, GHG emissions and increase vulnerability to climate change impacts; iii) GHG emissions and mitigation strategies cannot be measured and monitored due to the lack of monitoring systems in the field.

The project strategy to tackle the threats to global environmental benefits and adaptation benefits is based on the Climate Smart Agriculture (CSA) approach, in which FAO has large experience. This project is a demonstrative case of how the CSA approach can help to solve the

⁴ <http://www.iica.int/Esp/prensa/Comuniica/Comuniica/2005/n4-esp/n4.aspx>

problems faced by the agriculture sector due to climate change. Therefore, the project will introduce some tools of Climate Smart Livestock, which is a CSA sub-approach focused on the livestock sector.

The **Global Environmental Objective** is: To reduce soil degradation, and mitigate GHG emissions in the livestock sector of Ecuador. The **Project Development Objective** is: To sustainably increase and improve the supply of goods and services from livestock production. The **Specific Project Objective** is: To reduce soil degradation, increase adaptive capacity to climate change, and mitigate GHG emissions by implementing cross-sectorial policies and climate-smart livestock management, with emphasis in the vulnerable provinces.

The project will be implemented through the following components:

- Component 1: Strengthening of institutional capacities and coordination to incorporate the CSL approach in territorial management and in the development of livestock-related policies and tools.
- Component 2: Strategies of Technology Transfer, Deployment and Implementation for Climate-Smart Livestock Management.
- Component 3: Monitoring of GHG emissions and adaptation capacity in the livestock sector.
- Component 4: Project management, Monitoring and Evaluation and knowledge management.

Project's expected outcomes are: i) the CSL approach has been mainstreamed in climate change mitigation and adaptation policies and land-use planning in the livestock sector; ii) Institutional capacities for the implementation of CSL management strategies have been strengthened; iii) CSL approach has been adopted in degraded livestock areas; iv) Access to financing instruments for investments in CSL practices in degraded areas has been improved; v) GHG emissions from livestock activities have been reduced and monitored in project targeted areas; vi) the adaptive capacity of the livestock sector has been monitored; vii) Project implemented, lessons learned and best practices have been documented and disseminated.

TABLE OF CONTENTS

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------|----|
| GLOSSARY OF ACRONYMS | 6 |
| SECTION 1 – RELEVANCE (STRATEGIC FIT AND RESULTS ORIENTATION) | 8 |
| 1.1 GENERAL CONTEXT | 8 |
| 1.1.1 Rationale..... | 15 |
| 1.1.2 FAO’s comparative advantages | 30 |
| 1.1.3 Participants and other stakeholders | 31 |
| 1.1.4 Lessons learned from past and related work, including evaluations..... | 32 |
| 1.1.5 Links to national development goals, strategies, plans, policy and legislation, GEF/LDCF/SCCF and FAO’s Strategic Objectives..... | 33 |
| SECTION 2 – PROJECT FRAMEWORK AND EXPECTED RESULTS | 39 |
| 2.1 PROJECT STRATEGY | 39 |
| 2.2 PROJECT OBJECTIVES | 41 |
| 2.3 EXPECTED PROJECT OUTCOMES | 41 |
| 2.4 PROJECT COMPONENTS AND OUTPUTS | 42 |
| 2.5 GLOBAL ENVIRONMENTAL BENEFITS/ADAPTATION BENEFITS | 55 |
| 2.6 COST EFFECTIVENESS (alternative strategies and methodologies considered) | 63 |
| 2.7 INNOVATIVENESS | 64 |
| SECTION 3 – FEASIBILITY (FUNDAMENTAL DIMENSIONS FOR HIGH QUALITY DELIVERY) | 65 |
| 3.1 ENVIRONMENTAL IMPACT ASSESSMENT | 65 |
| 3.2 RISK MANAGEMENT | 65 |
| 3.2.1 Risks and mitigation measures..... | 66 |
| 3.2.2 Fiduciary risk analysis and mitigation measures (only for NEX projects) | 66 |
| SECTION 4 – IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS | 67 |
| 4.1 INSTITUTIONAL ARRANGEMENTS | 67 |
| 4.2 IMPLEMENTATION ARRANGEMENTS | 68 |
| 4.3 FINANCIAL PLANNING AND MANAGEMENT | 75 |
| 4.3.1 Financial plan (by component, outputs and co-financier)..... | 75 |
| 4.3.2 GEF/LDCF/SCCF inputs..... | 76 |
| 4.3.3 Government inputs..... | 76 |
| 4.3.4 FAO inputs | 78 |
| 4.3.5 Other co-financiers inputs | 78 |
| 4.3.6 Financial management of and reporting on GEF/LDCF/SCCF resources | 78 |
| 4.4 PROCUREMENT | 79 |
| 4.5 MONITORING AND REPORTING | 80 |
| 4.5.1 Oversight and monitoring responsibilities | 80 |
| 4.5.2 Indicators and information sources | 81 |
| 4.5.3 Reporting schedule | 83 |
| 4.5.4 Monitoring and evaluation plan summary | 85 |

| | |
|----------------------------------------------------------|------------|
| 4.6 PROVISION FOR EVALUATIONS | 86 |
| 4.7 COMMUNICATION AND VISIBILITY..... | 87 |
| SECTION 5 – SUSTAINABILITY OF RESULTS..... | 88 |
| 5.1 SOCIAL SUSTAINABILITY | 88 |
| 5.2 ENVIRONMENTAL SUSTAINABILITY..... | 89 |
| 5.3 FINANCIAL AND ECONOMIC SUSTAINABILITY | 90 |
| 5.4 SUSTAINABILITY OF CAPACITIES DEVELOPED | 90 |
| 5.5 APPROPRIATENESS OF TECHNOLOGY INTRODUCED..... | 91 |
| 5.6 REPLICABILITY AND SCALING UP | 91 |
| APPENDICES | 93 |
| APPENDIX 1: RESULTS MATRIX | 94 |
| APPENDIX 2: WORK PLAN (RESULTS BASED)..... | 111 |
| APPENDIX 3: RESULTS BUDGET..... | 126 |
| APPENDIX 4: RISK MATRIX | 127 |
| APPENDIX 5: PROCUREMENT PLAN | 129 |
| APPENDIX 6: TERMS OF REFERENCE (TORS)..... | 130 |
| OTHER APPENDICES AS REQUIRED BY THE PROJECT..... | 143 |

GLOSSARY OF ACRONYMS

| | |
|----------|---------------------------------------------------------------------------------------------------------------------------------|
| AEWG | Adaptation through Effective Water Governance in Ecuador |
| APTA | Amazon Production Transformation Agenda |
| AWP/B | Annual Work Plan and Budget |
| AITs | Animal Identification and Traceability Systems |
| APU | Agricultural Productive Unit |
| BH | Budget Holder |
| BNF | National Promotion Bank |
| CAN | Andean Community of Nations |
| CBD | Convention on Biological Diversity |
| CC | Climate Change |
| CCA | Climate Change Adaptation |
| CCM | Climate Change Mitigation |
| CCNS | Climate Change National Strategy |
| CEO | Chief Executing Officer (GEF) |
| CIAT | International Center of Tropical Agriculture |
| CSA | Climate Smart Agriculture |
| CSL | Climate Smart Livestock |
| CSLM | Climate Smart Livestock management |
| DAGs | Decentralized Autonomous Governments |
| DIVI | Drought Infrastructure Vulnerability Index |
| EP | Executing Partner |
| FAO | Food and Agriculture Organization of the United Nations |
| FIVI | Flooding Infrastructure Vulnerability Index |
| FORECCSA | Strengthening Community Resilience to Adverse Effects of Climate Change with focus on Food Security and Gender Approach Project |
| FPMIS | Field Project Management Information System |
| FSC | Forest Stewardship Council |
| GDP | Gross Domestic Product |
| GEBs | Global Environmental Benefits |
| GEF | Global Environment Facility |
| GEFSEC | GEF Secretariat |
| GHG | Greenhouse Gases |
| GLEAM | Global Livestock Environment Assessment Model |
| GVAP | Gross Value of Agriculture Production |
| INEC | Ecuador Institute of Statistics |
| JICA | Japanese International Cooperation Agency |
| LD | Land Degradation |
| LTO | Lead Technical Officer |
| LTU | Lead Technical Unit |
| LU | Livestock Unit |
| LUDPs | Land Use Development Plans |
| MAE | Ministry of Environment |
| MAGAP | Ministry of Agriculture, Livestock, Aquaculture, and Fisheries |
| MIES | Ministry of Social and Economic Inclusion |
| MRV | Measurement, Reporting and Verification |
| M&E | Monitoring and Evaluation |
| NAMA | Nationally Appropriate Mitigation Action |
| NPA | National Protected Areas |
| NPF | National Priority Framework |
| NPSL | National program of Sustainable Livestock |
| PC | Project Coordination |
| PIF | Project Identification Form (GEF) |
| PIR | Project Implementation Review |
| PPG | Project Preparation Grant (GEF) |
| PRAA | Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes Project |
| PPR | Project Progress Report |

| | |
|-----------|---------------------------------------------------------|
| PRODOC | Project Document |
| PSC | Project Steering Committee |
| PY | Project Year |
| RLC | FAO Regional Office for Latin America and the Caribbean |
| SENAGUA | National Secretariat of Water |
| SENPLADES | National Secretariat of Planning and Development |
| SFG | Under-Secretariat of Livestock |
| SeVI | Socioeconomic Vulnerability Index |
| SLM | Sustainable Land Management |
| STAP | Scientific and Technical Advisory Panel |
| TCI | Investment Centre Division (FAO) |
| TOR | Terms of Reference |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNCCD | United Nations Convention to Combat Desertification |
| USD | United States Dollar |

SECTION 1 – RELEVANCE

1.1 GENERAL CONTEXT

a) General development context related to the project

Ecuador is located in the northwest of South America, bordered by Colombia on the North, Peru on the East and South, and by the Pacific Ocean to the West. The country is divided into 24 provinces, distributed in four natural macro-regions: Amazonia or “East” (116 644 km²), Coast (59 920 km²), *Sierra* or Andes (70 672 km²), and Insular Region (7 998 km²), named Galapagos. Its total land area is 255 234 km². Its location in the Equatorial zone, as well as the presence of the Andes Mountains, the Amazonian forest and the Pacific Ocean determine diverse climate features, spatial and seasonal variations by natural macro-regions. Nevertheless, most of the country is characterized by having two defined seasons: one dry and one rainy.

The country aridity index is 23%, which means that 5 998 341 hectares have a ratio between potential evapotranspiration and precipitation equal to or less than 1. The annual average rainfall is 2087mm: 1482mm/year in the coastal zone (where Manabí, Santa Elena and Guayas are located); 1459 mm/year in the *Sierra* (Loja and Imbabura); and 1572 mm/year in the Amazon (Napo and Morona Santiago)⁵. Differences between dry season and wet season cause water deficits in winter. Natural vegetation covers 55.16% of national territory (13.60 million has), including 43.32% of forest (10.69 million has.); 5.28% of *páramo* (1.3 million has.); and 6.56% of shrubby formations (1.62 million has)⁶. Forests are featured mainly as tropical rainforest, dry forest, and montages forest. Most of forest remnants are still in the Amazon region, the largest rainforest in the world and the world's terrestrial biodiversity reservoir. At country level, 40% is forest land (10.26 million has.), while 29% is productive land for agro-livestock use (7.5 million has)⁷. Agricultural land is divided in arable land (17%), permanent cropland area (17%), and pastures (66%). Rainfed land represents 90% of total agriculture land (6,7 million has), while only 10% is irrigated (0.76 million has). Even though, water resources are predominantly used in agriculture (92%)⁸, followed by municipal drinking (6%)⁹ and industrial use (2.5%)¹⁰.

b) Institutional and policy framework

The Constitution of the Republic of Ecuador recognizes the rights of nature declaring its public utility, promotes sustainable development in order to ensure natural resources for future generations and mentions the need to take measures to address climate change. Related articles are:

- Art. 14: recognizes the right of people to live in a healthy and ecologically-balanced environment that guarantees sustainability and good living (*sumak kawsay*). Environmental preservation, conservation of ecosystems, biodiversity

⁵ TNR-UNCCD, 2006

⁶ *The Use and Coverage Map, Ecuador*, 2008.

⁷ FAO, 2008

⁸ 13,96 (2000) 10^9 m³/year

⁹ 1.293 (2005) 10^9 m³/year

¹⁰ 0.549 (2005) 10^9 m³/year

and integrity of the genetic heritage, prevention of environmental damage, and the recovery of degraded natural areas are matters of public interest.

- Art. 395: The Constitution recognizes the following environmental principles: 1. The State will guarantee a sustainable model of development, environmentally-balanced and respectful of cultural diversity that conserves biodiversity and natural regeneration capacity of ecosystems and ensures the satisfaction of the needs of present and future generations; 2. The environmental management policies will be applied transversally and shall be mandatory for all levels of the State, and for all people in the country; 3. The State shall ensure the active and permanent participation of individuals, communities, peoples and affected nations in the planning, execution and control of all activities that might generate environmental impacts. 4. In case of doubt regarding the scope of the legal provisions on environmental issues, they will be applied in the more favorable sense to the protection of nature.
- Art. 414: The State shall take appropriate and cross-cutting measures to mitigate climate change by limiting GHG emissions, deforestation and air pollution; the State will take steps for the conservation of forests and vegetation, and protect the population at risk.

The **National Plan for Good Living (NPGL) 2013-2017** is the roadmap through which “Public sector institutions, at different government levels, articulate the formulation of policies, institutional planning, public programs and projects, budget planning and execution, investment and public resources allocation with objectives, policies, strategic lines, targets and the National Territory Strategy established in the National Plan for Good Living 2013-2017, without reduction of their competencies and autonomy”¹¹.

General guidelines promoted by the central government are organized in 12 objectives. The following objectives are related with the project:

- Objective 3: To improve the quality of life of the population
- Objective 4: To guarantee the rights of nature and to promote a healthy and sustainable environment; Policies: 4.1 (natural heritage conservation and sustainable management); 4.4 (to prevent, control and mitigate environmental pollution as a contribution to the improvement of the quality of life); 4.5 (to promote the mitigation and adaptation to climate change and climate variability); and 4.7 (to mainstream the environmental approach in social, economic and cultural processes in public administration);
- Objective 7: To strengthen citizen capacities and potentialities; to guarantee the rights of nature, and promote territorial and global sustainability;
- Objective 8: To consolidate the social and solidary economic system, in a sustainable manner;
- Objective 9: To guarantee decent work
- Objective 10: To promote the transformation of the productive matrix.

All investment projects of the different ministries (and related projects with other institutions) must fit into the 12 NPGL objectives for the respective authorization by the National Secretariat of Planning and Development (SENPLADES).

¹¹ Resolution No. CNP 002 2013 National Planning Council, June 24, 2013.

The **Ministry of Agriculture, Livestock, Aquaculture, and Fisheries** (MAGAP) is in charge of executing institutional policies related with the project:

- Policy 1: To promote systematic productivity growth in the agriculture, livestock, aquaculture and fishery sectors, enhancing sustainable use and production of agro-biodiversity resources.
- Policy 7: To implement research and technological innovation outcomes for the agriculture, livestock, aquaculture and fishery sectors, tending to consolidate food sovereignty, mitigating climate change effects, improving productivity and facilitating technology transfer and offer.
- Policy 10: To implement quality standards and guarantee sanitary standards of the agriculture and livestock production at all levels, promoting sustainable practices to ensure intergenerational resources sustainability and quality of life.

The Ecuadorian Agency for Agriculture Quality Assurance (**AGROCALIDAD**) is the national sanitary, Phyto-sanitary and food safety authority, and is placed in the MAGAP. AGROCALIDAD is based on national and international standards aimed at the protection and improvement of agricultural production, implementation of food safety practices, monitoring the quality of inputs, support public health and the environment, incorporating the private sector and other stakeholders in the implementation of plans, programs and projects.

AGROCALIDAD promotes processes supported by quality management systems in several agricultural production chains, in order to improve production, productivity and ensure food sovereignty, for the satisfaction of national requirements and the development of international competitiveness.

AGROCALIDAD also awards organic certification through the application of national legislation: it records, controls and supervises operators of the organic agricultural production chain in Ecuador, in order to ensure their status as certified organic producers, products processors and/or marketers. AGROCALIDAD also observes the technical and administrative performance of organic products certification agency and their inspectors. Thus, consumers trust is generated in domestic and international markets.

The **Ministry of the Environment** (MAE) leads the national environmental policy. The following instruments are related to the project:

- Policy 2: Efficient use of strategic resources for sustainable development: water, air, soil and biodiversity.
- Policy 3: Management of adaptation to climate change to reduce social, economic and environmental vulnerability and strategies for:
 - mitigating impacts on people and ecosystems caused by climate change, natural and anthropogenic events;
 - implementation of comprehensive risk management to cope with extreme weather events;
 - reduction of GHG emissions in the social and production sectors.

As regards climate change, the adaptation and mitigation policies are shaped in the National Climate Change Strategy (NCCS), presented in 2012 and valid until 2025. The NCCS is the basis for the National Plan on Climate Change 2014-2017, which prioritizes the following sectors:

1. Water, through a Water and Climate Change (CC) governance program.
2. Energy, through energy exploitation of agricultural waste, clean development mechanism, reduction of hydro-electric vulnerability and NAMAs.
3. Agriculture (and other land uses) through the Sustainable Livestock Program, Program to Combat Desertification, Adaptation and Food Security Program.
4. Ecosystems, through the National REDD+ Program, Adaptation to glacier retreat and *paramos* conservation.

The described public policy instruments are based on the following Executive Decrees of the Presidency of the Republic:

- N. 1815/2009, which adopts mitigation and adaptation to climate change as a policy of the State. It also delegates to the MAE the formulation and execution of the National Climate Change Strategy and of a plan for the implementation of actions and measures for awareness-raising in the country, including inter-institutional coordination measures.
- N. 495/2010, Art.2, which creates the Inter-institutional Committee on Climate Change that will be composed of members or delegates of: i) the National Planning Secretariat; ii) the Coordinator Ministry of Patrimony; iii) the Ministry of Environment, who will preside over the Committee; iv) the Ministry of Coordination of Strategic Sectors; v) the Coordinator Ministry of Production, Labour and Competitiveness; vi) the Coordinator Ministry of Social Development; viii) the Ministry of Foreign Affairs, Commerce and Integration; ix) the National Water Secretariat; and x) the National Secretariat for Risk Management. The CC Under-Secretariat of MAE will act as Technical Secretariat of the Committee.

The **Productive Transformation Agenda**, which promotes the internalization of environmental costs through "[...] the implementation of carbon sinks in the industrial and productive sectors to help environment repair and remediation," lays on the principle of Environmental Sustainability, which is composed as follows:

Policy 1: Land-use planning:

Strategy 1: Identifying areas for productive development.

Strategy 2: Banning intervention in highly critical areas.

Strategy 3: Regulating the productive use of water resources.

Policy 2: Promoting gender equality:

Strategy 1: Use of clean technologies.

Strategy 2: Efficient and sustainable use of resources.

Strategy 3: Green certification processes.

Strategy 4: Environmental good practices.

Policy 3: Internalization of environmental costs in production processes:

Strategy 1: Effective waste management.
Strategy 2: Control of pollutants emission.
Strategy 3: Implementation of carbon sinks.
Strategy 4: Regulating the effective use of resources.

Land Use and Development Plans (LUDP) are the instruments through which the Decentralized Autonomous Governments (DAGs) are guided for the implementation of public policy regarding the use and occupation of urban and rural areas.

The National Constitution (2008) introduced a model of decentralization: the Organic Code of Territorial Organization, Autonomy and Decentralization (COOTAD) along with the National System of Competencies.

According to the COOTAD one function of provincial DAGs is *"to develop and implement the development plan of the province, as well as land use plans and policies within the scope of their competencies and their territorial boundaries; in coordination with national, provincial, cantonal and parochial (authorities); and to permanently perform monitoring and reporting for the fulfilment of established goals"*¹². DAGs are also responsible to promote productive activities; and food security¹³. The DAGs annually report to the National Secretariat of Planning and Development (SENPLADES) on the fulfilment of the goals set out in their respective LUDPs.

The LUDPs generally consist of two parts: a diagnosis and the plans themselves. In both cases the following components must be analyzed: Environment, Economy, Socio-cultural and political-institutional, human settlements, Mobility, Energy and Connectivity. All LUDP of Provincial GADs must be updated until December 2015, in compliance of a resolution of the National Planning Council.

c) Socio-economic relevance of the livestock sector

Livestock production, human livelihoods and productivity trends

In Ecuador, livestock is a major economic activity. The average contribution of the agriculture to the national economy during the period 1985-2005 was 13%¹⁴. In 2008, agriculture's participation in the GDP was 10.7%, ranking secondly after oil production. The primary sector¹⁵ has rapidly grown in the last decade. For example, in 2011 the sector registered a GDP annual variation of +5%¹⁶.

The livestock sector is fundamental to achieve food security in Ecuador. It is also an important source of employment and income in selected provinces, characterized by the predominance of small- and medium-scale farmers. In most areas of the country the

¹² Article 31, paragraph e)

¹³ Article 32 of COOTAD

¹⁴ <http://www.iica.int/Esp/prensa/Comuniica/Comuniica/2005/n4-esp/n4.aspx>

¹⁵ Primary sector is composed by agriculture, livestock, hydrocarbons, hunting, forestry, fisheries, mining and quarrying activities.

¹⁶ Central Bank of Ecuador, 2012.

stocking density of animals is 1.5 livestock unit (LU) per hectare, while in some minor areas this figure is 0.96 LU per hectare¹⁷.

According to the Third National Agricultural Census (MAGAP, 2001), there were 3 382 740 has of cultivated pastures, divided in 349 883 Agricultural Productive Units (APUs), distributed as followed:

- 195 275 APUs from 1 to 10 hectares, with a total of 188 209 hectares representing 56% of the total of APUs;
- 135 404 APUs from 10 to 100 hectares, with a total of 1 745 225 hectares and accounting for 39% of total APUs;
- 19 203 APUs of 100 or more hectares, with a total of 1 449 305, accounting for 5% of total APUs.

It is estimated that small and medium-sized farmers represent 95.5% of APUs in the country. Less-than-20-hectares production units supply 41% of national milk production. Livestock production is more spread than crop production at national level. The areas with natural and cultivated grasses used for livestock production represented 67% over the total agricultural areas in 2006, and have increased since 1990 when represented 63% of total agricultural areas¹⁸.

The grassland area in the *Sierra* (Andean region) increased from 37% in 1990 to 42% in 2006; the Coast shows a decrease from 45% in 1990 to 41% in 2006, while in the Amazon, its distribution has remained almost constant (17% from 1990 to 2000 and 16% in 2006) in relation to the total area used as grasslands¹⁹. Livestock production mainly includes cattle, which has significantly increased from 1990 (total number of cattle: 4 539 000) to 2006 (total number of cattle: 5 034 652)²⁰.

In light of these increasing tendencies and its contribution to the rural sector economy, livestock production is key to ensure human livelihoods for the 40% of the population living in rural areas, and more than 25% of them developing a farming activity in Ecuador.

The traditional way of production among small-scale and medium-scale producers is extensive cattle ranching. The main problem of extensive cattle ranching is the lack of milk and meat productivity. Large tracts of land are occupied, the pastures are poorly exploited, and CO₂eq emissions per unit of milk or meat are indirectly proportional to the level of productivity (for details see *Section 2.1: Project Strategy* and *Section 2.5 Global Environmental Benefits*).

Table 1a shows data on cultivated pastures, natural pastures and total cattle in the Project intervention area. As can be noted, the rates of animals per hectare are low. Only two provinces are above the national average (0.95): Guayas and Manabi. As for the milk production, the number of milking cows was divided for total produced liters. Being the national average of 5.38 liters/cow, most provinces are below it, except for Imbabura (7.76) and Napo (5.63).

¹⁷ MAGAP, 2011

¹⁸ According to the Ecuadorian National Institute for Statistics and Census (INEC)

¹⁹ National GHG Inventory in Agriculture, MAGAP, 2008.

²⁰ Id.

Table 1a**Index of livestock production in the provinces within the project boundaries**

| PROVINCE | CULTIVATED PASTURES | NATURAL PASTURES | PASTURE HECTARES | CATTLE POPULATION | CATTLE POPULATION / HA | TOTAL NUMBER OF MILKED COWS | TOTAL MILK PRODUCTION (lt) | AVERAGE (lt/milked cow) |
|-----------------|---------------------|------------------|------------------|-------------------|------------------------|-----------------------------|----------------------------|-------------------------|
| Imbabura | 57 668.00 | 42 141.00 | 99 809.00 | 84 060.00 | 0.84 | 20 450.00 | 158 593.00 | 7.76 |
| Loja | 94 968.00 | 337 909.00 | 432 877.00 | 383 578.00 | 0.89 | 53 504.00 | 226 292.00 | 4.23 |
| Guayas | 203 085.00 | 75 806.00 | 278 891.00 | 326 679.00 | 1.17 | 41 574.00 | 119 512.00 | 2.87 |
| Manabi | 840 749.00 | 113 823.00 | 954 572.00 | 977 142.00 | 1.02 | 178 101.00 | 521 844.00 | 2.93 |
| Santa Elena | 12 759.00 | 14 411.00 | 27 170.00 | 18 448.00 | 0.68 | 791.00 | 3 319.00 | 4.20 |
| Morona Santiago | 372 424.00 | 38 866.00 | 411 290.00 | 266 207.00 | 0.65 | 38 541.00 | 167 470.00 | 4.35 |
| Napo | 80 286.00 | 3 276.00 | 83 562.00 | 66 702.00 | 0.80 | 11 897.00 | 66 953.00 | 5.63 |

Source: Survey of Agricultural Area and Production (SAAP)
National Institute of Statistics and Census (INEC), 2012.

Considering the area designated for pasture and forage production in the Coast and Andean regions, the main varieties of grasses used, pasture management and production (t/ha) of green forage and total cattle consumption (Tm) in each of these two regions; it is estimated that currently 41 539 611 tons of grasses are managed inappropriately, which negatively affects the production of milk and meat during drought times.

Table 1b**Balance of pastures in the Coast and Andean regions, Ecuador**

| Pasture production and consumption/year | Metric tons |
|-----------------------------------------------|-------------|
| Production | 98 651 865 |
| Consumption | 57 112 253 |
| Difference between production and consumption | 41 539 611 |

Source: Production and nutrition Systems Division (SG-MAGAP), 2013

Another problem is the use of low persistence seeds and pastures non-adaptable for the production area. The situation is even worse when soil fertility is not considered when selecting fertilizers²¹.

Table 1c**Livestock production dynamics in project intervention area**

| Imbabura |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Milk is the main production. • Average Animal/UPA: 15. • Daily milk production: 35 lt/day/UPA. • Prevailing breeds: <i>Holstein and Holstein</i> crossed with local breeds. • More than half of producers don't keep a field book. |

²¹ Idem

| Manabí |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Mainly meet producers. • UPA average area: 100 ha. • More than half of the producers produce milk: daily production is 126lt/UPA/day. • Prevailing reeds: Holstein, Brown Swiss, Mestizo. • 30% of farms keep a field book. • Prevailing pasture: <i>saboya</i>. |
| Guayas y Santa Elena |
| <ul style="list-style-type: none"> • Mainly meat producers. • Average farm size: 45 Ha. • Prevailing breeds: Braham and local. • Approximately 50% of producers keep a field book. • Prevailing pastures: <i>saboya</i> and, to a lesser extent, <i>bracchiaria</i>. |
| Loja |
| <ul style="list-style-type: none"> • Mainly milk producers. • Average farm size 27 Ha. • High diversity of pastures, depending on the area: <i>Chilena, letania, saboya, kikuyu, bracchiaria, pasto miel, gramalote</i>. • Less than 50% of farms keep a register of herd management. • Prevailing breeds: Braham, local, Holstein and brown swiss. |
| Napo |
| <ul style="list-style-type: none"> • Mainly meat producers. • Average farm size: 38 Ha. • Prevailing pastures: <i>kikuyu</i> and <i>pasto miel</i> (depending on the area). • Prevailing breed: Holstein (especially in the higher area). |
| Morona Santiago |
| <ul style="list-style-type: none"> • Both Milk and meat production, depending on the producer. • Average farm size: 37 Ha. • Prevailing pastures: <i>gramalote</i>, with an increasing use of <i>bracchiaria</i>. • Prevailing breed: <i>charolais</i>. • Most producers do not keep a register of herd management. |

1.1.1 Rationale

a) Threats to Global Environmental Benefits (GEBs) and vulnerability to climate change

Livestock production is still highly unsustainable in some provinces, generating three main threats to the local and global environment: i) soil losses and desertification risks; ii) increasing pollutants and GHG emissions; and iii) extension of the livestock frontier:

- i. Cattle production requires large grassland areas. In Ecuador, these areas have deteriorated soils due to the intensive management, and the lack of sustainable management initiatives to increase or keep stable the production levels. Excessive animal load and aggravating droughts have made meadows more vulnerable and exposed to severe erosive processes. Soils can become unproductive, and their recovery and restoration processes would need time and new investments;
- ii. Unsustainable livestock management practices have also generated pollutant releases such as animal wastes, antibiotics and hormones, chemicals used to dye fur, fertilizers and pesticides to fumigate the fodder crops²². In order to counterbalance productivity losses, the process of soil recovery (compensation of elements N, P, K) has been mainly achieved via chemical fertilization. It negatively impacted on water resources and has generated greater GHG emissions from agriculture in the past decade (see GHG emissions trends below);
- iii. If un-sustainable and extensive livestock production continues, Ecuador will need an additional 1 million hectares for grazing by 2020²³, generating more land degradation and GHG emissions.

Land degradation

During decades, the development strategy in Ecuador has put pressure on natural resources and natural heritage. Land degradation affects 47% of the national territory as a result of erosion, overgrazing, loss of soil fertility, pollution and loss of vegetation. In 1982-2003, 14.2 % of the total national land (34 686 km²) was degraded; of which 25.9% was in the Andean region, 30% in the Coastal region, and 44% in the Amazon region²⁴.

Land degradation is a key problem in some provinces located in the *Sierra* and at the Coast, due to land dryness and seasonal rainfall scarcity, whereas in the Amazon (Napó and Morona Santiago) land degradation is caused by unsustainable livestock practices. These practices also accelerate the desertification processes in the Coastal areas (mainly in Manabí, North Guayas and Santa Elena) and *Sierra* (Loja is heavily degraded, and Imbabura)²⁵. Soil fertility deterioration and productivity decreases are perceptible in: i) the erosion level, which is the most visible sign of degradation; ii) the decrease in the amount of organic matter (carbon) captured; iii) draining and hydrophobia originated by grazing and tillage; iv) soil compaction; v) qualitative and quantitative loss of water resources, affecting agricultural production and human consumption; and vi) loss of biodiversity, including agro-biodiversity.

In the livestock-dedicated provinces of Ecuador, unsustainable livestock production is worsening land degradation through: i) inadequate management practices (e.g.: grazing in strong slopes, burn and slash to renovate fodder, deforestation, irrational use of pesticides and chemical fertilizers) that directly impact on soil, water and forests; ii) degrading soil uses and increased urban demand of natural resources, that cause a reduction of plowed

²² Id.

²³ MAGAP's estimations calculated during the formulation of the Sustainable Livestock National Program, 2011

²⁴ Second National Communication (SNC)

²⁵ Some of the selected provinces of this project have the most alarming aridity indexes of the country²⁵: Santa Elena 0.11; Manabí 0.28; Guayas 0.70; Imbabura 0.62, Loja 0.33 (TNR, 2006).

areas²⁶ and areas with natural vegetation; and iii) inadequate land management, which is worsened by natural disasters, climate change impacts and geophysical threats.

From a socio-economic perspective, land degradation is a negative driver for rural productivity and threatens local and national food security. It causes average annual losses of agricultural gross production value (GPV) by -7,6% (-10% in the Coast, and -6,3% in the *Sierra*)²⁷. Soil degradation has also generated social consequences, such as the migration process from Loja and Manabí towards other productive areas since early 1980s. Having lack of access to productive lands, rural population moved out to new settlements (mainly, in the Amazon) and cities, seriously impacting on the socio-economic and environmental conditions of their new habitats.

Desertification still affects population of vast areas in Ecuador and aggravates poverty, which in turn forces to over-exploit natural resources, fostering a vicious circle which accelerates the process of land degradation. The lack of access to financing sources that would enable a more sustainable and productive land use at small-scale level worsens poverty levels, which operate simultaneously as cause and consequence of desertification. Therefore, desertification generates unbalanced socio-economic development, rural migration and displacement, and needs to be addressed in the livestock-dedicated provinces in an integrated manner.

Impacts of climate change

Regarding climate conditions, Ecuador has experienced a reduction of total rainfall level in some areas, and an increase of annual average, maximum and minimum temperatures in the whole country, excepting few areas. In the period 1960-2006, average annual temperature increased by +0.8°C, maximum temperature by +1.4°C, and minimum temperature by +1.0°C²⁸. Furthermore, the *Sierra*, Coast and Amazon have been recently distressed by extreme weather events potentially caused by climate change (i.e.: El Niño, La Niña, exceptional floods, short-term and long-term droughts) that pose adaptation challenges for small- and medium-scale livestock farmers, causing serious socio-economic and environmental impacts. Precipitation intensity has also suffered unbalances. At social level, 62% of the most vulnerable households which were affected by floods had as main income source payments for work in agricultural areas. In the period February-May 2010, the Government had to declare the national state of emergency of power grids due to lack of rain, while in April 2010 a state of emergency in some Amazon areas was declared as a result of the rigorous winter season. Insufficient investments in irrigation and natural waterways regulation have made agriculture systems more vulnerable and defenseless to face drought seasons and water deficits.

In particular, climate change is affecting livestock production and productivity, through increased heat stress and reduced water availability, and indirectly through reduced feed and fodder quality and availability, the emergence of livestock diseases and competition for natural resources with other economic sectors.

Small-scale livestock producers have been the most affected by climate impacts in the rural sector. The economic losses caused by climate events also impacted on the national economy both as GDP decreases and as increases of national expenditures to face emergencies in vulnerable rural areas (e.g: subsidies, emergency funds). The dramatic

²⁶ From 0.42 has./habitant in 1954, to 0.21 has./habitant in 2001 (NAP, 2006)

²⁷ MAGAP, 2011

²⁸ Data obtained from 39 stations, National Institute of Meteorology and Hydrology, Ecuador.

droughts of 2009-2010 severely affected the livestock sector in several provinces. In 2009, 500 000 units of cattle and 473 309 has of pastures were affected, and the following year, 207.021 units of cattle and 107 907 has of grass were also hit. In order to address this problem, the GoE disbursed USD 2 705 060 and USD 1 841 759 respectively²⁹, to provincial governments.

While the effects of climate change on livestock are likely to be diverse, more serious impacts are anticipated in grazing systems, due to their close linkage with the natural resource basis which is being redefined by climate change, and their limited adaptation opportunities. Since livestock production is an important part of many farmers' livelihoods, climate change poses a risk to food security (e.g.: access to food) and human health, in some particular regions of Ecuador that are *per se* vulnerable. The Coast, *Sierra* and Amazonian regions have been affected by climate variability in the recent two decades. The selected 7 provinces are particularly vulnerable to climate impacts in different aspects:

- The Coast: Manabí, Santa Elena and Guayas are twice as vulnerable to desertification than national standards, having the most alarming rates of soil degradation (over national rates) and low precipitation levels.
 - Manabí is highly vulnerable to droughts. Its soils are relatively fertile and good textured, but shallow, highly exposed to erosion in steep slopes. Cattle raising is the main economic activity. *Saboya* pastures are the most used in grasslands for livestock production systems, being handled in monoculture. This species of erect growth has little grass tillering and is not drought-tolerant. No legumes herbaceous are cultivated in this province.
 - In Santa Elena and Guayas, the reduction of rainfall (-20 mm/year³⁰) and desertification signals are affecting land areas that previously had a great agricultural potential. Based on vegetation cover, the river sub-basins with potential problems of desertification are: *Daule*, *Chimbo*, *Babahoyo*, *Vinces* and *Santa Elena* (where the Guayas River watershed is located, which is source of more than 40% of the national GDP). Livestock production is the most important economic activity, seconded by crop production.
- The *Sierra*: the most vulnerable provinces are Loja and Imbabura, that suffer erosion and desertification due to overgrazing in livestock-dedicated areas, very heavy rainfall, loss of surface soils, and inadequate livestock practices on hillsides. Loja and Imbabura are facing an overall and accelerated land deterioration process, worsened by the effects of climate change and variability. The local economy is based on livestock production, and only secondly on crop cultivation.
- The Amazonia: Morona Santiago and Napo have suffered unusual winter seasons in the last decades, affecting human livelihoods that are mainly based on livestock production at subsistence levels. Crops production has low profit in this region, and therefore settlers and some indigenous communities living near the roads develop ranching and grazing activities, taking advantage of the relative land abundance.

GHG emissions in the livestock sector

In 2006³¹ agriculture emitted around 210 000 kTon CO_{2eq} (51% of all GHG emissions), while direct GHG emissions generated by LULUCF were around 162 000 kTon CO_{2eq} (40%

²⁹ MAGAP, 2011

³⁰ SNC, 2011

³¹ The most updated data reflected by the SNC is from 2006

of all GHG emissions). In addition, in the period 2000-2006 emissions from the agriculture grew by +39.5%, and emissions from LULUCF diminished by -7.3%.

The livestock sector has been identified as one major source of GHG emissions at national level (SNC, 2011). Emission reduction policies should therefore be directly connected with the behavior of this economic sector.

The SNC shows that N₂O and CO₂ are the main direct GHGs emitted by the country, followed by CH₄ emissions:

- Between 1990-2006, total N₂O emissions increased from 151 590 kTon CO_{2eq} to 201 581 kTon CO_{2eq} (+33%). Agriculture has been the main source of N₂O emissions at the national scale (95.7%). However, these increases have not necessarily reflected in the intermediate period (1990-2000), when N₂O emissions fell -5.8%. The SNC attributes this reduction to the decrease of grazing animals, which reduced emissions from pastures. In 2006, the number of grazing animals increased again, pushing up the N₂O emissions from agriculture. N₂O is the most important GHG emitted in Ecuador. Any CCM strategy in the country should address agriculture and include sustainable livestock management in pastures, as identified by the SNC (see Graphic 2 in Annex I of the PIF). N₂O emissions are caused by the use of synthetic nitrogen fertilizers, livestock grazing and manure. According to MAGAP, in 2003 Ecuador had 4 724 231 has of pastures and in 2010 increased to 5 214 028 has, leading to higher total N₂O emissions³².
- CO₂ is the second most important GHG emitted in Ecuador. CO₂ emissions nearly doubled from 98 069 ktonnes CO_{2eq} in 1990 to 188 973.6 ktonnes CO_{2eq} in 2006. The LULUCF sector is the largest CO₂ generator (84% of the total CO₂ emissions), followed to a lesser extent by the energy and agriculture sectors. In the period 1990-1994 pasture areas increased by +172 000 has, and in 2000-2006 they expanded by +511 000 has. Therefore, livestock farming activities (i.e: management of pastures and *páramos*) have become an increasing source of GHG emissions in the country. In 1990-2006 total GHG emissions in the livestock sector grew from 11.033,51 KTon CO₂ (1990) to 11 196.61 KTon CO₂ (2006) (+1.45%)³³.
- CH₄ is the third most important GHG emitted in Ecuador. It increased in 1990-1994 (+ 18.6%), decreased slightly in 1994-2000, increased again in 2000-2006 (+20% in 1990-2006). According to the SNC, the decrease in 2000 responded to the reduction of the number of grazing animals, which resulted in reduced CH₄ emissions both from enteric fermentation and manure management. The livestock sector is the main source of methane emissions³⁴. In 2006, CH₄ emissions in Ecuador amounted to 19 456.4 kTon (kTon CO_{2eq}), of which 46% can be attributed to activities in the agriculture and livestock sectors and 12% to LULUCF activities³⁵.

Table 2 illustrates the emissions from manure and enteric fermentation (CO_{2eq}) broken down by type of livestock.

³² SNC, 2011

³³ MAGAP, 2008

³⁴ SNC, 2011

³⁵ SNC, 2011

Table 2. Emission by livestock type

| Type of livestock | CO _{2eq} tons from enteric fermentation and manure management |
|-------------------|------------------------------------------------------------------------|
| Dairy cattle | 203 865 |
| Non-dairy cattle | 75 987 |
| Buffalo | 0 000 |
| Sheep | 5 022 |
| Gouts | 0 810 |
| Camels | 0 000 |
| Horses | 8 023 |
| Mules and donkeys | 3 326 |
| Pigs | 4 780 |
| Poultry | 1 071 |
| Total | 302 885 |

Source: National GHG Inventory in Agriculture, MAGAP, 2008.

In agricultural soils, 78% of the N₂O emissions originate from grassland management, grazing and animal droppings (manure deposited in the field). 19% are direct N₂O emissions from agricultural soils. Indirect N₂O emissions mainly come from nitrogen leaching and run-off from agricultural soils. In Ecuador, N₂O emissions in the subsector of agricultural soils are distributed as showed in Table 3³⁶.

Table 3: N₂O emissions in the subsector of agricultural soils, Ecuador

| | Tons CO _{2eq.} | % over total agricultural soils |
|---------------------------|-------------------------|---------------------------------|
| N ₂ O direct | 37 919 200 | 19.24 |
| N ₂ O animals | 153 859 200 | 78.08 |
| N ₂ O indirect | 5 285 500 | 2.68 |
| Total | 197 039 100 | 100 |

Source: National GHG Inventory in Agriculture, MAGAP, 2008.

The baseline scenario shows a combination of variables that are risky for sustainable livestock production in vulnerable areas, affecting soil composition, GHG emission levels, and disaster risk management. Rural people living in vulnerable provinces have been seriously affected by land degradation and desertification, since both have affected small- and medium-scale farmers' livelihoods and food security, and therefore, have increased rural poverty levels. Poverty is a key driver that explains natural resources over-extraction and depletion, and accelerates the process of land degradation. Poverty is both cause and consequence of desertification. The livestock sector is framed into this context of poverty, climate-related economic losses and land degradation, while having a big potential to reduce GHG emissions. It is one major economic sector affected by climate change adverse impacts, that at the same time could have a huge impact on

³⁶ National GHG Inventory in Agriculture, MAGAP, 2008.

climate change mitigation. As such the livestock sector should be included both in adaptation and mitigation national strategies.

b) Baseline projects and investments

The **National Program of Sustainable Livestock (NPSL)** is executed by MAGAP since 2011. The NPLS' overall objective is *“to promote the sustainable development of the livestock sector through the implementation of production systems that support livestock producers to achieve more efficient production, improve their income and at the same time to better use of natural resources”*.

The NPLS has the following specific objectives: i) to establish Animal Health systems, an Official Animal Identification and Traceability System, and a Reproduction and Genetic System, in order to improve livestock productivity; ii) to establish livestock production systems according to different climatic zones to improve productivity; iii) to coordinate the producers through short chain networks, that ensure a fair price to the producer and offer the consumers a guarantee in terms of food safety, social equity, environmental sustainability and cultural identity; and iv) to train, evaluate and follow-up project beneficiaries. Outcomes indicators of the NPLS are the following:

- 1 Animal Identification and Traceability System (AITS), operating in 2013
- 1 Animal Health System, implemented
- 1 Reproduction and Genetic System, implemented
- Average output per Livestock Unit: 58% in 2017
- Stocking rate: 2.08 Livestock Unit /hectare by 2017
- Associations working in the exploitation and supply component in the framework of the associativity model, increased by 80%
- 70% of beneficiaries of milk, wool and fibres commercialize their products in an associative manner
- 90% of beneficiaries receive follow-up and training by project's technicians.

The NPLS is divided into three components. The activities are:

Component 1: To establish Animal Health, AITS and Reproduction and Genetic Systems to improve the livestock sector productivity.

1. Genetics:

- Establishment of the National Genetics Centre
- Reproduction nucleus
- Spreading and management of superior genetic material
- Import of *alpacas*
- Import of caprine breeds for meat and milk production
- Import of ovine breeds for meat and wool production

2. Animal health:

- Operative costs of official laboratories
- Supplying of mobile units
- Supplying of veterinary first-aid kits
- Regional diagnosis laboratories
- Veterinary mobile units
- Veterinary first-aid kits

Component 2: To establish livestock production systems according to different climatic zones to improve animal load and reduce the livestock frontier

3. Nutrition

- Operative cost of Forage Strategic Reserves
- Establishing silvopastures
- Maintaining silvopastures
- Forage Strategic Reserves
- Fodder production and stocking units
- Seeds for fodder production and stocking units

Component 3: To coordinate the producers through short chain networks, that ensure a fair price to the producer and offer the consumers a guarantee in terms of food safety, social equity, environmental sustainability and cultural identity.

- Value chain development
- To gather baseline information
- Advertising campaign on Milk consumption
- Storing, Cooling and Quality Verification Infrastructure
- Meat production chain
- Fibres and wool production chain

The Sustainable Agri-Production Restructuring Program in the Ecuadorian Amazon – **Amazon Production Transformation Agenda (APTA)** is a program executed by MAGAP since 2013. APTA's main objective is to convert Amazon's agricultural production activities into sustainable production systems under the economic, social, environmental and cultural perspective, through the implementation of comprehensive farm planning to free up pasture areas that will be dedicated to crop diversification and reforestation. To do this, the following specific objectives will be achieved: i) Developing mechanisms for information, land tenure and use management to supporting integrated management plans at farm level, in accordance with the social and environmental land functions: ii) promoting the sustainable development of rural population in the Amazon region, through incentives, credit, technical assistance and participatory rural extension, in the framework of the integral planning of each farm; iii) Strengthening production chains through the generation of activities that promote competitiveness and facilitate fair trade. Table 4 details the geographic scope of APTA.

Table 4: Geographic scope of the Amazon Production Transformation Agenda (APTA)

| Province | Province surface (Ha) | Total agricultural area (Ha) | Pastures Area (Ha) | % of Provincial Surface | Surface of Intervention |
|------------------|-----------------------|------------------------------|--------------------|-------------------------|-------------------------|
| Sucumbios | 1 814 655 | 322 192 | 161 783 | 8.92 | 36 259 |
| Orellana | 2 167 541 | 269 881 | 132 109 | 6.09 | 20 990 |
| Napo | 1 254 422 | 167 022 | 131 054 | 10.45 | 28 228 |
| Pastaza | 2 962 876 | 136 737 | 117 680 | 3.97 | 24 436 |
| Morona Santiago | 2 402 911 | 457 424 | 447 974 | 18.64 | 123 015 |
| Zamora Chinchipe | 1 056 578 | 240 711 | 233 490 | 22.10 | 67 470 |

| Province | Province surface (Ha) | Total agricultural area (Ha) | Pastures Area (Ha) | % of Provincial Surface | Surface of Intervention |
|----------------------------|-----------------------|------------------------------|--------------------|-------------------------|-------------------------|
| Total Amazon Region | 11 658 985 | 1 593 969 | 1 224 093 | 10.50 | 300 400 |

The Shoulder to Shoulder Strategy is implemented by the Coordination Unit of National Innovation (MAGAP) since late 2012 in the provinces of Cotopaxi, Tungurahua, Chimborazo, Bolivar and Cañar. Since 2014 the strategy has been extended to the whole country. This strategy consists of bringing agricultural extension closer to the producer: agricultural and livestock technicians reside in rural parish and work on a daily basis with producers. The MAGAP provides housing and working tools to the technicians. Currently the MAGAP does not have an on-line platform for training technicians and producers. Through the Shoulder to Shoulder Strategy the MAGAP is creating a Virtual Training Platform as a tool for the implementation of the Strategy.

The **AGROCALIDAD Certification System for Good Livestock Practices in Milk Production** is being implemented since December 2012. The System, regulated by MAGAP Ministerial Agreement (n. 394 of 4 September 2013), was designed to be implemented nation-wide. It is a voluntary public certification system and has no cost for producers. Three supporting document (Regulation, handbook for certifiers, manual for producers) were elaborated with a participatory approach to be applied at local level. This certification system is based on three pillars: productivity, social, animal and environmental well-being.

Practices proposed by the system are generally applicable by small-scale and medium-scale producers, with some exception that require financing and training: infrastructure, water, creation and use of processes and registers. Some system requirements should be adjusted to facilitate small and medium scale producers' access to incentives, for example: i) producers have to compile 18 documents to support the application; ii) some criteria are inapplicable or should be adapted to small and medium scale producers (i.e.: farms should have a gate). This constitutes a barrier for the dissemination of the incentive.

The System's certification criteria consider labour/social, environmental and animal wellbeing aspects. The certification focuses on good practices for milk production. However it does not include the sustainable/climate-smart livestock approach (in accordance with FAO and the RAS regulation). The following elements should be incorporated or enhanced: ecosystem conservation, protection of forest live corridors, relations with community, land management and conservation, sustainable pasture management (reduction of degraded pastures), reduction of carbon print (through silvopastoral systems, multi-layered living fences grass sowing and forage banks, reforestation), genetic improvement, warning systems and risk reduction.

The certification system is still in a testing phase. The promotion and technical assistance for its implementation are still very limited. The system only includes milk production, although AGROCALIDAD is planning to include meat production in 2015.

The Program *National System of Rural Land, Information and Technology Infrastructure* (SIGTIERRAS) of the MAGAP generates cadastral information at national level that supports efficient land management and land tenure security. This program provides a tool for land use planning and strategic decision-making in rural areas. The system generates satellite photography and cartography at scale of 1:25 000, the same supported by the Military Geography Institute (MGI), which is the competent authority

in Ecuador. Thematic maps at cantonal level are an important input for livestock planning at land unit and landscape level. The Project will seek a cooperation agreement to utilize SIGTIERRAS information in targeted livestock areas.

The Ministry of Environment (MAE) has developed the **Guidelines for Climate Change mainstreaming into the local planning of DAGs, through plans, programs and Climate Change strategies**³⁷. This document aims to support DAGs in the process of including climate elements in their development and land use plans, facing, contributing to the Good Living National Plan 2013-2017 and the Climate Change national Strategy 2012-20125.

The Guidelines are complemented by General Guidelines for Decentralized Territorial Planning, released by SENPLADES. It consists in several actions to be taken by DAGs at administrative and technical level, participation of citizens and production sectors. Following the CC Guidelines, each LUDP should generate and include a Climate Change Plan, to be approved by the MAE.

The **Japanese International Cooperation Agency (JICA)**, at the request of the Adaptation Directorate of MAE, developed a tool and a monitoring framework for tracking, evaluating and improving the quality of climate change adaptation measures in Ecuador. This framework is composed of two components: i) an M&E framework, including a set of indicators to define the effectiveness of adaptation measures; and ii) a tool for implementing this M&E system in projects being led by the Directorate of Adaptation (MAE).

The M&E tool is based on effectiveness indicators in seven economic sectors, including livestock. Sectorial indicators include: number of degraded hectares per year; percentage of pastures affected by flooding or drought; percentage of farms with adaptation practices; percentage of farms with land management to maintain fertility and humidity.

The JICA M&E monitoring tool has not been tested yet for the livestock sector in Ecuador.

c) Remaining barriers to address threats on GEB/CC vulnerabilities

Despite the efforts made to promoting sustainable livestock ,management in appropriate areas in Ecuador, the livestock sector faces three macro-barriers:

1. **The institutional framework lacks an integrated livestock approach to reverse land degradation, increase climate change adaptation and reduce GHG emissions.** Livestock policies are fragmented, and do not integrate multi-variable strategies. There is a poor institutional knowledge on interactions between climate change mitigation and adaption in the livestock sector. Institutional capacities to implement integrated livestock management at field level are limited.
2. **Livestock producers in the field apply unsustainable livestock management practices and technologies that worsen land degradation, GHG emissions and increase vulnerability to climate change impacts.**
3. **GHG emissions and mitigation strategies cannot be measured and monitored due to the lack of monitoring systems in the field.**

³⁷ *Guidelines for Climate Change mainstreaming in Decentralized Autonomous Governments local planning, through plans, programs and Climate Change strategies, May 2014, MAE.*

These three macro-barriers are divided into ten micro-barriers detailed as follows:

Barrier #1: Lack of a climate-smart livestock focus in MAGAP policies and programs. Policies do not expressly refer to actions for adaptation and mitigation of CC in the livestock sector. Therefore, programs, impact or outcome indicators of MAGAP projects and actions do not include GHG reduction measurement or reduction of vulnerability to climate impacts. MAGAP only measures productive indicators; the environmental impact of sector policies is not measured.

Barrier #2: DAGs' LUDPs do not aim at improving environmental sustainability of the livestock sector. There is no explicit reference to sustainable/climate-smart livestock in LUDPs. Therefore, a direct relationship between livestock production, the impacts of climate change and desertification and land degradation cannot be found. All LUDPs note livestock lack of productivity in the province, low average milk production and marketing problems. The LUDPs of the DAGs of Loja, Manabi, and Morona Santiago do not mention the words "climate change", "adaptation" and "mitigation". In the remaining four provinces actions on adaptation and/or mitigation of climate change are mentioned, but the economic side of the environmental sector is excluded. There is no recognition of a direct relationship between agricultural production activities and climate change. The proper handling of animal nutrition and herd management is not mentioned as a priority.

Barrier #3: Lack of knowledge and institutional capacity on climate change and sustainable livestock. The provincial technicians of MAGAP and MAE, and DAG staff have little knowledge about climate change. Concepts of adaptation are ignored and not included or adopted in projects, planning and pastoral areas. There is a general lack of knowledge about the contribution of livestock activities to GHG emissions. Technicians tend to define as livestock only the breeding of cattle, regardless of the more complex system involving GHG generated by deforestation and agrochemicals. Technicians partially recognize that methane is the main greenhouse gas produced in livestock production. There is a lack of capabilities in animal nutrition issues: pasture management, use of minerals and nutritional blocks. There is also a lack of knowledge about silvopastures work. There is demand for training on this topic, including appropriate species, densities, seeds adapted to areas, among others.

Barrier #4: Lack of knowledge on the level of vulnerability of the livestock sector in the face of CC. There are interesting initiatives in the country to determine the vulnerability to climate change. However none of them focuses on the livestock sector, although the sector is recognized as an important rural livelihood. Therefore an important remaining barrier is the lack of knowledge of the vulnerability level of the sector, as well its resilience.

Barrier #5: Lack of awareness among livestock producers regarding GHG emissions and mitigation potential. Although some producers have agreed to the adoption of good practices, they do so on the basis of the co-benefits they generate. This implies that the lack of capabilities in the areas of climate change mitigation is a barrier to the full implementation of sustainable livestock.

Barrier #6: Inadequate practices generate impacts on soil, GHG emissions and adaptation capacities at local level. Livestock, especially in vulnerable areas, is becoming an environmentally unsustainable activity due to the implementation of inadequate production practices generating impacts on soils and increased GHG emissions. The loss of vegetation and soil quality have generated degradation, reducing livelihoods and threatening food security of small and medium scale livestock producers. Poverty is a key factor that emphasizes the depletion and excessive exploitation of natural resources and accelerates the land degradation process.

Barrier #7: Limited access to credit of small and medium scale livestock producers leads to low profitability levels, unsustainable exploitation of natural resources and low productivity. The main problems of the dairy chain are: i) Insufficient control in terms of negotiation between producers and industry on issues such as quality control and milk and inputs prices; ii) The production collection and vial infrastructure is inadequate; iii) There are no studies on the problems of commercialization, storage and post-harvest treatment; iv) Lack of price information for producers.

Meat and dairy value chains are not well established. Services to improve farm productivity are expensive and credit conditions are not attractive to producers. As for marketing, information systems are deficient and the intermediary imposes unequal conditions to small-scale farmers. There are no associations with enough strength to jointly marketing livestock-based goods.

Barrier #8: The AGROCALIDAD certification system does not include CSL/sustainable livestock, and has little diffusion. In 2012 AGROCALIDAD developed a manual and a voluntary certification system for milk production. At present, AGROCALIDAD is working on a certification system for meat production. Despite the efforts, the milk certification system is scarcely used in the country. Producers receive no training, do not know how to comply with regulations, and the economic incentive of two additional cents per litre of milk is insufficient to motivate a change in their production system. AGROCALIDAD only certifies the quality and safety of food and lacks of guidelines focused on climate change and production environmental sustainability. The certification system does not include criteria for sustainable/climate-smart livestock³⁸.

Barrier #9: Incentive systems for reversing land degradation in the livestock sector are inadequate and uncoordinated. There are various incentives led by DAGs, MAGAP and the international cooperation to encourage farmers to implement sustainable livestock, Ministerial agreements promote sustainable land use, fair pay to the producers, incentives for reforestation and conservation. However, incentives currently present the following problems: i) insufficient and with limited coverage; ii) uncoordinated and disarticulated; iii) not adequately promoted; iv) difficult to access for the producer; v) are not attractive for small-scale producers (i.e. tax incentives); vi) are not put into practice nor enforced; vii) not designed with specific sustainable/climate-smart livestock approach.

³⁸ I.e.: ecosystem conservation, protection of forest live corridors, relations with community, land management and conservation, pasture sustainable management (reduction of degraded pastures), reduction of carbon print (through silvopastoral systems, multi-layered living fences grass sowing and forage banks, reforestation), genetic improvement, warning systems and risk reduction are lacking in the system at present.

Barrier #10: Absence of an adequate monitoring system of GHG emissions. The lack of research to elaborate livestock-related emission factors by province, hinders the measuring of GHG emissions. The ESPAC, main sectorial data provider, does not gather all the necessary information to complete the GHG inventory. An updated agricultural census is missing. No carbon or GHG monitoring system has been tested in the livestock sector.

d) Incremental/additional reasoning (added value of the GEF/LDCF/SCCF financing)

In order to remove the above-mentioned barriers and achieve global environmental benefits and adaptation benefits, the financial resources of GEF/SCCF will be invested in an incremental/additional way to the aforementioned baseline initiatives, as detailed below:

Component 1: Strengthening of institutional capacities and coordination to incorporate the CSL approach in territorial management and in the development of livestock-related policies and tools.

In order to overcome barriers #1, #2, #3 and #4 (see sub-section 1.1.1.c), Component 1 will deliver four outcomes: i) Design of a sustainable/climate-smart livestock management strategy; ii) Design of a Nationally Appropriate Mitigation Action (NAMA) for the livestock sector; iii) Facilitated the updating of five (5) LUDP under the sustainable/climate-smart livestock approach, including livestock production zoning plans; iv) the capacities of key representatives of MAE, MAGAP and DAGs in selected provinces have been strengthened.

FAO will provide an in-kind contribution estimated in USD 200 000, corresponding to technical assistance to be provided through the Project *Policies and strategies strengthening to prevent, control and eradicate the foot-and-mouth disease in Peru, Bolivia, Ecuador, Colombia and Venezuela* to be executed concurrently with this proposal.

The MAE has taken a step forward in the CC technical-political approach through the development of the *Guidelines for Climate Change mainstreaming in Decentralized Autonomous Governments local planning, through plans, programs and Climate Change strategies*. The Project will support the integration of the Guidelines criteria and climate standards in livestock sector policies, at national and provincial level. The MAE will provide a co-financing contribution of 164 000. Of this amount, USD 120 000 will be an in cash contribution, mainly for the development of adaptation and mitigation criteria to be incorporated in Land Use Development Plans – LUDPs, coming from the project *Integrated Management to Combat Desertification, Land Degradation and Adaptation to Climate Change – GIDDACC*³⁹. In-kind contributions, for an amount of USD 44 000, include human resources, transport, infrastructure for meetings and training to provide local governments with technical assistance. The GIDDACC Project seeks to contribute to combat desertification, land degradation and drought processes with a focus on climate change adaptation in those provinces that have high rates of land degradation, mainly in dry and fragile areas, such as dry forest ecosystem and / or Tumbes region, inter-Andean valleys and dry high areas.

³⁹ By its name in Spanish

MAGAP will contribute the sum of USD 1 834 033 in-kind, which includes human resources, transport, infrastructure for meetings and training to provide local governments with technical assistance.

The GEF incremental financing of USD 321 474 and the additional SCCF financing of USD 493 934 for Component 1 will aim to strengthen the institutional framework, increase national and provincial stakeholders capacities and improve DAGs territorial planning on livestock sector related matters. LUDP updated with environmental criteria will cover the 2015-2020 term.

Component 2: Strategies of Technology Transfer, Deployment and Implementation for Climate-Smart Livestock Management.

In order to remove barriers # 5, # 6, # 7, # 8 and # 9 (see sub-section 1.1.1.c) Component 2 aims to transfer technology and information, and provide tools to producers for the adoption of sustainable practices to improve productivity, while contributing to the sustainable use and conservation of natural resources such as soil, water and air. The actions implemented to achieve the selected objective under this component will be fully incremental, since they are complementary and strengthen existing national efforts, which is why they are cost - effective and sustainable over time. For the design of this component's activities, Institutional Programs and Plans of Local Governments have been considered to be consistent and incremental with livestock development activities and conform to the socio-economic characteristics and demands.

The MAE will provide an amount of USD 11 130 891, corresponding to the expected investment in the seven provinces for the *Forest Restoration Program*, to be developed concurrently with the Project. This national program has two execution modalities: a) assisted natural regeneration; and b) enrichment using native species. For the Sierra region, an incentive of USD 403 per hectare has been set, for the Coast and Amazon regions the incentive is USD 411 per hectare. In-kind contributions, for an amount of USD 47 000, include human resources, transport, infrastructure for meetings and training. Co-financing for this component will also come from the *Capacity Development for Energy Exploitation of Agricultural Waste* Project - GENCAPER⁴⁰ that aims to train and provide technical assistance to farmers' associations on the energetic potential of livestock-generated waste and to implement biomass energy projects in the agricultural sector through the development of feasibility studies.

The MAGAP will provide a cash contribution of USD 6 107 069 for outputs 2.1.1, 2.1.2 and 2.1.3, from the 2010-2017 Sustainable Livestock National Program. This amount includes human resources, transport and direct investments on field for incentives schemes, as well as infrastructure for meetings and training for project activities. For output 2.1.1 MAGAP's co-financing will be related to soil restoration, implementation of silvopastoral systems and forage reserve. For output 2.1.2, co-financing will be related to strengthening of community milk collection centers, networks promotion and commercial agreements. For output 2.1.3, co-financing will be related to the Livestock Supply Centers and Collection Centers, fiber and wool shear and classification.

⁴⁰ By its name in Spanish.

The FAO will provide an amount of USD 120 000 in cash to support financial mechanisms and incentives schemes through technical assistance provided through the Project *Strengthening the Inclusion of Family Farming in Public Food Purchase*.

The GEF incremental financing of USD 1 518 984 and the additional SCCF financing of USD 490 235 for Component 2 will aim to promote and facilitate access to incentives, training, local networks, and best practices to provide livestock producers a range of possibilities for them to transform their production units in sustainable systems, taking into account their needs and the condition of their property. Families led by female producers will be particularly taken into account during the selection of local beneficiaries.

Component 3. Monitoring of GHG emissions and adaptation capacity in the livestock sector.

In order to remove barriers #3, #4, #5 and #10 (see sub-section 1.1.1.c) Component 3 aims to establish a monitoring system of GHG emissions and adaptation actions in the livestock sector, in line with the integrated approach of CSLM (see Section 2.1).

The MAE will provide an amount of USD 316 000 in cash, from the *Capacity Development for Climate Change Mitigation Project*. This MAE Project seeks to implement 3 NAMAS, develop the National Climate Change Mitigation Plan and develop GHG inventories and Monitoring, Reporting and Verification (MRV) systems by sector. In this sense the project co-financing will mainly focus on the support and technical supervision for the definition of emission factors for the livestock sector and monitoring of satellite images and GIS processing.

The MAGAP will co-finance an amount of USD 861 062 in kind, corresponding to the time of technical focal points allocated for gathering mitigation baseline information and on-field monitoring of adaptation indicators.

The GEF incremental financing of USD 220 000 and the additional SCCF financing of USD 345 155 for Component 3 will be directed to monitoring GHG emissions from the livestock sector in Project selected areas, and to test and evaluate the JICA tool for monitoring adaptation capacity in the livestock sector (see description in sub-section 1.1.1.b).

Component 4: Project management, Monitoring and Evaluation and knowledge management.

Component 4 will address project progress monitoring and evaluation, achievement of project indicators, risk mitigation measures and identification of new measures to address unforeseen risks, and draw lessons learned (including successes and failures) resulting from the implementation of the project. Lessons learned might be disseminated at regional level and worldwide, and will be useful for projects to be implemented in similar regions.

The MAE will co-finance this Component with an in-kind contribution of USD 100 300 through the Environmental Information System – EIS (General Planning Coordination – GPC), an on line platform for knowledge management created in 2012 which seeks to integrate all environmental information to generate geographic and statistical indicators, and automation of institutional processes. This will include staff in charge of Project’s document management and dissemination through the portal. MAGAP will make available its on line platform for knowledge management, which is valued in USD 220 000. Project’s beneficiaries will contribute with their participation in project evaluation for a value of USD 5 000.

The GEF incremental financing of USD 198 011 and the additional SCCF financing of USD 50 000 for Component 4 will be directed to M&E activities, including monitoring project progress and fulfillment of indicators, midterm and final external evaluations, project systematization and preparation of dissemination materials.

1.1.2 FAO’s comparative advantages

FAO in the last decade has developed technical tools and guidelines to support its member countries in CCM and CCA, covering different land systems and practices in the agriculture sector. FAO has a long experience in the sustainable management of agro-ecosystems. As well, FAO is an international player in the fields of rural development, sustainable livestock production, sustainable land management (forages, pastures), food security, agro-biodiversity, and local and/or community capacity building.

Since 2011, FAO has promoted the concept of Climate-Smart Agriculture, comprising the livestock sector within the concept of agriculture. In 2013, FAO released the Climate-Smart Sourcebook⁴¹, whose *Module 8: Climate-Smart Livestock* is one of the conceptual basis of this Project. As of September 2014, FAO participates in the Global Alliance for Climate-Smart Agriculture⁴² launched at the Climate Summit of the United Nations in New York.

The Animal Production and Health Division (AGAL) of FAO has developed the publication *Tackling Climate Change-through Livestock* whose main thesis is that livestock systems with low productivity generate more GHG emissions per unit of output generated (See Section 2.1: Project Strategy below, for details). The AGAL team has participated in the design and will lead the implementation of this project from a technical point of view. Also, the FAO Regional Office for Latin America and the Caribbean (RLC) will support the implementation of this project through its Senior Livestock Officer.

In Ecuador, FAO is a key player that provides technical assistance for designing agricultural policies, supporting training activities, and strengthening the management and conservation of natural resources in the communities. FAO has a global knowledge network that join experts with experience in livestock development and environmental

⁴¹ <http://www.fao.org/docrep/018/i3325e/i3325e.pdf>

⁴² <http://www.fao.org/climate-smart-agriculture/85725/en/>

policies, GHG emission monitoring, GIS, forestry, governance (including, voluntary codes), food production chain analysis, farmers organization and field schools).

FAO has a long track record in investment projects. Through the Investment Centre Division (TCI) and its more than 40 investment officers FAO is supporting the development, implementation and supervision of investment projects in agriculture and forestry. The FAO-GEF Coordination Unit is based in TCI to ensure the integration of this expertise in the design and supervision of GEF projects, which include technical assistance as well as investments. The mission of TCI is to provide developing countries with technical assistance to identify and formulate investment strategies and operations for external financing, including environmental and natural resources management projects. The FAO-GEF Unit specialists in investment project design and implementation have provided guidance for the development of this project, and will have a key role in support of project implementation.

1.1.3 Participants and other stakeholders

FAO, the Under-Secretariat of Livestock Promotion (SLP) - MAGAP, and the MAE will be the main co-partners for project execution. The project will work closely with the DAGs of Napo, Morona Santiago, Guayas, Imbabura, Loja, Manabí and Santa Elena. Civil society will be integrated through national and local organizations of small- and medium-scale farmers, that are grouped by production purposes (dairy, meat), cultural identification (*chagras, montubios*), or cattle types (e.g.: Holstein, Brahman Association). National and regional farmers associations will be included as well. Table 5 below details the roles of stakeholders participating in the proposed project.

Table 5: Stakeholders, participants, and their roles in the Project

| Stakeholder | Interest in the project | Role in the project |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| FAO | To increase sustainable food security through the dissemination and promotion of climate-smart livestock strategies and policies. To draw lessons and systematize good practices, lessons learned and recommendations that might be useful for other projects in this region. | GEF implementing agency |
| Under-Secretariat of Livestock Promotion (SLP)-MAGAP | To implement the national livestock sector policy, channelling resources and institutional competencies for this purpose. | Co-executing partner. Technical-political coordination to ensure synergy between baseline programmes and project activities. |
| Under-Secretariat of Climate Change-MAE | To promote policies of CCA, CCM and natural resources management (NRM), as well as strategies to combat desertification, in agriculture. To implement the national environmental policy in the rural (livestock) sector, channelling resources and institutional competencies for this purpose. | Co-executing partner. Technical-political coordination to ensure synergy between baseline programmes and project activities. |

| | | |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| DAGs of the provinces of Napo, Morona Santiago, Guayas, Imbabura, Loja, Manabí and Santa Elena | To promote the inclusion of sustainable livestock production into the provincial LUDPs, and vulnerable micro-watersheds located in their provinces. | Partner for implementation at local level. Local resources mobilization, monitoring and evaluation at local level. |
| National and regional livestock associations | To strengthen the livestock sector through sustainable production initiatives. To improve the living conditions of its members. To incentive local markets and to promote the access to climate-smart livestock technologies. | Partners for Component 2 and 3 implementation. |
| Local organizations of small- and medium-scale farmers | To improve the living conditions of the small- and medium-scale producers by increasing their incomes. To facilitate the access of local producers to climate-smart livestock technologies and services. | Local promoters and direct beneficiaries of project implementation. |
| Vulnerable local livestock producers and peasants | To improve their living conditions by increasing their incomes and reducing poverty. To avoid migration and achieve productivity levels that allow them to stay at their rural communities. To have access to climate-smart livestock technologies and services. To reduce climate-related economic losses. | Direct beneficiaries of project implementation. |

1.1.4 Lessons learned from past and related work, including evaluations

The design of this project is based on lessons learned through other initiatives implemented in Ecuador or region, namely:

1. *Adaptation through Effective Water Governance in Ecuador*, a GEF project executed through UNDP. The project conducted a study on vulnerability to climate risks in the water resources sector in the watersheds of Paute, Jubones, Catamayo, Chone, Portoviejo and Babahoyo rivers. Watersheds of Chone and Portoviejo rivers (Manabí), sub-watershed of Babahoyo River (Guayas), watershed of Catamayo river (Loja), and sub-watershed of Jubones river (Loja, Saraguro) are located within the area of intervention of the climate-smart livestock project. The methodology is based on the construction of four indexes: a) socio-economic vulnerability index (SEVI), b) drought infrastructure vulnerability index (DIVI), c) flooding infrastructure vulnerability index (FIVI), and d) institutional vulnerability index. The conclusion is that it is essential that adaptation measures reduce climate change impacts, since the most vulnerable groups in the country are linked to perturbation sensitive sectors: agriculture, livestock and fisheries. In the province of Loja, overgrazing and forest burning for obtaining grazing areas have been identified (among others) as cause of ecosystem deterioration in that province.
2. The Adaptation to the Impact of Rapid glacier Retreat in the Tropical Andes (PRAA) Project - financed by the World Bank and executed through the Andean Community of Nations (CAN) – conducted a prioritization of adaptation measures for communities in pilot project intervention areas PP2 through an approximation extended to representatives of the community and experts from

the agriculture and tourism and paramo. Later, with the help of a support tool for decision making for CC adaptation projects (CRiSTAL 4.0) matrixes of adaptation measures were obtained as options to respond to climate change impacts. Finally the measures were prioritized and disseminated among beneficiary communities. It is also important to mention that the PRAA Project applied the UNDP adaptation policy framework methodology (CRiSTAL 4.0) for two additional vulnerability studies. Currently the PRAA Project is under completion and a second execution phase is being arranged. Measures related with climate smart livestock prioritized by PRAA are: i) building of water tanks for cattle in the higher area, ii) implementation of a Land-use Plan aimed at optimization/relocation of livestock activities performed by communities and other key stakeholders; iii) recognition of the usefulness of the CRiSTAL tool for determining vulnerability in specific communities, but there is no certainty or successful experience of its application at provincial level.

3. *The Strengthening Community Resilience to Adverse Effects of Climate Change with a focus on Food Security and Gender Approach in the Pichincha Province and Jubones river watershed (FORECCSA)* Project conducted a vulnerability rapid assessment with food security focus in 33 parishes in Jubones and Pichincha. The project developed a pioneering methodology in Latin America that combined three approaches (climate change, food security and livelihoods) that converge on the general topic of increasing the resilience of livelihoods and vulnerable people; the three approaches differ on the specific characterization of: i) impact according to the livelihoods threatened by climate change; ii) social and vulnerability features of the Parish; iii) Food security analysis of the parish; and iv) Gender conditions. The purpose of the vulnerability analysis and related index was to reflect quantitatively the sensibility of food security and main livelihoods to the impacts of climate change and at the same time to raise information on the responsiveness of the population against to climate hazards. The lessons of FORECCSA project are: i) The main livelihoods that depend on climate are related to agriculture and livestock subsistence; ii) The drought is threat with greater impact and to which most parishes should direct their adaptation efforts; iii) The impacts on livelihoods rank from medium to high, and the most affected food security element is food availability, including three indicators: crop yields, resistance of local crop varieties and irrigation flow.

Lessons learned for the successful implementation of incentives and market mechanism can be outlined, namely: i) It is necessary to guarantee facilitating conditions reducing limitation such as lack of credit, resources and knowledge; poverty and uncertainty in land tenure; ii) It is important to conduct a cost-benefit analysis (including damages) of land use activities, in order to raise awareness among the society; iii) it is necessary to identify appropriate mechanisms for the national context and the specific site; iv) It is important to identify appropriate and committed partners, including purchasers and providers of environmental services, as well as facilitators for the creation of appropriate mechanisms.

1.1.5 Links to national development goals, strategies, plans, policy and legislation, GEF/LDCF/SCCF and FAO's Strategic Objectives

a) *Alignment national development goals and policies*

The Project is in line with the Constitution of Ecuador (2008), the National Plan for Good Living 2013-2017, the National Strategy for Climate Change 2012-2025, and the MAGAP's National Program of Sustainable Livestock (see details in sub-section 1.1.1.b)

The project is in line with the UNDAF for Ecuador 2015-2018, Group of Results 4: *Environmental sustainability, resilience and risk management*. In particular, it is in line with outcomes 1: State institutions at national and local levels define and implement public policies for environment conservation and sustainable development building on evidence; and 3: State institutions increased their capacities for emergency response and natural and/or anthropic risk management⁴³.

b) *Alignment with NAPA, NAPs, NBSAP, NIPs, NAMA*

This proposed project is in line with:

- The **Second National Communication (SNC) to UNFCCC**⁴⁴, prepared by the Ministry of Environment of Ecuador with the support of UNDP in 2011. The SNC promotes CC mitigation actions related to land use, land use change and forestry (LULUCF). It recognizes that agriculture is the biggest emitter of direct GHGs in Ecuador, followed by the LULUCF sector and then energy, waste and industrial processes. The SNC identifies as key sources of CO₂ emissions: i) forests and grasslands conversion into other uses; and ii) soils use and management in the LULUCF sector. The proposed GEF-financed project aims at increasing potential of carbon capture in grasslands to mitigate emissions. In Ecuador there is a huge potential of soil carbon sequestration in grazing systems linked to the vast extension of grasslands that are highly degraded. Agriculture is also the main emitter of CH₄. Further explanation and quantitative data on the trends of GHG emissions and livestock systems is presented in Section 2.
- **The National Action Programme to Combat Desertification and Drought (NAP) – 3rd Version**, which was submitted by the Government of Ecuador (GoE) to UNCCD in August 2004, and identified agro-ecological zones susceptible to desertification in Ecuador. The proposed project will implement actions to reverse land degradation in the vulnerable areas identified by the NAP, as follows:
 - Dry Coast: a strip of 10km wide along the coast from the Equator line to the south (provinces of Manabí, Guayas and Santa Elena), with a hot and dry climate. The Santa Elena Peninsula is semi-desert, excepting in its extreme - where the temperature is regulated by the sea air. Soils are aridisols, mollisols, alfisols and vertisols. Coffee crops and subsistence livestock production are main activities in the Dry Coast;
 - South Wet Coast: is located East of the dry coast and extends to the limit of 1200m in the Western foothills of the Andes, being covered mostly by the Guayas Basin (Guayas Province). Rainfalls are variable and increase from West to East, with a single rainy season for up to six months, while during the rest of the year there are droughts of variable intensity, often

⁴³ <http://www.undg.org/docs/13579/UNDAF-2015-2018-bn.pdf>

⁴⁴ <http://www.ambiente.gob.ec/?q=node/727&page=0,3>

tempered by drizzle. Soils are predominantly inceptisols and mollisols. Agricultural production is concentrated on rice, bananas, corn, soybeans, sorghum, oil palm, citric, pastures for cattle, and in higher areas, coffee and cocoa;

- North Valleys are the inter-Andean valleys located from the border with Colombia to north Azuay Province (some sub-regions of the province of Imbabura are located here). These valleys have variable altitudes and are generally dry due to the "rain shadow" effect of the surrounding mountains. Valleys depend on rainfalls in mountains to supply drinking and irrigation water demand. Soils are predominantly inceptisols, and also entisols. North valleys are mainly pasturelands, due to higher commercial value of milk and meat compared with crops. There are also some bean and potatoes production;
- South Sierra: it extends from Azuay to the border with Peru, and tends to be drier than Northern regions (the province of Loja is located here). Topography is very irregular. Valleys are very narrow and land is quite unsuitable for agriculture. Most agricultural land is dedicated to livestock production or urban settlements. Soils have not recent volcanic origins and are mostly entisols and vertisols, and then mollisols and alfisols.

In addition, the NAP identifies 4 processes that lead to land degradation in Ecuador: deforestation, unplanned land settlement, inappropriate soil use, and agricultural practices unsuitable to natural conditions. They generate losses in permanent vegetation, as well as soil erosion and deterioration, and interact with socioeconomic, climatic and topographic features, causing desertification risks in the above-mentioned areas. The NAP's general objective is to *"establish a continuous planning process and participatory action to execute programs, projects and activities that address the: (...) i) reversion of land degradation in affected areas, ii) mitigation of drought effects"*. The NAP promotes Regional Action Programmes that develop and implement *"integrated planning systems at provincial level for sustainable natural resources use in areas susceptible to/affected by desertification"*. The proposed project will address the priorities detected by the NAP in SLM by: i) implementing actions in the provinces of Manabí, Santa Elena, Guayas, Loja and Imbabura (affected or susceptible to desertification, see above); ii) promoting the dissemination of good livestock management among small- and medium-scale farmers in vulnerable areas; iii) restoring vegetative cover to revert soil degradation and deforestation through the implementation of silvopastoral systems, including in the Amazon Region; iv) designing agro-ecological zoning plans for sub-humid, semi-arid, and dry areas.

- The **Third National Report (TNR) to the United Nations Convention to Combat Desertification (UNCCD)**, submitted by the GoE in 2006, has identified the following priority areas to act against land degradation and desertification which will be supported by interventions of the proposed project: Loja, for projects related to irrigation, community-based initiatives to conserve dry forests, management of fragile micro-watersheds that provide water for human consumption; Manabí and Guayas, for reforestation and conservation of Chongon-Colonche Mountains; and Santa Elena, which is extremely dry and where land degradation affects livestock

management (due to lack of pastures) and food security (due to low soil productivity).

The **Microfinance Strategy for Sustainable Land Management and Climate Change Adaptation in Ecuador (MFSLMCCA)** designed in the framework of **The Global Mechanism (UNCCD)** and submitted by the Ministry of Environment in June 2011, makes Ecuador a pioneer country in using microfinance to fulfil its commitments under the UNCCD. The MFSLMCCA is supporting activities that reduce land degradation and CC impacts by promoting sustainable agriculture production. It addresses the creation of a Second-Level Micro Financing Programme (National Program of People's Financing, Entrepreneurship and Solidary Economy - NPPFESE) through an approach of financial and environmental sustainability and participation, in highly degraded and degrading areas, and vulnerable zones. The MFSLMCCA identified the Provinces of Loja and Santa Elena among the highest eroded, and Manabí and Guayas among the most susceptible (in hectares). It provides resources for 2 types of activities: i) supporting local people's financing institutions that deliver micro-financing to micro- and small-scale entrepreneurs without access to the traditional banking system; and ii) capacity-building, awareness-raising and technical assistance to local financing institutions and local organizations on LD, land desertification and CCA. The NPPFESE is financed by national public resources, external resources, and it might receive additional resources from CC-related funds. The MFSLMCCA identifies measures to be financed by the NPPFESE, such as tree planting, silvopastoral systems and sustainable grazing, among others. In view of this, the proposed GEF project will strengthen this existing financial mechanism (among others detailed in Section 2) including its regulatory framework and sanctionary regime, to facilitate the transfer of silvopastoral technologies and other climate-smart livestock practices in degraded areas, in coordination with the funds delivered by the NPPFESE in Loja, Santa Elena, Manabí and Guayas. Once validated, piloting experiences may be scaled-up in the framework of the MFSLMCCA and may attract new public-private investments to CSLM. Component 2 will be based on the microfinance model adopted by the MFSLMCCA: to channel second-level financing to local and qualified financing institutions that are located in high risk and vulnerable areas, in coordination with Decentralized Autonomous Governments (DAGs), while including technical assistance and community participation. This Component is further described in Section 2.

c) Alignment with GEF focal area and/or LDCF/SCCF strategies

Ecuador is signatory of the UNFCCC as a non-Annex I party. This project is consistent with SCCF eligibility criteria because it addresses the priorities identified in the preparation of the Ecuador's Second National Communication (SNC) to the UNFCCC. The SNC proposes to generate programs for adaptation and response to climate change promoting inter-institutional coordination and dissemination of actions among key stakeholders, with a special attention to fragile ecosystems. In addition, the SNC indicates Ecuador's intention to implement measures of adaptation to climate change for the reduction of climate impact and vulnerability that are indicated in the 2013-2017 National Plan for Good Living (2013-2017 NPGL). This Project will be executed in vulnerable areas of the country, identified in the Second National Communication. In the four last decades anomalous climate phenomena have gradually increased, for example: in the Sierra and Coast regions, as well as in the Amazon in the timeframe between 1960

and 2006 annual rainfalls has varied. Average annual rainfalls have increased of 33% in the Coast region and 8% in the Inter-Andean region.

This Project proposal is consistent with SCCF criteria because is cost-efficient and builds on national strategies for poverty reduction and sustainable development (reflected in the 2013-2017 NPGL).

Component 1 will support the mainstreaming of the CSL approach in the climate change adaptation and mitigation policies of the livestock sector, and in land-use planning. Component will help strengthen institutional capacities for the implementation of CSL strategies in the country. Therefore, Component 1 is aligned with Objective 1 of the Climate Change Adaptation focal area (CCA-1)⁴⁵ of SCCF (GEF-5), Outcome 1.1: *Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas*; with Objective 2 (CCA-2)⁴⁶, Outcome 2.2: *Strengthened adaptive capacity to reduce risks to climate-induced economic losses*; with Objective 5 of the GEF 5 Climate Change Mitigation focal area (CCM-5)⁴⁷, Outcome 5.1 *Good management practices in LULUCF adopted both within the forest land and in the wider landscape*; with Objective 3 of the GEF-5 Land Degradation focal area (LD-3)⁴⁸, outcome 3.1: *Enhanced cross-sector enabling environment for integrated landscape management*.

Component 2 will promote the diffusion of the CSL approach in degraded livestock areas and will support the improvement of access to financing instruments from small-scale producers, in order to allow them to invest in CSL management practices in degraded areas. Thus, component 2 is in line with the Objective 1 of the GEF-5 Land Degradation focal area (LD-1)⁴⁹, Outcome 1.2: *Improved agricultural management*, with Objective LD-3, Outcome 3.3: *Increased investments in integrated landscape management*; with the Objective 3 of the Climate Change Adaptation focal area (CCA-3)⁵⁰, Outcome 3.1: *Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas*; and with Objective CCM-5, outcome 5.2: *Restoration and enhancement of carbon stocks in forests and non-forest lands, including peatland*.

Component 3 seeks to monitor: i) reduced GHG emissions; and ii) increased adaptive capacity of the livestock sector, both in Project intervention areas. In view of this, Component 3 is in line with Objective CCM-5, Outcome 5.1, Output 5.1 *Carbon stock monitoring systems established*; and with Objective CCA-2, Outcome 2.1: *Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas*.

d) Alignment with FAO Strategic Framework and Objectives

⁴⁵ Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level. (See <http://www.thegef.org/gef/node/3624>)

⁴⁶ Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level. (See: <http://www.thegef.org/gef/node/3624>)

⁴⁷ Promote conservation and enhancement of carbon stocks through sustainable management of land use, land-use change, and forestry. (See: <http://www.thegef.org/gef/node/3624>)

⁴⁸ Integrated Landscapes: Reduce pressures on natural resources from competing land uses in the wider landscape. (See: <http://www.thegef.org/gef/node/3624>)

⁴⁹ Agriculture and Rangeland Systems: Maintain or improve flow of agro-ecosystem services sustaining the livelihoods of local communities (See: <http://www.thegef.org/gef/node/3624>)

⁵⁰ Promote transfer and adoption of adaptation technology (see: <http://www.thegef.org/gef/node/3624>)

The project is in line with FAO's Strategic Results Framework (2014-2019) and particularly with FAO's Strategic Objective 2 (SO2): *Increase production in agriculture, fisheries and forestry in an economic, social and environmentally sustainable manner*, Outcome 1 (OO1): *Producers and natural resource managers adopt practices that increase and improve the provision of goods and services in agriculture production systems in a sustainable manner*; and Outcome 2 (OO2): *Stakeholders in member countries strengthen governance – the policies, laws, management frameworks and institutions that are needed to support producers and resource managers in the transition to sustainable agriculture production systems*.

Moreover, the project is coherent with FAO's Regional Priorities for Latin America and the Caribbean⁵¹ and is aligned with the priority area *Climate change and environmental sustainability*: “[provide assistance to governments for] strengthening national programmes for the sustainable management of natural resources, agro-climatic risk reduction, mitigation of emissions and adaptation of the agriculture sector to climate change, in the new context of low-carbon development”⁵².

Finally, the Project is in line with the FAO Country Priority Framework (CPF) in Ecuador (2013-2017)⁵³, priority area 4: *To contribute to the consolidation of the environmental public policy through conservation, valuation and sustainable management of biodiversity and natural resources as a strategic resource of the State, as well as ensuring ecosystem services and the development of strategies for adaptation and mitigation of climate change and ensuring food sovereignty*; Outcome 4.9 *Developed strategies for Mitigation and Adaptation to Climate Change, which reduce GHG emissions and vulnerability to climate change (resilience processes), by energy and productive sectors, favoring carbon capture and storage, through the formulation of initiatives and methodologies grounded in territory, good use of marine and coastal resources, research and implementation of technologies, through the rescue of ancestral knowledge and innovation including the use of polyculture, local varieties tolerant to drought, method of water harvesting, soil conservation practices, agroforestry and silvopastoral systems, recovery of degraded forest areas as carbon sinks to mitigate climate change and other ecological techniques*; and 4.10 *Strengthening the MAGAP's National Program of Sustainable Livestock*.

⁵¹ See *Areas of Priority Actions for Latin America and the Caribbean for the Following Biennium (2014–2015)*, taking into account the summary of recommendations of regional technical commissions, 32nd FAO Regional Conference for Latin America and the Caribbean. Buenos Aires, Argentina, 2012.

Fuente: <http://www.fao.org/docrep/meeting/024/md240e.pdf>

⁵² Ibidem

⁵³ See *Marco Nacional de Prioridades para la Asistencia Técnica de la FAO en Ecuador (2013-2017)*. Source: http://www.cooperacioninternacional.gob.ec/wp-content/uploads/downloads/2013/12/Marco_Nacional_Prioridades_FAO_Ecuador.pdf

SECTION 2 – PROJECT FRAMEWORK AND EXPECTED RESULTS

2.1 PROJECT STRATEGY

The Project strategy is based on the *Climate-Smart Agriculture*⁵⁴ approach (CSA) in which FAO has broad experience. This project is a demonstrative case of how the CSA approach can support in resolving problems faced by the livestock sector due to Climate Change. Therefore, the project will introduce some tools for *Climate-Smart Livestock*, a CSA sub-approach dedicated to the livestock sector.

Climate-Smart Agriculture

According to FAO, the Climate-Smart Agriculture (CSA)⁵⁵ approach integrates the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. It is composed of three main pillars: i) sustainably increasing agricultural productivity and incomes; ii) adapting and building resilience to climate change; iii) reducing and/or removing greenhouse gases emissions, where possible. CSA is an approach to developing the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change. CSA allows to meet multiple objectives through an integrated approach that is responsive to specific local conditions. CSA supports countries to mainstream climate change issues in their agricultural agendas through public policies, technical actions and investment mechanisms. Project actions are based on this vision.

Climate-Smart Livestock

Climate-Smart Livestock (CSL) is a CSA sub-approach for the livestock sector. According to FAO, CSL is based on two basic principles: i) increased efficiency in the use of resources; and ii) increased resilience and risk management at farm and systemic levels. The livestock sector can make major contributions to the food supply chain, for it to be climate-smart. There are several mitigation options along the chain. Most of them focus on the production of animal feed, enteric fermentation and manure management. Livestock also plays a central role in adaptation to climate change, through practices such as organic matter and nutrients management, and income diversification. This project will implement some CSL existing practices such as pasture management (e.g. rotation and silvopastoral systems), manure management (recycling), and integration of crops with livestock. FAO has identified some typical barriers to the adoption of CSL, which are similar to the barriers faced by Ecuador⁵⁶: i) lack of information, ii) limited access to technology and lack of capital; iii) insufficient policies. For removing these barriers, the project will promote specific policy interventions, including extension work and implementation of financial mechanisms as access to credit schemes and incentives⁵⁷.

⁵⁴ According to FAO definition, the term *agriculture* includes crop and livestock production as well as fishing and forestry

⁵⁵ FAO presented the CSA concept for the first time at the Hague Conference on Agriculture, Food Security and Climate Change in 2010. This section of the Project document is based on : FAO, *Climate-smart Agriculture Sourcebook*, 2013: pp. ix) y x) <http://www.fao.org/docrep/018/i3325e/i3325e00.htm>

⁵⁶ Identified during full project preparation.

⁵⁷ Project proposers identified actions similar to those suggested by FAO, *Climate-smart Agriculture Sourcebook*, 2013: <http://www.fao.org/docrep/018/i3325e/i3325e00.htm>, pp. 212-13

CSL approach: Food Security and Adaptation to Climate Change

According to FAO, climate change is having substantial effects on ecosystems and the natural resources upon which the livestock sector depends. Livestock make a necessary and important contribution to global calorie and protein supplies. While livestock products are not absolutely essential to human diets, they are valued and they will continue to be consumed in increasing amounts. Meat, milk and eggs in appropriate amounts are valuable sources of complete and easily digestible protein and essential micronutrients. Livestock production and marketing can help stabilize the food supplies and provide individuals and communities with a buffer against economic shocks and natural disasters related to climate change.⁵⁸

CSL approach: Climate Change (CC) Mitigation

According to FAO studies⁵⁹, GHG emissions are inversely proportional to the level of productivity. A more efficient use of resources (inputs) brings to lower GHG emissions per unit of product. Higher yields per hectare, higher water productivity, greater efficiency in feed use, improved manure management and fertilizer and reduction of losses along the value chain, are practices that contribute to improved efficiency⁶⁰.

In 2013 FAO developed the Global Livestock Environment Assessment Model (GLEAM), which enables the production of disaggregated estimates of GHG emissions and emission intensities for main commodities, farming systems and world regions. GLEAM uses spatially explicit information from a wide range of sources and predominantly relies on the IPCC (2006) guidelines to compute emissions. This methodological development is a major improvement on other global assessments, typically relying on national averages. GLEAM uses a life-cycle assessment (LCA) method for the identification of all main emission sources along supply chains; starting from land use and the production of feed through to animal production to processing and transportation of products to the retail point⁶¹.

Summarizing, the project aims to promote sustainable livestock by applying the CSL approach. Component 1 will promote appropriate policy interventions, including the design of a NAMA, and will support the development of institutional capacities. Component 2 will seek to strengthen existing incentives and financing mechanisms for sustainable land management (SLM) in the livestock sector in provinces with degraded areas or with risk of desertification. Also, Component 2 will promote extension actions with livestock producers' networks that can spread CSL management practices in six provinces. The intervention sites were chosen with criteria of representativeness (Coast, Sierra and Amazon) and replicability. Component 3 will contribute to: i) monitoring the emission reductions of the project, ii) generate a proposal for sectorial emission factors that could be incorporate in MAE national communications, and iii) testing the JICA adaptation monitoring tool, which was designed for Ecuador and will be adjusted to the livestock sector during Project Year (PY) 1.

⁵⁸ FAO, *Climate-smart Agriculture Sourcebook*, 2013, pp.216:

<http://www.fao.org/docrep/018/i3325e/i3325e00.htm>

⁵⁹ For a complete explanation, please see *Tackling Climate Change through Livestock: A Global Assessment of Emissions and Mitigation Opportunities*, 2013: <http://www.fao.org/docrep/018/i3437e/i3437e.pdf>; and FAO, *Climate-smart Agriculture Sourcebook.*, Module 8.

⁶⁰ FAO, *Climate-smart Agriculture Sourcebook*, pp. 218

⁶¹ For more details on GLEAM, please consult <http://www.fao.org/news/story/en/item/197644/icode/>

2.2 PROJECT OBJECTIVES

Global Environmental Objective: To reduce soil degradation, and mitigate GHG emissions in the livestock sector of Ecuador.

Project Development Objective: To sustainably increase and improve the supply of goods and services from livestock production.

Specific Project Objective: To reduce soil degradation, increase adaptive capacity to climate change, and mitigate GHG emissions by implementing cross-sectorial policies and climate-smart livestock management, with emphasis on the vulnerable provinces.

2.3 EXPECTED PROJECT OUTCOMES

Outcome 1.1: The CSL approach has been mainstreamed in climate change mitigation and adaptation policies in the livestock sector and land-use planning.

Indicator CCA-1.1.1: CSL approach mainstreamed in 5 Land-Use and Development Plans (LUDPs)⁶², 1 CSL National Strategy and 5 Local Zoning Plans.

Indicator LD-3.i: Enhanced cross-sector enabling environment for integrated landscape management: 7 Integrated land management plans

Outcome 1.2: Institutional capacities for the implementation of CSL management strategies strengthened.

Indicator CCA-2.2.1: Number and type of targeted institutions with increased adaptive capacity to minimize exposure to climate variability: Five (5) national institutions (regional branches); 2 national institutions (central government); 5 provincial agencies.

Outcome 2.1: CSL approach adopted in selected degraded livestock areas.

Indicator CCA-3.1.1: % of targeted groups adopting adaptation technologies by technology type: i) pasture management: 50% (men and women); ii) animal and herd management: 50% (men and women); iii) water management: 50% (men and women); iv) supplementary feeding: 50%; v) grazing management: 50%.

Indicator LD-1.ii: Rate of livelihoods vulnerability perceived by local population: 3 (medium vulnerability).

Indicator CCM-5: i) good practices developed and adopted: i) 2 (development of prescriptions for sustainable livestock management); ii) emissions avoided: 174 000 ton CO_{2eq} in direct GHG emissions; 3.2 million ton CO_{2eq} direct carbon sequestration.

Outcome 2.1 is directly related to the stocks monitoring system developed under Outcome 3.1.

⁶² Land Use and Development Plans - at provincial or local level.

Outcome 2.2: Access to financing instruments for investments in CSL practices in degraded areas has been improved.

Indicator LD-1.iv: Increased investments in Sustainable Land Management (SLM): 2) small grant schemes: + USD 175 000 investments through: 1 pilot financing mechanism and 1 existing incentive scheme strengthened.

Outcome 3.1: Livestock sector-based GHG emissions in selected areas have been reduced and monitored.

Indicator CCM-5: Carbon monitoring system: 3 (compiling and analysis of information on carbon stocks)⁶³.

Emission factors in the livestock sector for national inventory: 1 proposal

Outcome 3.2: Adaptive capacity of the livestock sector has been monitored⁶⁴.

The JICA tool for monitoring adaptive capacity in the livestock sector has been tested and evaluated.

Outcome 4.1: Project implemented. Lessons learned and best practices have been documented and disseminated.

Indicators: Project targets achieved. Project evaluated. Sustainability demonstrated.

2.4 PROJECT COMPONENTS AND OUTPUTS

In order to achieve the objectives and outcomes detailed in subsection 2.3, the project was structured in four components. Project components and expected outputs, GEF/SCCF funding and co-financing are detailed below.

Component 1: Strengthening of institutional capacities and coordination to incorporate the CSL approach in territorial management and in the development of livestock-related policies and tools.

Component 1 main objective is to strengthen internal and inter-agency coordination capacities of involved institutions to mainstream Climate Smart Livestock as an strategy of integrated territorial management, and as an approach for developing multi-sectorial policies and instruments. Component 1 seeks to generate two outcomes (see Section 2.3) and four specific outputs: (1) a national CSL strategy, (2) one NAMA for the livestock sector, (3) five Land Use and Development Plans (LUDP) under CSL approach, incorporating livestock production zoning plans, and (4) key representatives of MAE, MAGAP, provincial councils, DAGs and municipalities trained on CSL. Academic and related institutes will also participate.

Output 1.1.1: National Climate Smart Livestock Strategy prepared and adopted.

⁶³ It refers to a GHG emissions monitoring system at sectorial level, applied in selected provinces or areas.

⁶⁴ It refers to adaptation capacity of project selected areas, which is expected to improve through actions under Component 2 (30,000 hectares under CSL). This output is linked to Output 2.1.

Baseline: There are some activities of application of good livestock practices, but they are disarticulated and do not incorporate a holistic view of CSL. Problems are unfocused and there is no cause-effect analysis. GEF/SCCF funds will help to unblock these institutional and coordination barriers.

Target: One strategy designed and integrated into the Climate Change national Plan (CCNP).

The Livestock Secretariat (Vice-ministry of Agriculture) of MAGAP will lead the process in coordination with the Climate Change Roundtable – International Cooperation Directorate (MAGAP), the Agenda for Production Transformation of the Amazon (APTA). Actions will also be coordinated with the Under-Secretariat of Climate Change (MAE), in charge of the Climate Change National Strategy 2012-2025. The CSL strategy will be adopted as public policy and will articulate existing actions in the livestock sector.

Activities:

During PY1 the CSL Management Strategy will be designed and validated. The CSL strategy will be in line with the Climate Change National Strategy (CCNS) of MAE, and will be designed in a participatory manner with inter-institutional involvement. The strategy will be based on the national concept of *sustainable livestock*⁶⁵: (1) to implement climate change mitigation and adaptation measures, (2) to promote livestock production and productivity in a sustainable and adequate manner for each regions, and (3) to promote healthy and nutritious food habits.

The Strategy document will be divided in three sections: a) background, b) strategic work frame, and c) internal implications. In PY1 the following design activities will be carried out:

- a. Discussion on key problems emerged during project preparation (access to water, financing conditions, land degradation, marketing). Presentation of results in form of PEST analysis.⁶⁶
- b. Impact and effectiveness analysis of programs/projects supporting sustainable livestock. Review of the organizational structure under which programs/projects were developed to determine their efficiency and effectivity in terms of cost. Presentation of results as SWOT analysis.⁶⁷
- c. Establishment of minimum planning parameters and identification of critical problems.
- d. Establishment of the sustainable/climate-smart livestock (CSL) vision in the Country, clarification and agreement on organizational values that will govern the CSL strategy.

⁶⁵ Validated in the frame of the gathering of information for full project preparation: Livestock that guarantees rural Good Living implementing climate change mitigation and adaptation measures to reduce economic and environmental vulnerability, promoting livestock production and productivity in a sustainable and adequate manner for each region of the country and promoting healthy and nutritious food habits.

⁶⁶ Political, Economic, Social and Technological, PEST analysis are conducted before SWOT analysis.

⁶⁷ Strengths, Weaknesses, Opportunities, Threats.

- e. Development of the CSL mission, establishing the general objective and immediate objectives of sustainable livestock.
- f. Definition of key areas of work and establishment of the appropriate structure for sustainable livestock.
- g. Management of the process of change, both in terms of work redefinition and existing structures of the organization.
- h. Identification and proposal of solutions to potential problems for the execution of the Strategy.
- i. Development of a plan of activities based on the Strategy, whose execution will start in PY3 and PY4.

In PY2, the strategy will be incorporated to the CCNS, including validation workshops. In PY3 and PY4 the Strategy will be implemented, monitored and evaluated.

The project will finance a Livestock Policy Expert, who will facilitate this activity and a Gender Expert, who will support the mainstreaming of the gender approach in the Strategy.

Output 1.1.2: One Nationally Appropriate Mitigation Action (NAMA) for the livestock sector.

Baseline: Ecuador has not designed any NAMA for the livestock sector. Lack of Measurement, Reporting and Verification (MRV) systems for the sector. General lack of knowledge of climate financing options.

Target: A sectorial NAMA designed in a participatory manner and with inter-institutional support.

Under the leadership of the Under-Secretariat of Climate Change (MAE), the Directorate of Mitigation (MAE), and the Secretariat of Livestock (MAGAP) will work with the Project team for the design of the sectorial NAMA.

Activities:

In PY1, a detailed baseline will be established, and broad mitigation strategies identified, as a basis for the design of the NAMA preparation process. The Project will hire a NAMA Expert. Calculation of the potential for GHG emissions reduction in the sector will be undertaken for a number of mitigation scenarios. The design process will include workshops with representatives of the central government, DAGs, farmers' organizations, civil society and academia, with at least 20% participation of women. The national and sectorial baseline GHG emissions will be determined during this process. Broad potential mitigation actions and allocation of GHG reduction targets for the livestock sector will also be identified. This process will require multisectoral and multi-stakeholder planning.

In PY2 two workshops will be organized, one on MRV and another on co-benefits, both of 2 days duration. Afterwards, the NAMA Expert will facilitate the selection of most appropriate mitigation interventions, as well as the analytical work required to estimate emission reduction levels, investment and costs of mitigation and financing needs. A validated MRV system and the analysis of the co-benefits of the NAMA will be finalized.

The NAMA management structure will be designed in consultation with private sector and key partners.

In PY3 the NAMAs expert will draft a concept document of the livestock sector NAMA with a CSL approach. The NAMA will be developed with GEF incremental funding. The MRV methodology for the NAMA should be adapted to local capacities and should be cost-efficient. To this end, the following sub-activities will be developed: 1) list of selection criteria of mitigation actions; building the emissions reference scenario, iii) building the mitigation scenario with proposed measures, iv) development of abatement cost curves, v) development of a co-benefits analysis and description of the MRV methodology, vi) identification of barriers and the enabling frame for the selected measures, vii) consultations with stakeholders, viii) formulation of a proposal of Financing Structure for the proposed measures, ix) formulation of a Proposal of policy instruments to incentivize investments in the proposed measures, x) formulation of the final NAMA document.

In PY4 the NAMA will be submitted to the UNFCCC NAMA Registry. The NAMA will be handed over to MAGAP for its promotion in the voluntary carbon market. Before the delivery, the NAMA expert will design a NAMA financing plan, to be used by MAGAP.

Output 1.1.3: LUDPs of Provincial DAGs with CSL approach and livestock zoning plans.

Baseline: Provincial LUDPs do not include a CSL approach, nor actions on climate change. LUDPs have livestock projects focused on nutrition, pastures and animal health. Livestock production zoning plans are non-existent.

Target: 5 provincial LUDPs⁶⁸ with CSL approach and livestock zoning plans under implementation and replicable.

The Project will promote the inclusion of the CSL approach and livestock zoning in at least five LUDPs of 5 selected provinces (Imbabura, Loja, Manabí, Santa Elena and Guayas) Intervention areas have been selected with replicability criteria, so that Project lessons learned can be scaled up.

Provincial directorates of MAE and MAGAP will support the Project team through provincial technicians.

Activities:

In PY1 five LUDPs will be updated, following the national updating calendar. Provincial administrations have to present updated LUDPs to the National Secretariat of Planning and Development (SENPLADES)⁶⁹ by December 2015. The project will support the inclusion of the CSL approach in the update, involving decision-makers, advisors, field technicians, directors, departmental chiefs at provincial level. In order to ensure

⁶⁸ In Imbabura, Loja, Manabí, Santa Elena and Guayas.

⁶⁹ SENPLADES manages and coordinates the National Decentralized Participatory Planning System in the frame of the Organic Code for Territorial Organization, Autonomy and Decentralization (COOTAD, by its name in Spanish) of 2008, being the institution that promotes LUDPs updating.

participatory design, two workshops of two days duration will be organized in each province. The project will also support the inclusion of gender approach in the LUDPs.

Zoning plans will be designed and included in LUDPs in PY2. A livestock zoning plan is a technical exercise with high political charge that requires a high level of commitment by all stakeholders. The technical intervention will include: a vulnerability study (soils, hydrographic, climate, altitude, geography analysis), an analysis of agro-ecological conditions and potential, and an analysis of cultural, sociological and anthropological aspects related to livestock in Project's intervention areas. Decision-making is the second step. It will be undertaken in a participatory manner, taking into account local residents' and livestock producers' lifestyle. The provincial GADs (having jurisdiction over the promotion of provincial productive activities, especially agricultural)⁷⁰ and cantonal GADs (with jurisdiction over the regulation of use of urban and rural land)⁷¹ will have a central role in decision-making.

In PY1 and PY2 the following sub-activities will be undertaken: i) Working sessions with the MAE for the implementation of the "*Guidelines for mainstreaming climate change in DAGs planning, through plans, programs and strategies*"; ii) information collection and analysis and iii) Train provincial technical and managerial staff on climate change, its main causes and effects in the productive sector, particularly in the livestock sector.

Through CSL approach and zoning, the updated LUDPs will contribute to reducing local vulnerability to climate change impacts by incorporating climate considerations in land-use planning.

In PY3, the LUDPs with CSL actions and livestock zoning (adjusted during PY1 and PY2) will be implemented from mid-PY2 in selected livestock production areas. This intervention will be monitored during the PY3 and PY4, and evaluated in PY4, including environmental, social and economic dimensions.

The Livestock Policy Expert will facilitate this activity and will build on the provincial technicians to be hired by the project in each province.

Output 1.2.1: Key representatives of MAE, MAGAP, provincial councils and municipalities with strengthened capacities for the implementation of CSL management measures in different livestock production systems.

Baseline:

- No plans for strengthening capacities on sustainable livestock in MAE, MAGAP and DAGs.
- Indicator CCA-2.2.1.1: Number of staff trained on technical adaptation themes: 0

Target:

- Training plans on CSL for MAE, MAGAP and DAGs staff designed and implemented in 6 provinces.

⁷⁰ COOTAD, art. 42, literal f).

⁷¹ COOTAD, art 55, literal a)

- Indicator CCA-2.2.1.1: Number of staff trained on technical adaptation themes⁷²: 100 (at least 20% women).

The project will support the capacity development of at least 100 key representatives of central and local governments for the implementation of CSL management measures in different livestock production systems. Workshops will be organized in each province, to this end two Training Programs have been designed, focusing on MAE, MAGAP and DAGs technicians' needs detected during the full project preparation. These syllabuses will focus on climate change and sustainable livestock/CSL (Appendix 10).

Activities:

In PY1 authorities and technical staff to be trained will be identified. The attendance of political levels and decision-makers is important, so that they can update their knowledge on CC and can create related policies. Since MAGAP and DAGs staff have little knowledge on CC, the syllabus dedicated to them will focus on CC mitigation and adaptation. MAE staff has little knowledge on livestock, so their syllabus will include a module on sustainable livestock. All institutions will be trained on the FAO CSL approach promoted by the Project. Also, all will be trained on complementary themes that are necessary for the successful implementation of the CSL approach: socio-economic indicators measurement, gender themes, GIS, associativity, sustainable land management, among others.

In PY2, PY3 and PY4 technicians will be monitored, including performance tracking, and production indicators in the areas under their responsibility. Through this constant monitoring, information gaps will be identified and workshops will be organized for strengthening specific knowledge. Training on new themes will be linked to themes that arise during project implementation.

The project will hire a Capacity Development Expert, who will coordinate with provincial technician for the development of trainings.

Component 2: Strategies of Technology Transfer, Deployment and Implementation for Climate-Smart Livestock Management.

Component 2 aims to promote knowledge exchange, good practices dissemination, transfer and application of appropriate technologies for the adoption of CSL. CSL will contribute to the reduction of land degradation, adaptation to climate change and mitigation of GHG emissions, contributing to food security. Activities will have a strict gender approach in the work with families and livestock producers' associations. This component's beneficiaries will be small- and medium-scale rural livestock producers. Component 2 will promote three outputs: the adoption of CSL good practices, training of producers operating in networks, and access to financing instruments for producers to manage their land in a more sustainable way.

Output 2.1.1: CSL practices disseminated in degraded livestock lands, with a participatory approach.

⁷² Including: early warning systems, improvement in livestock systems resilience, support to livelihoods, erosion control, soil and water conservation, microfinance, water storage, dissemination of information.

Baseline: 0 hectares under CSL practices. CSL management technologies⁷³ (good practices) are not applied systematically in Project intervention areas. CSL packages are non-existent. Livestock production does not incorporate the environmental component.

Target: CSL management disseminated in 30 000 hectares of degraded livestock areas, with the participation of small- and medium-scale livestock producers. CSL practices packages are identified and analyzed for main livestock production systems. 1000 beneficiaries.

CSL good practices will be implemented and disseminated in 30 000 hectares⁷⁴ during 4 years. Impact evidences are expected as of PY2. To achieve the effective implementation of CSL management, the project team will work in close coordination with regional branches of MAGAP and with DAGs.

Activities:

In PY1, the Sustainable Livestock Expert/Project Coordinator will identify and systematize CSL management practices for main livestock production systems. Together with MAGAP, pilot farms for the application of CSL will be selected. Livestock producers will be trained on environmental and climate problems related to their activity. In PY2 the project will provide producers with technical assistance through field technicians in each province, who will coordinate with the Sustainable Livestock Expert/Project Coordinator and MAGAP, and will formulate and finance detailed investment plans to improve small- and medium-scale producers' access to productions means. Livestock producers will be trained to the specific technology packages and practices they will have identified as suitable and profitable for their farms. PY2 target is to work in 10 000 hectares. In PY3 the Project will provide technical assistance, finance investments and train other producers to disseminate CSL in additional 10 000 hectares. The same will be made in PY4 in other 10 000 hectares. As of PY2, strengthened producers networks (see Output 2.1.2) will be used to quickly and effectively disseminate CSL good practices.

The Project will promote a range of technical options for pasture restoration and efficiency gains, which will result in emission reduction, carbon sequestration and pasture restauration. These include planned grazing, but also pasture improvement through introduction of legumes, silvopastoral systems and water management. On each production unit, pasture restoration practices will be selected and tailored according to specific local conditions. They will be coupled with improvement regarding animal husbandry: feed balancing, animal health and manure management. It is through these suites of interventions that the project will achieve the adaptation, mitigation and productivity objectives of Climate Smart Livestock production.

The Project will work with at least 1000 beneficiaries (men and women) that will implement CSL practices in their properties and will serve as a model for replicas for other producers of the networks. Interventions will include improved pasture management, animal and herd management, water management, supplementary feeding, erosion control and soil conservation/restoration, the introduction of early

⁷³ Animal and herd management, water management, supplementary feeding, among others.

⁷⁴ Intervention areas are detailed in Appendix 11, according to field studies carried out during project preparation.

warning systems in areas vulnerable to drought and floods. The project will promote the establishment of a monitoring system for mitigation and adaptation, including carbon sequestration in soils (see Component 3) that will be applied on 30,000 intervention hectares. CSL management will contribute to increase farm productivity. Productivity level will be monitored by Project Monitoring and Evaluation system (see component 4).

Output 2.1.2: Small-scale and medium-scale livestock producers' networks created and strengthened

Baseline: local livestock producers' networks do not include CSL approach.

Target:

- 7 networks created/strengthened and trained to disseminate CSL practices.
- 1000 small- and medium-scale livestock producers participating and trained (at least 20% women) in CSL management, increasing their resilience to adverse effects of CC and braking soil degradation.
- Actions implemented in 7 provinces.

This output consist in the creation of seven producers' networks one per province, that will support the training of 1000 small- and medium-scale livestock producers, disseminate the CSL approach and strengthen associativity in the sector.

Activities:

In PY1 the Project will support the creation of seven producers' networks (one per province), and training of its members on CC, CSL and associative strengthening. The training will include topics such as early warning systems, CSL practices, sustainable livelihoods, micro-finance, water storage, information dissemination, strategies for use, sustainable management and conservation of soil and water, risk management and local vulnerability to climate change, design of agro-ecological corridors in livestock landscapes, implementation of good animal husbandry practices and agrosilvopastoral to build resilience, records management. The training of the networks will be certified by MAE and MAGAP. The training program is attached in Appendix 10. It will be complemented by training materials developed by the Climate Change Adaptation Project PACC⁷⁵.

In PY2 the Project will support producer networks, which in turn will train at least 500 livestock farmer members. These trainings will include CSL topics such as nutrition, rotational systems, genetics, silvopastures, forage conservation, livestock and climate indicators. Similarly, networks will train other 500 farmers in PY3. This output is directly related to the actions in 30 000 hectares under Output 2.1.1.

CSL management includes actions to adapt to climate change and reduce resilience: planting grass species tolerant to drought or flood, rotational pasture management systems and flexible stocking according to forage supply, efficient use of rainwater,

⁷⁵ The Special Climate Change Fund (SCCF) / UNDP project *Climate Change Adaptation through effective water governance* seeks to reduce vulnerability to CC through efficient management of water resources. This initiative incorporates national and local adaptation to climate change in water management practices included in development plans and knowledge management systems and information.

comprehensive crops and livestock systems, genetic improvement systems and improvement of forage. CSL also includes specific practices that serve to reverse land degradation (generated by livestock activity): association of leguminous species, perennial shrubs and grasses, implementation of production records and herd traceability, introduction of legumes and grasses and legumes mixtures, scheduled reproduction systems and incorporation of silvo-pastoral systems in selected farms. Both types of actions will be implemented under Output 2.1.1 and disseminated under Output 2.1.2.

To ensure sustainability of the network after the completion of the Project during the PY4, the following activities will be held: i) to identify livestock producers who have been trained and initiate a dialogue through which to propose the creation of a livestock organization dedicated to the restoration of ecosystem services (which may mean the birth of a new organization, or expanding an existing one); ii) to organize interconnection forums between producers to meet and work on common goals if the idea is accepted, a Network Coordinator will be created as a roundtable where producers' leaders meet; iii) to build an exit strategy to maintain the achievements of the Project.

This Activity will be facilitated by provincial field technicians.

Output 2.2.1: Financing mechanisms and incentive schemes to support CSL

Baseline: AGROCALIDAD certification scheme has 4 certified large-scale producers. AGROCALIDAD does not include CSL or a CC-related approach. MAE has designed a credit line for Sustainable Land Management (SLM), but it is not operational. There are no operational credit facilities for investment in sustainable livestock.

Target: 1 pilot financing mechanism (Microfinance Strategy) and at least 1 existing incentives scheme strengthened (AGROCALIDAD good livestock practices certification system). 470 producers have accessed a financing/incentives mechanism for CSL.

The goal is to have one financing mechanism and one incentives scheme strengthened and operational (including regulatory frames and sanctions regimes) for facilitating the transfer of silvopastoral technologies and other sustainable livestock practices to the rural sector. The assumption is that the SLM is of interest to the whole society but their adoption depends on individual producers' decisions.

Currently, AGROCALIDAD certifies food safety in milk production, and soon will include meat production as well. The project will help include the sustainability criteria (CSL) in the AGROCALIDAD certification system.

Thanks to the Global Mechanism, the MAE has worked on the design of the Microfinance Strategy for sustainable land management and adaptation to climate change in Ecuador, but the strategy is not operational yet. The Project will help adapt the Strategy to the livestock sector, and to formulate an operational plan that increase its reach among farmers.

Activities:

In PY1, an Incentives Expert will formulate a proposal for strengthening: i) the AGROCALIDAD⁷⁶ certification mechanism for good livestock practices, in order to convert it into good CSL practices, ii) the Microfinance Strategy at national level, in coordination with MAGAP and MAE. In the case of AGROCALIDAD, sustainable livestock will be included as eligible activity CSL selection criteria will be incorporated, such as: climate change, land degradation, desertification risk, food security, among others. In the case of the Microfinance Strategy, a new structure will be proposed to initiate a pilot phase in the selected provinces. For both the mechanisms/schemes an operative strategy will be formulated to support the CSL management, in coordination with MAE and MAGAP.

In PY1 and PY2, at provincial level, the Capacity Development Expert and the Gender Expert will design a Technical Assistance and Training on Incentives Plan for small-scale livestock producers, including gender approach. Awareness will be raised about the existence of the financing schemes and technical assistance will be provided through extension activities (PY2, PY3, PY4) in coordination with MAGAP technicians in each province, while training workshops will be channelled through the networks (see Output 2.1.2). Training will include information on financing mechanisms and incentives schemes, farm book keeping and investment design, and requirements to promote the CSL management in selected farms⁷⁷. The networks will operate as an intermediary between producers and the mechanisms, supporting in preparing the investment plans, forms, clarifying doubts and accompanying producers during the verification process. The existence of capacities in networks will allow the dissemination of financing and incentives mechanisms among all the members, scaling up Project intervention and guaranteeing sustainability after Project completion.

In PY3 and PY4, the project will promote the adoption of good practices in farms, through technical assistance, supplies and preferential access to financing. The aim is that 470 small-scale producers can access through the fulfilment of accreditation and verification requirements of AGROCALIDAD and the Microfinance Strategy (see Section 1 for a complete description). Access to incentives for CSL management practices will contribute to increase productivity through an efficient and sustainable use of land and natural resources. Farms will receive incentives based on certain minimum criteria, detailed in Box 1.

Box 1

Tentative list of minimum criteria for the application of Financing Mechanisms/ Incentives in farms with CSL management

1. Farms receiving credits or incentives implement livestock management practices that favor conservation and protection of ecosystems, biodiversity, soil structure and water sources.
2. Farms receiving credits or incentives have plans/strategies for livestock, pastures, crops, plagues and organic/inorganic waste management.
3. Livestock production practices contribute to diminishing the carbon print for herd feeding, silvopastoral systems and management of animal-produced effluents.
4. The farm has socially and environmentally adequate community management plans.
5. Livestock production complies with national legislation on labor, health, occupational safety and good conditions for people working in the farm.
6. Farm's practices and habits promote animal well-being, having adequate facilities, balanced feeding, healthy practices and animal management procedures in general.

From PY2, producers wishing to obtain financing from one of the mechanisms/incentives, will receive technical assistance for the transition of their farms. Each producer will have a plan to transform the farm, which will be designed using the information generated in the MAGAP GIS Lands Project, that allows to visualize the property distribution and soil use and to propose a new, more sustainable distribution if applicable.

Component 3. Monitoring of GHG emissions and adaptation capacity in the livestock sector.

The objective of Component 3 is to generate a monitoring system of GHG emissions and of adaptive capacity (two dimensions of CSL), including better ways of gathering information. This will include establishing models or pilots that allow understanding the global balance of GHG emissions from livestock production, especially methane, and the implications of promoting CSL practices. The Project mitigation strategy is to reduce emissions per output unit and to increase carbon sequestration in well-managed pastures. According to FAO, in Ecuador there is significant potential for carbon sequestration in soil in livestock systems linked to the vast extension of highly degraded pastures. GHG monitoring systems will be established in the 7 pilot areas to provide data on emissions and mitigation potentials of different types of practices and livestock activities. These data will be very useful for measurement, reporting and verification (MRV).

As regards adaptation capacity monitoring, the Project will test the JICA tool, designed by the JICA project in Ecuador in coordination with MAE. The Project will build on lessons learned and will test this tool's effectiveness in the livestock sector.

Output 3.1.1: Monitoring of GHG emissions reduction

Baseline: There are institutions trained to provide livestock activities data. There are annual surveys. National communications to the UNFCCC are based on Tier1 of IPCC guidelines. This does not allow to measure CSL practices effect.

Target: One GHG emissions monitoring system working in selected areas. MAE is trained to prepare national communications based on Tier2 of IPCC guidelines. There are emission factors by systems, management practices and climatic zones.

This output will deliver a GHG monitoring system for the livestock sector. This implies knowledge on the number of animals and the methane emission factor per capita per year.

Activities:

In PY1 the project will identify pilot areas⁷⁸ that present facilities for obtaining monitoring data. The project will finance the hiring of a consultancy to support this task, while MAE will assign a technical team with which to coordinate. The livestock production and manure management system will be specified, including variables such

⁷⁸ In the 30,000 has – see Output 2.1.1

as population, feed rations, excretion and manure management. Thus, technicians/workers for cattle management (feeding and manure management) will be selected and trained.

In PY2 necessary capacities will be created *in situ* to obtain data, and a plan for continuous monitoring will be designed. Emissions and soil carbon sequestration will mostly be computed and modelled. The project will only marginally finance direct measurements, to verify computations or calibrate models. Thus, data gathering, registry and reporting protocols will be the central activity.

In PY3, the monitoring protocol will be rolled out. GHG emissions monitoring will be undertaken by applying 2006 IPCC guidelines and specific models. This includes modelling the farm system through GLEAM. The following monitoring scheme will be implemented in pilot areas:

- To apply the 2006 IPCC Tier2 guidelines for methane enteric emissions. Modelling of the feed ration, animal production and herd structure is required.
- To apply the 2006 IPCC Tier2 guidelines for calculation of nitrous oxide and methane emissions related with manure storage. Estimates will be calculated in relation with excretion values, manure management practices and corresponding climatic regions.
- To describe the mechanization level in the farm system, taking into consideration the climatic zone extrapolating information from literature and experts' judgement. In this way, emissions related to levels of energetic efficiency and energy sources can be calculated building on existing data.
- To use GIS technology and specific models to estimate changes in soil carbon stocks due to land use and land use change induced by livestock production in implementation areas.

The data will be used to compute emission profiles of the farms in the 30,000 ha where the project will invest.

In PY4 , the information from project site will be centralized and analysed to support Nation Inventory A letter of Agreement will be signed with an institution with experience in management of related tools. Emission factors specific by system, management practices and climatic zones will be developed. MAE technical team in charge of preparing national communications will be trained.

These activities are incremental to the baseline, since they are an additional effort to the current Tier1 emissions calculation of the sector – which relies on default emission factors and would thus not allow to capture the mitigation effects of the projects. Being a key category of the National GHG Inventory, it is considered necessary updating it to Tier2. Global Environmental Benefits resulting of this incremental effort will be generated through reduction of uncertainty in the emissions report of the sector, which will allow the design of much more effective policies for emissions reduction, including the NAMA under Component 1.

The Mitigation Directorate (MAE) will have an active role in generating this output. MAGAP will support at field level.

Output 3.2.1: Tool for monitoring adaptive capacity in the livestock sector.

Baseline: There is a tool for monitoring the adaptive capacity of the rural sector developed by the JICA project (see Section 1), but it has not been implemented nor tested. During full project preparation a need for monitoring the adaptive capacity in the rural sector has been identified.

Target: The JICA adaptive capacity monitoring tool has been tested in the livestock sector and has been reviewed according to Project's lessons learned.

This output will put into practice a Monitoring and Evaluation system for CC adaptation measures in the frame of the policies promoted under Component 1. Environmental, social and economic indicators will be monitored. The JICA tool will be applied in pilot areas where the Project will promote CSL practices. The objective is to have a practical tool that enables the MAE Adaptation Direction to gather information and a feedback process.

Activities:

In PY1, an Adaptation Expert will undertake a detailed analysis on the vulnerability (risks, exposure and capacity to cope and adapt) of the livestock sector, including with regards to productivity levels, and livelihoods of different categories of producers. Thus, the JICA M&E Tool will be adjusted taking into consideration the characteristics of the livestock sector and Project intervention areas (representative pilot areas where the CSL management will be applied) and definition of a baseline. The tool will include monitoring the evolution of Adaptive Capacity Perception Index (CCA-1). The Expert will work in close coordination with the MAE Adaptation Direction and with Project Coordinator.

In PY2, PY3 and PY4 the JICA tool will be tested in pilot areas. Project field technicians and provincial MAGAP extension staff will be trained to collect data on their field trips, with simple surveys. First data systematization will be conducted with the support of the Climate Change Expert and MAE Adaptation Direction - central level. At the end of PY3, the Adaptation Expert will prepare a proposal to adjust the JICA tool, based on lessons learned during testing. The proposal shall include an implementation strategy of the tool at national level (Coast, Andes, Amazon). In PY4, JICA tool will be evaluated, including adjustments.

Component 4: Project Management, Monitoring and Evaluation and Knowledge Management.

Component 4 objective is to efficiently implement the project. This includes: i) Project progress monitoring and evaluation; ii) achievement of targets; iii) application of the risk mitigation strategy and alternative measures responding to unexpected risks; iv) preparation of Project progress reports; v) systematization and dissemination of data gathered and lessons learned – through different communications instances of MAE, MAGAP and FAO, and DAGs communications units.

Component 4 is composed of two outputs:

Output 4.1.1: Project management, monitoring and evaluation system

This output will ensure the efficient implementation of the Project, with the organization of the team that will undertake the actions, located in a working space that allows interaction with MAE, MAGAP and provincial authorities (DAGs) executors. Project organizational structure will consist of a Project Coordinator/Sustainable Livestock Management Expert, a Technical Assistant, 14 Technicians in the 7 provinces, a Livestock Policies and LUDPs Expert, a NAMA Expert, a Capacity Development Expert, an Incentives Expert,, an Adaptation Expert, and a Gender Expert. The Terms of Reference of the team and short-term consultancies are detailed in Appendix 6. I

Activities:

In PY1 a Project Inception Workshop will be organized. Biannual reports (Project Progress Reports – PPR) and an annual report (Project Implementation Review – PIR) will be prepared. In PY2 two PPR and one PIR will be prepared and Mid-term External Evaluation will be undertaken. GEF/SCCF Tracking Tools will be completed (AMAT, PMAT LD, y CCM). In PY3 two PPRs and one PIR will be prepared. In PY4 two PPRs and one PIR will be prepared and a Final External Evaluation will be undertaken. The final version of the GEF/SCCF Tracking Tools will be completed (AMAT, PMAT LD, y CCM). Project Final report will be prepared.⁷⁹

Output 4.1.2: Project knowledge management system

This output seeks systematize and make public the information generated by the Project. Project experiences, best practices and lessons learned will be disseminated, including successes and failures. The information will be uploaded on the online platforms of MAGAP and MAE.

Activities:

In PY1 the Project will coordinate with MAGAP the use modality of its online platform to disseminate project results. Information on project practices and learnings will be uploaded. In PY2 mid-term Project results will be systematized and published on the platform. Also, the project will select in coordination with DAGs five relevant themes per province, which will be published as articles in the platform. Five (5) online courses on CSL will be developed. In PY3 five additional themes, as well as Project learnings, will be uploaded. In PY4 a report on *“Implementation of the CSL approach in Ecuador, lessons learned and replication potential”* will be prepared with FAO technical support. The project will also liaise with global networks, such as the Global Agenda for Sustainable Livestock (GASL - www.livestockdialogue.org) in order to disseminate lessons learnt in pioneering CSL practices.

2.5 GLOBAL ENVIRONMENTAL BENEFITS/ADAPTATION BENEFITS

The Secretariat of Livestock Promotion of MAGAP, the MAE, the DAGs of Loja, Manabí, Santa Elena, Guayas, Morona Santiago, Imbabura and Napo, small-scale and medium-scale cattle ranchers, public and private institutions, producers associations, local development actors and local rural communities involved in the Project will contribute to generate the following Global Environmental Benefits (GEB):

The project will identify, test and disseminate Climate Smart Livestock (CSL) production interventions that will generate positive outcomes regarding two global environmental

⁷⁹ See section 4 for more details.

benefits (i.e. climate change mitigation and reduced land degradation) and adaptation to climate change. The three benefits will be addressed in an integrated manner. There are indeed strong technical and institutional linkages between the interventions required to deliver on these objectives. For example, improved grazing management and pasture restoration, through a better spatial and temporal management of the grazing pressure contributes to restoring degraded pasture (biomass and soil carbon regeneration), to increasing resilience to climate change (better water and nutrient management) and to mitigating climate change (carbon sequestration in soil and biomass and improvement of grass and animal production efficiency). In this regard, the project will control for possible tradeoffs, such as enteric methane emissions and the sequestration of carbon in pastures.

The underpinning principles of CSL are the efficiency of natural resource use and the improvement of resilience. Integrated technical packages that combine management practices and technology will be developed to effectively address mitigation, adaptation and land restoration objectives. The project will directly support the adoption of such packages on 30,000 ha, located in 7 provinces representative of the agro-ecological diversity of Ecuador. The vast majority of this area (ca. 98%) is covered by degraded pastures that the project will directly restore. The remainder is composed of un-degraded natural pastures. Tree coverage is marginal on the 30,000ha, mostly located in the Amazonian provinces. The introduced practices will aim at:

- (i) Reducing direct⁸⁰ GHG emissions by unit of animal product (emission intensity)
- (ii) Regenerating soil organic matter stocks to sequester carbon and improve productivity through better water and nutrients management
- (iii) Revert land degradation and pasture expansion trends.

Further, the project will foster the wider adoption of these practices, in other locations of the participating provinces and in other provinces too: (i) a NAMA will be designed to create the conditions for national level mitigation action in the sector; (ii) five provinces will be supported in designing livestock development zoning and land use planning (iii) six local networks will be developed to support the dissemination of the climate smart packages (iv) at least 350 producers in Ecuador will access financing mechanism or incentives to implement climate smart packages and (v) Monitoring systems for mitigation and adaptation will be developed to inform national and local authorities as well as the civil society and support decision making. Table 6 summarizes the main global benefits to be accrued by the project.

**Table 6:
Summary of Project Global Environmental Benefits and Adaptation Benefits**

| Global Environmental and Adaptation benefits |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Land degradation</i></p> <ul style="list-style-type: none"> • Reduced grassland degradation trends due to inappropriate pasture management and grazing pressure • Reduced pressures over forest (including native) due to expansion of livestock frontier • Reduced land and water degradation around water point due to trampling and animal |

⁸⁰ These are methane emissions from rumination and nitrous oxide and methane emissions from manure management

waste

Carbon benefits

- **Reduced direct GHG emissions per unit of animal product**
- **Reduced GHG emissions related to land use change and losses of soil organic matter**
- **Increased sequestration of carbon in restored pastures**

Adaptation benefits

- **Increased incomes and livelihoods**
- **Better resilience to environment changes and extreme events**
- **Decreased exposure to predictable or expected environmental disasters and losses associated with them.**

FAO has used the Global Livestock Environmental Accounting Model (GLEAM) to calculate the GHG emissions (baseline and project targets). GLEAM is GIS-based model, that models the main livestock production activities and related resource flows in all countries, and covers the main 11 global livestock commodities, and predominant production systems. The system boundary is from cradle to retail point. Regarding impact categories, the current GLEAM version (v1.0) focuses on GHG emissions. GLEAM was used to estimate adaptation benefits through increased productivity⁸¹.

Carbon benefits (CCM, LD)

National and local institutions, local communities, NGOs and small-scale farmers will help deliver carbon benefits through the implementation of project activities. Therefore, the Project will have direct and indirect impacts on carbon stocks and will reduce CO₂ emissions. The following estimation has been calculated by using a conservative methodology – see below. Project targets will be further refined in PY1.

Baseline trends

Cattle production is characterised by relatively poor animal rations, lack of health care, loose reproduction management and sub-optimal off take strategies. This causes low production efficiency and relatively high direct emissions intensities. The project areas are also highly degraded, contributing to poor animal feeding but also to C losses from soil and biomass. There is however little information on current rates of C losses.

Direct impacts

Through Output 1.1.2: *A Nationally Adapted Mitigation Action (NAMA) is developed.* Although the mitigation target of the NAMA will be defined during its development, a plausible scenario can be proposed: for example, a NAMA addressing one third of the milk production sector in Ecuador, now emitting about 4 kg CO₂eq per kg of milk with an emission reduction target of 3, would result in a mitigation effect of 7 130 tons CO₂eq per year.

Through Output 2.1.1: *Climate smart livestock practices are disseminated in degraded livestock production areas.* This project intervention will result in the implementation of CSL packages on 30 000 ha of degraded land. The estimated

⁸¹ Kindly see more in: FAO (2013) *Greenhouse Gas Emissions from Pig and Chicken Supply Chains: A Global Life Cycle Assessment*, Michael MacLeod, Pierre Gerber, et al.; and FAO (2013) *Greenhouse Gas Emissions from Ruminant Supply Chains: A Global Life Cycle Assessment*, by Carolyn Opio, Pierre Gerber et al. , Rome.

mitigation benefits during project implementation (4 years) are 325 thousand tons CO₂eq; 257,602 tons CO₂eq from reduction of direct methane and nitrous oxide emissions and 67 500 tons CO₂eq from soil C sequestration. Table 7 summarizes the expected mitigation effect by area of production.

Table 7
Summary of mitigation practices and related effects in Project intervention areas

| Geographical area | COAST | | AMAZONIA | | ANDES | |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project provinces | Guayas, Santa Elena, Manabí | | Morona Santiago, Napo | | Imbabura, Loja | |
| Production system | MEAT PRODUCTION Adult males (>24 months) 350 kg Adult females in reproduction (>18 months) 300kg Calve 45 kg Fattened young male for slaughter 450kg Fattened young female for slaughter 450kg | | MEAT PRODUCTION Adult males (>24 months) 400 kg Adult females in reproduction (>18 months) 300kg Calve 45 kg Fattened young male for slaughter 450kg Fattened young female for slaughter 450kg | | MILK PRODUCTION Adult males (>24 months) 300 kg Adult females in reproduction (>18 months) 250kg Calve 35 kg Fattened young male for slaughter (5 years) 400kg Old dairy cow at slaughter (12 years) 450kg | |
| | Baseline | Target | Baseline | Target | Baseline | Target |
| Management and project Intervention | <ul style="list-style-type: none"> - Grazing (no supplementary feeding), - Degraded pasture, large paddocks, no fertilization - All animals managed in a single herd, no mating management, - Deficient animal health - No specific manure management, all deposited in pasture | <ul style="list-style-type: none"> - Grazing, supplementary feeding for fattening animals only (500g maize silage per day), mineral blocks, - Improved pasture, grazing management in small paddocks (e.g. 2ha), 45kN/ha/year - Herd split in animal categories, reproduction management - Regular vaccination and disease | <ul style="list-style-type: none"> - Grazing, no supplementary feeding - 80% of improved pastures but high degradation rates, no fertilization - Poor grazing management: animals are hobbled, which also causes high mortality - No reproduction management - Deficient animal health - No specific | <ul style="list-style-type: none"> - Grazing, supplementary feeding, mineral blocks. - Improved pasture with the introduction of legumes (20% of cover) in half of the improved pastures, 45kN/ha/year. - Reproduction management - Regular vaccination and disease surveillance - No specific manure management, all | <ul style="list-style-type: none"> - Grazing, limited supplementary feeding - 20% of improved pastures but high degradation rates, no fertilization - Management in paddocks - Sub-optimal reproduction management and replacement rates - Deficient animal health - No specific manure management, all deposited in pasture | <ul style="list-style-type: none"> - Grazing, concentrate supplementation to milking cows (maize, soy cakes and minerals). - 50% of improved pastures, with introduction of legumes (20% of cover), 45kN/ha/year. - Reproduction management - Regular vaccination and disease surveillance - Manure mostly deposited in pasture, collection |

| | | | | | | |
|------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------|---------------------------------------------|------------------------------|-----------------------------|------------------------------|
| | | surveillance – No specific manure management, all deposited in pasture | manure management, all deposited in pasture | deposited in pasture | | during housing and spreading |
| Productivity parameters | | | | | | |
| Age at first calving (years) | 3.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Replacement rate (dairy system only) | n/a | n/a | n/a | n/a | 15% | 20% |
| Age at slaughter (reproduction females, years) | 10 | 8 | 10 | 8 | n/a | n/a |
| Calving intervals (months) | 30 | 18 | 24 (eight calvings in total) | 18 (eight calvings in total) | 18 (five calvings in total) | 18 (seven calvings in total) |
| Mortality rate of calves | 10% | 8% | 15% | 10% | 12% | 10% |
| Mortality rate of adults | 2% | 2% | 8% | 3% | 6% | 4% |
| Bull to cow ratio | 1/7 (inbreeding) | 1/25 | 1/20 | 1/25 | 1/15 | 1/25 |
| Milk yield (kg/cow/year) | n/a | n/a | n/a | n/a | 850 | 1440 |
| Gross DM yield of pastures | 1000 | 2000 | 6000 | 12000 | 17500 | 19600 |
| Harvesting/utilization losses in pasture | 60% | 50% | 40% | 20% | 25% | 20% |
| Productivity (for a herd of 10 adult females plus followers) | | | | | | |
| meat output (tons live weight) | 1.5 | 2.7 | 1.2 | 2.5 | 1.8 | 2.2 |
| Milk output (tons) | n/a | n/a | n/a | n/a | 8.5 | 14.4 |
| GHG emissions/sequestration | | | | | | |

| | | | | | | |
|----------------------------------------------------------|------|------|------|------|------|-----|
| kg CO ₂ -eq per kg live weight | 31.3 | 23.1 | 31.7 | 22.3 | 10.3 | 8.0 |
| kg CO ₂ -eq per kg milk | n/a | n/a | n/a | n/a | 3.8 | 2.9 |
| kg CO ₂ -eq per kg protein | 348 | 257 | 352 | 248 | 115 | 89 |
| Soil C sequestration in pasture (tons C per ha per year) | - | 0.5 | - | 0.5 | - | 0.5 |

Through Output 2.2.1: *Improved Access to financial instruments for investment in CSL*. Under the project, at least 350 producers will be supported to invest in CSL. Assuming an average herd size of 15 animals and pasture area of 15 ha, and also assuming mitigation potentials similar to those in Outcome 2.1, the mitigation effect is of 13.2 tons CO₂eq.

Indirect impacts

In addition to the direct impacts, the project is expected to generate some indirect positive impacts through institutional development, and the development of monitoring systems that will provide incentive for mitigation and detailed information required to identify and achieve mitigation goals:

- Through the Output 1.1.3: *Climate smart livestock (CSL) concept is integrated in climate change mitigation and as adaptation policies addressing livestock as well as in local land use plans*. Although results in terms of mitigation are difficult to quantify for the development of CSL practices and the inclusion of CSL in the land use plans of 5 Province, an estimate can be proposed. Assuming that 20% of the pasture area in five of the provinces (Guayas, Santa Elena, Manabí, Imbabura, Loja) is restored, the mitigation effect would be of 2.6 million tons CO₂eq per year.
- Through the Output 3.1.1: *The GHG mitigation effect of the project has been monitored*, and through Output 4.1.2: *Knowledge management and dissemination*. The project will generate and spread novel information about the practical implementation of CSL. There is currently a lack of primary information and understanding about synergies and trade-offs among practices that attempt to address mitigation, adaptation and food security in an integrated manner. This is a constraint to investment in CSL, both for public and private stakeholders. By generating such knowledge, the project will unlock similar interventions in other regions of Ecuador, and beyond. Assuming that this would result in the adoption of CSL practices on 50 000 ha, the mitigation effect would be of 460 thousand tons CO₂eq.

Table 8:
Direct and indirect avoided emissions and sequestration (Project implementation: 4 years).

| | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------------------------|------|------|------|------|------|
| Business as usual | | | | | |

| | | | | | |
|------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 3 905 | 4 022 | 4 139 | 4 256 | 4 373 |
| Carbon losses from pasture degradation (t CO ₂ eq /year) | not quantified (1) | not quantified (1) | not quantified (1) | not quantified (1) | not quantified (1) |
| Direct GHG emissions from livestock sector (t CO ₂ eq/year) | 42 902 | 45 160 | 47 192 | 49 316 | 51 535 |
| With CSL (direct impact) | | | | | |
| Carbon sequestration from pasture restoration (t C/year) | 16 875 | 16 875 | 16 875 | 16 875 | 16 875 |
| Carbon sequestration from pasture restoration (t CO ₂ eq/year) | 61 763 | 61 763 | 61 763 | 61 763 | 61 763 |
| Direct GHG emissions from livestock sector (t CO ₂ eq/year) | 31 089 | 32 725 | 29 846 | 27 359 | 25 221 |
| Direct mitigation effect (t CO ₂ eq/year) | | 74 197 | 79 109 | 83 719 | 88 077 |
| TOTAL DIRECT MITIGATION EFFECT (t CO₂eq) | | 325 102 | | | |
| With CSL (indirect impact) | | | | | |
| Carbon sequestration from pasture restoration (t C/year) | | 201 887 | 201 887 | 201 887 | 201 887 |
| Carbon sequestration from pasture restoration (t CO ₂ eq/year) | 0 | 738 905 | 738 905 | 738 905 | 738 905 |
| Direct GHG emissions from livestock sector (t CO ₂ eq/year) | 34 933 | 36 772 | 32 359 | 28 476 | 25 059 |
| Indirect mitigation effect (t CO ₂ eq/year) | | 753 289 | 760 004 | 766 292 | 772 223 |
| TOTAL INDIRECT MITIGATION EFFECT (t CO₂eq) | | 3 051 809 | | | |

(1): In view of data paucity, a conservative approach was selected and baseline C losses related to land degradation trends were ignored.

Adaptation benefits (SCCF)

The main project's beneficiaries will be 1000 small and medium-scale livestock producers, including women who through the implementation of the CSL will improve their livelihoods, their resilience capacity in the face of drought, will increase livestock productivity and will receive higher income per family. These 1000 producers will benefit from the creation of provincial networks that will provide them with technical support

and training. It is expected that at least 470 families out of 1000 producers will be able to access financing or incentive mechanisms for maintaining their production sustainable during project life. The rest of producers are expected to access the mentioned mechanisms after project completion.

Indirect beneficiaries of the project will be the rest of community members in selected municipalities (7 provinces), since sustainable production systems generate positive impacts on the ecosystem at a wider scale. Final consumers will also be indirect beneficiaries, since they will be sure to buy a product developed with sustainable livestock management techniques.

Project's expected adaptive benefits at a local scale are:

Short and medium term:

- Improved production net incomes (from +USD 1 470 to +USD 5 495 per producer⁸² during project execution).
- Improvement of income generated from sale of milk, + 25 to 30% (lt/capita-day) and meat, +15 to 20% per family. This will generate a positive impact on poverty and local migratory pressure⁸³.
- Greater access to credit/production incentives, especially for women: +USD 175 000 in 4 years, at least 20% women (especially head of household).
- Improved productivity of livestock farming: +80 to 100% for meat and +70% for milk.
- Less vulnerability of livelihood (rate perceived by local population. From high to medium level)⁸⁴.
- Improved association capacity.

Long term:

- Better resilience to environment changes, thus allowing the maintenance or improvement of income levels.
- Greater information for decision making a priori and in the future.
- Decreased exposure to predictable or expected environmental disasters and losses associated with them.
- Increased responsiveness to extreme events
- Improved levels of nutrition and health of family members.

Gender approach

The project will apply the gender approach in the four components. Under Component 1, women will be involved in the decision-making process both at the local level (training workshops, review of LUDPs to include CSL) and the national level (design of NAMA and CSL strategy). Under Component 2, microfinance activities, access to financing

⁸² Calculated on a basis of 30 000 has restored, 1000 beneficiaries.

⁸³ With the application of good practices an income growth is expected in the short term, mainly due to increased milk and meat production. In the case on milk production an increase of 25 to 30% (lt/capita-day) in the 30 000 ha and an increase of 15 to 20% for meat (kg of meat) in the short term. In the medium term it is expected that reduction of production cost will sum, which will also help to increase incomes once that the proposed changes are a common practice and real production costs at small- and medium-scale producer level will be known. Although information indicates that national average milk production is 5.05 lt/unit-day, in degraded lands this average is 2 lt/unit-day.

⁸⁴ According to indicator LD-1.ii, see outcome 2.1

mechanisms and incentives will take into consideration women as key actors who manage household savings and have a huge influence on the dissemination of good livestock practice in their communities and villages. Women have a key role in cattle managing and FAO experience has demonstrated that involving female farmers is crucial for successful poverty reduction programs. Therefore, women's organization and capacity development contribute to improve their working conditions, sustenance and life quality indicators (health, nutrition, education and social inclusion). This project addresses women's access to natural and productive resources (land, livestock, and credit) in order to increase their influence and social potentiality and thus their control over local resources.

2.6 COST EFFECTIVENESS (alternative strategies and methodologies considered)

During full project preparation various strategies and methodologies were analysed, in view of the provincial context where project activities will be conducted. Three type of interventions were identified and assessed: i) institutional strategy; ii) integrated landscape management; and iii) climate-smart livestock management, which enable tackling mitigation and adaptation to climate change and its relation with land degradation. The project will build on baseline activities implemented by the Government that will be strengthened in selected provinces for this project.

The proposed intervention strategies are profitable and acceptable for small- and medium-scale producers. These interventions and methodological proposals will enable small- and medium-scale producers to increase their production levels and to improve the environmental quality of their property, reducing emissions, increasing carbon capture in soil through good practices and better adapting to climate change.

In order to reduce land degradation, GHG emissions and increase resilience to climate change effects, the following strategies and methodologies have been selected for project implementation:

- I. Capacity development will improve inter-institutional coordination at central (between MAE and MAGAP), provincial and inter-sectorial levels. Coordination will avoid efforts duplication and will reduce project implementation costs.
- II. Project decision making mechanisms and activities will be in line with local development priorities and other existing initiatives of central governments. To this end, producers participation is a key element, since they will implement actions at field level and the sum of properties forms the production landscape in which ecosystem services have to be protected.
- III. Sustainable Land Management (SLM) will promote awareness-raising on sustainable use of land for livestock purposes.
- IV. Training and awareness-raising for producers and local governments, supporting them to reach changes in attitudes and behaviours that favours soils, water and forests sustainable management and the adoption of appropriate climate-friendly technologies.
- V. Promotion of sustainable and cultural intensification (i.e. agricultural planning, conservation and management of soils, water and pastures, use of native forage species and varieties or adapted for livestock management).
- vi. Promotion of incentives and financing mechanisms to encourage the adoption of sustainable production systems. These incentives will enable to expand good

practices and achieve the financial sustainability of the activities promoted by the project in the medium and long term.

- vii. Poverty reduction and property profitability. The recovery of 30 000 hectares will generate additional incomes for producers. This justifies investments in training for the adoption of CSL by small- and medium-scale producers.

2.7 INNOVATIVENESS

The Project is highly innovative because seeks to test and implement on field the Climate-Smart Livestock (CSL) approach, that is being promoted by FAO member states. Ecuador will be a showcase that will enable the assessment of CSL practices, draw lessons learned and formulate replication strategies, taking into account local features of each territory. The project will use the GLEAM tool (FAO), which was designed specifically to measure livestock sector indicators, generating information that can be utilized in national communications to the convention. It seeks to generate a measuring protocol for emissions and emission specific factors for each production system, climate zone and management practices.

Lessons learned and institutional capacities that will be generated through the project could be used as a basis for a future South-South cooperation between Ecuador and other developing countries, with FAO technical support. Additionally, the global community will benefit from the information on the livestock sector to be generated by the project and disseminated by FAO and the GEF as a public global good.

At national level, Project innovativeness lays on its inter-institutional character. The Project integrated approach will involve both the production sector (MAGAP) and the environmental sector (MAE) of the State, setting the basis for further coordinated initiatives.

At provincial level, the Project will be innovative through the dissemination of technologies and good management practices for livestock production that are currently unknown or have little application. The development of networks, training and access to financing beyond Project duration are also new element in the provincial and local scenario.

SECTION 3 – FEASIBILITY (FUNDAMENTAL DIMENSIONS FOR HIGH QUALITY DELIVERY)

3.1 ENVIRONMENTAL IMPACT ASSESSMENT

Following FAO's *Environmental Impact Assessment (EIA): Guidelines for FAO Field Projects*⁸⁵, the proposed Project is classified under category B⁸⁶. The corresponding Environmental and Social Review Form⁸⁷ is attached in Appendix 8.

3.2 RISK MANAGEMENT

Project risks have been identified and analyzed during full project preparation and mitigation measures have been incorporated into project design (see Risk Matrix in Appendix 4 of this document). With the support and supervision of the FAO, the Project Management Committee will be responsible for the daily management of such risks as well as for the effective implementation of mitigation measures. The Monitoring and Evaluation System (M&E) will monitor performance and outputs indicators, project risks and mitigation measures. The Project Management Committee will also be responsible for monitoring the effectiveness of mitigation measures and adjusting mitigation strategies as needed, and for identifying and manage any new risk that has not been identified during project preparation, in collaboration with Project partners. The six-monthly Project Progress Report (see section 4.5.3) is the main tool for project risk monitoring and management. The reports include a section on systematic follow-up of risks and mitigation actions identified in previous reporting periods. The PPRs also include a section for identification of eventual new risks or risks that still need attention, their rating and mitigation actions, as well as the responsible for monitoring those actions and the expected timeline. FAO will monitor the project risk management closely

⁸⁵ See <http://www.fao.org/docrep/016/i2802e/i2802e.pdf> . Kindly note that for projects designed after 15 March 2015, FAO is applying the Environmental and Social Management Guidelines (ESMG). The proposed project was designed in 2014.

⁸⁶ Category B projects should not entail significant (or potentially irreversible) negative environmental (and associated social) impacts, but may still have adverse effects which can be mitigated with suitable preventive actions. An indicative list of projects that would normally be assigned to Category B includes: i) Agro-industry projects of small and medium scale; ii) Water impoundment, irrigation and drainage schemes of small scale; iii) Small and medium-scale agricultural and animal husbandry production schemes which involve the use of "exogenous" technology and/or inputs (i.e. cultivation or animal husbandry techniques, agricultural or post-harvest machinery, disease and pest control, seeds, fertilizer, and tools that are not commonly used/traded in the project area); iv) Watershed management or rehabilitation, river basin management planning, international water management, and agreements for medium-size projects; v) Range and pasture management and livestock management, including waste control and livestock health aspects; vi) Small and medium-size aquaculture, including small and medium-scale industrial and artisanal fisheries; vii) Limited bioenergy projects; viii) Climate change adaptation projects; ix) Small and medium-size plantations for bioenergy or pulp or other agricultural use; x) Reforestation/afforestation; xi) Forest industry development including industrial and community uses; xii) Introduction of genetically modified organisms; xiii) Small and medium-size road construction, maintenance and rehabilitation; xiv) Significant changes in plant and animal gene pool; xv) Land use changes affecting biodiversity; xvi) Projects that may have potentially minor adverse impacts on physical cultural resources

⁸⁷ Ranking under Category B is to be certified by the FAO Lead Technical Officer (LTO) who can proceed to final design and implementation phases. The FAO LTO should carefully fill-in the FAO Environmental and Social Review Form – attached in Appendix 8.

and follow up if needed by providing support for the adjustment and implementation of risk mitigation strategies. Reporting on risk monitoring and rating will also be part of the annual Project Implementation Review (PIR) prepared by FAO and submitted to the GEF Secretariat (see section 4.5.3).

3.2.1 Risks and mitigation measures

Kindly refer to the Table in Appendix 4, which summarizes the risks identified during full project preparation, their probability, and identified mitigation measures.

3.2.2 Fiduciary risk analysis and mitigation measures (only for NEX projects)

- a) Macro analysis*
- b) Micro analysis*
- c) Action plan for capacity strengthening of Executing Partner if needed*

SECTION 4 – IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS

4.1 INSTITUTIONAL ARRANGEMENTS

Besides FAO as GEF Agency, the main institutions involved in the project are the Ministry of Environment on Ecuador (MAE) and the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP).

As requested by the Government of Ecuador⁸⁸, the Food and Agriculture Organization of the United Nations (FAO) will be the GEF Implementing Agency, and Project Executing Agency (see description in Section 4.2)

Both executing partners will be responsible for ensuring coordination of the four project components, as well as coordination and collaboration with the DAGs, community livestock producers' organizations in each province.

MAGAP is the leading institution in charge of regulating, facilitating, controlling and evaluating the management of agriculture, aquatic and fisheries production in Ecuador. MAGAP's mission is to promote rural development and sustainable production and productivity increase by enhancing producers' development, especially family farmers, and maintaining incentives for production.

MAE is the leading institution in charge of advocating for a healthy environment, and respect for the rights of nature or *pacha mama*. It aims for environmentally balanced development, respectful of cultural diversity that conserves biodiversity and the natural regeneration capacity of the ecosystems; and ensures the needs fulfilment of present and future generations. Its mission is to effectively and efficiently lead the promotion of environmental management, guaranteeing a harmonious relationship between the economic, social and environmental dimensions that ensures the sustainable management of strategic natural resources.

FAO, MAGAP and MAE will collaborate with implementing agencies of other programs and projects to identify and facilitate synergies with other relevant GEF-financed projects, as well as with projects financed by other donors. Collaboration will be undertaken through: (i) informal communications among GEF agencies and executing partners of other of other programs and projects; and (ii) exchange of information and dissemination materials among projects. In order to guarantee an effective coordination and collaboration between different initiatives, specific coordination responsibilities have been assigned to the Project Management Committee (see below) and included in the terms of reference of the Project Coordinator, which results shall be explicitly reflected in the Project Progress Reports (PPRs).

The project will coordinate actions with the following GEF projects, among others:

- 1) The GEF Small Grants Programme (SGP), which focuses on communities that live in buffer zones of protected areas. During the Fifth Operational Phase, the SGP implements the FSP "*Our Corridors for Good Living*" (#4375) with the objective of promoting social and economic connectivity. In the Amazon, the SGP is currently

⁸⁸ MAE, through letter MAE-D-2015-0320 has requested FAO to be the administrator of the project's resources.

working in the identification of project proposals that support the management of sustainable livelihoods of communities.

- 2) The project Conservation and Sustainable Use of Biodiversity, Forests, Soil and Water to Achieve the Good Living (Sumac Kawsay) in The Province of Napo (#4774), whose objective is to promote conservation and sustainable use of globally-important biodiversity, reduce and revert land degradation and deforestation, and improve forest management in the Province of Napo.

The UNDP/GEF project “*Advancing Landscape Approaches in Ecuador's National Protected Area System to Improve Conservation of Globally Endangered Wildlife*” (#4731) executed by MAE. The project addresses a paradigm change in the PAs management, and the adoption of a landscape approach to improve habitats and connectivity in favor of wildlife. This project promotes the development of programs that reduce the human-wildlife conflicts associated to agriculture. It is especially focused on the real or perceived threat on livestock represented by carnivore species (bears and jaguars). Conflicts usually take place in buffer zones of protected areas due to colonization and forest conversion. In the Napo Province, the selected areas are Antisana Ecological Reserve and Cayambe-Coca Ecological Reserve.

4.2 IMPLEMENTATION ARRANGEMENTS

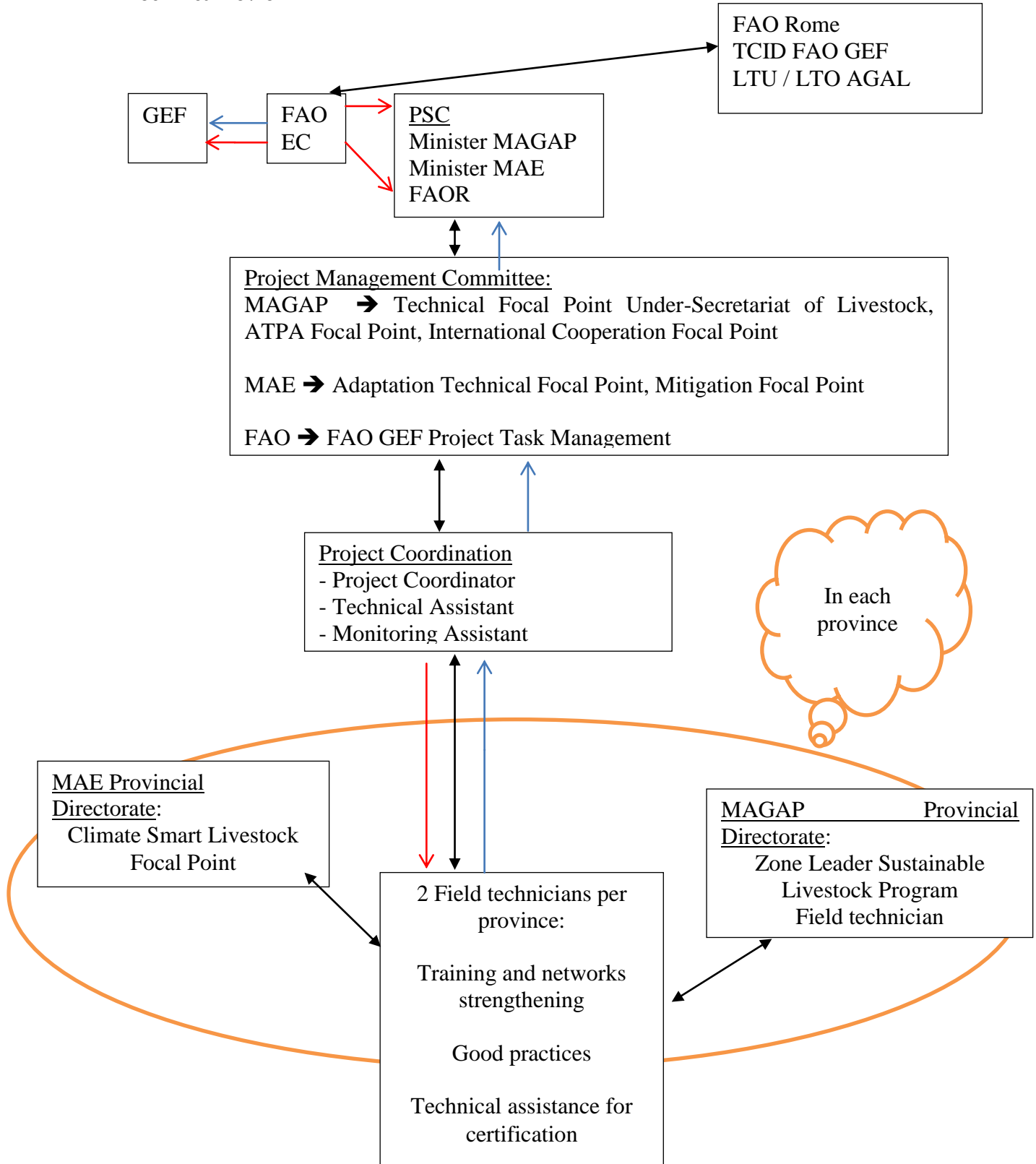
FAO will be the GEF Agency responsible for supervision and provision of technical guidance during project implementation. In addition, FAO will act as financial and operational Executing Agency, and will be responsible for the financial and operational execution of the project in addition to being the GEF implementing agency. FAO will delivery procurement and contracting services to the project using FAO rules and procedures, as well as financial services to manage GEF resources.

The project will be technically executed by the MAE and MAGAP. A **Project Steering Committee (PSC)** will be set up to provide oversight of and coordinate the planning of project implementation, and will comprise the MAGAP, MAE and FAO.

More specifically, the project will be executed through the **Project Management Committee (PMC)** made up of the Under-Secretariat of Climate Change of MAE, the Under-Secretariat of Livestock of MAGAP and the FAO GEF Project Task Management. The PMC will be responsible for decision-making, providing guidance and supervising the Project Team headed by the Project Coordination Office (PCO).

Figure 4.1. Institutional Arrangements for Project Implementation

Coordination ↔
 Financial review →
 Technical review →



4.2.1 Roles and responsibilities of the project executing partners

The roles and responsibilities of the main institutions involved in project implementation are the following:

The **Ministry of Environment (MAE)** Headquarters is the GEF operational focal point in Ecuador and responsible for coordinating the programming of GEF resources and supervising the GEF project portfolio in Ecuador, in collaboration with the GEF implementing agencies and project executing partners. The specific responsibility of the MAE in this project will be monitoring the annual Project Implementation Reviews (PIR) and will be invited to the mid-term and final evaluations of the project.

The MAE's Under-Secretariat of Climate Change will be the **co-executing partner**.

The **Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP)** will be the Project's **co-executing partner**, together with MAE.

Both institutions will be responsible for: (i) technical implementation of project activities; (ii) day-to-day monitoring of project progress and achievement of results; and (iii) financial planning and procurement of goods, minor works and services, which will be undertaken by the FAO Representation in Ecuador as per request of MAE and MAGAP. The Ministers of Environment and Agriculture will chair the Project Steering Committee and the annual meetings for project planning and review. Technical execution of the project will be the responsibility of the Under-Secretariats of CC and Livestock, respectively. Under-Secretaries will act as representatives in the Project Management Committee and will be in charge of the technical supervision of the project and reviewing the financial reports. MAGAP and MAE will supervise preparation and submission to the FAO Representation in Ecuador of the six-monthly Project Progress Reports (PPRs), detailed Annual Work Plan and Budget (AWP/B) and all the documents necessary to prepare the PIRs (see section 4.5.3 below).

For the execution of these activities, a Project Coordinator (PC) will be hired with project resources. He/she will have the responsibility of supervising and guiding the Project Team (see below) on the MAE and MAGAP policies and priorities. He/she will also be responsible for coordinating the activities with all bodies related to the different project components, as well as with the project partners. He/she will be responsible for requesting the timely disbursement of GEF resources that will allow the execution of project activities, in strict accordance with the Project Results-Based Budget and the approved AWP/B for the current project year. He/she will also be in charge of project daily management and technical supervision including: i) coordinate and closely supervise the implementation of project activities; ii) day-to-day project management; iii) coordination with related initiatives; iv) ensuring collaboration between the participating national, provincial and local institutions and organizations; v) implement and manage the project M&E plan and its communication program; vi) prepare the Project Progress Reports (PPRs), containing information on the activities carried out and the progress in the achievement of outcomes and outputs; vii) organize annual project workshops and meetings to monitor project progress and will prepare the Annual Work Plans and Budgets (AWP/B); viii) submit PPRs together with the AWP/B to the Project Management Committee (PMC) for approval and presentation to the Project Steering Committee (PSC) and FAO; ix) act as secretary to the PMC, PSC, and Steering

Committees and the Partners' Coordination and Support Group; ix) supporting the preparation of PIRs, mid-term and final evaluations.

The PC will supervise the work of, provide technical backstopping, and assess the reports and outputs produced by project national consultants (financed by GEF funds).

A GEF-financed **Project Team (PT)** will be established. The main responsibility of the PT, following the directives and decisions of the Project Steering Committee and the Project Management Committee (see Figure 4.2 below) and under the supervision of the NPD, is to ensure coordination and execution of the project through the rigorous and effective implementation of the AWP/B. The PT will be headed by the **Project Coordinator (PC)** (financed by GEF funds).

The **National Budget and Operations Officer** will be responsible for the day-to-day financial management and operation of the project including raising contracts and procure other needed inputs in accordance with the approved budget and annual work plans. The Budget and Operations Officer will work in close consultation with the PC, Budget Holder (BH, see below), Lead Technical Officer (LTO, see below) and project executing partners, particularly with the FAO Representation in Ecuador (FAOEC), and will take the operational responsibility for timely delivery of needed inputs to produce project outputs⁸⁹.

4.2.2 Roles and responsibilities of the GEF agency

FAO will be the GEF Agency of the Project as well as the financial and operational executing agency. As the financial and operational executing agency FAO will provide procurement and contracting services and financial management services of GEF resources. As the GEF Agency FAO will supervise and provide technical guidance for the overall implementation process. Administration of the GEF grants will be in compliance with the rules and procedures of FAO, and in accordance with the agreement between FAO and the GEF Trustee. As the GEF agency for the project, FAO will:

- Administrate funds from GEF in accordance with the rules and procedures of FAO;
- Oversee project implementation in accordance with the project document, work plans, budgets, agreements with co-financiers and the rules and procedures of FAO;
- Provide technical guidance to ensure that appropriate technical quality is applied to all activities concerned;
- Carry out at least one supervision mission per year;
- Report to the GEF Secretariat and Evaluation Office, through the annual Project Implementation Review, on project progress and provide financial reports to the GEF Trustee.

Based on a request from the Government of Ecuador⁹⁰, FAO will also be the financial and operational executor of the GEF resources including financial management, procurement of goods and contracting of services following FAO rules and procedures. As the financial executor, FAO will provide six-monthly financial reports including a statement of project

⁸⁹ Detailed TORs in Appendix 6

⁹⁰ Through letter MAE-D-2015-0320 of 8 April 2015

expenditures to the Project Steering Committee (PSC) and the Project Management Committee (PMC).

In accordance with the present project document, progress in the financial execution of the project, and the Annual Work Plan and Budget approved by the PSC, FAO will prepare budget revisions to maintain the budget current in the financial management system of FAO. The budget revisions will be provided to the PMC, and the PSC to facilitate project planning and execution. FAO will, in collaboration with the PT and the PMC, participate in the planning and execution of contracting and procurement processes. FAO will also process payments corresponding to delivery of goods, services and products after approval thereof by the PC in consultation with the PMC.

The FAO Representative in Ecuador will be **the Budget Holder (BH)** and responsible for the management of the GEF resources. As a first step in project start-up, the FAO Representation in Ecuador will establish an interdisciplinary Project Task Force (PTF) within FAO to guide the implementation of the project. In consultation with the LTO (see below) the FAO Representative will be responsible for timely operational, administrative and financial management of the GEF project resources, including in particular: (1) contracting and procurement processes based on the request from the Government and in accordance with the approved Annual Work Plan and Budget; (2) process the payments corresponding to delivery of goods, services and technical products based on the prior clearance of the same by PC in consultation with PMC; (3) provide six-monthly financial reports including a statement of project expenditures to PMC and the PSC; and (4) at least one time per year or more frequent if required, prepare Budget Revisions for submission to TCI/GEF Coordination Unit, ensuring that budget is updated in FAO system.

The FAO Representative will in consultation with the LTU, LTO and the FAO-GEF Coordination Unit give no-objection to AWP/B submitted by the Project Management Committee as well as to the Project Progress reports which should be approved by the LTO before they are submitted to the FAO-GEF Coordination Unit for final review and upload in FPMIS.

The **FAO GEF Project Task Manager (PTM)** will, under the direct supervision of the FAO Representative in Ecuador, support the FAO Representative in the supervision of project management and progress, procurement and contracting processes, and in the provision of technical guidance to the project, in close consultation with the LTU and the interdisciplinary Project Task Force. The PTM will be paid from GEF fee resources and will have the following main tasks:

- Review and provide comments to the project progress reports prepared by the PTC, and submit them to the BH and the LTU for inputs and subsequently to the FAO-GEF Coordination Unit in the Investment Center Division (TCI) for their final approval and uploading to the FPMIS.
- Participate in the annual project progress review and planning workshops; review and provide comments to the AWP/B and recommend its approval to the FAO Representative, in consultation with the LTU and the FAO-GEF Coordination Unit.

- Review the contracting and procurement documentation for those contracts and procurements to be financed by GEF resources, and recommend their approval to the FAO Representative, in consultation with the LTU and the FAO-GEF Coordination Unit.
- Participate in the annual project progress review and planning workshops; review and provide comments to the AWP/B and recommend its approval to the FAO Representative, in consultation with the LTU and the FAO-GEF Coordination Unit.
- Review the contracting and procurement documentation for those contracts and procurements to be financed by GEF resources, and recommend their approval to the FAO Representative, in consultation with the LTU and the FAO-GEF Coordination Unit.
- Review the co-financing reports submitted annually (June) by the project executing partners.
- Review the six-monthly financial reports prepared by the Administrative Assistant FAO Representative in Ecuador, previous to their submittal to the PTC for preparation of the PPR.
- Undertake periodic supervision missions; support the results-based project management, and facilitate the provision of technical guidance by FAO;
- Support the LTU in preparing the annual PIR report;
- When requested by the FAO Representative, participate in the Project Steering Committee;
- Participate in the project personnel selection committees to interview and give advice on candidate selection for key positions to be financed by GEF resources. The committees composition will be designated by the Project Management Committee; and
- Prepare draft terms of reference for the mid-term and final evaluations in consultation with the FAO Evaluation Office, the LTU and the FAO-GEF Coordination Unit, and project executing partners; support the organization of the evaluations; contribute to the development of an eventual agreed adjustment plan in project execution approach and supervise its implementation.

The **FAO Lead Technical Unit (LTU)** will be the Animal Production and Health Division. The LTU will designate a **Lead Technical Officer (LTO)** for the project, with experience in sustainable livestock management.

Under the general technical oversight of the LTU, the **Lead Technical Officer (LTO)** will provide technical guidance to the project team to ensure delivery of quality technical outputs. The LTO will coordinate the provision of appropriate technical backstopping from all the concerned FAO units represented in the Project Task Force responding to requests from both ministries and the Project Management Committee. The Project Task Force is thus composed of technical officers from the participating FAO units and of operational officers and is chaired by the BH. The LTO, supported by the LTU when needed, will be responsible for:

- Review and give no-objection to TORs for consultancies and contracts to be performed under the project, and to CVs and technical proposals short-listed by

the Project Management Committee for key project positions, goods, minor works, and services to be financed by GEF resources;

- Supported by the FAO Representation in Ecuador, in particular by the PTM, review and clear final technical products delivered by consultants and contract holders financed by GEF resources before the final payment can be processed;
- Assist with review and provision of technical comments to draft technical products/reports on request from the Project Management Committee during project execution;
- Review and approve project progress reports submitted by the PC, in coordination with the BH;
- Support the FAO Representative in reviewing, revising and giving no-objection to AWP/B submitted by the PC for approval by the Project Steering Committee;
- Prepare the annual Project Implementation Review report, supported by the PTM with inputs from the PC and the PT, which will be presented to the BH and the FAO-GEF Coordination Unit for approval, finalization and submittal to the GEF Secretariat and Evaluation Office as part of the Annual Monitoring Review report of the FAO-GEF portfolio. The LTO must ensure that the PTC and the PT has provided information on co-financing provided during the course of the year for inclusion in the PIR;
- Undertake field annual (or as needed) supervision missions;
- Review the TORs for the mid-term evaluation, participate in the evaluation mission including the mid-term workshop with all key project stakeholders, development of an eventual agreed adjustment plan in project execution approach, and supervise its implementation supported by the PTM (FAOEC).
- Review the TORs for the final evaluation; participate in the mission including the final workshop with all key project stakeholders, development and follow-up to recommendations on how to insure sustainability of project outputs and results after the end of the project.

The **FAO-GEF Coordination Unit** will review and approve Project Progress Reports, project reviews, financial reports, and budget revisions based on the AWP/B. This FAO GEF Coordination Unit will review and clear the annual PIR and undertake supervision missions if considered necessary. The PIRs will be included in the FAO GEF Annual Monitoring Review submitted to GEF by the FAO GEF Coordination Unit. The FAO GEF Coordination Unit will also participate in the mid-term and final evaluations and the development of corrective actions in the project implementation strategy in the case needed to mitigate eventual risks affecting the timely and effective implementation of the project. The FAO GEF Coordination Unit will in collaboration with the FAO Finance Division request transfer of project funds from the GEF Trustee based on six-monthly projections of funds needed.

The **FAO Finance Division** will provide annual Financial Reports to the GEF Trustee and, in collaboration with the FAO-GEF Coordination Unit, request project funds on a six-monthly basis to the GEF Trustee.

4.2.3 Project decision-making mechanisms

The **Project Steering Committee (PSC)** will take decisions on the overall project management and will be in charge of ensuring the project strategic approach for the operational tasks. The PSC will be chaired by the Ministries of Environment and Agriculture (or their delegates) and with the participation of the FAO Representative (or his/her delegates). The PSC will meet at least twice a year and its responsibilities will include: (i) overall oversight of project progress and achievement of planned results as per the project document; (ii) take decisions in relation to the practical organization, coordination and implementation of the project; (iii) facilitate cooperation between MAE, MAGAP, FAO and project participating partners and project support at the local level; (iv) advise the PC on other on-going and planned activities facilitating collaboration between the Project and other programs, projects and initiatives; (v) facilitate that co-financing is provided in a timely and effective manner; and (vi) review and approve the six-monthly Project Progress Reports and the AWP/B.

The **Project Management Committee (PMC)** will be responsible for: (i) guiding project implementation as per the AWP/B; (ii) timely achievement of project outcomes and outputs; (iii) effective and efficient use of resources allocated as per the project document; (iv) planning project activities, giving guidance and advice to the PSC; (v) providing technical advice to the Project Steering Committee; (vi) advising the PSC on other on-going and planned activities facilitating collaboration between the Project and other programs, projects and initiatives. The PMC may also be involved in technical evaluation of project progress and outputs, and eventual development of an agreed adjustment plan in project execution approach, if needed. The PMC will comprise the Under-Secretary of CC, or his/her delegate, the Under-Secretary of Livestock, or his/her delegate, with the cooperation of FAO (PTM). The PMC will meet on a bi-monthly basis, as minimum.

4.3 FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is USD 26 012 615, of which USD 3 856 060 will be financed by the GEF grant and USD 22 156 555 will be co-financed by MAE, MAGAP, FAO and beneficiaries.

Table 4.2 includes the cost by component, output and co-financier and Table 4.3 includes the sources and types of confirmed co-financing. FAO as GEF implementing agency will be responsible for the execution of the GEF resources and FAO co-financing.

4.3.1 Financial plan (by component, outputs and co-financier)



Financial Plan final
EN.xlsx

Table 4.3. Confirmed sources of co-financing

| Co-financing sources | Name of Co-financier (source) | Type of co-financing | Co-financing amount (USD) |
|-----------------------------|--------------------------------------|-----------------------------|----------------------------------|
| National government | MAE | Cash | 11 566 891 |
| National government | MAE | In-kind | 191 300 |
| National government | MAGAP | Cash | 6 107 069 |
| National government | MAGAP | In-kind | 3 159 895 |
| GEF Agency | FAO | In-kind | 320 000 |
| Beneficiaries | Small- and medium-scale producers | In-kind | 811 400 |
| Total Co-financing | | | 22 156 555 |

4.3.2 GEF/SCCF inputs

Under Component 1 GEF resources will be used to finance workshops for the dissemination and validation of the CSL management strategy and for technical backstopping from the Livestock Expert and the Capacity Development Expert. GEF resources will also finance a Mitigation Expert and the design of the NAMA, to be approved by the Ministry of Environment as part of its instruments in the framework of the UNFCCC. The GEF grant will also be invested in technical support to Project's intervention provinces for advocacy, training and definition of adaptation and mitigation indicators to be incorporated in planning instruments of local governments.

Under Component 2, GEF resources will be invested in supplies and materials to replicate good livestock practices for adaptation and mitigation in 30 000 hectares, with active participation of small-scale and medium-scale livestock producers. A capacity development process on the CSL approach will be financed, providing permanent technical assistance through participatory extension modalities and field schools. Workshops for the dissemination of the proposed financing mechanism will be undertaken. GEF grant will also be invested in workshops and technical assistance for strengthening local networks and producers' associations, so that they will be able to incorporate the CSL methodology in their practices and facilitate member's access to microcredit.

Under Component 3, GEF resources will be utilized to test adaptation and mitigation monitoring tools. Seven (7) extension technicians and provincial coordinators will be hired to support the incorporation of good practices under component 2 and the validation of the tools for monitoring Project indicators.

Under component 4, GEF resources will be used to finance the design of the NAMA monitoring tool; the Project's monitoring and evaluation process, mid-term and final evaluations. GEF resources will also finance the knowledge management system and the design and implementation of the communications strategy.

4.3.3 Government inputs

The contribution of the Government of Ecuador will focus on ensuring strengthened capacities for the implementation of CSL measures in inter-sectoral local policies and the implementation of several livestock production systems in the country.

Under Component 1, MAE inputs will focus on the review, validation and clearance of the national livestock strategy with CSL approach. To this end, through the project *Integrated Management to Combat Desertification, Land Degradation and Adaptation to Climate Change* – GIDDACC⁹¹, MAE will support the review, validation and clearance process of the national livestock strategy and will promote dissemination workshops and coordination with local governments for the incorporation of the CSL approach in provincial LUDPs.

Under Component 2, MAE inputs through the *National Reforestation Program* will be related to economic incentives for a) assisted natural regeneration; and b) enrichment with native species, seeking to increase the surface of silvopastoral systems for soils conservation and protection. In addition, MAE will invest in good agriculture practices for CC mitigation (waste exploitation) through the project *Capacity Development for Energy Exploitation of Agricultural Waste*.

Under Component 2, MAGAP's *2010-2017 National Project of Sustainable Livestock* – Component 2: Soils, Pastures, Conservation and Nutrition aims to recover soils degraded by livestock activities and to implement silvopastoral systems, pasture production with quality seeds and strategic forage supply. To this end, subsidies for quality seeds and Pastures and Forage Production and Storage Units will be provided. The establishment of a National Forage Reserve will be promoted.

Through the *2010-2017 National Project of Sustainable Livestock* – Component 3: Developing producers' networks to shorten value chains and ensure production diversification, added value and risk diversification, MAGAP will strengthen livestock producers networks and organizations in their commercial component. Association capacity will be strengthened and production will be ensured through commercial agreements.

Under Component 3, through the project *Capacity Development for Climate Change Mitigation* (UNDP/SCC), MAE will contribute with the creation of a GHG balance Monitoring System established in each pilot area to support the definition of emission factors.

Under Component 3, MAGAP will gather information on GHG emissions and CC adaptation (JICA tool) in the livestock sector through its technical focal points.

Under Component 4, MAE, through staff in charge of the Environmental Information System – EIS (General Planning Coordination – GPC), will take part in project's knowledge management actions and dissemination of publications uploaded in the virtual platform. To the same end, MAGAP will contribute with technical staff in charge of maintain MAGAP virtual platform and webpage.

⁹¹ From its name in Spanish

4.3.4 FAO inputs

Under Component 1, FAO will contribute through the Project *Policies and strategies strengthening to prevent, control and eradicate the foot-and-mouth disease in Peru, Bolivia, Ecuador, Colombia and Venezuela* to the consolidation of the sectoral public policy in targeted provinces.

Under Component 2, FAO will support the creation of inclusive marketing mechanisms in the national system of public purchases to link the national demand with small- and medium-scale livestock producers offer through the Project *Strengthening the Inclusion of Family Farming in Public Food Purchase*.

4.3.5 Other co-financiers inputs

Under Component 2, Project beneficiaries – 280 small- and medium-scale livestock producers – will provide work, land and in-kind co-financing to consolidate new sustainable livestock models with CSL approach in targeted provinces.

4.3.6 Financial management of and reporting on GEF/LDCF/SCCF resources

Financial management and reporting in relation to the GEF resources will be carried out in accordance with FAO's rules and procedures, and in accordance with the agreement between FAO and the GEF Trustee. On the basis of the activities foreseen in the budget and the project, FAO will undertake all operations for disbursements, procurement and contracting for the total amount of GEF resources, as per the request of the PC.

Financial Records. FAO shall maintain a separate account in United States dollars for the Project's GEF resources showing all income and expenditures. Expenditures incurred in a currency other than United States dollars shall be converted into United States dollars at the United Nations operational rate of exchange on the date of the transaction. FAO shall administer the Project in accordance with its regulations, rules and directives.

Financial Reports. The BH shall prepare six-monthly project expenditure accounts and final accounts for the project, showing amount budgeted for the year, amount expended since the beginning of the year, and separately, the un-liquidated obligations as follows:

1. Details of project expenditures on an output-by-output basis, reported in line with project budget codes as set out in the Project document, as at 30 June and 31 December each year.
2. Final accounts on completion of the Project on a component-by-component and output-by-output basis, reported in line with project budget codes as set out in the Project document.
3. A final statement of account in line with FAO Oracle Project budget codes, reflecting actual final expenditures under the Project, when all obligations have been liquidated.

Financial Statements. Within 30 working days of the end of each semester, i.e. on or before 31 July and 31 January, the FAO Representation in Ecuador shall submit six-monthly statements of expenditure of GEF resources to the Project Management

Committee and Project Steering Committee, which will be included in the PPRs. The purpose of the financial statement is to list the expenditures incurred on the project on a six monthly basis compared to the budget, so as to monitor project progress and to reconcile outstanding advances during the six-month period. The financial statement shall contain information that will serve as the basis for a periodic revision of the budget.

The BH will submit the above financial reports for review and monitoring by the LTO and the FAO GEF Coordination Unit. Financial reports for submission to the donor (GEF) will be prepared in accordance with the provisions in the GEF Financial Procedures Agreement and submitted by the FAO Finance Division.

Responsibility for cost overruns. The BH shall utilize the GEF project funds in strict compliance with the project document. The BH shall be authorized to make variations not exceeding 20 per cent on any total output budget line or any cost category line of the project budget provided that the total allocated for the specific budgeted project component is not exceeded and the reallocation of funds does not impact the achievement of any project output as per the project Results Framework (Appendix 1). Any variations exceeding 20 per cent on any total output budget line or any cost category line, which may be necessary for the proper and successful implementation of the project, shall be subject to prior consultations with the LTO and the FAO-GEF Coordination Unit. In such a case, a revision to the FAO-GEF budget in FPMIS should be prepared by the BH and approved by the LTO and the FAO-GEF Coordination Unit. Cost overruns shall be the sole responsibility of the BH.

Audit

The Project shall be subject to the internal and external auditing procedures provided for in FAO financial regulations, rules and directives and in keeping with the Financial Procedures Agreement between the GEF Trustee and FAO.

The audit regime at FAO consists of an external audit provided by the Auditor-General (or persons exercising an equivalent function) of a member nation appointed by the Governing Bodies of the Organization and reporting directly to them, and an internal audit function headed by the FAO Inspector-General who reports directly to the Director-General. This function operates as an integral part of the Organization under policies established by senior management, and furthermore has a reporting line to the governing bodies. Both functions are required under the Basic Texts of FAO which establish a framework for the terms of reference of each. Internal audits of imprest accounts, records, bank reconciliation and asset verification take place at FAO field and liaison offices on a cyclical basis.

4.4 PROCUREMENT

As per the request of the Government and managed by the PC, FAO will procure the equipment and services foreseen in the budget (Appendix 3) and the AWP/B, in accordance with FAO rules and procedures.

Careful procurement planning is necessary for securing goods, services and works in a timely manner, on a “Best Value for Money” basis, and in accordance with the Rules and Regulations of FAO. It requires analysis of needs and constraints, including forecast of

the reasonable timeframe required to execute the procurement process. Procurement and delivery of inputs in technical cooperation projects follow FAO's rules and regulations for the procurement of supplies, equipment and services (i.e. Manual Sections 502 and 507). *Manual Section 502*: "Procurement of Goods, Works and Services" establishes the principles and procedures that apply to procurement of all goods, works and services on behalf of the Organization, in all offices and in all locations, with the exception of the procurement actions described in Appendix A – Procurement Not Governed by Manual Section 502. *Manual Section 507* establishes the principles and rules that govern the use of Letters of Agreement (LoA) by FAO for the timely acquisition of services from eligible entities in a transparent and impartial manner, taking into consideration economy and efficiency to achieve an optimum combination of expected whole life costs and benefits ("Best Value for Money").

As per the guidance in FAO's Project Cycle Guide, the BH will draw up an annual procurement plan for major items which will be the basis of requests for procurement actions during implementation. The plan will include a description of the goods, works, or services to be procured, estimated budget and source of funding, schedule of procurement activities and proposed method of procurement. In situations where exact information is not yet available, the procurement plan should at least contain reasonable projections that will be corrected as information becomes available.

Before commencing procurement, the PC will update the project's Procurement Plan (Appendix 5) for approval by the Project Management Committee. This plan will be reviewed during the inception workshop and will be approved by the FAO Representative in Ecuador. The PC will update the Plan every six months and submit the plan to the FAO Representative in Ecuador for approval.

4.5 MONITORING AND REPORTING

Monitoring and evaluation of progress in achieving project results and objectives will be done based on the targets and indicators established in the Project Results Framework (Appendix 1 and described in section 2.3 and 2.4). The project Monitoring and Evaluation Plan has been budgeted at USD 118 830 (see Table 4.4). Monitoring and evaluation activities will follow FAO and GEF monitoring and evaluation policies and guidelines. The monitoring and evaluation system will also facilitate learning and replication of project results and lessons in relation to integrated management of natural resources.

4.5.1 Oversight and monitoring responsibilities

The monitoring and evaluation roles and responsibilities specifically described in the Monitoring and Evaluation Plan (see below) will be undertaken through: (i) day-to-day monitoring and project progress supervision missions (PC); (ii) technical monitoring of indicators to measure the introduction of CSL good practices, and the surface covered by incentive mechanisms, and the number of people trained in good practices; (iii) specific monitoring plans for implementation of good practices (component 2); (iv) mid-term and final evaluations (independent consultants and FAO Evaluation Office); and (v) monitoring and supervision missions (FAO). Monitoring will also include avoided GHG emissions due to project intervention. (PC in coordination with local organizations and other stakeholders).

At the initiation of project implementation, the PC and the PT will set up a project progress monitoring system. Participatory mechanisms and methodologies for systematic data collection and recording will be developed to support outcome and output indicator monitoring and evaluation. During the inception workshop (see section 4.5.3 below), M&E related tasks to be addressed will include: (i) presentation and clarification (if needed) of the Project Results Framework with all project stakeholders; (ii) review of the M&E indicators and their baseline; (iii) drafting the required clauses to include in consultants' contracts to ensure they complete their M&E reporting functions (if relevant); and (iv) clarification of the respective M&E tasks among the Project different stakeholders. One of the main outputs of the workshop will be a detailed monitoring plan agreed to by all stakeholders based on the monitoring and evaluation plan summary presented in section 4.5.4 below.

The day-to-day monitoring of the Project implementation will be the responsibility of the PC and will be driven by the preparation and implementation of an AWP/B followed up through six-monthly PPRs. The preparation of the AWP/B and six-monthly PPRs will represent the product of a unified planning process between main project stakeholders. As tools for results-based-management (RBM), the AWP/B will identify the actions proposed for the coming project year and provide the necessary details on output targets to be achieved, and the PPRs will report on the monitoring of the implementation of actions and the achievement of output targets. Specific inputs to the AWP/B and the PPRs will be prepared based on participatory planning and progress review with all stakeholders and coordinated through the PC and facilitated through project planning and progress review workshops. These contributions will be consolidated by the PTC in the AWP/B draft and the PPRs.

An annual project progress review and planning meeting should be held with the participation of the Project Management Committee to finalize the AWP/B and the PPRs. Once finalized, the AWP/B and the PPRs will be submitted to the Project Steering Committee for approval (AWP/B) and revision (PPR) and to FAO for approval. The AWP/B will be developed in a manner consistent with the Project Results Framework to ensure adequate fulfillment and monitoring of project outputs and outcomes.

Following the approval of the Project, the PY1 AWP/B will be adjusted (either reduced or expanded in time) to synchronize it with the annual reporting calendar. In subsequent years, the AWP/Bs will follow an annual preparation and reporting cycle as specified in section 4.5.3 below.

4.5.2 Indicators and information sources

To monitor project outputs and outcomes including contributions to global environmental benefits, specific indicators have been established in the Project Results Framework (see Appendix 1). The Project Results Framework indicators and means of verification will be applied to monitor both project performance and impact. Following FAO monitoring procedures and progress reporting formats, data collected will be sufficiently detailed that can track specific outputs and outcomes, and flag project risks early on. Output target indicators will be monitored on a six-monthly basis, and outcome target indicators will be monitored on an annual basis, if possible, or as part of the mid-term and final evaluations.

The project output and outcome indicators have been designed to monitor biophysical and socio-economic impacts and progress in building and consolidating capacities for the adoption of climate smart livestock management, at legal and political level, as well as at production level among livestock producers communities.

Capacity building processes indicators will monitor:

Outcome 1.1: The CSL approach has been mainstreamed in climate change mitigation and adaptation policies in the livestock sector and land-use planning.

Indicator CCA-1.1.1: CSL approach mainstreamed in 5 Land-Use and Development Plans (LUDPs)⁹², 1 CSL National Strategy and 5 Local Zoning Plans.

Indicator LD-3.i: Enhanced cross-sector enabling environment for integrated landscape management: 7 integrated land management plans

Outcome 1.2: Institutional capacities for the implementation of CSL management strategies strengthened.

Indicator CCA-2.2.1: No. and type of targeted institutions with increased adaptive capacity to minimize exposure to climate variability: Five (5) national institutions (regional branches); 2 national institutions (central government); 5 provincial agencies.

On-the-ground impact indicators will monitor:

Outcome 2.1: CSL approach adopted in degraded livestock areas.

Indicator CCA-3.1.1: % of targeted groups adopting adaptation technologies by technology type: i) pasture management: 50% (men and women); ii) animal and herd management: 50% (men and women); iii) water management: 50% (men and women); iv) supplementary feeding: 50%; v) grazing management: 50%.

Indicator LD-1.ii: Rate of livelihoods vulnerability perceived by local population: 3 (medium vulnerability).

Indicator CCM-5: i) good practices developed and adopted:) 2 (development of guidelines for sustainable livestock management); ii) emissions avoided: 78 052 ton CO_{2eq} avoided in direct GHG emissions; 247 050 ton CO_{2eq} direct carbon sequestration.

Outcome 3.1: Livestock sector GHG emissions in selected areas have been reduced and monitored.

Indicator CCM-5: Carbon monitoring system: 3 (compiling and analysis of information on carbon stocks)⁹³.

Emission factors in the livestock sector for national inventory: 1 proposal

⁹² Land Use and Development Plans - at provincial or local level.

⁹³ It refers to a GHG emissions monitoring system at sectorial level, applied in selected provinces or areas.

Outcome 3.2: Adaptation capacity of the livestock sector has been monitored⁹⁴.

The JICA monitoring tool for monitoring adaptive capacity in the livestock sector has been tested and evaluated.

The main information sources to support the M&E plan include: i) MAE, MAGAP and FAO monitoring systems; ii) participatory workshops with stakeholders and beneficiaries to review project progress; iii) on-the-ground monitoring of good practices, sustainable forest management, community tourism and biotrade; iv) progress reports prepared by the PC with inputs from the MAE, MAGAP, project specialists and other stakeholders; v) consultants' reports; vi) training reports; viii) mid-term review and final evaluation; viii) financial reports and budget revisions; ix) Project Implementation Reviews prepared by the FAO LTO supported by the FAO Representation in Ecuador; and x) FAO supervision mission reports.

4.5.3 Reporting schedule

Specific reports that will be prepared under the monitoring and evaluation program are: (i) Project inception report; (ii) Annual Work Plan and Budget (AWP/B); (iii) Project Progress Reports (PPRs); (iv) Annual Project Implementation Review (PIR); (v) Technical reports; (vi) Co-financing reports; and (vii) Terminal Report. In addition, assessment of the GEF LD CCM and CCA Tracking Tools (TTs) against the baseline (completed during project preparation) will be required at mid-term and final project evaluation.

Project Inception Report. After FAO approval of the project an inception workshop will be held. Immediately after the workshop, the PTC will prepare a project inception report in consultation with the PTM in the FAO Representation in Ecuador and other project partners. The report will include a narrative on the institutional roles and responsibilities and coordinating action of project partners, progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. It will also include a detailed first year AWP/B, a detailed project monitoring plan based on the monitoring and evaluation plan summary presented in section 4.5.4 below. The draft inception report will be circulated to FAO, the Project Steering Committee and the Project Management Committee for review and comments before its finalization, no later than three months after project start-up. The report will be cleared by the FAO BH, LTU and the FAO GEF Coordination Unit, and uploaded in FPMIS.

Annual Work Plan and Budget (AWP/B). The PC will submit to the Project Management Committee a draft AWP/B no later than 10 January of each year. The AWP/B should include detailed activities to be implemented by project outputs and divided into monthly timeframes and targets and milestone dates for output indicators to be achieved during the year. A detailed project budget for the activities to be implemented during the year should also be included together with all monitoring and supervision activities required during the year. The FAO PTM will circulate the draft AWP/B to the FAO interdisciplinary Project Task Force and will consolidate and submit

⁹⁴ It refers to adaptation capacity of project selected areas, which is expected to improve through actions under Component 2 (30,000 hectares under CSL). This output is linked to Output 2.1.

the FAO comments to the PC, who will incorporate the comments of the Management Committee. The final AWP/B will be sent to the Project Steering Committee for approval and to the FAO for final no-objection and upload in FPMIS by the FAO PTM.

Project Progress Reports (PPR). The PC will prepare six-monthly PPRs and submit them to the Project Management Committee and the FAO Representation in Ecuador no later than July 31 (covering the period January through June) and 31 January (covering the period July through December). The first semester six months report should be accompanied by the updated AWP/B, if needed, for review and no-objection by FAO. The PPR are used to identify constraints, problems or bottlenecks that impede timely implementation and take appropriate remedial action. PPRs will be prepared based on the systematic monitoring of output and outcome indicators identified in the project's Results Framework (Appendix 1). Each semester, the FAO PTM will review the PPR, collect and consolidate eventual comments by the FAO (BH, LTO, FAO-GEF Coordination Unit) and provide these comments to the PC. When comments have been duly incorporated the BH and the LTO will give final approval and submit the final PPR to the FAO-GEF Coordination Unit for final clearance and upload in FPMIS.

Annual Project Implementation Review (PIR). The LTO supported by the FAO PTM and with inputs from the PTC, will prepare an annual Project Implementation Review covering the period July (the previous year) through June (current year) to be submitted to the BH and the FAO-GEF Coordination Unit for review and approval no later than 31 July. The FAO-GEF Coordination Unit will upload the final report on FPMIS and submit it to the GEF Secretariat and Evaluation Office as part of the Annual Monitoring Review report of the FAO-GEF portfolio. The FAO-GEF Coordination Unit will provide the updated format when the first PIR is due.

Technical Reports. Technical reports will be prepared as part of project outputs and to document and share project outcomes and lessons learned. The drafts of any technical reports must be submitted by the PC to the Project Management Committee and the FAO Representation in Ecuador who will share it with the LTO for review and clearance and to the FAO-GEF Coordination Unit for information and eventual comments, prior to finalization and publication. Copies of the technical reports will be distributed to the Project Steering Committee and other project partners as appropriate. The final reports will be posted on the FAO FPMIS by the FAO PTM.

Co-financing Reports. The PC will be responsible for collecting the required information and reporting on in-kind and cash co-financing provided by all the project co-financiers and eventual other new partners not foreseen in the Project Document. Every year, the PTC will submit the report to the FAO Representation in Ecuador before 31 July covering the period July (the previous year) through June (current year).

GEF Tracking Tools. Following the GEF policies and procedures, the tracking tools for the LD, CCM and CCA focal areas will be submitted to the GEF Secretariat at three moments: (i) with the project document at CEO endorsement; (ii) at the project's mid-term evaluation; and (iii) with the project's terminal evaluation.

Terminal Report. Within two months before the end date of the project, the PTC will submit to the Project Management Committee and the FAO Representation in Ecuador a draft Terminal Report. The main purpose of the final report is to give guidance to authorities (ministerial or senior government level) on the policy decisions required for

the follow-up of the Project, and to provide the donor with information on how the funds were utilized. The terminal report is accordingly a concise account of the main **products, results, conclusions and recommendations** of the Project, without unnecessary background, narrative or technical details. The target readership consists of persons who are not necessarily technical specialists but who need to understand the policy implications of technical findings and needs for ensuring sustainability of project results. Work is assessed, lessons learned are summarized, and recommendations are expressed in terms of their application to the promotion of Climate Smart Livestock in the context of the development priorities at national and provincial levels, as well as in practical execution terms. This report will specifically include the findings of the final evaluation as described in section 4.6 below. A final project review meeting should be held to discuss the draft terminal report with the Project Steering Committee before it is finalized by the PTC and approved by the BH, LTO and the FAO-GEF Coordination Unit.

4.5.4 Monitoring and evaluation plan summary

Table 4.4 below provides a summary of the main monitoring and evaluation reports, responsible parties and timeframe:

Table 4.4. Summary of the main monitoring and evaluation activities

| Type of M&E Activity | Responsible Parties | Time-frame | Budget |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Inception Workshop | PC, FAO (PTM supported by LTO, BH, and the FAO GEF Coordination Unit) | Within two months of project start up | USD 2 496 |
| Project Inception Report | PC and FAO PTM, cleared by LTO, BH, and the FAO GEF Coordination Unit | Immediately after the workshop | - |
| Field-based impact monitoring | PC, institutions and indigenous and small-scale farmers organizations participating in the project | Continually | USD 14 836 (project coordination time, technical workshops for identification of indicators, M&E workshops) |
| Supervision visits and rating of progress in PPRs and PIRs | PC and FAO (PTM, LTO and FAO GEF Coordination Unit) | Annual or as required | FAO visits will be financed through GEF agency fee. Project coordination visits will be financed by the project travel budget |
| Project Progress Reports (PPR) | PC with inputs by MAGAP, MAE and other participating partners | Six-monthly | USD 4 945 |
| Project Implementation Review report (PIR) | FAO (LTO and PTM) supported by and PC. PIRs cleared and submitted by the FAO GEF Coordination Unit to the GEF Secretariat | Annual | Financed through GEF agency fee |

| Type of M&E Activity | Responsible Parties | Time-frame | Budget |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------|
| Co-financing Reports | PC with inputs from other co-financiers | Annual | USD 1 649 |
| Technical reports | PC, and FAO (LTO, PTM) | As appropriate | |
| Mid-term Evaluation | External Consultants, FAO Office for Evaluation in consultation with the project team including the GCU and other partners | At mid-point of project implementation | USD 40 000 for external consultants |
| Final evaluation | External Consultants, FAO independent Evaluation Office in consultation with the project team including the FAO GEF Coordination Unit, and other partners | At the end of project implementation | USD 40 000 for external consultants |
| Terminal Report | PC, FAO (PTM, LTO, FAO GEF Coordination Unit, TSCR report Unit) | Two months before the end date of the GCP Agreement | As completed by the PC |
| Total Budget | | | USD 103 926 |

4.6 PROVISION FOR EVALUATIONS

An independent Mid-Term Evaluation (MTE) will be undertaken at the end of the first 24 months of project implementation to review progress and effectiveness of implementation in terms of achieving project objective, outcomes and outputs. Findings and recommendations of this review will be instrumental for bringing improvement in the overall project design and execution strategy for the remaining period of the project's term if necessary. FAO (the Office of Evaluation) will arrange for the MTE in consultation with project management. The evaluation will, *inter alia*:

- a) Review the effectiveness, efficiency and timeliness of project implementation;
- b) Analyse effectiveness of partnership arrangements;
- c) Identify issues requiring decisions and remedial actions;
- d) Propose any mid-course corrections and/or adjustments to the implementation strategy as necessary; and
- e) Describe the technical achievements and lessons learned derived from project design, implementation and management.

An independent Final Evaluation (FE) will be carried out three months prior to the terminal review meeting. The FE will aim to identify the project impacts, sustainability of project results and the degree of achievement of long-term results. The FE will also have the purpose of indicating future actions needed to expand on the existing Project in subsequent phases, mainstream and up-scale its products and practices, and disseminate information to management authorities and institutions with responsibilities in food security, conservation and sustainable use of natural resources, small farmer agricultural production and ecosystem conservation to assure continuity of the processes initiated by the Project. Critical elements that both the MTE and FE will pay special attention to are the outcome indicators.

4.7 COMMUNICATION AND VISIBILITY

Project visibility and mechanisms to ensure effective communication of Project's key messages will be encompassed in many Project activities.

Capacity development activities under Component 1 will have high visibility at provincial level among authorities and decision makers (central government's institutions in the region, provincial institutions as planning councils and parish assemblies). The project will also have high visibility among several civil society stakeholders, (community organizations and livestock producers' organizations) with which the project will coordinate for activities planning, implementation and monitoring. The design of participatory and gender strategies will improve communications in the framework of the project. Workshops organized under this component will support stakeholders' training and awareness-raising and the dissemination of information and project's results. Information and training materials will support the communication of project's key messages, including environmental governance, integrated landscape management, inter-institutional coordination and cooperation, land use planning and participation, among others.

Under Component 2, dissemination of good practices in climate smart livestock will be undertaken through methodologies as farmers field schools and agricultural extension, which include activities as field days, and extension technicians visits for providing beneficiaries with practical knowledge for the adoption of good practices. Training workshops will complement the aforementioned methodologies with transmission of key project's messages related to production environmental sustainability. The contents of training materials will be adapted to the target audience to facilitate communication. The provision of production materials and supplies to beneficiaries and the participatory development of the climate smart livestock management strategy will contribute to project visibility.

Under Component 3, monitoring systems for GHG diminishment and adaptive capacity increase will allow transmit knowledge and improve beneficiaries' awareness on project's key messages and impacts generated by sustainable livestock management.

Component 4 will contribute to communication and visibility through the systematization of experiences and lessons learned. The Project will prepare at least 2 publications containing the mentioned experiences and lessons. Additionally, a dedicated space for regular publication of project's progress and results will be set up in MAGAP and MAE webpages for information dissemination and experiences exchange.

Additionally, the project will ensure mechanisms for broad diffusion of project-generated documents, particularly the Final Report, technical reports and mid-term and final evaluation reports.

SECTION 5 – SUSTAINABILITY OF RESULTS

Sustainability of results has been taken into account. The Project has been designed to remove the identified barriers and create an enabling environment to create a political-institutional basis for the implementation of Climate-Smart Livestock at national level. At field level, the project will promote actions with replicability potential in the provinces of Manabí, Santa Elena, Guayas, Napo, Morona Santiago, Loja and Imbabura. The project seeks to address threats generated by the expansion of the agricultural frontier, land degradation and extreme climatic events on the environment and the livelihoods of small-scale producers in those provinces.

It is expected that as of PY4 government institutions, communities and stakeholders will be able to give continuity to the activities undertaken by the Project.

Factors that encourage social, environmental, economic and capacity development sustainability dimensions are listed below:

5.1 SOCIAL SUSTAINABILITY

The social sustainability of project results will be achieved through a participatory, inter-institutional, and integrated landscaped approach. Best production practices will be disseminated through MAGAP extension and FAO farmer-to-farmer methodologies which have been tested in the territory (see sub-section 1.1.4), and livestock producers associations and networks. Project implementation will include defining factors that ensure social sustainability⁹⁵:

- **Capacity development** (see sub-section 5.4).
- **Gender equality and gender mainstreaming** at institutional and community levels. The project will promote timely participation of women beneficiaries in all Project activities through: i) the generation of income opportunities for female-led households, especially under Component 2 (incentives and access to financial instruments to invest in CSL practices); ii) specific technical assistance for women beneficiaries that request one of the current incentives at national level; iii) women participation in the creation of local small- and medium-scale producers networks (see Output 2.1.2); iv) promotion of participation of women in project trainings, meetings and technical assistance (at least 20% of female community leaders and/or producers); v) mainstreaming a cross-cutting gender approach in the LUDPs and the CSL management strategy; vi) timely dissemination of lessons learned to female beneficiaries; vii) promotion of women participation in planning and decision-making at provincial, local, community and family levels.

Data will be disaggregated by gender to monitor differentiated project impacts, and women producers will be particularly involved and represented in all project activities.

⁹⁵ Based on FAO, *Environmental Impact Assessment - Guidelines for FAO Field Projects*, Annex 3: Basic Policy Requirement for field projects: <http://www.fao.org/docrep/016/i2802e/i2802e.pdf>

- **Participatory approach** was used during project preparation and will be implemented through multi-stakeholders workshops, thematic roundtables, and validation processes that will be applied to policy and LUDPs updates, alternative livelihoods strategies, and incentive mechanisms. Livestock producers will be fully involved in livestock production, GHG monitoring and adaptation activities. Component 2 will work on territory planning and management through a network approach, including producers' networks. Networks will disseminate training and information on CSL management and access to incentives for SLM.
- **Food security** is one of the pillars of CSL (see Section 2.1). The Project will promote this objective through CSL practices dissemination, in order to increase producers' productivity and capacity for adaptation to climate change and reduce their economic losses due to drought and unexpected floods. Project activities focus on increase livestock production efficiency in a sustainable manner, avoiding agriculture frontier expansion, and improving the livelihoods of vulnerable rural population.
- **Ownership** by local institutions, producer associations, and local communities of all project processes (see sub-section 5.4).

The project incorporates the ethno-cultural features of involved groups, the family's role in production and income generation, the socio-economic differences between men and women, and the knowledge differences regarding the use of natural resources.

5.2 ENVIRONMENTAL SUSTAINABILITY

Project implementation will be based on a Climate-Smart Livestock management approach, which focuses on adaptation to climate change, food security, and climate change mitigation, with special attention to land degradation and local needs and capacity. The project will work on the territory, defining each province as a landscape shaped by different use units and natural or intervened vegetation coverage as a result of social, cultural, economic, political and environmental dynamics. In this context, appropriate interventions for the application of the CSL practices have been selected to enable to increase productivity, reduce GHG emissions per kg of meat or litre of milk, improve resilience of producers affected by drought or excess of rain.

Project activities will directly or indirectly contribute to environmental sustainability by:

- **Institutional strengthening of government agencies dealing with environmental issues in the provinces:** development of a participatory CSL strategy; mainstreaming of the CSL approach in LUDPs updating (see description in Section 2);
- **Capacity development** of institutional stakeholders (MAE, MAGAP, DAGs) who manage natural resources (see sub-section 5.4)
- **Improving financial sustainability of environmental-friendly initiatives:** promoting monetary and non-monetary incentive mechanisms to finance sustainable production in the livestock area jointly with incentive mechanisms (see description in Section 2).
- **Disseminating sustainable natural resources management practices:** support MAGAP provincial offices and DAGs in disseminating CSL practices in 30,000 hectares (see description in Section 2).

GHG and adaptation monitoring, and design of a NAMA for the livestock sector with a validated MRV system.

5.3 FINANCIAL AND ECONOMIC SUSTAINABILITY

Financial and economic sustainability of project supported activities will be achieved to the extent that these activities are financially and economically viable for the parties involved, including small-scale farmers and their families, organized communities, producer organizations, and institutional partners in the central and local governments, particularly DAGs, MAGAP and MAE.

The activities promoted by the project will contribute to the financial and economic sustainability of the rural beneficiaries by improving their livelihoods. Good livestock practices (meat and dairy production) to be disseminated by the Project will tend to improve long-term financial sustainability through training, upfront investment and risk management during transition. The project will facilitate the transition to improved production systems by alleviating these constraints.

The project will promote inter-institutional articulation and agreements that will enable to increase the resources channelled through monetary and non-monetary incentives mechanisms to the livestock sector in the provinces. Producers and communities' investments in sustainable land management and CSL will be increased by catalysing and facilitating their access to financing sources.

5.4 SUSTAINABILITY OF CAPACITIES DEVELOPED

The project will address the three dimensions of capacity development (CD) identified in *FAO's Approach to Sustainability*⁹⁶: i) individuals (small-scale farmers, households, female-led households); ii) institutions (provincial and local governments, provincial branches of MAE and MAGAP, networks, associations); and iii) the policy enabling environment (new environmental governance strategy; enhanced institutional capacities through trainings on SLM and CSL). The interaction between community members and local CSOs, and between CSOs and DAGs will be also addressed.

CD activities will be focused on strengthening the managerial and technical skills of the national and local institutions, producer associations, civil society and local communities. At institutional level, the project will strengthen the provincial, municipal and parochial governments, the ministries (MAE and MAGAP) in the province, and CSOs to facilitate multi-stakeholder coordination. CD will maximize the institutionality of multiple public and private stakeholders in the design of policies and strategies on sustainable management of natural resources, agriculture, livestock production and forestry. Training and raising awareness among stakeholders will improve the environmental governance in the province (enabling environment).

At field level, the promotion of best practices will be based on methodologies already used in the province (e.g. farmer field schools, extension, farmer-to-farmer), local knowledge, and collective community work (called *mingas*). Training methods and modules will take into account local ethno-cultural knowledge to ensure the

⁹⁶<http://www.fao.org/capacitydevelopment/the-three-dimensions-of-the-fao-capacity-development-framework/en/20>

mainstreaming of cultural issues in the proposals for plans and strategies, sustainable best practices, and forest conservation and management. Ethno-cultural knowledge will be combined with current technologies to be promoted by the project. Training events (e.g. courses, workshops, tours, field days) will be timely programmed to ensure the participation of beneficiaries, especially women. In sum, stakeholders' ownership of best practices and SLM/CSL concepts will contribute to the sustainability of the acquired capacities. Systematized lessons learned will also contribute to CD sustainability.

5.5 APPROPRIATENESS OF TECHNOLOGY INTRODUCED

The project's technical feasibility is based on the DAG's, and MAGAP's technical capacity for research and technology transfer without compromising ecosystems and their regeneration cycles. MAGAP works on sustainable livestock promotion in the selected provinces. Provincial DAGs, in coordination with MAGAP, undertake technology transfer actions on livestock. In addition, local institutions in the Amazon provinces have technologies for sustainable livestock production generated by national entities and international cooperation that are being validated on the territory.

The project will promote tested, cost-effective production practices in the livestock sector. Smart practices are based on two overarching principles: increased efficiency and improved resilience. The specific practices that contribute to these objectives are known and their introduction doesn't entail any unmanageable risk. They include elements such as improving animal health, balancing the ration of animals, developing fodder banks, water management, range management, and production decisions such as off-take rates. Particular attention will however be placed on ensuring that the mix of technologies and their fine tuning is grounded on local knowledge and producers' expectations and capacity. This will allow for the design of technical itineraries that are both effective in terms of CSL objectives and can be practically adopted by producers.

The Project will make use of training and technical assistance methodologies currently used by FAO and MAGAP/INIAP, and which are known and accepted by both technicians and producers.

5.6 REPLICABILITY AND SCALING UP

The Project includes measures for ensuring that the project results could be replicated. The measures are:

- Early involvement of project stakeholders, from project design to project implementation. Government and civil society actors have participated in the project preparation workshops. They have known the project scope, activities included and non-included.
- The NAMA will have a sectorial policy approach (livestock sector), and will promote the participation of livestock producers from the whole country. The financing mechanisms supported by the Project will further contribute to amplifying the practices developed in the context of the Project.
- Project visibility: during full project implementation, the information about project achievements and results will be actively communicated and disseminated by MAE and MAGAP. This communication strategy will

incentivize other beneficiaries to participate in other CLS initiatives in the country.

- Lessons learnt: Project progress reports will have a section on lessons learnt which will be registered by future replication.
- Learning curve and economy of scale: human talent involved in the project will require decreasing time to implement CSL initiatives. CLS at national level will allow expanding activities, reducing costs and incrementing feasibility.
- The detailed monitoring and evaluation of the interventions carried out on the 30,000 ha will provide insights and lessons learnt for replication at scale.

The potential for replication of the project is very high given its complementarity with national and provincial policies and programs. The development of the CSL strategy will allow the up-take of integrated natural resources management at the provincial level. In addition, the generation of guidelines for mainstreaming environmental issues in the LUDPs of the DAGs will allow replicating the experience to the entire territory of the selected provinces.

Strengthening and coordination of incentive mechanisms and the implementation of good practices and appropriate technologies to be disseminated by the Project will be replicable in the Coast, Sierra and Amazon regions. Systematization of experiences and lessons learned will serve to promote the replication of project results to the rest of the province as well as to other Ecuadorian provinces with similar ecosystems.

The FAO Representation in Ecuador will share information on project lessons learned and outcomes with other FAO projects in the country and through the Regional Office for Latin America and the Caribbean (FAO RLC) and Headquarters in Rome so that other countries with similar interests and features can learn on Project's results. In particular, the project will liaise with the Global Agenda for Sustainable Livestock (www.livestockdialogue.org)

APPENDICES

APPENDIX 1: RESULTS MATRIX

Project outcomes and impacts: ¹

| Objective/Impact | Baseline | Outcomes | Assumptions |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>Global Environmental Objective:</u> To reduce soil degradation, and mitigate GHG emissions in the livestock sector of Ecuador.</p> <p><u>Project Development Objective:</u>² To sustainably increase and improve the supply of goods and services from livestock production.</p> <p><u>Specific Project Objective:</u> To reduce soil degradation, increase adaptive capacity to climate change, and mitigate GHG emissions by implementing cross-sectorial policies and climate-smart livestock management, with emphasis in the vulnerable provinces.</p> | <p><u>Component 1:</u></p> <p><u>Outcome 1.1:</u> The Climate Smart Livestock (CSL) approach is not applied in livestock policies.</p> <p><u>Outcome 1.2:</u> National and provincial institutions do not have knowledge on CSL.</p> | <p><u>Component 1:</u></p> <p><u>Outcome 1.1:</u> The CSL approach has been mainstreamed in climate change mitigation and adaptation policies in the livestock sector and land-use planning.</p> <p><u>Outcome 1.2:</u> Institutional capacities for the implementation of CSL management strategies strengthened.</p> | <p><u>Component 1:</u></p> <ul style="list-style-type: none"> • Political will to adopt and implement the CSL approach. • Local authorities committed with Project actions and supported by central government. • Availability of human and technological resources to implement the actions. • Production sector's will and incentives for the adoption of good practices. • Increasing acknowledgement of the livestock sector's vulnerability. |
| | <p><u>Component 2:</u></p> <p><u>Outcome 2.1:</u> The CSL approach has not been applied on field.</p> <p><u>Outcome 2.2:</u> No financing instruments have been utilized to incentivize climate smart livestock management practices in degraded areas.</p> | <p><u>Component 2:</u></p> <p><u>Outcome 2.1:</u> CSL approach adopted in degraded livestock areas.</p> <p><u>Outcome 2.2:</u> Access to financing instruments for investments in CSL practices in degraded areas has been improved.</p> | <p><u>Component 2:</u></p> <ul style="list-style-type: none"> • Availability of human and technological resources to implement the actions. • Production sector's will and incentives for the adoption of good practices. • Existing co-financing resources for the implementation of CSL measures. • Sufficient ties to the land and property to implement actions. |

¹ Please insert/delete rows for components as needed

² In line with FAO SOs

| | | | |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | <ul style="list-style-type: none"> • Political will to adopt and implement innovative guidelines • Local authorities committed with Project actions. |
| | <p><u>Component 3:</u></p> <p><u>Outcome 3.1:</u> Inappropriate and inefficient livestock management practices emit GHG and contribute to climate change. The country does not have a GHG emissions monitoring system at sectorial level.</p> <p><u>Outcome 3.2:</u> The country has proposal for monitoring adaptive capacity to climate change in agriculture, but it has not been tested.</p> | <p><u>Component 3:</u></p> <p><u>Outcome 3.1:</u> Livestock sector GHG emissions in selected areas have been reduced and monitored.</p> <p><u>Outcome 3.2:</u> Adaptation capacity of the livestock sector has been monitored.</p> | <p><u>Component 3:</u></p> <ul style="list-style-type: none"> • Existing co-financing resources for the implementation of CSL measures. • Sufficient ties to the land and property to implement actions. • Political will to adopt and implement innovative guidelines • Producers voluntarily offer to implement CSL actions. • Beneficiary producers accept that their farms are used as demonstration centres, selected with replicability criteria. |
| | | <p><u>Component 4:</u></p> <p><u>Outcome 4.1:</u> Project implemented with a results based management approach.</p> | <p><u>Component 4:</u></p> <ul style="list-style-type: none"> • Monitoring & Evaluation System designed and operational • Organigram with high interaction between central and provincial authorities. • Differentiated responsibilities, timeframe and budget assigned. |

Project outputs and outcomes:¹

| Indicators | Baseline ² | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| Component 1: Strengthening of institutional capacities and coordination to incorporate the CSL approach in territorial management and in the development of livestock-related policies and tools. | | | | | | | | |
| <p>Outcome 1.1 The CSL approach has been mainstreamed in climate change mitigation and adaptation policies in the livestock sector and land-use planning</p> | <p>The Climate Smart Livestock (CSL) approach is not applied in livestock policies.</p> <p><u>Indicator CCA-1.1.1:</u> Adaptation actions implemented in national/sub-regional development frameworks: 0 CSL strategies.</p> <p><u>Indicator LD-3.i:</u> Enhanced cross-sector enabling environment for integrated landscape management: 7 Integrated land management plans</p> | <p><u>Indicator CCA-1.1.1:</u> CSL approach mainstreamed in 5 Land-Use and Development Plans (LUDPs)³, 1 CSL National Strategy and 5 Local Zoning Plans.</p> <p><u>Indicator LD-3.i:</u> Enhanced cross-sector enabling environment for integrated landscape management: 7 Integrated land management plans</p> | <p><u>Indicator CCA-1.1.1:</u> CSL approach mainstreamed in 5 Land-Use and Development Plans (LUDPs), 5 Local Zoning Plans.</p> | <p><u>Indicator CCA-1.1.1:</u> CSL approach mainstreamed in 1 CSL National Strategy and 5</p> <p><u>Indicator LD-3.i:</u> Enhanced cross-sector enabling environment for integrated landscape management: 7 Integrated land management plans</p> | | | <p>LUDPs updated with CSL approach</p> <p>Local zoning plans designed with CSL approach</p> <p>CSL National Strategy integrated in the CC National Strategy</p> <p>NAMA</p> <p>PPR</p> <p>PIR</p> | <p>Project Coordinator (PC)</p> <p>NAMAs expert</p> <p>Project provincial technicians</p> <p>Livestock Policy Expert</p> |
| <p>Output 1.1.1 National Climate Smart Livestock Strategy</p> | 0 CSL Strategy | One strategy designed and | CSL strategy designed and | CSL Strategy incorporated in | CSL Strategy implemented | | Strategy summary | Secretariat of Livestock, |

¹ Please insert/delete columns for project years and rows for outputs and outcomes as needed.

² Value in the case of quantitative indicators and description of situation in the case of qualitative indicators. Please insert the year of the baseline

³ Land Use and Development Plans - at provincial or local level.

| Indicators | Baseline ² | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| prepared and adopted. | | integrated into the Climate Change National Strategy (CCNS). | validated | CCNS, incorporation validated | | | reports Final Strategy Document reviewed by Project Steering Committee | supported by MAE ¹ and APTA ² . Livestock Policy Expert |
| Output 1.1.2 One Nationally Appropriate Mitigation Action (NAMA) for the livestock sector. | 0 NAMA for the livestock sector. Lack of Measurement, Reporting and Verification (MRV) systems for the sector. General lack of knowledge of climate financing options. | One sectorial NAMA designed. | Baseline and mitigation scenarios finalized. Calculation of the potential for GHG emissions reduction in the sector | MRV system selected and co-benefits analysis finalized. NAMA management structure designed. | Concept document finalized. | Support to NAMA promotion | NAMA Concept document NAMA will be submitted to the UNFCCC | PC Livestock Secretariat MAE Mitigation Direction. NAMAs Expert |
| Output 1.1.3 LUDPs of Provincial DAGs with CSL approach and livestock zoning | 0 LUDPs with CSL approach No livestock production zoning | 5 provincial LUDPs ³ with CSL approach and livestock zoning plans | 5 DAGs trained on CC and CSL approach 5 LUDPs reviewed | Livestock zoning plans designed, validated and included in LUDPs. | CSL actions and livestock zoning included in LUDPs | M&E of zoning plans and CSL actions ² . | Workshops attendance lists. Schedules of | MAGAP provincial directions and their technicians. |

1 Ministry of Environment.

2 Agenda for the Production Transformation of the Amazon.

³ In Imbabura, Loja, Manabí, Santa Elena and Guayas.

| Indicators | Baseline ² | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|--------|-----------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| plans. | plans | under implementation and replicable. | and updated with CSL approach ¹ . | | implemented in livestock production areas. Constant monitoring. | | support to DAGs, updated LUDPs. Zoning plans for each province. List of livestock production areas. Zoning progress report. Social and economic impact measurement reports. | Livestock Policy Expert Provincial technicians for LUDPs Capacity Development Expert. |
| Outcome 1.2 Institutional capacities for the implementation of CSL management strategies strengthened. | National and provincial institutions have no knowledge on CSL. <u>Indicator CCA-</u> | <u>Indicator CCA-2.2.1: Five (5)</u> | | | | 12 government institutions with strengthened capacities in CSL management. | PPR PIR Evaluation of capacity self-perception. | Livestock Secretariat, MAGAP and MAE CC. Livestock Policy Expert |

² Including socio-economic evaluation impact.

¹ Including sustainable livestock activities.

| Indicators | Baseline ² | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| | 2.2.1: No. and type of targeted institutions with increased adaptive capacity to minimize exposure to climate variability: 0 for the livestock sector. | national institutions (regional branches); 2 national institutions (central government); 5 provincial agencies. | | | | | | |
| Output 1.2.1 Key representatives of MAE, MAGAP, provincial councils and municipalities with strengthened capacities for the implementation of CSL management measures in different livestock production systems. | No plans for strengthening capacities on sustainable livestock in MAE, MAGAP, INIAP and DAGs. <u>Indicator CCA-2.2.1.1:</u> No. of staff trained on technical adaptation themes: 0 | Training plans on CSL for MAE, MAGAP and DAGs staff designed and implemented in 6 provinces. <u>Indicator CCA-2.2.1.1:</u> No. of staff trained on technical adaptation themes: 100 (20% women). | Staff identified, trained and assessed on CC, CSL management, socio-economic and biophysical indicators monitoring, GIS. | Technicians monitored: performance tracking, and production indicators in the areas of their responsibility. Knowledge strengthening. Training on new themes required by circumstantial issues | Technicians monitored: performance tracking, and production indicators in the areas of their responsibility. Knowledge strengthening. Training on new themes. | Technicians monitored: performance tracking, and production indicators in the areas of their responsibility. Knowledge strengthening. Training on new themes. | Assistance to training. Assessments Production and CCA and CCM indicators in Project areas. | PC Project team LUDPs Provincial Technicians Capacity Development Expert. |

¹ Including: early warning systems, improvement in livestock systems resilience, support to livelihoods, erosion control, soil and water conservation, microfinance, water storage, dissemination of information.

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|-----------------------------------------------------------------------------------------------------------------------------|----------|--------|---------------------------------------------------------|--------|--------|--------|-------------------------------|---------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| Component 2: Strategies of Technology Transfer, Deployment and Implementation for Climate-Smart Livestock Management | | | | | | | | |

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| <p>Outcome 2.1 CSL approach adopted in degraded livestock areas.</p> | <p>0 hectares under CSL practices</p> <p><u>Indicator CCA-3.1.1:</u> % of targeted groups adopting adaptation technologies by technology type: i) pasture management: 10% (men and women); ii) animal and herd management: 5% (men and women); iii) water management: 10% (men and women); iv) supplementary feeding: 0%; v) grazing management: 0%.</p> <p><u>Indicator LD-1.ii:</u></p> | <p>30,000 hectares in livestock degraded lands have adopted the CSL management.</p> <p><u>Indicator CCA-3.1.1:</u> % of targeted groups adopting adaptation technologies by type: i) pasture management: 50% (men and women); ii) animal and herd management: 50% (men and women); iii) water management: 50% (men and women); iv) supplementary feeding: 50%; v) grazing management:</p> | <p><u>Indicator CCM-5:</u> i) 2 (development of guidelines for sustainable livestock management)</p> | <p>10,000 hectares</p> <p><u>Indicator CCA-3.1.1:</u> % of targeted groups adopting adaptation technologies by technology type: i) pasture management: 25% (men and women); ii) animal and herd management: 25% (men and women); iii) water management: 25% (men and women); iv) supplementary feeding: 25%; v) grazing management: 25%.</p> | <p>20 000 hectares</p> | <p>30 000 hectares</p> <p><u>Indicator CCA-3.1.1:</u> i) pasture management: 50% (men and women); ii) animal and herd management: 50% (men and women); iii) water management: 50% (men and women); iv) supplementary feeding: 50%; v) grazing management: 50%.</p> <p><u>Indicator LD-1.ii:</u> 3</p> | <p>PPR</p> <p>PIR</p> <p>Extension staff surveys</p> <p>Field technical assistance reports</p> <p>Samples</p> <p>Carbon stocks monitoring system developed under Output 3.1</p> | <p>PC</p> <p>Project provincial technicians and extension staff</p> <p>MAGAP provincial delegations and technicians</p> <p>Under-Secretariat of CC – Mitigation Directorate</p> <p>Incentives Expert</p> |

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | | |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|--|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection | |
| | <p>Community vulnerability: 2 (high vulnerability).</p> <p><u>Indicator CCM-5: i)</u> good practices developed and adopted: 1 (without action); ii) GHG emissions avoided: 0.</p> <p>GHG emissions per product unit are approximately 4 CO_{2eq} and 32 CO_{2eq} for litre of milk and kilo of meat.</p> | <p>50%.</p> <p><u>Indicator LD-1.ii: 3</u> (medium)</p> <p><u>Indicator CCM-5: i) 2</u> (development of guidelines for sustainable livestock management); ii) emissions avoided:</p> <p>78 052 ton CO_{2eq} avoided in direct GHG emissions; 247 050 ton CO_{2eq} direct carbon sequestration.</p> | | | <p><u>Indicator CCM-5: ii)</u> avoided emissions:</p> <p>23 416 ton CO_{2eq} avoided in direct GHG emissions;</p> <p>74 115 ton CO_{2eq} direct carbon sequestration.</p> | <p><u>Indicator CCM-5: i) ii)</u> emissions avoided:</p> <p>78,052 ton CO_{2eq} in direct GHG emissions;</p> <p>247 050 ton CO_{2eq} direct carbon sequestration.</p> | | | |
| Output 2.1.1 CSL practices disseminated in degraded livestock | 0 hectares under CSL practices. CSL management technologies (good | CSL management disseminated in 30,000 | CSL management practices identified and analysed for main | 10 000 hectares | Additional 10 000 hectares | Additional 10 000 hectares | 1000 | PC Project provincial | |

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------|------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| lands, with a participatory approach. | practices) are not applied systematically in Project intervention areas. CSL packages are non-existent. Livestock production does not incorporate the environmental component. | hectares of degraded livestock areas, with the participation of small- and medium-scale livestock producers. CSL practices packages are identified and analyzed for main livestock production systems. 1000 beneficiaries. | livestock production systems. Pilot farms for the application of CSL will selected. | | | | beneficiaries. | Technicians MAGAP provincial directions and technicians. |
| Output 2.1.2 Small-scale and medium-scale livestock producers' | Local livestock producers' networks do not include CSL | 7 networks created/strengthened and trained ¹ to | 7 networks created and trained on CC, CSL and associative capacity | 500 producers trained ² | Additional 500 producers trained ³ . | 7 networks created and trained ⁴ to disseminate | | |

¹ On topics such as early warning systems, improved resilience in livestock systems, sustainable livelihoods, microfinance, water storage, information dissemination, strategies for soil and water use, sustainable management and conservation, risk and local vulnerability management, design of agro ecological corridors in livestock landscapes, implementation of good livestock and agrosilvopastoral practices to improve resilience, registry management.

² On CSL themes: nutrition, rotational systems, genetics, silvopastures, forage stocking, livestock and climate indicators.

³ Idem.

⁴ On topics such as early warning systems, improved resilience in livestock systems, sustainable livelihoods, microfinance, water storage, information dissemination, strategies for soil and water use, sustainable management and conservation, risk and local vulnerability management, design of agro ecological corridors in livestock landscapes, implementation of good livestock and agrosilvopastoral practices to improve resilience, registry management.

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| networks created and strengthened | approach. | disseminate CSL practices. 1000 small- and medium-scale producers participating and trained. 7 provinces At least 20% participants are women | strengthening. | | | | CSL and sustainable practices. | |
| Outcome 2.2 Access to financing instruments for investments in CSL practices in degraded areas has been improved | <u>Indicator LD-1.iv:</u> Increased investments in integrated landscape management: 1) small grant scheme. | <u>Indicator LD-1.iv:</u> + USD175 000_investment through 1 pilot financing mechanism and 1 existing incentive scheme strengthened. | | | | <u>Indicator LD-1.iv:</u> + USD175 000 investments in SLM in the livestock sector. | PPR Financial reports PIRs | PC Incentives Expert Technicians in charge of promotion. |
| Output 2.2.1 Financing mechanisms and incentive schemes to support CSL | The AGROCALIDAD certification system has 4 large-scale | 1 pilot financing mechanism (Microfinance Strategy) and | A Technical Assistance and Training on Incentives Plan designed. | Schemes and mechanisms promoted among producers' networks. | 120 producers accessed a financing/incentive mechanism to | 350 producers in total accessed a financing/incentive | Technical assistance visits for advice on incentives | PC Incentives Consultant |

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| | producers registered. It does not include CSL or CC. There is a credit line for SLM designed, but not operational. | at least 1 existing incentives scheme strengthened (AGROCALIDA D good livestock practices certification system). 470 producers have accessed a financing/incentives mechanism for CSL. | Producers trained on financing mechanisms and incentives scheme through the networks. Operational strategy for financing and incentives mechanisms reviewed. 2 financing mechanisms and a 1 incentives scheme strengthened. | 350 producers received technical assistance in their farm to access CSL mechanisms. | implement CSL management. | mechanism for CSL | and related reports. Financing mechanisms regulation updated. Inter-institutional memorandum of understanding. Database of beneficiary producers. | Capacity Development expert Technicians in charge of promotion. |

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|------------|----------|--------|---------------------------------------------------------|--------|--------|--------|-------------------------------|---------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |

Component 3: Monitoring of GHG emissions and adaptation capacity in the livestock sector.

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| <p>Outcome 3.1 Livestock sector GHG emissions in selected areas have been reduced and monitored.</p> | <p><u>Indicator CCM-5:</u> Carbon monitoring system: 2 (forest mapping)</p> <p>Emission factors in the livestock sector for national inventory: 0</p> | <p><u>Indicator CCM-5:</u> Carbon monitoring system: 3 (compiling and analysis of information on carbon stocks)¹.</p> <p>Emission factors in the livestock sector for national inventory: 1 proposal</p> | <p><u>Indicator CCM-5:</u> 3 (compiling and analysis of information on carbon stocks)</p> | | <p><u>Indicator CCM-5:</u> 3</p> | <p><u>Indicator CCM-5:</u> 3</p> <p>1 proposal for emission factors in the livestock sector to be considered in the national GHG inventory</p> | <p>PPR</p> <p>PIR</p> <p>Third national Communication</p> | <p>PC</p> <p>Emission Monitoring Specialist</p> <p>Directorate of Mitigation - MAE</p> |
| <p>Output 3.1.1 Measurement of GHG emissions reduction</p> | <p>There are institutions trained to provide livestock activities data.</p> <p>Annual surveys.</p> <p>National communications to the UNFCCC are based on Tier1 of IPCC guidelines. This does not</p> | <p>One GHG emissions monitoring system working in selected areas.</p> <p>MAE is trained to prepare national communications based on Tier2 of IPCC guidelines.</p> | <p>Technicians selected and trained.</p> <p>Selection of pilot areas.</p> | <p>Monitoring structure designed and established.</p> <p>Measurement and reporting protocols designed and established.</p> | <p>Measurement and reporting protocols tested.</p> <p>GHG emissions monitoring system applied.</p> | <p>Variables processed and analysed with the related tool (e.g. IPCC software, web based NAIIS)</p> <p>MAE team in charge of preparing national communications trained.</p> | <p>PPRs</p> <p>Third National Communication</p> <p>Report on measurement protocol and specific emissions factors.</p> | <p>PC</p> <p>MAE provincial directions and technicians</p> <p>Directorate of Mitigation - MAE</p> |

¹ It refers to a GHG emissions monitoring system at sectorial level, applied in selected provinces or areas.

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| | allow to measure CSL practices effect. | There are emissions factors by systems, management practices and climatic zones. | | | | Development of emission factors specific by system management practices and climatic zones. | | |
| Outcome 3.2 Adaptation capacity of the livestock sector has been monitored ¹ . | The JICA Project developed an adaptation capacity M&E tool in Ecuador. The tool hasn't been tested. | The JICA monitoring tool for monitoring adaptive capacity in the livestock sector has been tested and evaluated. | The JICA tool adapted to the livestock sector. | JICA tool tested in Project intervention areas. First monitoring data on adaptive capacity obtained and systematized. | JICA tool evaluated and adjusted. | JICA tool tested and evaluated in the livestock sector | JICA tool Data systematization JICA tool evaluation reports PPR PIR | PC Direction of Adaptation – MAE CC Adaptation Consultant |
| Output 3.2.1 Tool for monitoring adaptive capacity in the livestock sector. | Tool developed by the JICA project but not implemented. National need for monitoring the adaptive capacity. | The JICA adaptive capacity monitoring tool operational and tested (in the livestock sector) | Detailed analysis on the vulnerability of the livestock sector JICA Tool adjusted to the livestock sector and Project | Tool pilot, monitoring, data collection and first systematization | Implementation. Continuous monitoring. Proposal for the adjustment of the JICA Tool at national level (in the | Implementation. Continuous monitoring. JICA Tool assessed in the livestock sector. | JICA Tool Data systematization JICA tool evaluation reports | PC Direction of Adaptation – MAE MAGAP provincial directions and |

¹ It refers to adaptation capacity of project selected areas, which is expected to improve through actions under Component 2 (30,000 hectares under CSL). This output is linked to Output 2.1.

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|------------|----------|--------|---------------------------------------------------------|--------|-------------------|--------|-------------------------------|---------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| | | | intervention areas | | livestock sector) | | PPR PIR | technicians |

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|----------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| Component 4: Project Management, Monitoring and Evaluation and Knowledge Management | | | | | | | | |
| Outcome 4.1 Project implemented. Lessons learned and best practices have been documented and disseminated. | | The project has been executed with a results based management approach. Project sustainability has been ensured. | 33% progress in project target achievement | 66% progress | 85% progress | Project targets achieved Project evaluated. Sustainability demonstrated. | PIR PPRs Mid-term Evaluation Final Evaluation Final Project Report | PC FAO |
| Output 4.1.1 Project management, monitoring and evaluation system | | Project Operational Unit functioning. Procedures established | 2 biannual reports (1 PPR and 1 PIR) | 2 biannual reports (1 PPR and 1 PIR) Mid-Term Evaluation | 2 biannual reports (1 PPR and 1 PIR) | 2 biannual reports (1 PPR and 1 PIR) Final Project Evaluation | Project national consultants reports Project | PC FAO External evaluators |

| Indicators | Baseline | Target | Milestones towards achieving output and outcome targets | | | | Data Collection and Reporting | |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Means of verification | Responsible for Data Collection |
| | | and fulfilled M&E system operational. | | Tracking Tools completed (mid-term) | | Tracking Tools completed (final) | management system and records MAE and MAGAP management system | |
| Output 4.1.2 Project knowledge management system | There is no online platform for systematization of information on training and CSL. MAGAP is creating a virtual training platform | Mechanism for knowledge systematization and sharing. Online platform operational, linking users, systematizing lessons learned and good livestock practices and providing training. | Practices and learning shared with all beneficiaries, implementing units of Ministries and associated academies/institutes Coordination with MAGAP for using its platform. MAGAP online platform applied to project requirements | Practices and learning shared Information systematized for the platform 5 themes per province uploaded to the platform 5 trainings developed for the platform | Practices and learning shared Information systematized for the platform 5 themes per province uploaded to the platform | Practices and learning shared Information systematized for the platform 5 themes per province uploaded to the platform Preparation of the <i>“Implementation of the CSL approach in Ecuador, lessons learned and replication potential”</i> report. | No. of users registered on the platform No. of themes and training in the platform Platform online with the information generated Report on lessons learned and replication potential | PC Communication Consultant FAO |

APPENDIX 2: WORK PLAN (RESULTS BASED)

PC : Project Coordinator PCU : Project Coordination Unit

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q 1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Component 1 | | | | | | | | | | | | | | | | | | |
| Output 1.1.1: National Climate Smart Livestock Strategy prepared and adopted. | Workshops in 7 provinces to validate problems to be addressed by the CSL Strategy | PC Livestock Policy Expert DAGs Provincial MAGAP | | | | | | | | | | | | | | | | |
| | Design of the CSL Strategy. Development of an Activities Plan for the Strategy to be executed in PY2, PY3 and PY4. | PC Livestock Policy Expert Gender Expert MAGAP FAO | | | | | | | | | | | | | | | | |
| | Incorporation of the CSL Strategy to the CC National Strategy. | PC Livestock Policy Expert | | | | | | | | | | | | | | | | |

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | | MAE | | | | | | | | | | | | | | | | |
| | Workshops for validation of the Strategy and its inclusion in the CCNS | PC Livestock Policy Expert MAE MAGAP | | | | | | | | | | | | | | | | |
| | Implementation and monitoring of the CSL strategy | PC MAE MAGAP | | | | | | | | | | | | | | | | |
| | Implementation, monitoring and evaluation of the CSL strategy | PC MAE MAGAP FAO OED | | | | | | | | | | | | | | | | |
| Output 1.1.2: One Nationally Appropriate Mitigation Action (NAMA) for the livestock sector. | Establishment of baseline and mitigation scenarios in detail | NAMA Expert MAE | | | | | | | | | | | | | | | | |
| | 7 participatory workshops to validate baseline and mitigation scenario | NAMA Expert PC MAE provincial DAGs | | | | | | | | | | | | | | | | |
| | One workshop on MRV | NAMA Expert | | | | | | | | | | | | | | | | |
| | One workshop on co-benefits | PC MAE MAGAP Incentives | | | | | | | | | | | | | | | | |

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | | Expert. Capacity Development Expert | | | | | | | | | | | | | | | | |
| | Selection of the MRV system and analysis of the NAMA co-benefits. | NAMA Expert MAE | | | | | | | | | | | | | | | | |
| | Preparation of the NAMA concept document | NAMA Expert | | | | | | | | | | | | | | | | |
| | Submission to the NAMA UNFCCC Registry | MAE with PC support | | | | | | | | | | | | | | | | |
| Output 1.1.3: LUDPs of Provincial DAGs with CSL approach and livestock zoning plans. | Updating of 7 LUDPs with CSL approach | DAGs CP- Sustainable Livestock Expert Livestock Policy Expert SENPLADES | | | | | | | | | | | | | | | | |
| | 14 workshops (2 workshops per province) to review LUDPs in a participatory manner | DAGs PC Livestock Policy Expert | | | | | | | | | | | | | | | | |
| | Design of 5 livestock zoning plans and inclusion in LUDPs | DAGs PC Livestock Policy Expert | | | | | | | | | | | | | | | | |
| | Training for provincial | PC | | | | | | | | | | | | | | | | |

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | technical and managerial staff on CC. | Capacity Development Expert Adaptation Expert | | | | | | | | | | | | | | | | |
| | Implementation of LUDPs new elements in livestock production areas | PC DAGs Provincial MAGAP | | | | | | | | | | | | | | | | |
| | Monitoring and evaluation of CSL and zoning plans implementation. | PC DAGs Provincial MAGAP FAO Provincial Technicians and Extension Technicians | | | | | | | | | | | | | | | | |
| Output 1.2.1: Key representatives of MAE, MAGAP, provincial councils and municipalities with strengthened capacities for the implementation of CSL management measures in different livestock production systems. | Identification of authorities and technical staff to be trained | PC MAE MAGAP Capacity Development Expert | | | | | | | | | | | | | | | | |
| | Training to MAGAP, MAE and DAGs technicians | CP Capacity Development Expert Adaptation Expert | | | | | | | | | | | | | | | | |
| | Measurement and tracking of trained technicians | PC Project team | | | | | | | | | | | | | | | | |

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | performance and production indicators in areas under their responsibility | | | | | | | | | | | | | | | | | |
| | Workshops for specific knowledge strengthening, according to measurement and evaluation. | PC Project team Capacity Development Expert Adaptation Expert | | | | | | | | | | | | | | | | |
| Component 2 | | | | | | | | | | | | | | | | | | |
| Output 2.1.1: CSL practices disseminated in degraded livestock lands, with a participatory approach. | Identification and analysis of CSL practices packages for main livestock production systems. | PC Sustainable Livestock Expert Provincial MAGAP | | | | | | | | | | | | | | | | |
| | Selection of pilot farms for CSL application | PC Sustainable Livestock Expert Provincial MAGAP Provincial and extension technicians | | | | | | | | | | | | | | | | |
| | Training to livestock | PC | | | | | | | | | | | | | | | | |

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|--------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | producers on climate and environmental problems related to their production | Sustainable Livestock Expert Adaptation Expert Capacity Development Expert Provincial MAGAP | | | | | | | | | | | | | | | | |
| | Technical assistance to producers | PC Project team MAGAP | | | | | | | | | | | | | | | | |
| | Financing investments to improve productivity at local level | CP Producers' networks MAGAP Incentives Expert | | | | | | | | | | | | | | | | |

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Output 2.1.2: Small-scale and medium-scale livestock producers' networks created and strengthened. | Creation of 6 producers' networks. | PC Project team | | | | | | | | | | | | | | | | |
| | | Provincial MAE | | | | | | | | | | | | | | | | |
| | | Provincial MAGAP | | | | | | | | | | | | | | | | |
| | | DAGs | | | | | | | | | | | | | | | | |
| | Training to the networks on CC, CSL and association strengthening themes | PC Capacity development expert | | | | | | | | | | | | | | | | |
| | | Sustainable livestock expert | | | | | | | | | | | | | | | | |
| | | Incentives Expert | | | | | | | | | | | | | | | | |
| | | Provincial MAGAP | | | | | | | | | | | | | | | | |
| | Support to the networks in training 500 livestock producers per year | CP Capacity Development Expert | | | | | | | | | | | | | | | | |
| | Networks sustainability strategy: livestock organization for restoration of ecosystem services, fora | CP DAGs | | | | | | | | | | | | | | | | |

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | for interconnection among producers, creation of networks coordination. | Provincial MAGAP | | | | | | | | | | | | | | | | |
| Output 2.2.1: Financing mechanisms and incentive schemes to support CSL. | Formulation of a proposal for strengthening AGROCALIDAD mechanisms and incentives, and a pilot microcredit. | Incentives Expert MAGAP MAE | | | | | | | | | | | | | | | | |
| | Design of a Technical Assistance and Training on Incentives Plan for small-scale livestock producers, including gender approach. | Capacity Development Expert Incentives Expert Gender Specialist MAGAP | | | | | | | | | | | | | | | | |
| | Technical assistance, inputs supply and training to Access financing/incentives ¹ | Project team PC Provincial MAGAP extension staff | | | | | | | | | | | | | | | | |
| | Training workshops on incentives channelled through the networks | Project team PC | | | | | | | | | | | | | | | | |

¹ For the adoption of good practices by small-scale livestock producers

| Output | Activities | Responsible | PY 1 | | | | PY 2 | | | | PY 3 | | | | PY 4 | | | |
|-------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | | Producers' networks | | | | | | | | | | | | | | | | |
| Component 3 | | | | | | | | | | | | | | | | | | |
| Output 3.1.1: Measurement of GHG emissions reduction | Identification of pilot areas to obtain monitoring data | PC NAMA Expert Emissions monitoring consultancy PC MAE Provincial MAGAP | | | | | | | | | | | | | | | | |

Emissions monitoring consultancy

| | | | | | | | | | | | | | | | | | | |
|--|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | <p>Selection and training of technicians/workers for cattle management</p> | <p>Capacity development expert PC Provincial MAE Provincial MAGAP DAGs</p> | | | | | | | | | | | | | | | | |
| | <p>Creation of <i>in situ</i> capacities for obtaining monitoring data constantly. Design of a plan for continuous monitoring.</p> | <p>Emissions monitoring consultancy NAMA Expert PC Provincial Technicians Provincial and central MAE Provincial MAGAP</p> | | | | | | | | | | | | | | | | |
| | <p>Elaboration of data measurement, registry and reporting protocols.</p> | <p>NAMA Expert Emissions</p> | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|--|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | monitoring consultancy | | | | | | | | | | | | | | | | |
| | | PC Provincial and central MAE | | | | | | | | | | | | | | | | |
| | Test of the measurement protocol. Emissions monitoring using Tier2. GLEAM system. | Emissions monitoring specialist PC Provincial and central MAE | | | | | | | | | | | | | | | | |
| | Data processing and analysis. Expression in CO2eq. | Emissions monitoring consultancy (Letter of Agreement) MAE | | | | | | | | | | | | | | | | |
| | Training to MAE technical team in charge of national communications. | MAE PC NAMA Expert Capacity Development Expert Emissions monitoring consultancy | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Output 3.2.1: Tool for monitoring adaptive capacity in the livestock sector. | Analysis on the vulnerability of the livestock sector | PC Adaptation expert MAE | | | | | | | | | | | | | | | | | |
| | Adjustment of the M&E JICA tool to the livestock sector and to Project intervention areas. | CP Adaptation expert MAE | | | | | | | | | | | | | | | | | |
| | Training of Provincial MAGAP extension staff to collect data in their field trips. | PC Adaptation Expert | | | | | | | | | | | | | | | | | |
| | | Provincial Technicians and extension staff | | | | | | | | | | | | | | | | | |
| | | Provincial MAGAP Extension staff | | | | | | | | | | | | | | | | | |
| | | MAE | | | | | | | | | | | | | | | | | |
| | Test of the JICA Tool in pilot areas. | PC Adaptation expert | | | | | | | | | | | | | | | | | |
| | | Provincial technicians and extensión | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | staff | | | | | | | | | | | | | | | | | |
| | | MAE | | | | | | | | | | | | | | | | | |
| | | Provincial MAGAP | | | | | | | | | | | | | | | | | |
| | Systematization of data collected on field. | PC | | | | | | | | | | | | | | | | | |
| | | Adaptation expert | | | | | | | | | | | | | | | | | |
| | | MAE | | | | | | | | | | | | | | | | | |
| | Proposal for the adjustment of the JICA tool, based on lessons learned during testing. | PC | | | | | | | | | | | | | | | | | |
| | | Adaptation expert | | | | | | | | | | | | | | | | | |
| | | MAE | | | | | | | | | | | | | | | | | |
| Outcome 4 | | | | | | | | | | | | | | | | | | | |
| Outcome 4.1.1: Management, monitoring and evaluation system. | Project inception workshop | PC | | | | | | | | | | | | | | | | | |
| | | Project technical assistant | | | | | | | | | | | | | | | | | |
| | | FAO | | | | | | | | | | | | | | | | | |
| | Project Progress Reports (PPR) | PC | | | | | | | | | | | | | | | | | |
| | Project Implementation Review (PIR) | PC | | | | | | | | | | | | | | | | | |
| | | FAO LTO ¹ | | | | | | | | | | | | | | | | | |
| | Mid-Term Evaluation | FAO OED | | | | | | | | | | | | | | | | | |
| | Compiling the GEF/SCCF | PC | | | | | | | | | | | | | | | | | |

¹ FAO Lead Technical Officer

| | | | | | | | | | | | | | | | | | | | |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | Tracking Tool (mid-term) | | | | | | | | | | | | | | | | | | |
| | Project Final Evaluation | FAO OED | | | | | | | | | | | | | | | | | |
| | Compiling the GEF/SCCF Tracking Tool (final) | PC FAO LTO | | | | | | | | | | | | | | | | | |
| | Final Project report | PC Project technical assistant FAO LTO | | | | | | | | | | | | | | | | | |
| Project 4.1.2: Project knowledge management system. | Design of the modality of use of MAGAP and MAE online platform. | MAGAP | | | | | | | | | | | | | | | | | |
| | Project practices and learnings uploaded to the platform | PC MAGAP Project technical assistant | | | | | | | | | | | | | | | | | |
| | 5 themes per province uploaded to the platform | PC MAGAP DAGs Project technical assistant | | | | | | | | | | | | | | | | | |
| | Preparation of a report on “Implementation of the CSL in Ecuador, lessons learned and replicability” | PC FAO LTO MAE, MAGAP Project technical assistant | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | |
|--|--|-----------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | Capacity development expert | | | | | | | | | | | | | | | | | |
|--|--|-----------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

APPENDIX 3: RESULTS BUDGET



Oracle Budget
Ecuador Livestock EN

APPENDIX 4: RISK MATRIX

| Risk statement | Impact | Likelihood ¹ | Mitigation measures |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical risk: Scarcity of technicians to cover the entire surface encompassed by the Project. | It is difficult to implement project activities on field | Moderately high | <ul style="list-style-type: none"> • The project will work in close complementarity with MAGAP programs and initiatives and supporting MAGAP technicians' capacity development. • The Project will support and train MAGAP provincial branches and DAGs technicians. • Agreements will be signed with national Universities in order to have senior students from Agrarian Engineering or related subjects supporting MAGAP and DAGs as trainees. |
| Technical risk: Lack of transportation hinders trainers to train producers on field. | Local capacity development activities are limited. | High | <ul style="list-style-type: none"> • There is a budget line dedicated to transportation in the provinces. |
| Technical risk: Lack of availability of technician exclusively dedicated to GHG monitoring on field | Difficulty in measuring GHG emission reductions generated by the Project | Moderately high | <ul style="list-style-type: none"> • The project will select areas with facility to obtain data related to livestock activities (manure management systems, up-to-date population data) • The Project will train producers in selected pilot areas. |
| Technical risk: Lack of capacity for gathering data for the design of national emission factors. | Difficulty in generating a Tier2 emission factor for the livestock sector | Moderately high | <ul style="list-style-type: none"> • Involvement of MAE, INIAP and ESPAC Monitoring Units in the implementation of Component 3. |
| Technical risk: Malfunctioning of the MAGAP Platform | Project lessons learned cannot be appropriately shared | Moderately Low | <ul style="list-style-type: none"> • An ITC Expert will set up an interphase in MAGAP platform to include the Project link. • Technical assistance will be provided for managing the platform |
| Technical and social risk: Difficulties in the access to the Global Mechanism and incentives by the producers. | Few producers access incentives for SLM in the livestock sector | Moderately high | <ul style="list-style-type: none"> • Activities of promotion of the mechanism and incentives through networks and trainers will be implemented under Component 2. • Networks helping producers to access incentives and the mechanism will be trained. • Strengthening, promotion and support to producers for the application |

¹ Estimate of likelihood: High, Moderately High, Moderately Low, or Low, as per the FAO Project Cycle Guidelines. .

| Risk statement | Impact | Likelihood ¹ | Mitigation measures |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | <p>of good practices, access to incentives and financing.</p> <ul style="list-style-type: none"> Development of a communications and education strategy adapted to the local reality. |
| Technical and social risk: Producers apply good practices incorrectly. | CSL is not disseminated at local level and non environment friendly practices prevail | Moderately Low | <ul style="list-style-type: none"> Project intervention areas will be supported and supervised by MAGAP extensionists and Project team during implementation. |
| Political risk: Change of authorities and lack of support to the Project | The Project and its expected outcomes are not a national priority | Moderately Low | <ul style="list-style-type: none"> The Project Management Unit will be formed by staff with strong technical and management skills and will be able to adequately manage possible changes in the political and institutional scenario. |
| Political risk : Lack of collaboration of local governments | The Project and its expected outcomes are not a local priority | Moderately Low | <ul style="list-style-type: none"> There is a strong support from MAGAP and DAGs in the territory Project's scope will be promoted through local workshops |
| Technical and institutional risk: Technicians lack knowledge on sustainable livestock | MAGAP technicians are not able to teach producers how to convert to CSL management. | Moderately high | <ul style="list-style-type: none"> MAGAP, DAGs and MAE technicians will be trained with a syllabus especially designed to address their needs. |
| Economic risk: Lack of dynamism and operativity of the MAGAP BNF credit line for climate-smart livestock | Few incentives for SLM in the livestock sector | Moderately high | <ul style="list-style-type: none"> Adequate design of the involvement and role of each institution, in order to have an agile operation mechanism that generates earnings for all participants. |
| Climate risk: Extreme or typical natural phenomena with serious effects (volcanos, El Niño) in Project areas. | Socio-economic losses in the livestock sector | Moderately high | <ul style="list-style-type: none"> Training to MAE, MAGAP and DAGs technical staff on adaptation to CC. CSL includes adaptation measures and improvement of livestock systems resilience. |

APPENDIX 5: PROCUREMENT PLAN

Please use format from the “FAO Guide to the Project Cycle”

APPENDIX 6: TERMS OF REFERENCE (TORS)

(Draft)¹

#1. Draft Terms of Reference: Livestock Policies and LUDPs Expert (Preliminary version)

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator, the Agricultural policies and LUDPs Expert will lead, supervise and coordinate all Project activities aimed to achieve Outputs 1.1.1 *National Climate Smart Livestock Strategy prepared and adopted* and 1.1.3 *LUDPs of Provincial DAGs with CSL and livestock zoning plans*: 1) participatory design of the National Strategy for Climate Smart Livestock (CSL) and its Plan of Action for PY2, PY3 and PY4; 2) the mainstreaming of the CSL in five provincial LUDPs with related livestock zoning plans (Imbabura, Loja, Manabí, Santa Elena, Guayas, Napo and Morona Santiago).

In particular he/she will be in charge of the following tasks:

1. Prepare the annual work plan and budget for the activities that fall under his/her responsibility and contribute to preparation of the project's Annual Work Plan and Budget (AWP/B);
2. Prepare periodic reports of the activities developed and contribute to the preparation of the Project Progress Report (PPR);
3. Support periodic Monitoring and Evaluation of the project, collecting information related to progress in achieving outcome and output indicators, means of verification and identifying lessons learned;
4. Coordinate the preparation and conducting of 6 provincial workshops to analyse the problem to be addressed by the CSL Strategy.
5. Generate documentation, systematization and analysis of information gathered in provincial workshops and elaborate the Strategy draft document.
6. Lead the process of drafting the CSL Strategy.
7. Organize in coordination with counterparts the CSL Strategy information and validation workshops, in charge of incorporating required adjustments.
8. Facilitate the participatory design of the CSL Strategy Plan of Action, to be implemented in PY2, PY3 and PY4.
9. Act as a facilitator for the monitoring of the CSL Strategy in PY2, PY3 and PY4, in coordination with institutional counterparts MAGAP and MAE.
10. Provide technical backstopping to provincial directions in charge of LUDPs updating process in five selected provinces for the incorporation of the CSL approach.
11. In coordination with Project provincial technicians and institutional counterparts, prepare 10 workshops (2 per province) for the validation on the incorporation of the CSL approach in LUDPs and the participatory design of livestock zoning plans.

Professional profile:

¹ TORS final version will be discussed during Project inception workshops with national counterparts)

- University degree in Social Sciences, Economics, Agriculture or other related fields.
- At least 5 years experience in development of public policies on natural resources management at decentralized level.
- Knowledge and experience in agriculture projects and natural resources management.
- Experience in developing Land Use and Development Plans in Ecuador.

Duration: 36 months

Location: Quito with availability to travel at national level.

Languages: Spanish.

#2. Draft Terms of Reference: NAMA Expert (preliminary version)

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator, the NAMA Expert will lead, supervise and coordinate all project activities aimed to achieve Output 1.1.2 *One Nationally Appropriate Mitigation Action (NAMA) for the livestock sector*, which includes related sub-activities.

In particular, he/she will be in charge of the following main tasks:

1. Prepare the annual work plan and budget for the activities that fall under his/her responsibility and contribute to preparation of the project's Annual Work Plan and Budget (AWP/B).
2. Prepare periodic reports of the activities developed and contribute to the preparation of the Project Progress Report (PPR).
3. Support periodic Monitoring and Evaluation of the project, collecting information related to progress in achieving outcome and output indicators, means of verification and identifying lessons learned.
4. List mitigation actions selection criteria.
5. Build the emissions reference scenario and the potential mitigation scenario with proposed measures. Conduct consultations with involved stakeholders.
6. Identify barriers and the enabling frame for selected measures.
7. In coordination with national counterparts, prepare and facilitate 6 participatory workshops to validate baseline and mitigation scenario.
8. In coordination with national counterparts prepare and facilitate an MRV workshop.
9. In coordination with national counterparts prepare and facilitate a co-benefits workshop.
10. Develop an analysis on NAMA co-benefits and describe the selected MRV methodology. Develop the abatement curves.
11. Formulate a proposal of Financing Structure for the proposed measures.
12. Formulate a Proposal of policy instruments to incentivize investments in the proposed measures.
13. Draft a NAMA concept document.

Professional profile:

- University degree in Forestry or Environmental Engineering or other related fields.
- At least 5 years experience in climate change mitigation projects.
- Proved experience in the design of national or sectorial strategies for climate change mitigation in the agriculture and/or natural resources fields.
- Knowledge and experience in developing baseline and mitigation scenarios in the agricultural sector.
- Knowledge on FAO methodology for calculation of emissions in the livestock sector (GLEAM) desirable.

Duration: 48 months.

Location: Quito with availability to travel at national level.

Languages: Spanish.

#3. Draft Terms of Reference: Provincial Technicians for LUDPs and capacity development (Preliminary version)

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator the provincial technicians for LUDPs and capacity development will lead, supervise and coordinate all Project activities aimed to achieve Outputs 1.1.3 *LUDPs of Provincial DAGs with CSL and livestock zoning plans*, 2.1.1 *CSL practices disseminated in degraded livestock lands, with a participatory approach* and 2.1.2 *Small-scale and medium-scale livestock producers' networks created and strengthened* in identified areas in the provinces of Imbabura, Loja, Manabí, Santa Elena, Guayas, Napo and Morona. In particular, he/she will be in charge of the following main tasks:

1. Prepare the annual work plan and budget for the activities that fall under his/her responsibility and contribute to preparation of the project's Annual Work Plan and Budget (AWP/B).
2. Prepare periodic reports of the activities developed and contribute to the preparation of the Project Progress Report (PPR).
3. Support periodic Monitoring and Evaluation of the project, collecting information related to progress in achieving outcome and output indicators, means of verification and identifying lessons learned.
4. In coordination with the Project Coordinator, keep institutional relations in project intervention areas, including DAGs and MAE and MAGAP provincial directions to operationalize Project counterparts' commitments.
5. Development of a joint agenda with DAGs to mainstream the CSL approach in LUDPs.
6. In coordination with provincial extension technicians, identify Project beneficiary organizations, their communities and families, and keep planning meetings and regular evaluations.
7. Coordinate with the Adaptation Expert the design of a monitoring system for production and livestock adaptation measures indicators and the development of the baseline.
8. Coordinate with the Capacity Development Expert and with MAE and MAGAP provincial directions local training events to strengthen networks in CSL.
9. Coordinate with Extension Technicians the schedule for timely and permanent technical assistance to new or existing networks on the implementation of CSL on field and supervise the technical work of provincial extension staff.
10. Report the information generated by the adaptation measures monitoring system to the Climate Change Adaptation Expert.
11. Prepare project progress reports, supervise technical documents generated and support Project Coordinator in the organization of local accountability events.

Professional profile:

1. Natural Resources Management Engineer, Agricultural Engineer, Forestry Engineer or other related fields.
2. At least 5 years experience in agricultural or natural resources management in the Coast or Inter-Andean regions of Ecuador.
3. Knowledge and experience in participatory extension, farmers field schools, agrosilvopastoral systems, agroforestry and soils management

4. Proved experience in production planning in the frame of LUDPs.
5. Knowledge on climate change adaptation in natural resources, gender approach and prospective risk management desirable.
6. Good professional relations and contacts at sectorial level in the relevant province.

Duration: 36 months.

Location: Provinces, according to requirement.

Language: Spanish.

#4. Draft Terms of Reference: Capacity Development National Expert (Preliminary version)

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator the Capacity Development National Expert will lead, supervise and coordinate all Project activities aimed to achieve Outputs 1.2.1 *Key representatives of MAE, MAGAP, provincial councils and municipalities with strengthened capacities for the implementation of CSL management measures in different livestock production systems*, 2.1.1 *CSL practices disseminated in degraded livestock lands, with a participatory approach*, 2.1.2 *Small-scale and medium-scale livestock producers' networks created and strengthened* in identified areas in the provinces of Loja, Manabí, Santa Elena, Guayas, Napo and Morona.

In particular he/she will be in charge of the following main tasks:

1. Prepare the annual work plan and budget for the activities that fall under his/her responsibility and contribute to preparation of the project's Annual Work Plan and Budget (AWP/B).
2. Prepare periodic reports of the activities developed and contribute to the preparation of the Project Progress Report (PPR).
3. Support periodic Monitoring and Evaluation of the project, collecting information related to progress in achieving outcome and output indicators, means of verification and identifying lessons learned.
4. Review Project proposed methodologies based on the FAO-JICA tool and other considered by the project (PACC-MAE).
5. Identify training need of Project technical staff and implementation of the training process.
6. Design a "Training for trainers" mechanism to achieve a knock-on effect and cover at least half of the 1000 trained people on CSL in the 7 Project provinces.
7. Identify training need of local authorities and technician on the CSL approach.
8. Identify training need of existing and newly-created networks on CSL.
9. Design and implement a training plan on incentives for small-scale producers.
10. Develop training plans tailored for each audience: authorities, DAGs technicians, networks and relevant institutional partners such as Mae, MAGAP and others.
11. Systematize Project training experiences.
12. Draft documents for publications related to the training process.

Professional profile:

- Pedagogy, environmental education, social sciences professional, or other related fields.
- At least 5 years proved experience in pedagogic intervention in natural resources management and/or climate change adaptation projects.
- Knowledge and experience in adult education and participatory research.
- Knowledge in risk management and gender mainstreaming desirable.

Duration: 48 months

Location: 25% Quito and 75% itinerant in the 7 provinces, according to requirements.

Languages: Spanish

#5. Draft Terms of Reference: Project Coordinator and Sustainable Livestock Management Expert (Preliminary version)

The Project coordinator will work under the direct supervision of the Technical Committee and the general supervision of the FAO Representative in Ecuador/Budget Holder, supported by the Lead Technical Officer (LTO). The project Coordinator will lead, supervise and coordinate all Project activities aimed to the good implementation of actions and budget execution, , human resources management and good relations with institutional counterparts. He/she will be responsible for global planning, daily administration, technical supervision and coordination of all project activities, performing the following tasks:

1. Prepare and follow-up project's Annual Work Plan and procurement plans.
2. Supervise the execution of works and activities developed by the Project
3. Coordinate the preparation of Project's Annual Work Plan and Budget (AWP/B) and quarterly planning.
4. Coordinate and monitor the preparation of Project Progress Report (PPR) and Project Implementation Report (PIR) and the preparation of technical and financial reports, in compliance with local governments, FAO and GEF requirements.
5. Supervise the implementation of the financing mechanism and incentive scheme, in close coordination with MAGAP and MAE.
6. Coordinate the design and operation of Project monitoring and evaluation system.
7. Support the establishment of strategic partnership and agreements with other public and private local actors to support Project implementation and ensure the accomplishment of co-financing targets.
8. Occasionally update the Project Operations Manual (POM), to be cleared by FAO.
9. Monitoring expenditures financial execution.
10. Supervise procurement procedures.
11. Manage a financial information system to monitor Project accounting and expenditures.
12. Manage a procurement information system and project results to monitor Project execution and results.
13. Prepare reports and monitor Project progress to be submitted to Project Steering Committee and Technical Committee for evaluation.
14. Deliver project related information required by executing organizations, FAO as implementing agency and the GEF as donor.
15. Coordinate the preparation of different contract types, institutional agreements for the execution of Project activities at provincial and local level.
16. Prepare and perform supervision mission and the FAO mid-term evaluation mission.
17. Supervise the application of Project technical team work plans.
18. Ensure that project implementation complies with participatory and integrated approaches, stakeholders' participation and the incorporation of cross-cutting issues such as prospective risk management, adaptation to climate change and gender equality.

19. Call the Project Technical Committee to regular meetings in order to coordinate activities, exchange lessons learned and harmonize approaches.
20. Facilitate the preparation of technical and financial audit reports.
21. Promote communication channels among executing agencies.

Professional profile:

- Studies in agronomic, forestry or environmental engineering, or other related fields.
- Minimum 5 years experience in managing climate change adaptation projects in agriculture.
- Knowledge and experience in participatory planning tools, social monitoring and financial report.
- Sound knowledge of the socio-economic context of rural Ecuador.
- Experience in working with DAGs and land use planning processes.
- Capacity and initiative for planning with multiple actors.
- Experience in working with multidisciplinary teams and demonstrated ability to manage them.
- Demonstrated capacity to prepare documents, evaluate proposals, draft reports, perform processes and prepare contracts.
- Demonstrated capacity for development of sectorial strategies with programmatic approach.
- At least three years experience in financial management of development projects financed by international donors.
- Knowledge of procurement norms and regulations, according with national regulations (SERCOP).
- Coordination and supervision capacity.
- Availability to travel frequently to the 7 project intervention provinces.

Duration: 48 months

Location: Quito with availability for frequent travels to project intervention areas.

Languages: Spanish and English

#6. Draft Terms of Reference: Provincial extension technicians (Preliminary version)

Output 2.1.1, 2.1.2 and 2.2.1

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator the Extension technicians will lead, supervise and coordinate all Project activities aimed to achieve Outputs 2.1.1 *CSL practices disseminated in degraded livestock lands, with a participatory approach*, 2.1.2 *Small-scale and medium-scale livestock producers' networks created and strengthened* and 2.2.1 *Financing mechanisms and incentive schemes to support CSL* in identified areas in the provinces of Loja, Manabí, Santa Elena, Guayas, Napo and Morona.

In particular he/she will be in charge of the following main tasks:

1. Support periodic Monitoring and Evaluation of the project, collecting information related to progress in achieving outcome and output indicators, means of verification and identifying lessons learned.
2. Under the supervision of the Provincial Technician, work on joint agendas with producers' networks and associations and agree mutual cooperation commitments to implement good livestock practices on the territory.
3. Lead on field beneficiaries' capacity strengthening on CSL and implementation of CSL practices.
4. Provide beneficiaries with continuous technical assistance to achieve production targets with CSL approach.
5. Provide existing or newly created networks with timely technical assistance in coordination with the Sustainable Livestock Expert.
6. Coordinate with the Adaptation Expert for developing a baseline of the CSL measures monitoring system on field.
7. Gathering information for the livestock adaptation measures monitoring system on field.

Professional profile:

- University degree in agriculture systems, environment or other related fields.
- Studies in participatory extension and natural or agricultural resources management.
- Experience in agricultural and natural resources management in the Coast or Inter-Andean region of Ecuador.
- Knowledge and proved experience in the implementation of agrosilvopastoral systems, agroforestry and soils management.
- Knowledge on climate change adaptation, gender approach and prospective risk management desirable.

Duration: 48 months.

Location: provinces according to requirement.

Language: Spanish.

#7 Draft Terms of Reference: Incentives Expert (Preliminary version)

Output 2.2.1

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator the Incentives National Expert will lead, supervise and coordinate all Project activities aimed to achieve Output 2.2.1 *Financing mechanisms and incentive schemes to support CSL* in identified areas in the provinces of Imbabura, Loja, Manabí, Santa Elena, Guayas, Napo and Morona. In particular, he/she will be in charge of the following main tasks:

1. Prepare the annual work plan and budget for the activities that fall under his/her responsibility and contribute to preparation of the project's Annual Work Plan and Budget (AWP/B).
2. Prepare periodic reports of the activities developed and contribute to the preparation of the Project Progress Report (PPR).
3. Support periodic Monitoring and Evaluation of the project, collecting information related to progress in achieving outcome and output indicators, means of verification and identifying lessons learned.
4. Design the financing mechanism and facilitate the process of validation of the proposal in consultation with MAGAP and MAE in the frame of the Microfinances Strategy for sustainable land management and adaptation to climate change in Ecuador.
5. Undertake a potential impact assessment of the proposed financing instrument at provincial level and identify opportunities for articulation with other public incentive mechanisms. Submit recommendations of courses of action.
6. Facilitate institutional arrangements for operationalization of the financing mechanism at provincial level (Imbabura, Loja, Manabí, Santa Elena, Guayas, Napo and Morona)
7. Prepare a proposal for strengthening the AGROCALIDAD certification mechanism for good livestock practices, to convert it into good CSL practices, in coordination with MAGAP and MAE.
8. Design the Technical Assistance and Training Plan on Incentives for Small-Scale Livestock Producers, with gender approach, in coordination with the Capacity Development Expert.
9. Promotion of the financing mechanism and the AGROCALIDAD incentives mechanism in dissemination workshops in the networks and support for meeting the requirements to access these mechanisms.

Professional profile:

- University degree in economics or related fields.
- Experience in design and/or application of payment for environmental services, incentives mechanisms, subsidy schemes or similar mechanisms.
- Knowledge in adaptation to climate change, gender approach and prospective risk management desirable.

Duration: 49 months

Location: Quito with travel to provinces

Language: Spanish

#8. Draft Terms of Reference: Consultancy for Measurement of GHG emission reduction (Preliminary version)

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator the Consultancy for Measurement of GHG emission reduction will lead, supervise and coordinate all Project activities aimed to achieve Output 3.1.1 *Measuring GHG emissions reduction* in identified areas in the provinces of Imbabura, Loja, Manabí, Santa Elena, Guayas, Napo and Morona.

In particular, he/she will be in charge of the following main tasks:

- Apply 2006 IPCC Tier 2 Guidelines for enteric methane emissions. Modelling of food basket, animal production and herd structure is required.
- Apply 2006 IPCC Tier 2 Guidelines for the calculation of nitrous oxide and methane emissions related with manure stocking, together with GIS technology. Estimations will be prepared on the base of manure management practices and related climatic zones.
- Describe the level of mechanization in farm system, taking into consideration the climatic zone extrapolating information from literature and expert judgement. In this way emissions related to the level of energetic efficiency and energy sources can be calculated based on existing data.
- Using GIS technology to detect change in soils use due to livestock activities in implementation areas, supported by MAE monitoring unit.
- Process and analyse data obtained to express them in tons of CO₂eq.
- Develop specific emission factors by system, management practices and climatic zones.
- Establish the baseline for intervention in CSL pilots in 7 provinces.
- Preparation of the TIER 2 guidelines adapted for Ecuador in coordination with MAGAP and MAE.
- Systematize the experience and draft a final document to be integrated as progress in biannual reports of the Climate Change Convention.

Duration: 48 months

Location: Project intervention areas in 7 provinces

Languages: Spanish

#9. Draft Terms of reference: Climate Change Adaptation Expert (Preliminary version)

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator the Climate Change Adaptation Expert will lead, supervise and coordinate all Project activities aimed to achieve Output 3.2.1 *Tool for monitoring adaptive capacity in the livestock sector* in identified areas in the provinces of Imbabura, Loja, Manabí, Santa Elena, Guayas, Napo and Morona. In particular, he/she will be in charge of the following main tasks:

1. Prepare the annual work plan and budget for the activities that fall under his/her responsibility and contribute to preparation of the project's Annual Work Plan and Budget (AWP/B).
2. Prepare periodic reports of the activities developed and contribute to the preparation of the Project Progress Report (PPR).
3. In coordination with MAE and MAGAP, adjust the JICA M&E Tool in accordance with national and local livestock sector features in Project intervention areas and available information to implement the methodology in the country. The monitoring tool will include the Adaptive Capacity Perception Index (CCA-1).
4. Supervise the hiring process of the consultancy "Study of vulnerability in the livestock sector in project intervention areas", that will include the generation of the baseline thereof.
5. In coordination with the Capacity Development National Expert, produce all supporting documents (manuals, templates, tables) to implement the JICA M&E tool.
6. Training to Project and MAGAP provincial and extension technicians in for utilizing the tool and tracking instruments for operationalize data collection on field.
7. Support provincial technical staff, Project and MAGAP extension technicians for correct data collection.
8. Gather systematize and interpret information obtained by monitoring adaptation measures on field and deliver regular reports on the adaptation indicators generated.
9. Prepare progress reports and systematize lessons learned through the monitoring system for livestock adaptation measures.
10. Present results and lessons learned from the implementation of the monitoring system to partners, MAGAP, MAE and beneficiaries, with a continuous readjustment and feedback process.

Professional profile:

- Environmental management or natural or forestry resources management professional.
- At least 5 years experience in climate change adaptation projects in agriculture.
- Knowledge and capacity in developing adaptation measures monitoring systems.

Duration: 48 months

Location: 25% Quito, and 75 %itinerant in project intervention areas

Languages: Spanish

#10 Draft Terms of Reference: Project Technical Assistant (Preliminary version)

Under the overall supervision of the Project technical Committee and the direct supervision of the Project Coordinator, the Technical Assistant will support the execution of all project activities, with emphasis on the achievement of Outputs 4.1.1 and 4.1.2.

In particular he/she will perform the following main tasks:

1. Prepare the annual work plan and budget for the activities that fall under his/her responsibility and contribute to preparation of the project's Annual Work Plan and Budget (AWP/B).
2. Prepare periodic reports of the activities developed and contribute to the preparation of the Project Progress Report (PPR).
3. Support the Project coordination for the organization and conducting of all Project planning, evaluation and accountability events.
4. Support to the project coordination in the execution of activities foreseen in the annual work plan, following all operational and administrative procedures in compliance with executing partner's rules and FAO instructions.
5. Support general coordination in Project knowledge management: systematization of information, preparation of documents: review, editing and publishing when required.
6. Responsible for the actualization of Project monitoring system in permanent coordination with experts and provincial technicians.
7. Support the coordinator with the organization and logistics of FAO/GEF Project evaluation missions.
8. Support the organization of inter-institutional events promoted by the project or in which is participates: dissemination events, planning events with counterparts, accountability events, among others.

Professional profile:

- Environmental management or natural resources management professional, or other related fields.
- Proven capacity in administration and management of natural resources management projects.
- Knowledge in adaptation to climate change in agriculture.
- Proven capacity for managing monitoring systems and evaluation processes.

Duration: 48 months

Location: Quito with field trips when required

Languages: Spanish

OTHER APPENDICES AS REQUIRED BY THE PROJECT

APPENDIX 7
PROJECT INTERVENTION AREAS

The project will intervene in: i) degraded areas; ii) cattle ranching areas; iii) where there are producers' associations interested in the project (that assisted to information workshops and were visited by the consultant team during project preparation); iv) where MAGAP is present through technical assistance, technology transfer, capacity strengthening.

Project intervention areas are detailed in the following table:

| N° | Province | Municipality | Parish | Association | N° of members | N° of has |
|--------------|----------|--------------|----------------------------|---------------------------------------|---------------|-----------|
| 1 | LOJA | Gonzanamá | Purunuma | Comuna Colambo | 47 | 300 |
| | | | | Aso. San José de Eguiguren | 14 | 50 |
| | | | | Seguro social campesino Purunuma 2 | 60 | 1 000 |
| | | | | Aso. Agropecuaria Barrio Purunuma | 20 | 200 |
| | | | | Comuna del Barrio Purunuma | 40 | 200 |
| | | | | Comuna Sasaco | 20 | 100 |
| | | | | Junta del canal de regantes Gualaches | 80 | 250 |
| | | | | Junta canal Chandaycu | 50 | 200 |
| | | | Changaimina | Aso PROCAN | 100 | 2 000 |
| | | | | Aso. Reyna de la Caridad | 32 | 500 |
| | | | | Aso. Lansaca | 50 | 1 000 |
| TOTAL | | | | 513 | 5 000 | |
| 2 | IMBABURA | Urcuquí | Buenos Aires San Francisco | Corporación de ganaderos 4 de Octubre | 32 | 2 500 |
| | | | Buenos Aires | Luchando por el progreso | 15 | 400 |
| | | | Buenos Aires | Aso. Agricultores Buenos Aires | 15 | 300 |
| | | | Buenos Aires San Francisco | Aso. De desarrollo 24 de junio | 60 | 1 000 |
| | | | Carolina | Asociación ganadera La Carolina | 25 | 800 |
| | | | TOTAL | | | |
| 3 | GUAYAS | Santa Lucia | | Aso 1 de Agosto | 55 | 1 500 |
| | | | | Cabuya | 48 | 1 500 |
| | | Isidro Ayora | | San Juan Bautista | 42 | 500 |
| | | | | Las Piñas | 12 | 500 |
| | | | | Bálsamo | 33 | 500 |
| | | | | Guaija | 21 | 300 |

| N° | Province | Municipality | Parish | Association | N° of members | N° of has |
|----------|-----------------|----------------------------|-----------------------|-----------------------------------------------------|---------------|--------------|
| | | | | Manga Alegre | 17 | 200 |
| | | | | TOTAL | 228 | 5 000 |
| 4 | SANTA ELENA | Santa Elena | Chanduy | Recinto Tuguadaja | 80 | 3 000 |
| | | | Colonche | Aguadita | 247 | 2 000 |
| | | | | TOTAL | 327 | 5 000 |
| 5 | MANABI | Chone | Eloy Alfaro | Aso. Agropecuaria ganaderos Eloy Alfaro | 23 | 500 |
| | | | Eloy Alfaro | Coop. De producción agropecuaria Chone | 38 | 500 |
| | | | El Convento | Asociación Ganaderos el Convento | 72 | 2 500 |
| | | Flavio Alfaro | La Morena | Aso. Ganaderos La Morena | 65 | 1 500 |
| | | | | TOTAL | 198 | 5000 |
| 6 | NAPO | Quijos | Papallacta | Aso. De ganaderos de Papallacta | 30 | 300 |
| | | | Cosanga | Aso. De Ganaderos de Cosanga | 35 | 1 500 |
| | | | Cosanga | Aso. Agropecuaria Oyacachi | 55 | 1 500 |
| | | | Chaco | Asociación agropecuaria y comercialización el Chaco | 28 | 700 |
| | | | Baeza | Asociación agropecuaria Baeza | 21 | 300 |
| | | Arosemena Tola | Arosemena Tola | Aso. La Esperanza | 22 | 300 |
| | | Archidona | Ila | Aso. Ganaderos Archidona | 24 | 400 |
| | | | | TOTAL | 225 | 5 000 |
| 7 | MORONA SANTIAGO | Gualaquiza | Bedoya | Aso. Agroecológica 22 de noviembre | 22 | 400 |
| | | | El Rosario | Aso. ADESO | 22 | 500 |
| | | | Chigunda | Aso. Punto de la Amazonia | 28 | 500 |
| | | Limón Indanza | Indanza | Aso. De ganaderos campo alegre | 25 | 600 |
| | | | Indanza | Aso. De ganaderos GAVA del Oriente | 30 | 600 |
| | | | San Miguel de Conchai | Aso. Ganaderos agro productivos Nuevos Horizontes | 33 | 300 |
| | | | | Aso. Agropecuarios Cascadas del Carmen | 12 | 200 |
| Yundanza | Yundanza | Aso. Agropecuaria La Finca | 12 | 200 | | |

| N° | Province | Municipality | Parish | Association | N° of members | N° of has |
|-------------------------|----------|--------------|-----------|----------------------------------------------|---------------|---------------|
| | | Logroño | Logroño | Aso. Agrícola Ganadero de Logroño | 41 | 400 |
| | | Méndez | Tayuza | Aso. Unión y progreso | 30 | 300 |
| | | | Chinguimi | Aso. Nueva esperanza | 20 | 300 |
| | | Morona | Cuchaenza | Aso. Agrícola ganadera progreso del EBENEZER | 20 | 200 |
| | | | Macas | Aso. Charolais | 20 | 500 |
| | | | | | 315 | 5 000 |
| TOTAL ASSOCIATES | | | | | 1.626 | 30 000 |

APPENDIX 8: ENVIRONMENTAL AND SOCIAL REVIEW



EIA Ecuador
Livestock - signed.pdf

APPENDIX 9: GEF TRACKING TOOLS

Please see separate archive attached.

APPENDIX 10: Capacity strengthening

Two workshops will be held in each province. During the Project preparation, interviews were performed with MAE, MAGAP and GADs technicians. Based on the findings of this analysis, two curricula were designed focused on the needs detected. The first addresses the issue of climate change. The second seeks to increase capacity on sustainable livestock. Trainings will be directed to MAGAP staff, technicians from the involved GADs, INIAP and MAE. In total 100 people will be trained and at least 20% of participants will be women.

Plan 1: Climate Change Curriculum

| Competencies | Indicator | Methodology | Time | Materials |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------|
| Knowledge of basic concepts on CC, adaptation and mitigation | Participants master basic CC concepts. | Master lecture and participants' interaction. Videos and materials designed for exemplification. | 2 hours | Digital presentation. Scientific documents for initial reading. Documentaries. |
| Understanding CC causes and effects at national and global level. | Participants analyse CC causes and effects, climate projections and scenarios. | Master lecture and participants' interaction. Videos and materials designed for exemplification. | 2 hours | Scientific documents, Digital presentation |
| Knowledge of MAE policies to tackle CC. | Participants analysed CCNS and related state policies. | Master lecture and participants' interaction. Videos and materials designed for exemplification. | 1 hour | |
| Proposing actions on CC opportunities and challenges. | Participants elaborate proposals on actions for tackling CC. | Roundtables and presentation of results. | 1 hour | |

Unit 1. Basic concepts.

- 1.1. Concept of Climate Change, scientific considerations supporting the phenomenon.
 - Greenhouse gases: list and global warming potential.
 - Main actions producing CC.
- 1.2. Concepts of CC adaptation and mitigation. General examples of activities in different sectors.
- 1.3. Concepts of desertification. Changes in Ecuador and in the world. Scientific reasons.
- 1.4. Necessity for the implementation of CC adaptation and mitigation actions. Examples of actions undertaken in Ecuador and other countries.

- 1.5. Global opportunities and challenges.
- 1.6. Uncertainties of science, climate projections and scenarios.

Unit 2. Climate Change in Ecuador.

- 2.1 Statistics on climate change in Ecuador, Latin America and our position face to the global scenario.
- 2.2 Sectors contributing to CC at national, regional and global level.
- 2.3. Agriculture sector analysis face to the CC in Ecuador.
- 2.4. Opportunities and challenges in Ecuador.
- 2.5. Gender and Climate Change.
- 2.6. Indigenous peoples and Climate Change.

Unit 3. Climate Change national Policy and provincial policies.

- 3.1. Presentation of the CC National Strategy.
- 3.2. Presentation of policies and activities at international level.
- 3.3. Progress in actions, projects and indicators of the CCNS and in the province.
- 3.4. Challenges and opportunities for agriculture in the CCNS.

Unit 4. Roundtables and evaluation

- 4.1. Roundtable on basic concepts: global opportunities and challenges.
- 4.2. Roundtable on CC in Ecuador: national opportunities and challenges.
- 4.3. Roundtable on the CC national policy: opportunities and challenges for the agriculture sector.

Unit 5. Field visits.

Plan 2. Climate Smart Livestock Curriculum.

| Competencies | Indicator | Methodology | Time | Materials |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------|----------|--------------------------------------------------------------------------------------|
| Knowledge of the main features on the livestock sector in Ecuador and in the province. | Participants know livestock productivity levels in the country and in their province. | Master lecture. Videos. | 2 hours. | Digital presentation. Scientific documents for initial reading. Documentaries. |
| Knowledge of necessary activities for improving herd productivity and sustainability. | Participants know GLP | Master lecture. | 2 hours. | Digital presentation. Scientific documents for initial reading. Documentaries. |
| Knowledge, application and proposal of actions for livestock policies at national and | Participants propose policies to mainstream CC mitigation and adaptation in their | Master lecture. Roundtables. | 2 hours. | Tables, flipchart, projector, markers. |

| | | | | |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------|---------|------------------------------------------------|
| provincial level. | provinces. | | | |
| Proposing CC mitigation and adaptation activities in the province's livestock production. | Participants propose activities for CC mitigation and adaptation in the area of work. | Roundtables. | 2 hours | Tables, chairs, flipchart, projector, markers. |

Unit 1. Features of the livestock activity.

- 1.1. Bovine livestock by management system (milk, meat and mixed). Productivity statistics in Ecuador.
- 1.2. Land tenure statistics in the livestock sector.
- 1.3. Relevance of the livestock activity in national and global economy.
- 1.4. Cost of milk and meat livestock activity: is it profitable? Why do we continue doing it?

Unit 2. Activities to improve productivity and sustainability: (environmentally) sustainable livestock practices.

- 2.1. Concept of climate smart livestock.
- 2.2. Animal health: status of health conditions in the country and health schedule.
- 2.3. Nutrition:
 - 2.3.1. Supplementary feeding vs. pastures.
 - 2.3.2. Features of pastures in the province.
 - 2.3.3. Type of pasture: use of electric fences and forage conservation.
 - 2.3.4. Silvopastures.
- 2.4. Breeding.
 - 2.4.1. Artificial insemination: benefits and limits.

Unit 3. Livestock policies in the country.

- 3.1. Sustainable livestock national program
- 3.2. Articulations with the CCNS.
- 3.3. Good practices Certification.

Unit 4. Roundtables: Climate Change and livestock.

- 4.1. Activities considered as mitigation in livestock production.
- 4.2. Activities considered as adaptation in livestock production.
- 4.3. Sustainable livestock practices: applicability in the province's reality.
- 4.4. Gender and livestock.
- 4.5. Indigenous peoples and livestock.

Unit 5. Field visits

- 5.1 Field visits in degraded areas
- 5.2. Field visits in areas with sustainable practices.