



GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL-SIZED PROJECT

TYPE OF TRUST FUND: GEF TRUST FUND

PART I: PROJECT INFORMATION

| | | | |
|--|--|---------------------------------|----------------|
| Project Title: | Climate-smart livestock production and land restoration in the Uruguayan rangelands | | |
| Country(ies): | Uruguay | GEF Project ID: | 9153 |
| GEF Agency(ies): | FAO | GEF Agency Project ID: | 636320 |
| Other Executing Partner(s): | Ministry of Livestock, Agriculture and Fisheries (MGAP); National Institute of Agricultural Research (INIA); Uruguayan Federation of Regional Centres of Agricultural Experimentation (FUCREA) | Submission Date: | 6 January 2016 |
| GEF Focal Area (s): | Climate Change, Land Degradation | Project Duration(Months) | 48 |
| Integrated Approach Pilot: IAP Cities: IAP Commodities: IAP Food Security: Corporate Program: | | | |
| Name of parent program (if applicable): | n/a | Agency Fee (USD): | 198,719 |

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAMME STRATEGIES

| Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Program) | Trust Fund | GEF Project Financing (USD) | Co-financing (USD) |
|--|-------------------|------------------------------------|---------------------------|
| CCM-2, Program 4 | GEFTF | 1,481,781 | 9,047,500 |
| LD-1 Program 2 | GEFTF | 610,000 | 2,982,500 |
| Total project costs | | 2,091,781 | 12,030,000 |

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To mitigate climate change and to restore degraded lands through the promotion of climate-smart practices in the livestock sector, with focus in family farming.

| Project Component | Financing Type | Project outcomes | Project Outputs | Trust Fund | GEF Project Financing (USD) | Confirmed Co-financing (USD) |
|--|-----------------------|--|---|-------------------|------------------------------------|-------------------------------------|
| Component 1: Strengthening the institutional framework and national capacities to implement the | TA | Outcome 1.1: Policy and planning frameworks have been strengthened to support CSLM implementation and national communication on livestock emissions. | Output 1.1.1 A national climate-smart livestock management (CSLM) strategy, designed and validated with key stakeholders. | GEFTF | 354,077 | 5,347,619 |

| | | | | | | |
|---|--|--|---|--|--|--|
| <p>climate smart livestock management (CSLM)</p> | | <p><i>Target:</i> <i>Indicator 3 (CC): One MRV system for emission reduction in place and reporting verified data (for the large ruminant livestock sub-sector, as part of the NAMA development)</i> <i>Baseline: 4, Target: 8¹</i></p> <p><i>Indicator 5 (CC): Degree of support for low GHG development in the policy planning and regulatory framework.</i> <i>Baseline: 3; Target: 5²</i></p> <p>Outcome 1.2: National capacities have been strengthened to support CSLM implementation.</p> | <p>Output 1.1.2 A Nationally Appropriate Mitigation Action (NAMA), including a national measuring, reporting and validation (MRV) system for the livestock ruminant sector.</p> <p>Output 1.1.3 Detailed estimates of GHG emissions reduction and carbon sequestration</p> <p>Output 1.2.1 Capacities developed to effectively support the implementation³ of CSLM with a gender-sensitive perspective.</p> <p><i>Target: 6 national organizations (MGAP, NGB⁴, FUCREA⁵, INIA⁶, CNFR⁷, IPA⁸, etc) with strengthened capacities.</i></p> <p>Output 1.2.2 A training program in place, to supporting the rolling out of improved and climate- smart approaches to livestock management.</p> | | | |
|---|--|--|---|--|--|--|

¹ As per the scale in GEF-6 Programming Directions, page 81

(https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF6_programming_directions_final_0.pdf)

² As per the scale in GEF-6 Programming Directions, page 83-84

(https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF6_programming_directions_final_0.pdf)

³ Capacities to support implementation include: coordination, monitoring, analysis, communications, technical assistance, resource mobilization, social and economic evaluation.

⁴ National Grasslands Board

⁵ Uruguayan Federation of CREA Groups (Livestock and Agriculture producers)

⁶ National Institute of Agricultural Research.

⁷ National Commission of Rural Support

⁸ Agricultural Plan Institute

| | | | | | | |
|---|-----|---|--|-------|-----------|-----------|
| | | | <i>Target: Sixty extension workers from 5 organizations trained</i> | | | |
| Component 2: Development and deployment of CSLM technologies and practices at field level. | INV | <p>Outcome 2.1: Sustainable climate-smart livestock management (CSLM) has been implemented in degraded/degrading lands.</p> <p><i>Targets:</i> <u>Indicator LD 1.1:</u> Land area under effective rangeland management practices and/or supporting climate-smart agriculture: 35,000 hectares of grasslands under CSLM.</p> <p>60 small-scale farm owners have actively implemented CSLM in those 35,000 hectares.</p> <p><u>Indicator 1 (CC):</u> a range of 100,000 to 300,000 t CO_{2eq} tons of GHG reduced or avoided</p> <p><u>Indicator 2 (CC):</u> Volume of investment mobilized and leveraged by this GEF project for low GHG development (disaggregated by private and public investment⁹)</p> <p><u>Indicator 4 (CC):</u> Deployment of low GHG technologies and practices. b) additional 35,000 has under low GHG (CSLM)¹⁰ management practices.</p> | <p>Output 2.1.1 Short and medium-term farm level strategies implemented on project farms with a gender perspective.</p> <p><i>Target: 60 strategies containing improved practices and technologies, implemented by farmers.</i></p> <p>Output 2.1.2 A capacity development program focused on the application of the CSLM technologies and practices. <i>Target: At least 120 farmers and farm employees, trained</i></p> <p>Output 2.1.3 On-farm monitoring system, in place (to monitor GHG emissions, adaptation strategies, financing, land degradation and biodiversity). <i>Target: System present at 60 small-scale farms</i></p> | GEFTF | 1,247,619 | 5,280,952 |

⁹ To be defined during full project preparation, including both private and public investments.

¹⁰ Selected from GEF-6 Programming Directions, page 82

(https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF6_programming_directions_final_0.pdf)

| | | | | | | |
|---|----|--|--|-------|------------------|-------------------|
| Component 3: Monitoring, evaluation and knowledge- sharing | TA | Outcome 3.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated | Output 3.1.1 A set of manuals and media products that describe the improved CSL practices, measures and technologies, for use by extension workers and producers. | GEFTF | 390,476 | 828,571 |
| | | | Output 3.1.2 Project Monitoring & Evaluation Plan and system, in place. | | | |
| | | | 3.1.3 Knowledge- sharing with other countries and dissemination of verifiable data and tested methodologies | | | |
| | | | Output 3.1.4 Project Mid-term review and Final Evaluation. | | | |
| | | | Output 3.1.5 A Communication Strategy, implemented. | | | |
| Subtotal | | | | | 1,992,172 | 11,457,142 |
| Project Management Costs (PMC) | | | | GEFTF | 99,609 | 572,858 |
| Total Costs | | | | | 2,091,781 | 12,030,000 |

If multi-trust fund, breakdown of PMC across trust funds to be provided in small table here: not applicable.

Up to USD2 million, PMC cap is 10% of subtotal. Over USD 2million, PMC cap is 5%. PMC should be charged proportionately to focal areas (see table D). PMC to be charged proportionately to focal areas.

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE IF AVAILABLE, (USD)

| Sources of Co-financing | Name of Co-financier | Type of Co-financing | Amount (USD) |
|-------------------------|---|----------------------|--------------|
| National Government | Ministry of Livestock, Agriculture and Fisheries (MGAP) | Cash and in kind | 2,310,000 |
| National Government | MVOTMA | In kind | 200,000 |
| GEF Agency | FAO | In-kind | 100,000 |
| GEF Agency | FAO | Cash | 420,000 |
| Multi-lateral agency | World Bank | Cash and in kind | 5,500,000 |
| Bilateral Agency | New Zealand Ministry of Foreign Affairs and Trade | Cash and in kind | 2,000,000 |
| INIA | INIA | In kind | 800,000 |
| Farmer Organisation | FUCREA | In kind | 200,000 |
| Farmer Organisations | Other Farmer Organisations, including CNFR | In kind | 500,000 |

| | | | |
|---------------------------|--|--|-------------------|
| Total Co-financing | | | 12,030,000 |
|---------------------------|--|--|-------------------|

D. INDICATIVE TRUST FUND RESOURCES (USD) REQUESTED BY AGENCY, COUNTRY AND THE PROGRAMMING OF FUNDS

| GEF Agency | Trust Fund | Country Name/Global | Focal area | Programming of Funds | GEF Project Financing (USD) (a) | Agency Fee (USD) (b) | Total (USD) (a + b) |
|------------------------------|------------|---------------------|------------|----------------------|---------------------------------|----------------------|---------------------|
| FAO | GEF | Uruguay | CCM | NA | 1,481,781 | 140,769 | 1,622,550 |
| FAO | GEF | Uruguay | LD | NA | 610,000 | 57,950 | 667,950 |
| Total Grant Resources | | | | | 2,091,781 | 198,719 | 2,290,500 |

E. PROJECT PREPARATION GRANT (PPG)

PPG Grant is requested.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

| Project Preparation Grant Requested: USD 100,000 | | | | | | | Agency Fee:USD9,500 |
|--|------------|---------------------|------------|----------------------|----------------|----------------|---------------------|
| GEF Agency | Trust Fund | Country Name/Global | Focal area | Programming of Funds | (in USD) | | |
| | | | | | PPG (a) | Agency Fee (b) | Total c = a + b |
| FAO | GEF | Uruguay | CCM | NA | 50,000 | 4,750 | 54,750 |
| FAO | GEF | Uruguay | LD | NA | 50,000 | 4,750 | 54,750 |
| Total PPG Amount | | | | | 100,000 | 9,500 | 109,500 |

Max. USD50k for up to USD1million; max USD100k for up to USD3million; max USD150k for up to USD 6million, max USD200k up to USD10 million; top max is USD300k.

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS

Provide the expected targets as appropriate

| Corporate Results | Replenishment Targets | Project targets |
|---|--|---|
| 1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society | Improved management of landscapes and seascapes covering 300 million hectares | - |
| 2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes) | 120 million hectares under sustainable land management. | 35,000 has of directed project intervention (and 400,000 has of indirect project impact). |
| 3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services | - Water-Food-Energy-Ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins; - 20% of globally over-exploited fisheries (by volume) moved to more sustainable levels | - |
| 4. Support to transformational shifts towards a low-emission and resilient development path | 750 million tons of CO2 equivalent mitigated (include both | A range of 100,000 to 300,000 tons CO _{2eq} tons of |

| | | |
|---|--|--|
| | direct and indirect) | GHG directly mitigated, and ca. 1 to 3 million tons CO2 equivalent indirectly mitigated. |
| 5. Increase in Phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern. | - Disposal of 80,000 tons of POPs (PCB, obsolete pesticides) - Reduction of 1000 tons of Mercury - Phase-out of 303.44 tons of ODP (HCFC) | - |
| 6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks. | - Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries - Functional environmental information systems are established to support decision-making in at least 10 countries | - |

PART II: PROJECT JUSTIFICATION

A. PROJECT OVERVIEW

A.1. Project Description

A.1.1. Global Environmental Problems, Root Causes and Barrier Analysis

Uruguay is located in the southeast of South America between 30° and 35° South and 54° and 59° West. It has borders with Brazil to the north, Argentina to the west and the Atlantic Ocean to the south and east. The total land area is 176,215 km² or 17.6 million hectares. Uruguay is divided into 19 administrative departments (see map in Figure 1). According to the World Bank¹¹, in 2013 Uruguay had a total population of 3.4 million and a GDP of USD55.7 billion¹².

The geology of Uruguay is very complex. Diverse geological materials form a great variety of soils: igneous rocks that range from granite to basalt; diverse metamorphic rocks (gneiss, amphibolite, etc); diverse sedimentary rocks: sandstones with variable cement (silt, lutite and limestone, etc.) that have sometimes undergone ferrification processes or silicification; fluvial and lacustrine deposits and large areas of mainly Aeolian deposits. The physical and chemical differences in the characteristics of these materials have been a fundamental factor in the evolution of a large number of soil types for a country this size. Five soil groups are recognized, differing in the land use capability, the handling problems that they present and their potential productivity. Overall, the geology and soil types, the climate, and the topography have defined seven agro-ecological zones in Uruguay (see map in Figure 2).¹³

Figures 1 and 2: Departments and Agro-ecological zones of Uruguay

¹¹ World Bank website

¹² Current USD.

¹³ "Country Pasture/Forage Resource Profiles – Uruguay". FAO, 2006.

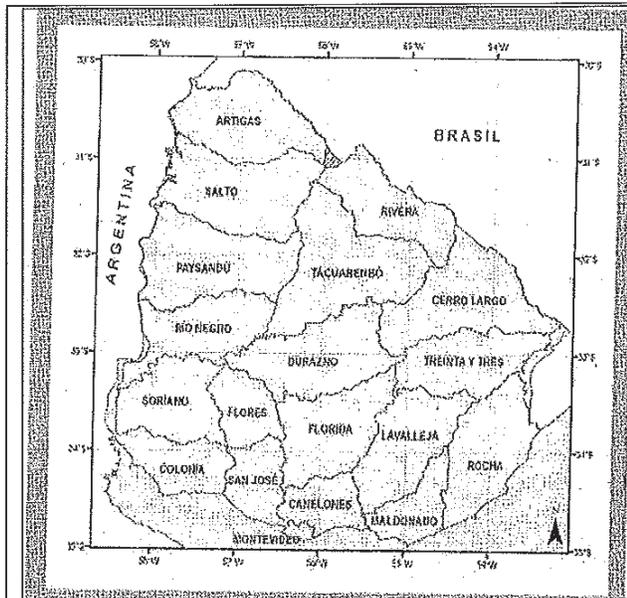


Figure 1: Showing Administrative Departments

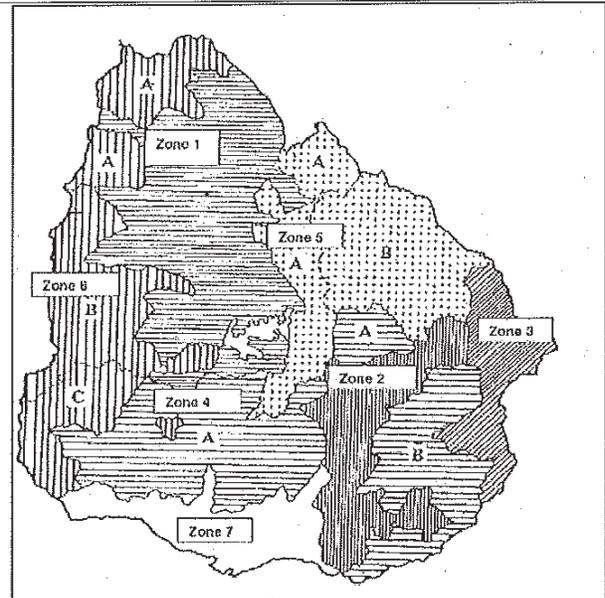


Figure 2: Showing Agro-Ecological Zones

Source: Figure 1: MGAP; Figure 2: INIA

Approximately 85% of Uruguay's land is suitable for agricultural production. Hence, the agriculture and livestock production systems are economically very important and are expected to remain so. The agricultural sector, which includes crops, livestock, and forestry, accounts for 12% of employment nationally and 70% in rural areas¹⁴. In 2009, the sector contributed 10% of Uruguay's GDP and provided 65% of the country's exports. The average annual growth rate of agricultural GDP for the period 2001-2009 was 6.5%, higher than the 3.5% of the overall economy. The challenge, however is to let small and middle producer participate in this growth, increase their income and contribute to economic development.

According to official statistics, in 2011 livestock raising occupied 14.9 million hectares of the 16.4 million hectares of private land in Uruguay.¹⁵ In this, cattle raising is by far the most important, with beef production being the most important economic activity, followed by the production of dairy products. However, Uruguay also has large numbers of sheep, horses, goats, chicken and increasing numbers of pigs. One specific feature is the large number of mixed cattle and sheep livestock raising systems. These cover almost all the pasture land. Three categories of mixed cattle and sheep production systems are distinguished¹⁶:

- The rearing of animals on natural pastures or *grasslands*. In this system, shortage of food in winter typically leads to a loss of weight, followed by large weight gains in spring and then moderate gains over summer and autumn. Typically, when a "campo steer" is three years old, it weighs 330 to 380 kg, and it requires one more year of fattening;
- The rearing of animals on improved pastures. Improved nutrition and managed grazing means weight gains can be maintained through winter. Steers often reach 380 kg by the age of two;
- Intensive rearing systems, in which weight gains can be above 350 kg per year.

The pasture land in Uruguay is mainly private property (although there are some State owned areas). Privately owned lands may be rented or leased. 69% of private pasture areas are directly exploited by the owners; 26 % are exploited by renters and the remaining 5% is exploited in other ways.¹⁷ In most farms, both public and private, the

¹⁴ "Rural Productive Development Program – Program Document". Inter-American Development Bank, 2012.

¹⁵ "Agricultural Census". DIEA-MGAP, 2011.

¹⁶ FAO, 2006 (ibid).

¹⁷ FAO, 2006 (ibid). It is noted that the figures date from 2000 and may have changed since, although they are generally considered to be accurate.

producer is responsible for management and rarely receives technical assistance. The qualification levels of the producers are very uneven.

By global standards, farm sizes in Uruguay are very large and the farming is extensive (both 'natural' and 'improved'). In 2000, by area, only 2.5% of farmland was farms under 50 ha. A recent survey established that a large proportion of livestock raising is on farms between 50 and 500 hectares. 49,210 farms under 500 hectares cover a total of 4 million hectares.^{18,19} These 'small' farms are typically privately owned by families or family groups and can typically invest only a very limited amount in improved technologies and practices.

The vast majority of these 'small farms' are found in three of the agro-ecological regions: (i) in the Basalt region, in Artigas, Salto and Paysandu Departments; (ii) in the Eastern Hills region, in Rocha, Treinta y Tres, Lavalleja and Maldonado Departments, and; (iii) in the Central region in Durazno and Tacuarembó Departments. Typically, these small farms are primarily *grasslands* or natural pastures. However, most farms will have a small area, say 5-10 hectares, of rangeland with some improvements in terms of seeding or nutrition or fodder species.²⁰

These farms had large numbers of sheep until the end of the 1990s or even later. The sheep population in Uruguay declined from 27 million in 1995 to 7.5 million in 2015, mostly as a result of declining wool prices. However, the nature of the land and climate mean that the combined sheep and cattle raising system is essential for land management and for risk management.

Until recently, high inflation coupled with low land prices provided an incentive for *grasslands* farmers to keep large herds and to invest little in managing herd numbers. The resulting grazing pressure on the land was high. This approach was promoted by both Government departments and academic experts. Typically, on an *ad-hoc* basis, the farmers would sell some livestock in order to purchase additional land, and so ultimately expand the herd. Despite the fact that inflation has been under control in more recent years, and the fact that land prices have increased very rapidly²¹ in recent years, the mind-set to have 'as large an herd as possible' still prevails. Historically, the economic incentive structure that encouraged large herds and extensive systems also discouraged farmers from investing in technologies and practices for pasture improvement or improved animal husbandry. Again, despite the changes in the overall economic structure, the mind-set to not invest in improved technology still persists amongst small and medium farmers.

Currently, as explained in the following paragraphs, the main problem of the cattle ranching is related to the poor meat productivity – particularly on the *campo* ranches. Large tracts of land are occupied, the pastures are poorly exploited and overgrazed, and as a result GHG emissions per unit of meat produced are very high. Land degradation and biodiversity loss also occur.

Economic challenges: Overall, livestock raising in Uruguay is significantly less productive than with its international competitors. The main challenges occur with regards to *breeding* rates on all farms and *fattening* rates on small farms. For example, the weaning rate per mated cow is only 63% on average²². The main reason for this is that cattle breeding is mostly dependent on sub-optimally managed natural grasslands. On these, high stocking rates combine with low grass heights and low leaf area index to lead to poor nutrition for the cattle; this results in the poor condition of the cows and therefore low rates of pregnancy and birth. Low levels of pregnancy means there is always a large number of economically unproductive cattle on the pastures – the 'breeding overhead'. Furthermore, the poor grazing and feeding conditions negatively affect fattening and finishing rates – these take time and are not efficient. Each animal is feeding for a long time before reaching maturing – another factor in meat production inefficiency. Hence, despite the overall gains in productivity in the past decade and success with export markets, the livestock sector remains vulnerable and emission intensities can be further reduced significantly.

¹⁸ FAO, 2006 (ibid).

¹⁹ The definition of family farmers adopted by MGAP states that the area should be less than 500 hectares and the farmer should live in the farm or close to it, and that farming should be the main livelihood.

²⁰ This is based on official records. Mostly, this means at some time some improvement was made, but there is no regular rangelands improvement programme.

²¹ Due mostly to the opportunity to convert land to soya bean production

²² For the period 1999-2010 (sources: DIEA-MGAP, 2014 Yearbook, 2014

The factors causing low productivity are most notable on small and family farms, which typically have lower rates of adopting new technologies, and also on medium sized farms. This is partly a result of dramatic changes in the scale and cost of production over the past years in Uruguay. Increasing production costs have squeezed margins and farm profitability, therefore making the management of small farms more economically challenging. In this context of economic stress, most small farmers have responded by attempting to *further* expand the herd size without concomitant efficiency gains. This ultimately further reduces productivity per livestock (or per hectare). Overall economic productivity per hectare in small farms is low, with average annual income per hectare in the range USD-7 to +36²³

GHG emissions: The agriculture (including livestock and forestry) sector accounts for approximately 80 % of national GHG emissions in Uruguay (expressed in CO_{2e}). The livestock sector is responsible for more than 92% of total methane emissions.²⁴ The main pathways in Uruguay for the livestock sector to contribute to GHG emissions are as follows:²⁵

- Methane emissions from enteric fermentation in cattle (contributing 15 million tons CO_{2e} per year) and in sheep (1 million tons CO_{2e} per year). The large 'breeding overhead', the high stocking rates, the slow growth and poor diets mean that these emissions, both per animal and per hectare, are very high by global standards. Improved grazing, management and feeding would lead to increased productivity and vast decreases in the GHG emitted *per unit of economic production*;
- Methane and N₂O emissions from animal manure. Although no figures are available for methane, N₂O emissions are estimated to be 7.6 million tons CO_{2e}. This can be reduced through improved feeding, improved animal management (reducing the 'over-breed'), and improved manure management. Again, large decreases in the GHG emitted *per unit of economic production* are possible;
- Reduced CO₂ sequestration by land. Healthy grasslands are a natural carbon sink and globally the organic matter in grasslands is a major reservoir of carbon.²⁶ Uruguay's millions of hectares of natural grasslands therefore make an important contribution to reducing atmospheric CO₂ levels. However, as the land is degraded, it releases carbon and the degraded land is less able to sequester. The high stocking rates are the main cause of this land degradation.

Currently, the inefficient systems lead to high CO_{2e} emissions per unit of production. The factors negatively affecting GHG emissions are more significant in the small and medium-sized farms that have not been able to adopt improved practices and technologies.

Land degradation: In Uruguay, unsustainable management of cattle production over large grassland areas has led to ongoing land degradation. Traditionally, as discussed above, herd management ignored the impact on the vegetation, soil or land. Continuous stocking, high stocking rates and high cattle/sheep ratios has led to compaction, loss of fertility, erosion and loss of some native species. It also causes losses of soil organic matter and thereby the release of CO₂ in the atmosphere. One indicator of this degradation is the increase of forbs and stoloniferous grasses (that are better adapted to such grazing conditions) and the reduced frequency of bunch grasses, as well as a reduction in the number of species present. Such changes in botanical composition have been observed to result in a 12% reduction in annual forage production.²⁷

In quantitative terms, 30.1 per cent (almost 5 million ha) of the pasture land is considered degraded, and 400,000 ha are considered severely degraded.²⁸ Although the rates of land and pasture degradation have reduced over the

²³ Source: Adaptation Fund Project "Building resilience to climate change in vulnerable smallholders" 2011, page 16.

²⁴ "Uruguay's Third National Communication to the UNFCCC". Government of Uruguay, 2004.

²⁵ Ibid.

²⁶ Historically, attention on soil organic matter (SOM) focused on the central role that it plays in ecosystem fertility and other relevant soil properties. In the last 20 years the role of carbon sinks and soil organic carbon in the mitigation strategies has emerged as a critical research area and the ecosystem services related to the carbon cycle are seen as a huge potential. Grasslands have a particular interest as potential C sinks. Natural organic matter in soils is the largest carbon reservoir in rapid exchange with atmospheric CO₂, and is thus important as a potential source and sink of greenhouse gases over time scales of human concern (Fischlin and Gyalistras, 1997).

²⁷ FAO, 2006 (ibid).

²⁸ FAO, 2006 (ibid).

past quarter century, many of the activities that make up the current production systems present new environmental challenges that need to be addressed within a context of sustainable development.

Importantly, land degradation and the related loss of pasture productivity and nutritional quality causes productivity losses in animal production. The productivity loss over the past decade was of ca. 20 to 25%. This has not only eroded farmers' income but also contributed to higher GHG emissions per unit of product, given the inverse relationship between herd productivity and GHG emission intensity (FAO, 2013).

Biodiversity: natural grasslands cover more than 70% of Uruguay. This is a significant portion of one of the last extensive temperate grassland ecoregions in South America. To date, in Uruguay, 2,750 higher plant species have been registered in 140 families, and more than 553 species of grasses (native and naturalized). Uruguay is one of the richest areas in Gramineae worldwide. The above-mentioned land degradation on grasslands is directly contributing to the loss and reduction of this globally significant biodiversity.

Climate and economic vulnerability: Finally, the small farms and *grasslands* in Uruguay are highly vulnerable to climate variability and change. Nationally, droughts and floods already severely affect the livestock sector. For example, in 2008-2009, droughts caused an estimated USD 400 million of on-farm losses.²⁹ Climate change is expected to further affect livestock production and productivity, through reduced water availability, increased heat stress and reduced feed and fodder quality and availability. This also undermines ecosystem health and integrity. Since livestock production is an important part of many farmers' livelihoods, climate change poses a risk to the sustainability of farmers, in particular to smaller ones.

To conclude, small and medium size cattle farms across Uruguay with mainly cattle mixed with sheep livestock systems, are caught in a downward spiral of old technology and inappropriate practices on predominantly natural pastures. This yields little economic benefit, it causes land degradation including biodiversity loss, and it is contributing significantly to GHG emissions – as well as missing important opportunities to sequester GHGs.³⁰ This is a 'triple-lose'. In the baseline, given the current context of rising land prices, it is likely that farmers will continue to intensify production and exacerbate the problems.

A solution to this would be for the cattle farmers to adopt alternative livestock raising practices that yield greater economic benefits, reduce land degradation, reduce GHG emissions and increase carbon sequestration. Such management systems and practices exist and are known in the form of Climate-Smart Livestock Management (CSLM). According to FAO³¹, CSLM 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. Research in Uruguay suggests that there are many low cost, high impact, simple to implement technologies that can lead to CSLM. Typical examples of these are:

- Grazing management: e.g. decreasing stocking levels and rotational grazing;
- Managed animal breeding: e.g. ovary activity diagnosis, early or temporary weaning; classification of animals by body condition; feeding levels aligned to body condition and requirements;
- Pasture management: e.g. measurement of forage availability at paddock level, adjusting grazing pressure to forage supply (variable stocking rate), introduction of legume species in the sward;
- Increasing the number of paddocks when necessary;
- Providing water and shadow to all paddocks, and;
- Limited supplementary feeding with grains, hay or silage (particularly in winter).

Through the use of these, the livestock sector can make major contributions to food supply and reducing GHG emissions.

Currently, a number of barriers stop small farmers and many medium sized farmers from adopting these practices and technologies. These are:

²⁹ Paolino, Carlos. OPYPA Yearbook, 2010.

³⁰ Note, 'big' or large scale farmers are responsible for a significant portion of livestock production. It is the intention of the project to produce information that is also useful for them, and that could be deployed in the scaling up phase.

³¹ "Climate-smart Agriculture Sourcebook". FAO, 2013.

High perceived risk of new technologies and practices. The small farmers predominantly believe that the best way to minimize risk is to maximize the number of livestock. Further, small farmers are generally risk averse – hence, they are slow and reluctant to adopt new technologies or practices.

Lack of awareness. Although national government officials and experts understand that the current situation is a “triple lose”, local extension workers and farmers are not aware. Generally, they are not aware that alternatives exist and that the benefits of these alternatives are probably high – this is especially the case for small and middle size farms. In particular, they are not aware of the details of alternative practices, which to use and when, and what are the benefits.

Inadequate incentives and/or financial risk. Over the short term, it is in the interest of small farmers to continue the current practices and technologies. To adopt alternative practices and technologies requires an investment in terms of time and money, and many small farmers are not able to make the investment. This is linked to the perceived risk. Government does not have the resources to broadly promote the adoption of the new technologies. There is no widespread certification scheme that would promote sustainable meat production.³²

Institutional weakness. At present, despite high-level knowledge and high-level understanding of the situation, there are no national programs, plans or regulations to promote the introduction and dissemination of CSLM. Likewise, there are no significant national budget allocations to this.

Lack of scientific knowledge and data. Although the general processes are understood, the details of the interactions between current livestock management systems and GHG emissions and land degradation are not well known. There is no scientific data on (i) how different livestock management systems affect GHG emissions nor (ii) how different livestock management systems affect soil fertility, erosion and biodiversity. This lack of knowledge is a barrier to securing private or donor funding to new technologies and practices.

A.1.2 Baseline scenario

The Government is committed to addressing livestock sector challenges through a holistic approach that addresses food security, economic competitiveness, sustainable land management, climate change adaptation and mitigation. The approach focuses on sustainably increasing productivity and efficiency. Reversing overgrazing and increasing productivity and efficiency is the win-win-win strategy.

In order to help address the challenges faced by small and family farmers, in 2005, the Ministry of Livestock, Agriculture and Fisheries (MGAP) established the Directorate General of Rural Development (DGDR) and its Decentralization Unit. DGDR is mandated to articulate and implement a single intervention strategy for rural production, with a particular focus on small and medium producers. DGDR mostly supports producer groups and sub-departmental and departmental associations, although it also intervenes to support individual producers. The DGDR actually began operating in late 2008.

For crop production and arable land, MGAP has issued the policy of “Soil Use and Management Plans” (2011). This policy regulates the use and expansion of croplands in order to promote the application of management practices that reduce soil erosion from croplands. At present, 1.5 million hectares of croplands are managed under these plans. MGAP aims to develop a similar policy for the use and management of livestock and grazing areas and has made general policy declarations at the highest level. However, as of yet, no implementation tools have been issued and no budget allocated.

In the baseline, several national organizations are implementing related activities. These include:

- The National Agricultural Research Institute (INIA), undertaking research and providing training and support

³² At present, the *Alianza del Pastizal*, is promoting a certification system for grass-fed beef on natural grasslands, this is a valuable but nascent initiative.

to farmers. This includes work on GHG emissions and emission factors for CH₄ and N₂O from cattle. INIA has developed until 2014 a pilot project with number of cattle and sheep small scale family farmers in the East of the country, which measured the impact of grassland management practices and co-innovation processes on productivity, income and sustainability;

- The Institute of Livestock Technology Transfer (IPA), undertaking research and providing training and support to livestock farmers;
- Farmer organizations and farmer groups. These provide networks of support and technical guidance to farmers, and are a platform for providing extension services. A notable example is the Uruguayan Federation of Regional Centres of Agricultural Experimentation (FUCREA). This combines 28 farmer groups. It has been estimated that FUCREA's inputs in terms of time and infrastructure are equivalent to USD 50,000 per year. Another relevant farmers' organization is the National Commission for Rural Promotion (CNFR), which includes 49 small-scale farmers' organizations in areas of extensive cattle and sheep production. These organizations gather and represent more than 9,000 cattle and sheep farmers, mostly small-scale.
- the Faculty of Agronomy of the National University (FA), undertaking research and providing training and support to farmers.

In 2013, the MGAP established the National Grassland Board (NGB). The NGB aims to coordinate and promote efforts to sustainably manage the grasslands. Until present it has focused mostly on theoretical issues. Current members include government actors, academic experts, researchers and private sector. The MGAP plans to expand membership by including representatives of Farmers' organizations, and to broaden activities to be more field oriented.

In addition, there are currently several related internationally supported projects. These are:

"Building Resilience to Climate Change and Variability in Vulnerable Smallholders", funded by the Adaptation Fund. This USUSD9.97 million project is implemented by MGAP and runs from 2012 to 2016. The overall objective is to contribute to building national capacity to adapt to CC and variability focusing on critical sectors for the national economy, employment and exports. The specific objectives include: (a) Reducing vulnerability and building resilience to climate change and variability in small farms engaged in livestock production (mainly rearing and complete closed cycle) located in extremely drought-sensitive Landscape Units of the Basaltic Cuesta and East Hills eco-regions; (b) Strengthening local institutional networks at the selected LU level targeting climate change adaptation (prevention) and response to extreme events (emergency) in highly drought-sensitive areas, and (c) Developing mechanisms for a better understanding and monitoring of the impacts and variability of CC, anticipating and assessing negative events and eliciting lessons learned and identifying and validating best practices and toolkits for adapting to increasing variability of CC.

This project focuses on supporting livestock smallholders in two agro-ecological regions: the Basaltic Cuesta and the East Hills. However, the focus of the project is purely on adaptation to climate change, and the associated technological, institutional and information needs. It does not address GHG emissions or land degradation - as such, it is very complementary to the proposed Project.

Sustainable Management of Natural Resources and Climate Change", funded by the Government (USUSD6 million) and a World Bank loan (USD49 million)³³ for a total of USD55 million, and implemented during 2012 - 2017. The objective of the project is to support Government efforts to promote farmer adoption of improved environmentally sustainable agricultural and livestock practices. This objective is to be achieved through the development and implementation of instruments that provide farmers with critical and timely information for the adoption of improved on-farm natural resources management as well as technical and financial assistance to promote investments in their production systems aimed at reducing risks and making them more resilient to extreme climatic events. The project is investment-focussed with little technical assistance - there is a strong focus on investments in water storage and paddock

Forthcoming World Bank Loan. The World Bank and Government of Uruguay are currently preparing a follow-up loan project, to start in 2016 or 2017. This loan will aim to increase in efficiency in the use of water (water

³³ The World Bank is aware that the GoU has proposed the DACC project as co-financing for the present GEF proposal.

reservoirs, wells, and water distribution to paddocks) and of grasslands in the livestock sector. Many components of this loan complement the Proposed project.

"Rural Productive Development Program" funded by the Government (USD3.6 million) and the Inter-American Development Bank (IDB, USD28.4 million) for a total of USD32 million, and running from 2012 to 2017. The Program's goal is to improve the income of small and medium agricultural producers. It seeks to increase their productivity through the adoption of new technologies. The Program focuses on the following investment areas: (i) production support; and (ii) institutional strengthening of the DGDR.

The government of New Zealand is supporting the Uruguay Farm Improvement Project (UFIP). The work started in 2014 and is planned to run for 4 years with a total investment of USD4million. The focus is on profitability and resilience, specifically on monitoring economic variables, management systems and the adoption of good practices. The project works closely with INIA and IPA and with individual; small cattle farms on *grasslands*.

All of the above are closely related to the present proposed Project, both in terms of beneficiaries (i.e. the small and family farmers) and geographical coverage. They adopt a range of strategies in order to support these targets. However, none of the three projects include a focus on climate change mitigation, and none of them focus specifically on livestock raising systems.

Hence, in the baseline, the vast majority of small-scale famers will continue to practice livestock management approaches that do not generate good economic returns, that lead to unnecessarily high GHG emissions, and that continue to degrade the land (including decreasing carbon stocks and biodiversity loss).

A.1.3 Alternative Scenario and Incremental Cost Reasoning

The alternative scenario involves the development, introduction and upscaling of climate smart livestock management (CSLM) on small, family and some medium-sized farms based on extensive systems on natural grasslands. This will lead to fewer GHG emissions, reversal of land degradation and restoration of land and the decreased economic vulnerability of farm holders.

The **Project objective** is to mitigate climate change and to restore degraded lands through the promotion of climate smart practices in the livestock sector, with focus in family farming.

Project strategy:

The project strategy has 3 main pillars:

a) **Piloting and upscaling:** The Project will work with 60 selected 'reference' small, medium and some large sized farmers at key sites across Uruguay. In a consultative manner, the Project will support the development of technologies and practices and the reference farmers will then implement the technologies/practices, leading to the economic and environmental gains. The 60 reference farmers will adopt ecosystem management approaches rather than focussing uniquely on 'animal management'. The results of these technologies/practices will be monitored and evaluated against a range of economic and environmental criteria.

b) Replication strategy at national level: from piloting to impact at scale

The project will achieve impact at scale through the replication of CSLM over a larger proportion of farms including small, middle and large production units. First, the will support the development of the institutional and individual capacity required to disseminate and extend the improved technologies and practices. Because these practices are more profitable to farmers than current practices (Annex I), the project will dedicate resources to their broad dissemination, through awareness raising, capacity development and extension work. Second, the project will feed into the recently launched National Program of Technology Transfer and Diffusion, which aims at upgrading management practices among agricultural producers (Annex2).

c) Mitigation effect:

The mitigation effect will be achieved through a range of entry points, resulting in a reduction of emissions and carbon sequestration.

The followings will contribute to a substantial reduction in emission intensities and overall emissions: (1) number of heads per farm will remain rather constant (in order to adequate the forage supply, number of heads cannot increase), (2) the proposal reduces the breeding overhead and increases the overall efficiency indicators of the herd (pregnancy, age at first mating, age at slaughter, etc.); (3) no nitrogen fertilizer are used to foster above ground net primary productivity (ANPP) (legumes may be introduced in the sward); (4) digestibility of diet increases significantly (due to the demonstrated impact of the increase in ANPP and the use of strategic supplementation with concentrates), which reduces acetic acid formation in the rumen as a precursor of methane; (5) even if there is a rebound effect, the increase in productivity is much larger, which means more food with less emissions; (6) carbon sequestration will compensate a portion of gross emissions, contributing to a reduction in net emissions (as this carbon is stored in soils that will remain as grasslands, there is no risk of reversibility of the removals); (7) small afforestation (average 2 ha, each) for shadow and shelter in every farm, will sequester carbon in woody biomass (many paddocks in farms do not have shadow and shelter and this affects productivity).

The project will intervene in a context of strong on-going land degradation. There is wide international scientific literature showing that when organic inputs to soils increase in such circumstances, organic matter increases and so does carbon. The speed of this process is slow (C in soils is "slow in" and "fast out") particularly if the C/N ratio is high. MRV of soil carbon is not easy in the short term. The following monitoring will put in place during the project: limited sampling, modeling (calibration), particulate soil organic matter fraction monitoring (this is the fraction of organic matter that moves faster) and monitoring the change in below ground biomass (the increase in ANPP will impact the volume of roots, and monitoring this variable will provide an important proxy to determine how are we affecting the soil organic matter pool). To account for uncertainties related to current trends and sequestration rates, the following conservative assumptions have been made when computing the CC mitigation effect):

- o A low sequestration scenario was tested
- o A stable soil C baseline was used: given the strong ongoing degradation in the region, it is likely that soil C is lost to the atmosphere under the baseline scenario. Reversing the trend with CSLM would thus not only sequester C but also stop the current losses. The project thus adopts a conservative approach by omitting losses from the baseline.

The alternative scenario proposed by the Project consists of 3 Components:

Component 1: Strengthening the institutional framework and national capacities to implement the climate smart livestock management (CSLM)

This Component establishes the capacity for rolling out and replicating the CSLM technologies and practices that are developed under Component 2. This includes the mainstreaming of CSLM into national and local development plans. During full project preparation, tools to mobilize finance and create economic incentives will be identified in order to address the barrier of limited finance to large-scale upscaling, notably within the framework of the UNFCCC. Project baseline and targets, as well as the scope and objectives of the NAMA and MRV will be further refined as full Project preparation.

This component is divided in two Outcomes and three Outputs:

Outcome 1.1: Policy and planning frameworks have been strengthened to support CSLM implementation.

Targets:

Indicator 3 (CC): One MRV system for emission reduction in place and reporting verified data (for the large ruminant livestock sub-sector, as part of the NAMA development). Baseline: 4, Target: 8³⁴.

Indicator 5 (CC): Degree of support for low GHG development in the policy planning and regulatory framework. Baseline: 3; Target: 5³⁵. The indicator will measure the national CSLM strategy, and the NAMA developed.

Output 1.1.1: A national climate-smart livestock management (CSLM) strategy, designed and validated with key stakeholders. This strategy will set out how CSLM is to be extended to all small farms across the country. It will stipulate the roles of all stakeholders – governmental and non-governmental. It will identify barriers, and it will identify costs and sources of funding. The process to prepare the strategy will be facilitated by the Ministry, but will be fully participative and consultative, involving all members of the NGB, FUCREA, INIA and others.

The national strategy will include timelines and targets and monitoring requirements. Notably, it will include a component on monitoring GHG emissions, the implementation of which will directly complement and support ongoing efforts to improve the GHG inventory prepared under the UNFCCC (for example, by ensuring more accurate data on GHG emissions is available, and national declarations better reflect mitigation effect of CSLM).

Output 1.1.2: A Nationally Appropriate Mitigation Action (NAMA), including a national measuring, reporting and validation (MRV) system for the livestock ruminant sector.

The sub-sector to be targeted by the NAMA is meat production from large ruminants - cattle and sheep. The NAMA will help overcome the financial barriers to improved practices. A NAMA is a commitment (under the UNFCCC) by countries such as Uruguay to implement a set of actions that reduce GHG levels in return for finance or other incentives.³⁶ NAMAs may be implemented at either the national, sector or project level. Given the importance of the livestock sector to GHG emissions in Uruguay, and given the potential GHG reductions from CSLM, the development of a sector NAMA for livestock is a priority. Ultimately, this NAMA may be supported by either the international community (notably through the Green Climate Fund) or from domestic sources.

One component of the NAMA is the measuring, reporting and verification (MRV) system³⁷. The UNFCCC provides substantial guidance on MRV systems related to for CSLM. Drawing from the monitoring established under Output 2.1.3, the Project will help establish an MRV protocol and framework for CSLM in Uruguay. This framework will be linked to (i) the overall framework for determining the GHG inventory in Uruguay – and indeed it will directly support Uruguay's efforts to report to UNFCCC on GHG emissions; (ii) similar efforts to establish a MRV for in the forestry sector in Uruguay; and (iii) existing systems to monitor land and land degradation in Uruguay. Preparation of the MRV will be led by the Climate Change Unit in MGAP and INIA.

Subsequently, the Project will develop a NAMA proposal for submission to the UNFCCC. This will be prepared in an inter-institutional and participatory manner, and will pay appropriate attention to concurrent developments under the UNFCCC. The Project will also develop capacity to prepare and manage the NAMA, and the Project will support efforts to obtain international and domestic funding for the NAMA. The NAMA process will be led by MGAP and

³⁴ As per the scale in GEF-6 Programming Directions, page 81

(https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF6_programming_directions_final_0.pdf). Baseline: 4 refers to "Measurement systems are strong in a limited set of activities however, analysis still needs improvement; periodic monitoring and reporting although not yet cost/time efficient; verification is rudimentary/non-standardized". Target: 8 refers to "Strong standardized measurements processes established for key indicators and mainstreamed into institutional policy implementation; reporting is widely available in multiple formats; verification is done for a larger set of information".

³⁵ As per the scale in GEF-6 Programming Directions, page 83-84

(https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF6_programming_directions_final_0.pdf). Baseline: 3 refers to "Policy/strategy proposed and consultations ongoing (quality is good and addresses the main climate change mitigation issues related to the relevant sectors". Target: 5 refers to "Strong policy/strategy adopted and institutional capacity for implementing key policy directives strengthened with adequate budget allocations".

³⁶ Currently, UNFCCC negotiations have not precisely established the NAMA mechanism nor have they established a format or content for NAMA proposal.

³⁷ As CSLM leads to reductions in GHG emissions and increased GHG sequestration, ultimately, it may be possible to generate other forms of carbon finance for CSLM. This MRV system will make available accurate, updated, certified data on changes in GHG emissions and so should be of use for accessing all sources of carbon finance.

MVOTMA.

Output 1.1.3 Measurement of GHG emissions reduction and carbon sequestration

Outcome 1.2: National capacities have been strengthened to support CSLM implementation.

Output 1.2.1: Capacities developed to effectively support the implementation of CSLM with a gender-sensitive perspective.

Target: 6 national organizations (MGAP, NGB³⁸, FUCREA³⁹, INIA⁴⁰, CNFR⁴¹, IPA⁴², etc) with strengthened capacities.

National Organisations (NGB, FUCREA, CNFR, INIA, IPA, etc) effectively supporting CSLM. Capacities to support implementation include: coordination, monitoring, analysis, communications, technical assistance, resource mobilization, social and economic evaluation. Under this Output, the Project will support the MGAP with its aim to transform the NGB in order to enable it to have an impact at both the policy level and at the pragmatic level (i.e. supporting those who actually manage land). This will include awareness raising and information campaigns and training for the NGB members on CSLM, its components and its benefits. This Output also includes institutional support to FUCREA and INIA in the form of: awareness and advocacy campaigns for senior staff; targeted training on CSLM for technical staff, and connecting them to data and information sources on GHG and land degradation issues. Collectively, this Output will establish a series of national level organizations, and it will therefore facilitate the mainstreaming of CSLM into national and local development plans. Other organizations may benefit, including IPA, FA, CNFR, etc.

Output 1.2.2: A training program in place, to supporting the rolling out of improved and climate- smart approaches to livestock management.

Target: 60 extension workers from 5 organizations trained

Sixty extension workers will be trained in supporting the rolling out of improved and climate smart approaches to livestock management. In Uruguay, the extension system consists of 100 field technicians under the MGAP and many private technicians. In order to provide support to small farmers, the MGAP technicians work with the private technicians, who, in turn, work with the small scale farmers. In some cases the private technicians are paid by the farmers directly, more often they are paid through a national programme or an internationally supported projects. Under this Output, working primarily through FUCREA, a group of 60 government and private technicians will be trained in how to roll out the technologies, practices and measures that have been developed under Component 2.

The **GEF incremental financing** by USD 554,077 will support that an UNFCCC-accredited MRV protocol and framework are established, and costs associated with developing and pursuing a NAMA and its submission to UNFCCC, and the specific costs of developing market based incentives for global environmentally friendly livestock and meat products.

GEF resources will also support the specific costs of transforming and operationalizing the NGB around CSLM, of mainstreaming CLSM into FUCREA and INIA operations, of training technicians, and of developing the CSLM strategy. An estimated 50% of these additional costs are to be covered by GEF. The remainder is covered by ongoing Government and Farmers Groups activities.

Co-financing of Component 1 will be provided by MGAP and DGDR (training to the extension network as described in section A.1.2). It also includes similar contributions from the NGB, FUCREA, INIA. It also includes some support under the ongoing *Sustainable Management of Natural Resources and Climate Change* WB-project to private technicians, and potentially some supported from the forthcoming WB loan project, and the ongoing

³⁸ National Grasslands Board

³⁹ Uruguayan Federation of CREA Groups (Livestock and Agriculture producers)

⁴⁰ National Institute of Agricultural Research.

⁴¹ National Commission of Rural Support

⁴² Agricultural Plan Institute

project supported by the Government of New Zealand (UFIP).

In particular for Outcome 1.1.2, MGAP and the National Institute for Agricultural Research (INIA) will provide co-financing through the use of existing structures in Uruguay to monitor land, land-use and the livestock sector within the. MVOTMA - as the UNFCCC Focal Point - will provided in-kind co-financing (staff time) to coordinate activities and monitoring under the UNFCCC.

In addition, FAO is bringing USD 210,000 of cash co-financing through the Project *Supporting Developing Countries to Integrate the Agricultural Sectors into National Adaptation Plans (NAPs)* (UNFA/GLO/616/UND), which will be implemented in the period 2015-2018. One of the components of this project will support the strengthening of capacities of the Ministry of Agriculture and Livestock to integrate climate change adaptation concerns in adaptation planning at the sub-national and local levels. This FAO project will also support adaptation mainstreaming into national planning and budgeting, and will provide a potential model for the agriculture sector. Uruguay will be one of the pilot countries of this global project. Since Climate-smart agriculture covers both climate change adaptation and mitigation, this FAO project will co-finance adaptation activities, while GEF project will support mitigation activities.

Component 2: Development and deployment of CSLM technologies and practices at field level

Component 2 is the field intervention of the project proposal. Project baseline and targets will be further refined as full Project preparation. Component 2 is divided in one outcome and three outputs:

Outcome 2.1: Sustainable climate-smart livestock management (CSLM) has been implemented in degraded/degrading lands.

Targets:

Indicator LD 1.1: Land area under effective rangeland management practices and/or supporting climate-smart agriculture: 35,000 hectares of grasslands under CSLM.

60 small-scale farm owners have actively implemented CSLM in those 35,000 hectares.

Indicator 1 (CC): a range of 100,000 to 300,000 t CO_{2eq} tons of GHG reduced or avoided

Indicator 2 (CC): Volume of investment mobilized and leveraged by this GEF project for low GHG development (disaggregated by private and public investment). To be calculated during full project preparation including both private and public investment.

Indicator 4 (CC): Deployment of low GHG technologies and practices: b) additional 35,000 has under low GHG (CSLM)⁴³ management practices.

As a result of the Project interventions, working with 60 small-scale farmers from the Basalt, Eastern Hills and Central regions, GHG emissions will be reduced, sustainable incomes will be increased, and 35,000 hectares of previously degraded grasslands will be of improving quality and will have its ecosystem services restored. These 60 small scale farmers will actively implement CSLM over 35,000 hectares. The farmers will be implementing the measures identified through the strategies (2.1.1). These measures may include improved grazing management, pasture planting/improvement (improve diet quality), and animal health measures to reduce mortality, improve fertility and performance. In general the revised practices will not be dependent on costly equipment and will require only small financial investments, they will notably require the time, land and animals of the farms to succeed. Productivity will be increased and global environmental benefits realised.

The following Outputs will be delivered.

⁴³ Selected from GEF-6 Programming Directions, page 82

(https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF6_programming_directions_final_0.pdf)

Output 2.1.1: Short and medium-term farm level strategies, implemented with a gender perspective.

Target: 60 strategies containing improved practices and technologies, implemented by farmers.

This output will consist of 60 short-to-medium term farm level strategies. These will be developed with the participation of the farmer families and the locally-based technical advisor. The implementation of these strategies will serve to both restore degraded areas, and to prevent or avoid further land degradation. The specific steps include: (i) mapping the farm; (ii) surveying farm technical and financial parameters; (iii) the identifying degraded areas; (iv) identifying basic infrastructure barriers; (v) assessing the biodiversity condition of grasslands at paddock level and native forests that provide protection, shelter and shade; (vi) participatory assessment of constraints and opportunities, and; (vii) determination of the climate smart technologies, practices and measures to be tested. 20 percent of selected farms will be women-headed.

Output 2.1.2: A capacity development program focused on the application of the CSLM technologies and practices.

Target: At least 120 farmers and farm employees, trained

At least 120 farmers and farm employees will be trained in the application of the CSLM technologies and practices. The first step will be to prepare the training material. At least two farmers from each of the 60 farms will then receive on-the-job and informal classroom training on the improved and climate smart approaches to livestock management. This will enable the farmers to implement the strategies (from 2.1.1). At least 30 percent of trainees will be women.

Output 2.1.3: On-farm monitoring system, in place (to monitor GHG emissions, adaptation strategies, financing, land degradation and biodiversity).

Target: System present at 60 small-scale farms

At the 60 farms, on-farm monitoring of variables related to GHG emissions, adaptation, finances, land degradation and biodiversity. The project will support the existing technical networks to support and monitor the 60 reference farms. The strategy (2.1.1) will have determined the variables to be monitored. This monitoring will notably provide some data to feed into the MRV system (Output 1.1.2). The first step will be to determine a monitoring framework covering the 60 farms.

The **GEF incremental financing** by USD 1,247,619 will support the development of the CSLM packages in a participatory manner, the provision of CSLM dedicated training, and the establishment of a comprehensive, farm-level monitoring system that covers GHG emissions.

Co-financing of Component 2 will be provided by MGAP and DGDR, and by Farmers Groups (through extension provided to farmers support in project intervention regions - see section A.1.2 above). Co-financing at field level will also come from the project *Sustainable Management of Natural Resources and Climate Change* project funded by the Government and a World Bank loan, which can finance investments in the pilot farms. This provides significant investment, for example to water storage and paddocks. The forthcoming WB-supported loan project will also contribute to this Component. The Government of New Zealand will provide co-financing through the project described in A.1.2.

In addition, FAO is bringing USD 210,000 of cash co-financing through the Project *Supporting Developing Countries to Integrate the Agricultural Sectors into National Adaptation Plans (NAPs)* (UNFA/GLO/616/UND), which will be implemented in the period 2015-2018. Another component of this project will support the testing and costing of adaptation options in pilot agricultural-based livelihood sub-projects, with the idea of replicating them in other projects at the district/province levels. Uruguay will be one of the pilot countries of this global project. Since Climate-smart agriculture covers both climate change adaptation and mitigation, this FAO project will co-finance adaptation activities, while GEF project will support mitigation activities.

Component 3: Monitoring, evaluation and knowledge-sharing

Under this Component, the Project implementation and M&E systems will be supported. In addition, it will develop the extension material necessary for Uruguayan extension workers to replicate, something which is realistic given the low cost of many of the technologies and new management systems. There are one outcome and four outputs

under this Component:

Outcome 3.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated

Output 3.1.1 A set of manuals and media products, for use by extension workers and producers, that capture and describe the improved practices, measures and technologies.

Under Outcome 2.1 (notably Outputs 2.1.2), the project, through its consultative and research-action approach, will have developed an affordable package of measures, practices and technologies that have been, tested, refined and implemented over 35,000 hectares under diverse socio-economic and ecological conditions. In Output 3.1.1, this will be transformed into a set of products for use by extension agencies. Many extension workers will have been trained in their use (Output 1.2.2) and will be immediately ready to start disseminating to new farms.

Output 3.1.2: Project Monitoring & Evaluation Plan and system, in place.

Output 3.1.3: Knowledge-sharing with other countries and dissemination of verifiable data and tested methodologies.

The project will implement novel approaches to the simultaneous improvement of productivity, adaptation to and mitigation of climate change. It is thus of critical importance to ensure strong linkages with teams carrying out similar work (e.g. FAO/GEF Ecuador project # 4775 and a Niger project under a World Bank loan) and a proactive dissemination of results through the Global Agenda for Sustainable Livestock (GASL), the Livestock Environmental Assessment and Performance (LEAP) Partnership and the Global Alliance for Climate Smart Agriculture (GACSA). Given that the project will be connected to other initiatives on CSLM, a regional conference would be organized with support from FAO and the Agricultural South Council (CAS). The project will seek to link its actions with the Livestock Research Group of the Global Research Alliance on GHG in Agriculture.

Output 3.1.4: Project Mid-term and Final Evaluations.

Output 3.1.5: A Communication Strategy, implemented

The systematic capturing of lessons, followed by their documentation and strategic dissemination will receive particular attention, in connection with output 3.1.3. The Communication Strategy will also create linkages with regional and global lesson learning processes, for example by linking to the FAO-promoted Global Agenda of Action in Support of Sustainable Livestock Sector Development (GASL). A set of multi-media products to raise public awareness and public appreciation of forests (e.g. video, website, posters etc.) will be produced.

The **GEF incremental financing** in Component 3 by USD 190,476 will be used to support project M&E system, lessons learned extraction and systematization, and knowledge-sharing mechanisms.

Co-financing of Component 3 will be provided by FAO (through GLEAM, LEAP, and other CSA livestock related initiatives). FAO supports global networking and lesson-learning mechanism. MGAP and MVTOMA will also provide co-financing through institutional monitoring systems, knowledge management, awareness raising and communication personnel.

Co-financing will be further detailed during full project preparation.

A.1.4 Global environmental benefits

Climate Change Mitigation – Reducing GHG Emissions and Increasing Carbon Sequestration.

One pathway to reducing GHG emissions is by reducing the intensity of emissions from enteric fermentation in cattle and therefore reducing the amount of CH₄ emitted by each animal during its life cycle. These gains are to be achieved by a combination of effects: slightly reducing the herd size, improved grazing management, improving digestibility of pastures, improving food and forage supply per animal and improve fertility and performance. This will improve indicators like weaning rate, slaughter age, heifer mating age, and off-take rate. Together, these

measures will greatly increase meat production and greatly lower the intensity of GHG emissions per unit of meat production. However, as opposed to the baseline, as the overall meat production will greatly increase (from 12,600 to over 17,800 tons, see Table 1 below), there may be a slight increase in overall GHG emissions (see Table 1).

Another pathway to reducing GHG levels is through increasing carbon sequestration of soil by reversing land degradation. When adequately managed, the grasslands soils can absorb carbon. However, overgrazing and land degradation has stopped or even reversed that process in most of the Project sites. An initial analysis suggests that the improved land management to be developed by the Project could lead to increase carbon sequestration of between 0.2 t C/ha/year (low sequestration scenario) and 0.6 t C/ha/year (high sequestration scenario).

Table 1 summarizes the anticipated effects of the Project (as opposed to the baseline scenario without the Project) on meat production and GHG net emissions, over the 4 years of the Project. The total reduction in GHG is estimated to be in the range 1.1 to 3.6 million t CO_{2eq}.

Table 1: Project Global Environmental Benefits - CC Mitigation

| | Baseline scenario | With Project (low sequestration scenario) | With Project (high sequestration scenario) |
|---|-------------------|---|--|
| Direct Impact (35,000 ha) | | | |
| Meat production (t live weight) | 12,600 | 17,848.96 | 17,848.96 |
| GHG emissions (t CO _{2e} over project duration) | 300,510 | 303,432 | 303,432 |
| C sequestration (t CO _{2e}) | - (1) | 102,667 | 308,000 |
| GHG emissions intensity - C sequestration excluded (kg CO _{2e} per Kg live weight) | 23.85 | 17.00 | 17.00 |
| Net GHG emissions intensity - C sequestration included (kg CO _{2e} per Kg live weight) | 23.85 | 11.25 | (0.26) |
| Net GHG emissions (t CO _{2e}) | 300,510 | 200,766 | (4,568) |
| Direct mitigation effect (t CO_{2e}) | | 99,744 | 305,078 |
| In-direct Impact (400,000 ha) | | | |
| Meat production (t live weight) | 144,000 | 182,400 | 182,400 |
| GHG emissions (t CO _{2e} over project duration) | 3,434,400 | 3,648,000 | 3,648,000 |
| C sequestration (t CO _{2e}) | - | 1,173,333 | 3,520,000 |
| GHG emissions intensity - C sequestration excluded (kg CO _{2e} per Kg live weight) | 23.85 | 20.00 | 20.00 |
| Net GHG emissions intensity - C sequestration included (kg CO _{2e} per Kg live weight) | 23.85 | 13.57 | 0.70 |
| Net GHG emissions (t CO _{2e}) | 3,434,400 | 2,474,667 | 128,000 |
| Direct mitigation effect (t CO_{2e}) | | 959,733 | 3,306,400 |
| Total mitigation effect (t CO_{2e}) | | 1,059,478 | 3,611,478 |

(1) in the absence of data on current degradation levels and trends, a conservative assumption is to assume no soil C loss in the baseline. This assumption will be verified and improved during the project preparation phase.

These figures are estimates. The monitoring system to be established under this Project will ensure that good data is collected related to these figures, and provide more accurate and reliable figures.

It is also noted that the improved management practices and technologies should significantly reduce CH₄ and N₂O emissions from animal manure. However there are no reliable estimates available for this, hence this is not included in Table 1. The Table 1 figures can thus be considered conservative, and will be further developed during full Project preparation.

Expected project carbon benefits and GHG emission reduction will be further analyzed and quantified during full project preparation. As suggested by GEFSEC, the PPG resources will be invested to better understand: i) the emissions profile of small- and medium-scale farmers; ii) revise the GHG emission estimates with more information on baseline emissions and the initial scenario in the grasslands; iii) establish GHG accounting mechanisms on practices to be implemented by the project and further followed-up through the scaling up strategy (see NPTTD details below in Annex II).

Land Degradation

The Project's principle grass roots interventions (Component 2) focus into 35,000 hectares, of these 5,000 are to be 'seriously degraded' and 30,000 'degraded'. At these sites, the Project will help stop activities that harm land and introduce activities that restore degraded land. Activities will include improved grazing management, notably lowering stocking levels, introducing rotation and improving grazing resources. Other activities will positively support land restoration, such as planting perennial grasses (e.g. tall fescue) and re-introducing native species that actively improve the soil quality, and reseeded. In turn, the project will directly result in increased ecosystem services, such as soil water retention, soil fertility and forage production over 35,000 hectares.

Potential for scaling-up is big since the factors addressed through this Project are pertinent in over 8 million hectares of grasslands. Hence, if, through upscaling, the Project can influence 5% of this land, it can have a positive impact on land degradation on an additional 400,000 hectares.

The monitoring system to be established under this Project will be aligned to, and supportive of, existing systems to monitor land status in Uruguay, both in the core 35,000 hectares and in additional areas. Hence, the Project's impact at all points should be monitored effectively.

Environmental Co-Benefits

The Project will have co-benefits in terms of biodiversity conservation and increasing adaptation to climate change.

Biodiversity: Uruguay's grasslands are rich in biodiversity and are considered unique by many experts⁴⁴. Uruguay contains remnants of the original *Argentine Mesopotamian Grasslands*. Habitats in Uruguay are varied and interspersed, with series of localized geographic features, each including rocks, hills, small ravines and rivers. There is also rich and diverse soil types. These mosaic patterns underlie and define the uniqueness and importance of the grasslands biodiversity. From a botanical perspective, Uruguay has over 2,500 species of which the great majority are herbaceous species or shrubs corresponding to the grasslands savanna ecosystems⁴⁵.

The Uruguayan grasslands have undergone systematic decline and deterioration, mostly due to the unsustainable

⁴⁴ See, for example, Dinerstein, E. et al in "A Conservation Assessment of the Terrestrial Ecoregions of Latin America and the Caribbean" (1995).

⁴⁵ Sources: "Estudio Ambiental Nacional" and "Propuesta de Estrategia Nacional para la Conservación y Uso Sostenible de la Diversidad Biológica del Uruguay".

grazing practices on *grasslands*. This Project aims to stop and reverse this, thereby helping considerably to stop the loss of biodiversity.

Adaptation to climate change: The Project interventions will increase the adaptive capacity of small farmers and improve ecosystem resilience over the concerned grasslands, thereby contributing to adaptation to climate change.

A.1.5 Innovativeness, sustainability and potential for scaling up

Innovativeness: At the global level, the approach of climate smart agriculture (including livestock), covering the nexus of food security, climate change and sustainable resource management, emerged quite recently. Hence, it is recognized that in practical terms there are many lessons to be learnt in this field. As such, all projects addressing climate smart agriculture are considered innovative. Recognizing this, the GEF has made climate smart agriculture (including livestock management) central to its strategies for natural resource management under GEF 6. This applies in both the climate change and land degradation focal areas. This will be one of the first GEF projects to implement these new GEF strategies.

In Uruguay, in the traditional livestock management systems, the stocking rate is rather constant, normally high, and does not take into account appropriate pasture management practices. This traditional management focusses purely on the herd animals. The main technological improvement over recent decades has been small areas of sown pastures. However, the overall economic and ecological context to livestock management has changed dramatically over the past decade. Innovative measures are required to react to this rapidly changing context, and this Project provides those required innovations.

Over the last 15 years, Uruguayan research institutions have developed a technological approach to livestock raising based on rangelands ecology, animal behaviour during grazing, ecosystem services (including carbon sequestration) and rural extension techniques. This holistic, farm level approach to management goes far beyond managing the herd animals. This Project will help fine tuning, testing and disseminating this innovative approach.

Sustainability: The Project has sustainability at the core of its design. Most of the Project funds focus on a selected set of 60 small farmers. Sustainability with this group of farmers will be achieved by developing and demonstrating livestock management mechanisms that rapidly make economic and financial sense to these farmers, and by providing the necessary training so that these farmers can master the new livestock management systems after the Project. Hence, this group of 60 farmers will have both the motivation and the ability to sustain their new management processes.

Sustainability also means sustaining the new approaches to new areas, by empowering public and private organizations to do so. Component 2 focuses very much on that, notably providing MGAP, DGDR, FUCREA and the Farmer groups with the tools, knowledge and skills to maintain and sustain the new approaches.

Upscaling strategy:

The Project has great potential for subsequent upscaling. The Project intervenes directly on 35,000 hectares of the 8 million concerned hectares in Uruguay. The total area that could be potentially affected by new technologies and practices is 8 million hectares. This is the area of *grasslands* managed by small, family and medium-sized farmers. It is estimated that the project can, indirectly, have an impact on 5% of this, i.e. 400,000 hectares. The Project takes a proactive approach to scaling up, notably through the following Outputs and Outcomes:

- Output 1.1.1, the CSLM policy framework;
- Output 1.1.2, the NAMA;
- Output 3.1.1, the manuals and tools to mobilize private and public funding to support the upscaling of CSLM.

The Project Plan of Action from Demonstration to Scale will be based basically on: i) the fact that the adoption of CSLM is cost-effective (see Annex I); and ii) the launch of the National Program of Technology Transfer and Diffusion (NPTTD).

Upscaling will be sought through a series of targeted measures. One key measure is to seek climate change mitigation related funding through the UNFCCC's National Appropriate Mitigation Actions (NAMA) mechanism. The project uses the 60 farms as the flagships of a much more ambitious strategy to produce more beef without any significant increase in emissions. The GEF project is the cornerstone of the sectoral policy designed for a technical revolution in Uruguayan beef production. Annex I provides information on the impact of the project on productivity and net income of farmers. As the profitability of the beef business improves with the technical change and net income is more stable as the farms builds resilience, it is expected that spill over be high, and it will be fostered by the MGAP policies including, beyond a NAMA, two other relevant sources: a public-private funded National Program of Technology Transfer and Diffusion (NPTTD) (estimated allocation: US\$ 10 million yearly) and a combination of GEF (15 million US\$ in total) and World Bank (at least 20 million US\$). The NPTTD is described in detail in Annex II of this PIF. This GEF project will be a key source of knowledge, lessons learned and tools to better design and implement the scaling-up activities with support of the NPTTD. The full coordination mechanism will be further analysed and defined during full project preparation.

GEF Tracking Indicators

The Project contributes to two GEF focal areas: climate change mitigation, and land degradation focal.

For **climate change mitigation**, the Project will contribute to Program 1 (Promote timely development, demonstration, and financing of low-carbon technologies and mitigation options), and Program 4 (Promote conservation and enhancement of carbon stocks in forest, and other land-use, and support climate smart agriculture). The selected indicators for this are: CCM mandatory indicators 1, 2 and 3; plus CCM indicators 4 and 5. The Project management unit will directly monitor the types and numbers of low GHG technologies and practices, the number of hectares over which they are deployed, and their adoption at the national level through policies, plans or programmes. Project baseline and targets will be further refined during full project preparation.

For **land degradation**, the Project will contribute to Program 2 (Climate Smart Agriculture). The selected indicator for this is LD Indicator 1.1. The Project management unit will directly monitor the area of land that adopts climate smart agriculture as both direct and indirect result of the Project interventions. Project baseline and targets will be further refined during full project preparation.

2. Stakeholders

Will project design include the participation of relevant stakeholders from civil society and indigenous people (yes/no). If yes, identify the stakeholders and briefly describe how they will participate in project design:

Table 2 lists the main stakeholders and stakeholder groups, introduces their relevant mandate and how they may be involved in the Project. No indigenous peoples are involved in the project intervention area. A full social analysis, including stakeholder analysis, will be conducted during full project preparation.

Table 2: Project stakeholders

| Stakeholder (group) | Mandate (or activities) | Potential role in Project |
|---|---|---|
| Ministry of Livestock, Agriculture and Fisheries (MGAP) and its Planning and Policies Office (OPYPA). | Responsible for the strategic development of all aspects of the livestock sector, including policy and providing technical support to stakeholders. | <ul style="list-style-type: none"> • Overall project coordination Responsible for project success to Government of Uruguay. • Provide technical and logistical support and so a co-financier. • Contribute to assessing impact of the project; • Benefit from capacity building activities. |
| The Agricultural Unit for Climate | Responsible for mainstreaming CC | <ul style="list-style-type: none"> • Responsible for technical |

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| <p>Change of the MGAP (UACC)</p> | <p>issues in policies and programmes of the Ministry.</p> <p>Participated in the design of the PNRCC (see below), and represents the MGAP at national and international for a level on climate change.</p> <p>Liaises with the Ministry of Housing, Land Planning and Environment (MVOTMA) on issues related to climate change from the agricultural perspective.</p> | <p>guidance of the project;</p> <ul style="list-style-type: none"> • Benefit from capacity building. |
| <p>The Rural Development Directorate of MGAP (DGDR)</p> | <p>Have the role of promoting rural development and ensuring equitable access of smallholders and rural workers to development opportunities.</p> <p>Started operations in 2008 focusing on the inclusion of local organizations in the policy dialogue and enforcing participatory approaches and decentralization.</p> | <ul style="list-style-type: none"> • Support technically all activities; • Benefit from capacity building; • Responsible for promoting upscaling and replication; |
| <p>The unit of MGAP responsible for natural resources: soils, water and grasslands (RENARE). RENARE notably includes the recently created Grasslands Division.</p> | <p>Responsible for policies for the stewardship of natural grasslands.</p> <p>Also a key player on the National Grasslands Board (NGB).</p> <p>The Soils Division of RENARE is the unit responsible for soil conservation policies.</p> | <ul style="list-style-type: none"> • Responsible for technical guidance of the project; • Benefit from capacity building. |
| <p>Natural Grasslands Board</p> | <p>Responsible for coordination across stakeholders.</p> <p>Also integrates policy, research and technology transfer institutions.</p> | <ul style="list-style-type: none"> • Key role in coordination and ensuring participation; • Will benefit from capacity building • Role in supporting replication and upscaling, through its network. |
| <p>Local level agricultural development councils, at Department level (CDA) and at local level (rural development boards or MDR).</p> <p>There are CDAs established in all 19 Departments of the country and 36 MDRs operating at present.</p> | <p>These are innovative and participatory mechanisms, created in 2007. The CDA and MDR are the forum where grass-root organizations and public institutions work together to translate national policies into meaningful local actions.</p> <p>These also support local networks and they support 315 farmer groups and organizations (see below).</p> | <ul style="list-style-type: none"> • Responsible for ensuring participatory approach at local level; • Responsible for rolling out Project activities at local level; • Will benefit from capacity building and training. |
| <p>The National Institute for Agricultural Research (INIA).</p> | <p>It is dedicated to generating and adapting knowledge and technologies</p> | <ul style="list-style-type: none"> • INIA will play a key role in the scientific back-up of the project |

| | | |
|---|--|---|
| <p>INIA organises its activities into 11 major programs, four of which are directly related to this project: Family Farm Production, Meat and Wool Production, Pastures and Forages, and Production and Environmental Sustainability.</p> | <p>to contribute to the sustainable development of the agricultural sector and the country, considering state policies, social inclusion and market and consumer demands.</p> <p>It has six experimental stations in different areas of the country. It also has a climate unit (GRAS) dedicated to monitoring climate, water balances in soils, vegetation quality and other environmental variables.</p> | <p>and in the monitoring activities and in the development of the tools for the MRV system.</p> |
| <p>The Institute of Livestock Technology Transfer (IPA)</p> | <p>Undertaking research and provides training and support to livestock farmers.</p> | <ul style="list-style-type: none"> • IPA will play a key role in the scientific back-up of the project |
| <p>Ministry of Housing, Land Planning and Environment (MVOTMA)</p> | <p>Responsible for environmental protection.</p> <p>Houses the focal points for the global conventions on climate change, biodiversity conservation and land degradation.</p> <p>Houses the GEF focal point.</p> | <ul style="list-style-type: none"> • Overall policy guidance to Project; • Facilitate coordination with all other activities under the global conventions, especially the UNFCCC (e.g. inventories). |
| <p>Climate Change Division (DCC) of MVOTMA.</p> | <p>The Focal Point for the UNFCCC</p> | <ul style="list-style-type: none"> • Coordination with other CC initiatives in Uruguay; • Technical guidance to the MRV and NAMA outputs, to ensure they are in line with UNFCCC expectations and developments. |
| <p>The Uruguayan Federation of Regional Centres of Agricultural Experimentation (FUCREA). Established in 1966</p> | <p>Includes 28 farmers groups, each with on average 10 to 12 members. The methodology used by FUCREA to work with groups and promote innovation has proven to be successful.</p> | <ul style="list-style-type: none"> • Coordination of farmers; • Delivery of training and capacity building; • Delivery of other support to local partners; • Will benefit from capacity building. |
| <p>CNFR</p> | <p>Includes 49 small scale farmers' organizations in areas of extensive cattle and sheep production. These organizations gather and represent more than 9,000 cattle and sheep farmers, mostly small-scale.</p> | <ul style="list-style-type: none"> • Coordination of farmers; • Delivery of training and capacity building; • Delivery of other support to local partners; • Will benefit from capacity building. |
| <p>Other Farmers Organizations and Farmers Groups</p> | <p>Most small scale and family farmers are organized into Organizations or Groups, each consisting 10-15 farmers on average. These are mechanisms for obtaining technical advice and other support services, and dialogue.</p> | <ul style="list-style-type: none"> • Beneficiaries of capacity building; • Delivery of training and other support to farmers. |
| <p>Farmers</p> | <p>Farmers are the main stakeholders</p> | <ul style="list-style-type: none"> • 60 small and medium size |

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| | involved in land management and in livestock management. | farmers will benefit from support and capacity building; <ul style="list-style-type: none"> • The 60 targeted farmers will be responsible for helping to identify the optimal approach to CSLM, including specific practices and technologies. They will also be involved in the development of the MRV system; • The 60 targeted farmers will be responsible for transforming land management systems, and adopting CSLM. |
|--|--|--|

During project implementation, a Project Steering Committee will be established including MGAP (UACC, OPYPA, UGP, DGDR, and RENARE) and INIA. This committee will consult and receive the advice of the other institutions involved i.e. MVOTMA (DCC, SNAP) and FUCREA.

3. Gender Considerations

Are gender considerations taken into account (yes/no)? if yes, briefly describe how gender considerations will be mainstreamed into project preparations, taking into account differences, needs, roles and priorities of men and women.

Women and men, due to their different economic and social roles and experiences, have differentiated responsibilities and capacities in terms of CSLM. On the one hand, action to develop CSLM may lead to gender-positive impacts in rural areas in Uruguay. The Project will seek to optimize this. On the other hand, women (as well as men) can be key agents of change in rural areas, helping to transform practices, and this possibility will be explored through the Project. Accordingly, gender mainstreaming (and accordingly women's empowerment) has been integrated into the most important Project outputs and activities.

During full project preparation a social analysis, including a gender analysis, will be undertaken by a social scientist to determine: the number of female farmers; the number of women-farmer headed households; the differentiated impacts of land degradation on farmer women; the different knowledge base of men and women; strategies for mainstreaming gender into livestock management; strategies for optimizing the participation of women in livestock management and optimizing their economic benefit. This will be done at two levels: national (in a strategic manner) and at select farms. This will lead to the selection of at least one gender indicator.

4 Risks

Indicate risk, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved and, if possible, propose measure that address these risks to be further developed during the project design (table format acceptable).

The initial risk assessment has tentatively identified the risks and tentative management strategies. These are set out in the Table 3 below. These will be validated during full Project preparation. If required, the risk management strategies will be elaborated, in line with the Environmental and Social Standards of FAO. Further, additional assessments will be undertaken to identify any additional risks.

Table 3: Risk analysis

| Risk | Level | Management Strategy |
|------|-------|---------------------|
|------|-------|---------------------|

| | | |
|---|---------------|--|
| <p>Climate change and climate variability</p> <p>Should the Project target areas experience extreme drought during the Project intervention, the measures (technologies and practices) introduced by the Project may not succeed.</p> | <p>Medium</p> | <p>Small and medium size farmers regularly experience harsh conditions and have experienced drought previously, without it stopping their activities.</p> <p>The selection of sites across the country, in different agro-ecological zones, should ensure that at least a good proportion of the farmers are able to introduce and test the technologies and practices.</p> <p>The Project management will monitor the situation closely and take remedial action if necessary.</p> |
| <p>Animal disease epidemic</p> <p>Should one or more of the Project target areas experience a disease epidemic, it will make it very difficult to test and develop new technologies and practices. It may also make the farmers more risk averse, and less willing to participate in the Project.</p> | <p>Medium</p> | <p>The only epidemic that could affect the project is Foot and Mouth disease. This would have a high impact. However, the likelihood of this happening is low, as Uruguay has adequate prevention for this disease (i.e. vaccination, border controls).</p> <p>The Project management will monitor the situation closely and take remedial action if necessary.</p> |
| <p>No farmers interest</p> <p>The Project approach is participatory and will require a full participation from farmers. However, small farmers are known to be (i) risk averse and (ii) short of time, and may not be willing to participate.</p> | <p>Low</p> | <p>The Project will select 60 farmers from diverse regions of Uruguay. Only interested and motivated farmers will be selected.</p> <p>The Project is to design measures and approaches that ultimately make good economic and financial sense to farmers, and this should ensure that over time most farmers wish to participate.</p> |
| <p>The enabling and institutional measures proposed by the Project are not adopted.</p> <p>Under Component 1, the Project proposes enabling and institutional measures. These include the MRV and NAMA proposal – both of which will require some form of formal approval, and the incentives, which will require regulatory or policy decisions by government authorities. There is a low risk that these will not be adopted. Likewise for the proposed CSLM Strategy in Output 1.1.1</p> | <p>Low</p> | <p>The Project adopts a highly participatory approach and hence most potential stakeholders are involved from the early stage, and are therefore favourable to the Project's approach. The Project will also support the NGB, and the NGB should be a key player in overcoming any institutional resistance. The strategy for up-scaling will take place even if NAMA is not funded because MGAP will put in place a National Program of Technology Transfer and Diffusion (NPTTD), allocating significant amount of resources from public and private sources to support it. The amount of resource for the NPTTD will be at least 10 million US\$ annually. In addition, the MGAP plans to apply to a GEF loan of 15 million US\$ to provide incentives to farmers to invest in subsidiary farm infrastructure (subdivision of paddocks, water, shadow and shelter).</p> |
| <p>C sequestered in soils is uncertain and may be released.</p> | <p>Low</p> | <p>The project will intervene in a context of strong on-going land degradation. There is wide international scientific literature showing that when organic inputs to soils increase in such circumstances, organic matter increases and so does carbon. Reversing the degradation trend with CSLM would thus not only sequester C but also stop the current losses. A conservative approach is nevertheless adopted by omitting losses from the baseline. In addition, and regarding reversibility of removals, the project will not plough the land and will eliminate overgrazing which</p> |

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| | | is the main driver of soil degradation. |
| Rebound effect: It is likely that the project will contribute to increasing the volume of production, given the financial profitability of CSLM practices. This raises the risk of a potential increase of overall GHG emissions, rather than the expected decrease. | Low | <p>Overall emissions from the livestock sector can be expressed as the production volume times the average emission per unit of product (Emission intensity – Ei).</p> <p><u>Within the project area</u> (35,000 ha). As shown in Figure 2 of Annex I (see below), it is estimated that under project implementation, the volume of production will grow by 42% through productivity gains (from 12,600 ton live weight to 17,849), while emission intensity will decrease by 53 % in the low sequestration scenario (23.85 to 11.25) and would be completely cancelled in the high sequestration scenario – even resulting in a net mitigation effect of livestock production. There will thus be no increase in absolute emissions within the project area.</p> <p>Considering now the possible effect at <u>national level</u>, it may be envisaged that because CSLM practices are more profitable than current practices, the project will contribute to accelerating the growth of the national beef sector, leading to more animals in production. This could result in a rebound effect whereby even if Ei goes down, the overall growth in production offset this trend and results in an increased amount of emissions. However, this situation should be compared against a baseline in which the beef sector is likely to grow anyway (see Annex I), driven by national and international demand (global meat consumption is expected to nearly double between 2005 and 2050). Without the project, the sector's growth would take place under Ei levels close to current ones. It is thus unlikely that any possible rebound effect causes greater absolute emission increases than the "no project" scenario.</p> |

5. Coordination

Outline the coordination with other relevant GEF financed and other initiatives.

The MGAP and FAO will be directly responsible for coordination. FAO will lead in ensuring coordination with international partners and initiatives, whereas MGAP will ensure coordination with national and local partners and national initiatives.

Within Uruguay, the proposed Project is part of a series of activities to support rural areas in addressing the natural resource management challenges related to land degradation and climate change. MGAP will ensure close coordination with these. These include:

- “Building Resilience to Climate Change and Variability in Vulnerable Smallholders” (Adaptation Fund);
- “Sustainable Management of Natural Resources and Climate Change” (Government and World Bank);
- “Rural Productive Development Program” (Government and IDB);
- “Green Accounting Project” (World Bank technical assistance project). This project is developing indicators for a green accounting system and includes a component on livestock. This could ultimately be linked to the work on MRV under Outcome 1.1;
- Uruguay Farm Improvement Project, supported by the Government of New Zealand.
- Two studies on Index-Based Insurance Schemes financed by diverse external institutions: a) excess rainfall damage in horticulture, already implemented (with support from IFPRI and IDB), and b) Drought insurance based on Vegetation Index (NDVI), which is in design phase.

MGAP, with support from FAO, will ensure an appropriate coordination, information exchange and synergizing with:

- *Strengthening the Effectiveness of the National Protected Area System by Including a Landscape Approach to Management* (implemented by UNDP with USD1.7 million of GEF support, and started in 2014). The aim is to develop and promote a landscape approach to protected area (PA) management, and to strengthening the effectiveness of PAs as nuclei for the conservation of globally important species and ecosystems;

Internationally, the Project will establish linkages to the Global Agenda of Action in Support of Sustainable Livestock Sector Development (GASL). The Project’s Outcomes and Outputs will be disseminated through the different activities of the GASL. At the same time, the Project will benefit from experiences and lessons learnt in similar projects carried out in the framework of GASL.

Uruguay is an active member of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) and was the Chair in 2013/14. The GRA brings countries together to find ways to grow more food without increasing greenhouse gas emissions. The GRA has a specific group working on Livestock, and within this Group there are networks, such as the Grasslands Network. The GRA also has a Group dedicated to Monitoring & Inventories. The GRA could be a partner to share technological successful options for mitigation and adaptation.

6. Consistency with National Priorities

Is the Project consistent with national strategies and plans or reports and assessments under relevant conventions (yes/no). If yes, which ones and how (NAPAs, NAPs, ASGM, NAPs, MIAs, NBSAPs, National Communications, TNAs, NCSAs, NIPs, PRSPs, NPFE, Biennial Update Report, etc):

The Project is in line with and supportive of national development strategies, climate change strategies and land degradation strategies.

Given its importance to employment, the economy and foreign exports, the Government of Uruguay places a high priority on developing the agriculture (including livestock) sector. The Government has for several years been addressing challenges in the livestock sector through a holistic perspective. This considers collectively food security, competitiveness, adaptation and mitigation, as well as land management and rural economic development. In support of this, this Project should deliver significant economic benefits at the local level, notably through: (i) increasing forage supply; (ii) ensuring higher stocks of dry matter stocks in the farms allowing forage conservation and deferred grazing strategies; (iii) ensuring higher above ground net primary production (NPP), meaning also higher below ground biomass (i.e. roots) and therefore improving water and soil resources, and; (iv) increasing soil organic matter. All-in-all this leads to greater options, greater resilience, and greater beef production and income to farmers.

With regards to climate change, in 2009 the Government established the National System to Respond to Climate Change and Variability (SNRCC). The SNRCC oversaw the development of the National Plan on Climate Change (PNRCC) and the Third National Communication. Under the SNRCC, technical working groups were created, and these helped define the main strategic lines of action on climate change. In 2010, priority lines of action were identified, and Agriculture and Forestry was identified as a main priority. Five priorities were identified within the

Agriculture and Forestry sector, and the current proposed Project contributes to three of these, as follows: sustainable land management, prioritizing the adequate use of crop sequences to minimize erosion, livestock production systems in environmentally sound grazing systems and the conservation of natural grasslands and native forests; animal breeding programs and usage of adapted species, prioritizing the knowledge of breeding resources adapted to our environments and; with regards to (CC) mitigation in this sector, the priority is to promote the use of biomass from agricultural and agri-industrial waste to replace the fossil fuels and to abate the emissions of methane in dairy farms and feedlots. Hence this Project directly supports implementation of the PNRCC.

Further, Uruguay's Third National Communication (TNC) to the UNFCCC validates the priorities established in the PNRCC. The TNC specifically promotes climate change mitigation actions related to land use, land use change and forestry (LULUCF) and agriculture.⁴⁶ The TNC notably identifies the following strategies for climate change mitigation (both of which are supported through the current proposed Project): (i) increasing carbon sequestration in grassland; and (ii) reducing methane emissions from enteric fermentation.

With regards to Land Degradation, Uruguay submitted its second national report to the United Nations Convention to Combat Desertification (UNCCD) in 2002 and finalized its National Action Plan in 2004. This Project is in line with the priorities established in these documents. Since 2012, MGAP has put in place a policy that requires farmers planting more than 50 ha of crops to present a medium term soil use and management plan that aims at minimizing erosion measured through the Universal Soil Losses Equation (USLE/RUSLE). MGAP is now dedicated to expand conservation policies to rangelands, mainly through the promotion of good practices of grassland management that, among other co-benefits, avoid naked soils and sward degradation. These actions are aligned with UNCCD.

7. Knowledge management

Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and other initiatives, to assess and document in a user friendly form, and share these experiences and expertise with relevant stakeholders.

Given the innovative nature of the Project both in Uruguay and for GEF, knowledge management is a key part of the Project strategy. The knowledge management activities are to be planned from the onset to provide valuable input to other projects and to the regular Government programmes.

Under Outcome 3.1, the proposed Project will establish tools and mechanisms to systematically collect data, to document lessons learnt, to validate technical options, to strengthen existing local networks and to share lessons to national, regional and international partners. This will be done in close connection to Project monitoring and evaluation and to the Project communications strategy. This will lead to an increase in the concerned knowledge base of the country.

In addition, under Output 1.1.2, the Project helps establish an MRV system. This will systematically generate knowledge related mostly to GHG emissions and factors, but also contribute to knowledge and data bases related to biodiversity and land management.

The Project's broad participation process, involving relevant policy making, research, extension and education institutions, will ensure that knowledge is shared efficiently within the country. Within the country, FUCREA will be an important partner for lesson sharing and knowledge management. Internationally, GASL will be an important partner for lesson sharing and knowledge management.

⁴⁶ It recognizes that the agricultural sector is the biggest emitter of direct GHGs in Uruguay, representing more than 80% of total emissions, followed by Energy. In particular, grazing cattle explains as much as 76% of all the emissions of Uruguay. The TNC identifies livestock as key sources of CO₂ emissions.

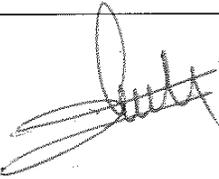
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this OFP endorsement letter).

| NAME | POSITION | MINISTRY | DATE (MM/dd/yyyy) |
|-------------|---------------|---|-------------------|
| Jorge Rucks | Vice-Minister | MINISTRY OF HOUSING, SPATIAL PLANNING AND ENVIRONMENT | 21 MARCH 2015 |
| | | | |
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B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

| Agency Coordinator, Agency name | Signature | DATE (MM/dd/yyyy) | Project Contact Person | Telephone | Email Address |
|---|--|----------------------|---------------------------|-------------------|--|
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Annex I

Cost effectiveness of CSL management practices. Data from prior pilot implementation.

The project will promote permanent change and innovation in farmers' behavior that result in sustainable management of their farms.

Research and field piloting have shown that the adoption of CSL management practices results in increased financial benefits for the farmer. The most recent validation experience is summarized here. A participatory research project was implemented during two years (summer 2012 to summer 2014) in seven pilot farms involving family livestock grazing systems based on natural grasslands, located in the East of Uruguay. The approach involved characterization and diagnosis of the farm system's sustainability, followed by cycles of re-design, implementation, and monitoring of system evolution. Proposals for re-design were based on changes in management practices without adding external inputs and without increasing costs. The relevance of the management practices at farm level was discussed between technicians and farmers. Productivity (meat productivity, stocking rate, sheep to cattle ratio, kg of weaning calf per breeding cow and forage allowance), and economic (net income) indicators were estimated for the three previous years before starting the project from farmers' records, and records were kept during the project. After starting the project also forage mass and forage height were measured twice per season in all farms.

Baseline practices and what was changed

Baseline practices in these farms were the following: i) overgrazing, ii) high stocking rates, iii) lack of strategic forage allocation based on the reproductive cycle and requirements of the animals, iv) lack of animal classification by body condition, and high sheep/cattle ratio.

The basis of the improvements proposed to the farmers is, first, maintaining appropriate levels of leaf area in grasslands through adapted grazing pressure, which increases the efficiency of solar radiation transformation into biomass and thus the aboveground net primary productivity (ANPP) of grasslands. Second, making strategic allocation of increased forage production to specific livestock cohorts during key seasons. These decisions increased meat productivity (per hectare and per animal). In practice, this was done by giving preferred forage access to the following cohorts: (i) cows at calving and lactation to enhance fertility in following mating, (ii) heifers in their first two years of rearing which promotes lifelong adult fertility and corporal condition, and (iii) steers in their first year of rearing which promotes earlier age and larger weight at slaughter.

The farmers had to go through specific training program and received thorough technical support. In this particular cases, no significant investment were needed but limited investments may be required in other conditions. In pilot farms grass biomass moved from levels below technical recommendations to levels even above technical recommendations (Fig.1) after two years of implementation of a redesign proposal within the participatory research project in Uruguay Eastern Hills (Ruggia *et al* 2015). Simultaneously, and in spite of a **mild reduction in the stocking rate** (from 0.92 Livestock Unit (LU)/ha to 0.84 LU/ha), **average productivity** in terms of equivalent meat production (i.e. meat + wool) **increased by 24%** (from 99 kg/ha to 123 kg/ha; Fig. 2; Ruggia *et al* 2015). Consequently, net income of these farms has increased with the adoption of improved practices (Ruggia *et al* 2015) and labor efficiency was increased. The pilot farms also performed better than control farms (national livestock farm monitored by the *Instituto Plan Agropecuario* - IPA), even when economic performance is corrected for fluctuations in meat prices (Fig. 3 and 4).

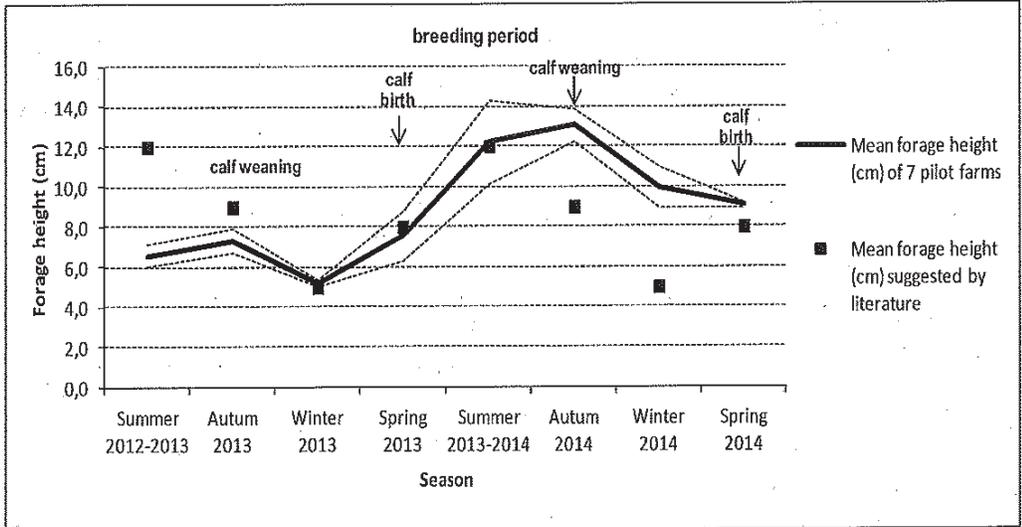


Figure 1. - (with permission of Ruggia et al 2015) Grass height (highly correlated to grass aerial biomass) during the introduction of management improvements that started in the spring of 2012. Grass biomass levels moved from below technical recommendations to levels even above technical recommendations.

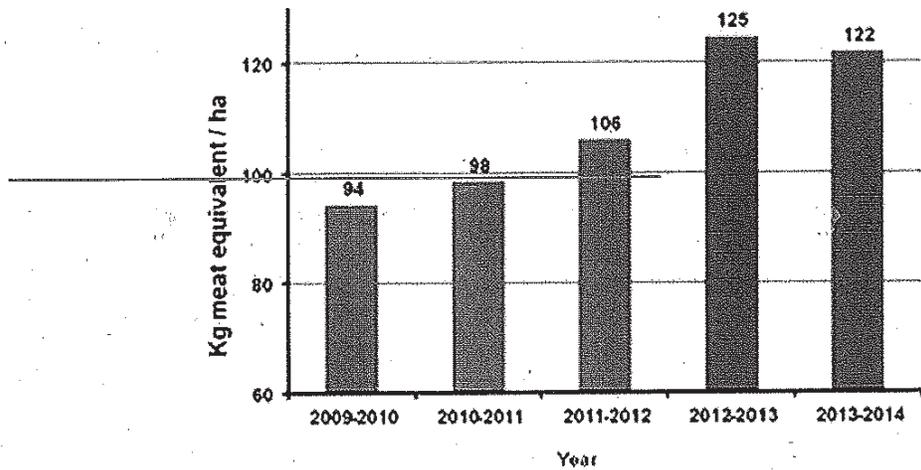


Figure 2 - (with permission of Ruggia et al 2015) Meat production per hectare during three years before the management improvements were made (grey) and during the first two years while improvements were being introduced (green). The orange line indicates the average production of the period before the change (99 kg/ha).

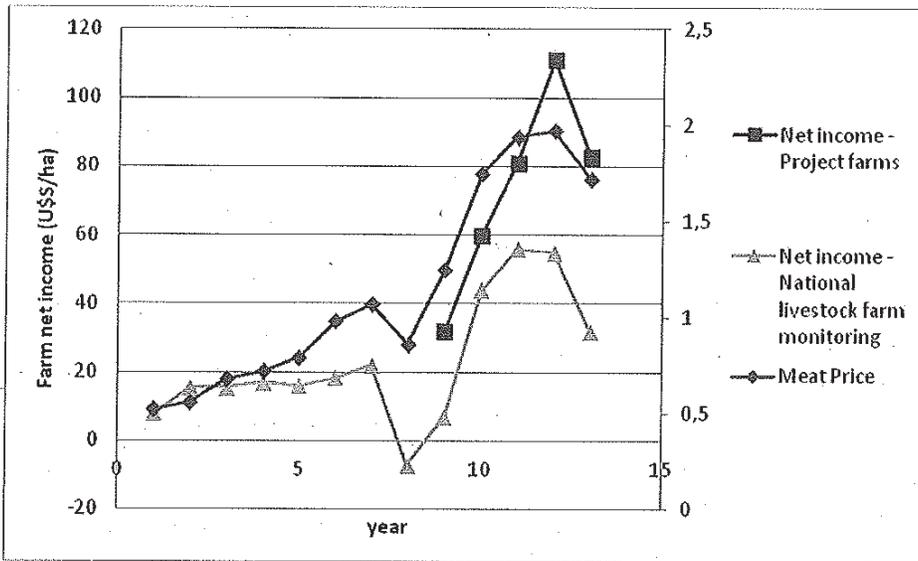


Figure 3 – Net income from pilot farms and farms from a cattle farms monitoring program in comparison with average meat price. Project farms show higher net income and more independence from meat price.

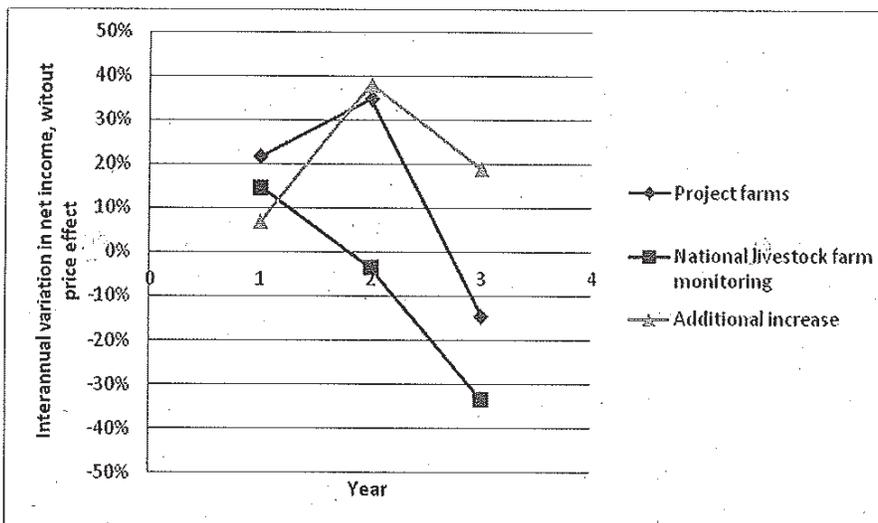


Figure 4 – Variation in farm net income with meat price taken into account, both from pilot farms and from a national livestock farm monitoring program. Pilot farms are performing better as shown by the difference between the two curves or having an additional increase.

Source: Andrea Ruggia, Santiago Scarlato, Gerónimo Cardozo, Verónica Aguerre, Santiago Dogliotti, Walter Rossing, Pablo Tiftonell. 2015. Managing pasture-herd interactions in livestock family farm systems based on natural grasslands. In Uruguay. 5th International Symposium for Farming Systems Design, Montpellier, France (<http://fsd5.european-agronomy.org/documents/proceedings.pdf>).

Annex II

The National Program of Technology Transfer and Diffusion (NPTTD) of Uruguay

The NPTTD is a new initiative of the MGAP that aims to reinforce the process of technology transfer and diffusion among cattle and sheep farmers. It is a public-private effort that will articulate actions carried on by the MGAP, the public institutions (National Research Institute INIA, National Meats Institute INAC, the Agrarian Plan IPA, and the Wool Secretariat SUL) and private local farmers' organizations.

The NPTTD builds on lessons learned from several other projects. First, the program is based on the idea that public policies need to foster the scaling-up of on-farm interventions, bringing on board a much larger number of farmers compared to the numbers reached so far, so as to increase the impact at the national level. Second, this effort must be articulated among all stakeholders, particularly those that represent the demand side (that is why the National Meats Institute is involved). Third, it is an accepted view that for a successful process of technology adoption, it is absolutely key to set up a continuous, reliable and competent technical assistance, able to work in an integrated form with farmers. This will require a special effort in capacity building at the technical and at the farm level.

The NPTTD will be funded in part by the central government and in part by the sector organizations (INIA, INAC, IPA), and it will also need additional funding in order to contract professionals from the private sector. Each of these professionals will be mandated to work with a group of farmers (25-30) in selected regions of the territory. The goal is to introduce technologies that are already available and that would improve the farm's general productivity by increasing the efficiency of natural grassland management, and the strategic use of feed-supplements.

The program is expected to be implemented as of 2016. It will be carried out in a progressive way, through different phases, running for 3 to 5 years each. However, phases will not be run in a sequence but rather in parallel, with the aim to incorporate an increasing number of farmers every year. The initial target is to reach 1.700 to 2.000 farmers in the first three years. The related budget is: Year 1: US\$ 500 thousand; Year 2: US\$ 1 million; Year 3 to 5: US\$ 1,5 million. Total amount (5 years): US\$ 6 million. In addition, the contribution of the public (MGAP) public-private (INIA, INAC, IPA) and private (SUL) institutions will preliminary add around US\$ 4 million per year in terms of human resources, infrastructure and operation costs.

The GEF project will be a key source of knowledge, lessons learned and tools to better design and implement the scaling-up activities with support of the NPTTD.

