

Business Case and Intervention Summary

Silvopastoral systems for climate change mitigation and poverty alleviation in Colombia's livestock sector

Intervention Summary

What is the purpose of the intervention?

The aim of this project is to increase the environmental and economic sustainability of cattle ranching in Colombia. Cattle ranching is a big industry in Colombia, occupying around 38% of the land, employing 28% of the rural population and generating 3.5% of the country's GDP. The agricultural sector, dominated by cattle ranching, generates 38% of Colombia's total GHG emissions, with deforestation caused by ranching accounting for a further 9% of emissions. The prevailing practice of grazing cattle on open pasture is environmentally destructive and economically inefficient, providing a poor livelihood for many small farmers. Grazing in this way leaves the land degraded and unproductive, generates significant greenhouse gas (GHG) emissions and results in a loss of biodiversity. In turn, as the land becomes less productive, farmers seek to move on to new land, contributing to the deforestation of Colombia's biodiversity- and carbon-rich tropical forests.

Agricultural techniques have been developed which can both increase the efficiency of cattle production (providing better incomes for the rural poor), and deliver environmental benefits (including reduced GHG emissions, decreased soil erosion and water pollution, and enhanced biodiversity). These techniques, known as silvopastoral systems (SPS), convert degraded extensive (i.e. open, treeless) pastures into a richer and more productive environment, where trees and shrubs are planted interspersed among fodder crops such as grasses and leguminous herbs.

The term SPS encompasses a range of different agroforestry practices, including trees in pasture, 'living fences', fodder banks (concentrated areas of protein-rich fodder crops) and grazed timber plantations. One type of SPS, known as intensive silvopastoral systems (ISPS)¹ has proved particularly effective in tropical areas such as Colombia. ISPS consist of fodder shrubs planted at high densities, intercropped with improved, highly-productive pastures and timber trees, all combined in a system that can be directly grazed by cattle.

This project aims to convert around 28,000 hectares of open pasture to SPS in seven regions of Colombia, promote wider adoption of SPS across the country, and gather more evidence on whether introducing SPS can help reduce the deforestation caused by cattle ranching. SPS have been tested successfully in Colombia and elsewhere, and this intervention will build on the experience and infrastructure of previous and ongoing pilot projects run by the World Bank and others.

This project would be supervised by the World Bank as an extension to an existing project (*Colombia Mainstreaming Sustainable Cattle Ranching*, CMSCR 2010-2015), using the Colombian Cattle Ranching Federation (FEDEGAN) as lead executing agency and involving a range of NGO partner agencies. It has the full support of the Colombian Government and the Ministries of Environment and Sustainable Development and Agriculture and Rural Development will participate in the project.

Why is UK support required?

Despite on-farm and off-farm benefits, SPS have only been adopted to a limited extent in Colombia due to the lack of knowledge of their existence, the high initial cost, and technical complexity. Given the potential for reducing GHG emissions, delivering environmental benefits and reducing poverty

¹ Murgueitio and Solorio, 2008

there is a strong case for accelerating the spread of SPS: this requires further international support. There is evidence from pilot studies that providing access to credit, technical assistance and Payment for Environmental Services (PES) can achieve conversion of land to SPS, and this is how UK support would be used.

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Sustainability and wider replication of this approach

The project could help bring about a sustainable transformation in a sector which represents a key part of the Colombian economy and one of its largest sources of GHG emissions. There are a number of factors which increase the likelihood that this intervention catalyses a change which extends beyond the lifetime and direct scope of the project:

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- **Economic viability of SPS:** Although initially costly to convert, SPS provide a good return on investment in the medium term, and allow land to be used productively while also delivering environmental benefits such as carbon sequestration and biodiversity conservation.
- **Strong political support:** There is strong support for this approach from the Colombian Government and clear political willingness to continue to build an enabling policy and regulatory environment and use the experience of this project to design future support measures for SPS.
- **Existing financial support:** Existing second tier credit lines and incentives (e.g. el Incentivo a la Capitalizacion Rural, ICR – the Rural Capitalization Incentive, Agriculture Guarantee Fund, FAG) established by the Government have provided increasing support for farmers converting to SPS over the last few years and will continue to grow.
- **Strong support from the livestock sector:** The cattle ranchers' association FEDEGAN has set a goal of transforming at least 25% of the 40 million hectares currently used for cattle ranching and is working to mainstream SPS throughout the sector.
- **Wide network of motivated stakeholders:** The strength of experience in the project team and the broad network of partners involved create many channels to disseminate learning and mainstream SPS, including in other countries.
- **Established channel for feeding back learning to policy makers:** Lessons learnt from the project will be fed into national and regional policy-making through the Public Policy Committee² and outreach work by the project, HMG and the World Bank, and fed into UK REDD strategy by DECC.
- **Growing market and consumer support for sustainably sourced products:** Demand-side or consumer market led measures such as voluntary certification for products that are sustainably sourced have the potential to provide support for the wider uptake of SPS.
- **Large scale potential application of SPS and growing interest:** Cattle grazing occupies over a quarter of rural landscapes in Latin America, and there is widespread interest in using SPS to meet climate and wider sustainability objectives throughout the region and further afield. A successful model for promoting SPS could be widely replicated.

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The proposed ICF intervention has three major aspects that would significantly increase the impact of SPS in Colombia over and above that of the existing CMSCR project:

1. **The ICF intervention dramatically increases the scale of SPS adoption:** The proposed ICF intervention is expected to lead to the conversion of around an additional 28,000 hectares of land used for extensive cattle ranching to SPS. This would bring SPS to approximately 1500 farms

² This Committee, already established for the CMSCR project, is presided over by Vice-Ministers of Agriculture and Rural Development (MADR) and/ or of Environment and Sustainable Development (MADS), and composed also by representatives of the National Planning Department (DNP), FINAGRO (second tier bank of Agricultural sector) and ASOCARS (Association of Regional Environmental Authorities, CARs)

across seven regions of the country. This will provide significant direct benefits in these farms and also have a wider demonstration effect, potentially at the local, national and international level.

2. **The ICF intervention is focused on carbon sequestration and poverty reduction:** In

Colombia, 82% of cattle farms belong to small scale producers, the majority of whom live in conditions of rural poverty. Converting their extensive pastures to SPS could help lift these farmers out of poverty, but the financial and technical obstacles are currently prohibitive. The existing efforts to implement SPS in Colombia, led by the World Bank / GEF project “*Colombia Mainstreaming Sustainable Cattle Ranching*” (CMSCR project, 2010-2015), are focused primarily on biodiversity conservation and environmental benefits, while the ICF intervention will focus on poverty reduction and climate benefits. As a result of this poverty reduction focus the intervention will exclusively target small and medium scale farmers (between two to 200 hectares), providing tailored support for them to convert to SPS, or to increase their use of intensive SPS (iSPS)³. Impacts of this project are expected to include co-benefits focused on the poorest sectors of society.

3. **The ICF intervention will help test whether the introduction of SPS can have an impact on deforestation as part of a wider set of policies and interventions:** The Government of

Colombia and the World Bank have made the introduction of sustainable agricultural practices like SPS a key part of their strategy for Reducing Emissions from Deforestation and Forest Degradation (REDD+), believing that the sustainable intensification of cattle rearing will help to reduce the demand for land and thus remove one of the drivers of deforestation. However, increasing productivity could also act as an incentive for agricultural expansion, and there appears to be a lack of academic consensus on whether the sustainable intensification of agriculture can in reality bring about a reduction in deforestation. The success, or otherwise, of this approach is likely to be context-specific and depend on the design of the SPS intervention, the wider land-use and forestry policy and enforcement regime, and other socioeconomic factors. By working in two active deforestation “hotspots”, in addition to the regions where the existing CMSCR project operates (which are further from areas of active forest clearance), this project will help test what impact the adoption of SPS has on deforestation and gather evidence for peer-reviewed publications on both this and the wider costs and benefits of SPS. The Colombian Government is keen to use this learning to shape future land-use policy and programmes.

What support will the UK provide?

The UK will provide up to £15 million to be used over four years (2013 – 2016) to support small and medium-scale farmers to convert land currently used for open, extensive cattle grazing into silvopastoral systems.

ICF funds will be used to support the following activities:

Component 1. Making SPS attractive and accessible. (£995k). The aim of this component is to create an enabling environment for small and medium scale farmers to adopt SPS, including access to technical knowledge, financial information and analysis. This enabling work is an essential prerequisite for achieving wider conversion to SPS and to maximising the results of the project. The main activities in this component would include: (a) broad promotion of SPS to induce a cultural change in producers in seven regions⁴ of the country; (b) peer-to-peer exchange for potential beneficiaries and other cattle ranchers as potential users of SPS, in demonstration farms; (c) the provision of SPS training to regional and local technical assistance (TA) providers, specifically

³ This applies to farmers who have already adopted some use of SPS through the World Bank’s existing CMSCR project. iSPS provide some of the most significant poverty reduction benefits, as they generate a greater increase in income than some other forms of SPS, but their uptake in the existing project has been limited because of the high level of initial capital investment required.

⁴ For the purpose of this document, seven regions are mentioned: five corresponding to the World Bank’s ongoing CMSCR project and two new areas that would extend existing areas into known deforestation hotspots. The magnitude of the intervention in the two new areas is under discussion.

FEDEGAN staff; (d) training farmers in banking and loan management in order to increase uptake of loans for SPS.

Component 2. Establishment of SPS in small and medium scale farms. (£10.9m). The aim of this component is to support farmers and provide incentives for the establishment of SPS on their farms. The main activities under this component would include: (a) selection and screening of beneficiaries and baseline farm assessments; (b) design and implementation of a PES for carbon sequestration purposes (PES-CS) to be provided to small farmers for iSPS; (c) design and implementation of a payment for environmental services (PES) mechanism for natural resources management (NRM) purposes, offering short-term payments for aspects of SPS that are (privately) profitable in the mid to long term (e.g. live fences, pastures with trees) and for watershed forest protection; (d) provision of TA to selected farmers for SPS implementation in seven regions of Colombia; (e) provision of seedlings, trees and organic fertilizers (at production costs) for live fences, pastures with trees and forest enrichment.

Component 3. Monitoring, evaluation and dissemination of results at local, regional and national levels. (£1.97m) The aim of this component is to ensure that the benefits of the project are delivered, and to gather evidence and implement a communication strategy that contributes to a broader adoption of SPS in Colombia. The main activities under this component would include: (a) monitoring of the benefits of SPS including contributions to climate change mitigation and adaptation, and of the link with deforestation; (b) the dissemination of results to livestock farmers and local and national institutions (including local producer associations, regional environmental authorities, municipalities, Ministries and banks). Gathering and disseminating this evidence has the potential to generate significant indirect benefits, as it will pave the way for land to be converted to SPS outside of the project areas and beyond the life of the project. In particular, the evidence gathered will influence future Colombian Government policies and support mechanisms for SPS.

Component 4. Project management and Trust fund management and oversight. (£1.15m) The main activities under this component would include: a) operational delivery (financial, technical, legal and administrative execution) of the project by FEDEGAN; (b) technical supervision and performance monitoring by the World Bank, including oversight for procurement procedures and practices, fiduciary management and environmental and social safeguards and (c) FCO and DECC oversight of the project.

What are the expected results?

Headlines:

- ICF financial support will be used to reduce GHG emissions by around 2MtCO₂ equivalent over 8 years and reductions are expected to extend beyond this period⁵.
- ICF support will be used to alleviate poverty in Colombia's livestock sector, particularly to improve the livelihoods of small cattle ranchers.
- The conversion from degraded pastures to SPS (i.e. restored pastures, pastures with trees, live fences etc.) is expected to increase income per hectare by at least 50% since stocking rates are likely to double⁶ after seven years of the establishment of SPS.
- It is expected that total farm income will rise according to the amount of land converted to each improved land use. A 10% increase in milk and beef productivity is expected from the

⁵ This time frame is based on the results of a pilot project (RSPS), where when farms were monitored 8 years after implementation (4 years after the end of the project and the cessation of PES) it was found that land converted to SPS during the project had remained as such. It is expected that GHG savings continue long after this period.

⁶ World Bank 2008. ICR, RSPS project

establishment of iSPS in participating farms by the project close, with the majority of improvements falling beyond this date.

- 5 • A wide range of environmental benefits are expected, including biodiversity conservation and reduced soil erosion and water pollution.
- Farmers will benefit from natural resource optimisation in their farms.
- 10 • Tree cover will be increased by planting from 50-10,000 trees and shrubs per hectare on land converted to SPS, and existing forest fragments preserved.
- The project will provide evidence on whether the introduction of SPS can help remove one of the drivers for ongoing deforestation in two of the national deforestation “hotspots”.
- 15 • ICF support will also contribute to the broader adoption of SPS by small and medium scale farmers, through the validation and adjustment of SPS strategies tested during Project implementation, and ready for adoption by FEDEGAN and other strategic public and private allies (e.g. DNP, Ministries of Agriculture and Environment, local authorities, cattle ranchers, other livestock associations, etc.).
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Impact and outcome

Silvopastoral systems deliver a wide range of environmental and socioeconomic benefits⁷.

25 Emissions reduction potential of proposed intervention

Green House Gas (GHG) emissions are reduced on land converted to SPS due to: improved capacity to store carbon in the soil and in the above ground biomass, fewer applications of nitrogen-based synthetic fertilizers (urea and others); reduced use of fire as a pasture management tool; and improved animal nutrition (methane emission reductions estimated at 21% and nitrous oxide emission reduction at 36%)⁸. Carbon removals have been estimated at between 1.2 and 4.5 C tonnes/ha/year for SPS pastures (depending on tree density) as a result of the increase in Carbon stocks in soils and biomass⁹.

35 Based on the assumptions that around 27,000 ha of degraded pastures will be converted to SPS and around 950 ha of forests will be preserved in farms, that the carbon reduction benefits will continue for at least four years after the PES has stopped, that sufficient farms can be recruited and that the required finance can be leveraged, FEDEGAN estimates that the impact of the intervention will be a reduction of at least 2 Mt CO₂e over eight years. This assumption is based on evidence from a previous regional pilot project¹⁰, which showed that the land use changes were kept by farmers after
40 the project ended.

The following table summarises the estimated carbon savings for the CMSCR and ICF interventions:

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⁷ This has been widely reported, e.g. Murgueito et al, 2011

⁸ World Bank 2008. ICR, RSPS project

⁹ Ibrahim et al, 2010.

¹⁰ CIPAV 2011. Report

	Hectares Planted CMSCR	Hectares Planted ICF	Average Avoided/reduced emissions (tonnes CO ₂ e/ha/yr)*	years	MtCO ₂ e captured or avoided CMSCR	MtCO ₂ e captured or avoided ICF	MtCO ₂ e captured or avoided Total
iSPS ¹¹	12,000	3,780	12.3	8	1.18	0.37	1.55
Preserved Forest areas	5,000	945	5	8	0.2	0.04	0.24
Trees in pastures	31,500	22,305	8.95	8	2.26	1.60	3.86
Degraded pastures recovered	2,000	945	1.62	8	0.03	0.01	0.04
Total	50,500	27,975			3.67	2.02	5.69

* Emissions avoided/reduced are based on the change from degraded pastures (with emissions of 0.65 tonnes/ha/year of CO₂e) to iSPS, trees in pastures and recovered pastures that act as a net sink for 11.6, 8.3 and 0.9 tonnes/ha/year respectively). See Annex 2 for further details.

Poverty reduction

5 A previous pilot project demonstrated that SPS are more profitable than conventional production systems without trees, and provide the opportunity to increase productivity and improve competitiveness¹². This applies for small, medium and large-scale¹³ cattle farms.

10 During the pilot project, 30 farms in each country were monitored for productivity and socioeconomic impacts, with the following results¹⁴:

Socio-economic Improvements	Baseline Value	Actual Value Achieved
Net income per hectare-livestock prod(US\$) with ISPS	237.7	533.2
Mean soil erosion (tonnes/ha)	80.9	44.1
Avg. milk production (daily litres per cow during summer)	5.0	6.1
Avg. Stocking rate (animals per ha.)	1.8	2.5
Fire (% farms that use fire)	38.0	2.3
Labour demand (No. man per day)	52,719.5	69,423.6
Use of Herbicides (litres)	13,914	7,900

The ICF intervention will benefit 1500 farmers¹⁵ of which at least 70% in number will be of small-scale (max 70 ha) and the remaining of medium scale (max 200 ha).

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¹¹ Intensive Silvopastoral Systems: A form of agroforestry for animal production that integrates fodder shrubs planted at high densities (more than 10,000 plants ha⁻¹), intercropped with improved, highly-productive pastures (and timber trees), all combined in a system that can be directly grazed by livestock (Murgueitio and Solorio, 2008).

¹² World Bank 2008. ICR, RSPS project

¹³ Over 200 hectares.

¹⁴ Farms evaluated implemented a mixture of SPS similar to those of the proposed ICF intervention though ISPS were only included in Colombia.

Wider environmental benefits

The ICF intervention is also expected to deliver a range of wider environmental benefits. As a result of the project, globally important biodiversity would be safeguarded in seven strategic regions of the country by increasing the amount of tree cover and reducing the use of fire and pesticides in the farms. Soil erosion, desertification and water pollution are expected to be reduced.

SPS contribution to climate change adaptation

Initial evidence suggests that as climate change increases, the dry seasons in Colombia will become more severe in intensity and duration¹⁶. Under this scenario, the use of SPS can help increase the resilience of cattle farming. The use of tree species that are drought tolerant and retain their foliage in the dry season provides high-quality fodder that results in stable milk and beef production, helps maintain the animals' body conditions (through reduced heat stress from increased shade) and helps secure farmers' assets (through increased farm productivity)¹⁷.

Monitoring and Evaluation (M&E)

M&E processes used and led by the WB for its ongoing CMSCR project will be used by the ICF project, having been aligned with the ICF M&E strategy where necessary. In order to implement the payments for environmental services (PES), which form a key part of the intervention, field information will be collected and assessed on an ongoing basis, giving an indication of how well the project is achieving the expected results. An independent evaluation will be performed towards the end of the project, and the findings published. Interim findings and lessons learned will be fed back to policy-makers throughout the project, including at a mid-term review.

Risks

The top three risks to this project are:

1. Difficulty in recruiting small farmers to the project, either due to financial constraints on their participation, or because the scheme is seen as unattractive or confusing. If it proves difficult to recruit small farmers, more medium scale farms could be recruited but this would be likely to reduce the poverty reduction benefits.

Mitigation: Ensure small farmers are consulted during the project design phase. Ensure there is coordination between agencies involved to engage farmers in a single negotiation. Create a user-friendly communication strategy.

2. Increased farm productivity due to SPS adoption creates an incentive for the expansion of cattle ranching, potentially causing deforestation and reducing climate benefits of the project. During the project this is only likely to be a risk in the two project areas which coincide with deforestation hotspots, however this is a longer term risk for the wider use of SPS.

Mitigation: The majority of project sites will be located away from areas of active deforestation, which significantly reduces the risk. A number of additional safeguards will be in place, including requiring farmers to sign agreements prohibiting deforestation during the project life, using PES schemes to reward preservation of forests, working with the Government to improve enforcement of forest protection laws and regular monitoring.

3. Fiduciary risk; the risk that funds are not used for their intended purposes.

Mitigation: Using the World Bank as supervising agency and utilising the existing management structures and procedures for its CMSCR project (currently judged to be working satisfactorily) significantly reduces this risk. DECC/FCO would reserve the right to do spot checks and request a forensic audit if there are any grounds for concern.

¹⁶ IDEAM, 2010.

¹⁷ World Bank 2008. ICR, RSPS project

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1 Strategic Case

1.1 Context and need for ICF intervention

1.1.1 Wider context and the impact of extensive cattle ranching

5 Colombia is at a pivotal moment of change, in which it is enjoying political stability and robust economic growth (6% in 2011, at least 5% predicted for the next five years). It is one of world's most biodiverse countries, with forests and natural ecosystems covering more than half of the country. However, these ecosystems are being degraded and threatened by unsustainable patterns of rural development.

10 The proposed ICF project focuses on two of the key challenges that Colombia is facing in relation to sustainable rural development: insidiously high rural poverty and the environmental degradation and increasing greenhouse gas (GHG) emissions resulting from extensive, resource-inefficient cattle ranching.

15 Around 38% of Colombia's total land surface (75% of land used for agriculture) is used for cattle production. Methane and nitrous oxide from livestock and agriculture make up 38% of Colombia's total GHG emissions¹³. Deforestation caused by cattle-ranching represents a further 9.2% of GHG emissions and causes irreversible biodiversity loss¹⁸. This extensive ranching is inefficient and land quickly becomes degraded, causing farmers to move on and clear further land. The rural sector suffers from poverty rates of 65.2% with the majority of small-scale cattle farmers living in poverty¹⁹.

20 Land used for cattle ranching purposes has expanded from 14 to 40 million hectares over the last fifty years, mostly at the expense of tropical forests²⁰. Forests with high biodiversity have been replaced with degraded pastures. The deforestation rate in Colombia during the past five years has been around 238,000 hectares per year (equivalent to 0.5% of total forest cover), with a high percentage of this area (55%) converted to pastures²¹.

25 Very important ecosystems have been affected: over 98% of dry tropical forest area in Colombia has been degraded. Dry tropical forest is regarded as one of the most endangered ecosystems of the neotropics²². In addition, the Paramo ecosystems²³, very important for biodiversity and water regulation, are disappearing at a rate of around 11,000 hectares per year and being replaced predominantly by pastures. Almost half of the Colombian territory is affected by erosion, and the process of desertification is currently affecting 79% of dry areas (17% of the national territory), due mainly to erosion and salinization.

35 Colombia is also one of the UK's strongest allies on climate change and sustainable development.

40 According to UNDP (2011) the poverty rate decreased at national level from 53.7 to 45.5% between 2002-2009. However, the rural sector has poverty rates significantly above the national levels, with 65.2% of the rural population below the poverty line - 8 million people, most of them small farm families - compared to 30.7% in urban areas. The rural economy registers a high inequality index

¹⁸ IDEAM, 2010.

¹⁹ National Statistics Department, 2008

²⁰ IDEAM, 2010.

²¹ IDEAM 2011.

²² Biogeographic region of the New World located between the tropics of Cancer and Capricornia including Mexico, Central America, most of South America and the West Indies.

²³ The Paramo is an Andean Mountain ecosystem, located discontinuously in the Neotropics from around 2900m above sea level to the permanent snow line at around 5000m above sea level.

(coefficient Gini of 0.85) with respect to land tenure²⁴. Except for a small percentage of very large farmers, most landholdings are small and face financial and technological limitations to their participation in the subsector's development. Working capital and natural resources are inefficiently used and translate into high production costs and marginal profitability. Average stocking rates on these pastures are estimated at less than one animal per hectare. Cattle ranching is carried out in areas with high poverty levels, unequal income distribution, illiteracy, violence, and unequal land ownership.

1.1.2 Increasing the sustainability of cattle production

Cattle ranching is a key economic subsector of the Colombian economy, contributing 3.5% of the Gross Domestic Product (GDP) and 27% of agricultural and livestock GDP; it also accounts for 7% of national and 28% of rural employment. The Colombian Government is committed to tackling the adverse environmental and socioeconomic impacts of the prevailing methods of extensive, inefficient ranching. The Government and FEDEGAN have announced plans for reforming the sector, including reducing land use for livestock farming by 25% by 2019.

Livestock production can be a source of sustainable rural growth and poverty reduction, particularly among small scale farmers. To achieve this, the Government of Colombia has implemented policies to: (i) provide incentives to increase productivity; (ii) finance asset improvement; (iii) promote small farmer access to markets, inputs, and new technologies such as SPS. In June 2007, the Ministry of Agriculture and Rural Development (MARD) established the Rural Capitalization Incentive (ICR) for any farmer interested in implementing intensive SPS with specific tree densities and species (fodder and timber). The National Cattle Ranchers Association, FEDEGAN, and the Fund for Agricultural and Livestock Sector Financing (FINAGRO) entered into an agreement to better integrate the offer of credit lines with technical assistance for cattle ranching, including SPS. However, even with these policies in place, the barriers to adoption of SPS are still prohibitive for most small farmers. The ICF intervention will work with these existing efforts and enable small farmers to participate.

Alongside this, in its 2010-2014 National Development Plan²⁵ the Government has set a specific target to reduce deforestation by 200,000 hectares between 2011-2014. The country's Readiness Preparation Proposal (RPP) for Reduced Emissions from Deforestation and Degradation (REDD+) was approved in October 2011 by the Forest Carbon Partnership Facility (FCPF), and a second grant (USD\$3.6 million for Phase 2) has been approved to finance RPP implementation.

The proposed ICF project has strong support from the Colombian government. It will play an important part in helping the Colombian government to implement the Land Restitution Act and its 2010-2014 National Development Plan²⁶, both of which aim to address the underlying socio-economic challenges of sustainable rural development. The intervention will also help pave the way for support for silvopastoral systems (SPS) to be introduced in the new law of property rights and rural development.

With emissions from the livestock subsector expected to grow significantly, the ICF intervention could demonstrate a cost-effective and "win-win", green economy-based approach to support livestock transformation as part of Colombia's Strategy for Climate Change Adaptation and Mitigation.

1.1.3 The potential benefits of Silvopastoral Systems

Silvopastoral Systems are used successfully in many places around the world, and there is considerable evidence that SPS can improve production efficiency, increase carbon sequestration and conserve biodiversity and water on land used for cattle production.

A recent study "*Integrated Silvopastoral Approaches to Ecosystem Management Project*" (RSPS) which piloted the use of SPS in Colombia, Costa Rica, and Nicaragua (2002-2008)

²⁴Berry, Deininger and Lavadenz 2004

²⁵Plan Nacional de Desarrollo. Prosperidad para Todos; DNP, 2010-2014.

²⁶<http://www.dnp.gov.co/Portals/0/archivos/documentos/GCRP/PND/PND.pdf>

highlighted their potential for climate change mitigation and wider benefits. This project showed the positive impact of SPS on the sustainability and productivity of cattle ranching²⁷ in terms of:

- 5 • **Carbon sequestration:** Green House Gases (GHG) emissions were reduced through fewer applications of nitrogen-based synthetic fertilizers (urea and others), reduced use of fire as a pasture management tool, and improved animal nutrition (methane emission reductions were estimated at 21% and nitrous oxide emission reduction at 36%). The capacity to store carbon in the soil and in the above ground biomass increased. Carbon removals were estimated at between 1.2 and 4.5 tonnes C/ha/year²⁸.
- 10 • **Land improvement:** Mean soil erosion in project areas was reduced by almost 50% between 2002 and 2007 (from 80.9 to 44.1 tonnes/ha/yr). The use of agrochemicals, mainly herbicides, decreased on average by 40% in participating farms.
- 15 • **Farm productivity:** Beef and milk production increased as stocking rates and animal conditions improved, and costs related to fertilizer and herbicide use decreased, as did the levels of soil erosion. Project results countered the farmers' perception that cleaner pastures are more productive.
- 20 • **Biodiversity conservation:** The number of species and individuals of special indicator groups observed at all sites increased, including, birds (many forest dependent and endangered species), butterflies, and terrestrial molluscs. Globally important flora was also protected.
- 20 • **Water quality:** Results included positive effects on the quality of water in micro catchments in Colombia. In three years, project monitoring evidenced reduced contamination and sedimentation levels.

1.1.4 The regulatory and policy context for SPS in Colombia

25 There is strong support both for the use of SPS and to tackling deforestation from across the Colombian Government, and a number of national strategies and initiatives have identified the potential for supporting conversion of grazing land to SPS as a policy measure. These include:

- 30 • The Colombian Government has a strong commitment to tackling deforestation and has set a target of reaching zero deforestation by 2020. In its recent Readiness Preparation Proposal for the Forest Carbon Partnership Facility (FCPF R-PP) the Government of Colombia expressed its clear desire to curb the expansion of the agricultural frontier and identified cattle ranching as a key driver of deforestation.
- 35 • The National Development Plan (2010-2014) identifies both the need to improve the sustainability of the livestock sector as a key driver of prosperity and the need to tackle deforestation. The plan includes a key objective of avoiding deforestation of 200,000 hectares by 2014²⁹. It also sets out that by 2014, there must be a national REDD strategy formulated and in the process of implementation³⁰. Colombia is formulating its strategy through mechanisms such as the Forest Carbon Partnership Facility and UNREDD+, and has adopted a sub-national level approach in order to set reference levels and deforestation reduction targets, which will eventually contribute to national goals. This approach will include the implementation of a national registry and national monitoring system. SPS is one of the implementation tools which could form part of the national REDD strategy to avoid the expansion of the agricultural frontier.
- 40 • Work on the National Low Carbon Development Strategy (under development) has identified alternatives within the agricultural sector including various forms of silvopastoral systems, which may be applied to extensive cattle ranching as a mitigation option. This strategy is currently establishing a baseline for carbon emissions generated by livestock in Colombia to
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²⁷ RSPS Implementation Completion and Results Report, WB; 2008

²⁸ Ibrahim et al 2010.

²⁹ See reference: <http://www.dnp.gov.co/PND/PND20102014.aspx> (p.445)

³⁰ As above, p.447

evaluate these systems regarding their emissions mitigation potential and cost-effectiveness. The World Bank and the Colombian National Planning Department are also finalizing a study on SPS as a cost-effective means of GHG emissions mitigation.

- 5 • The Ministry of Agriculture and Rural Development is promoting SPS as a driver of economic competitiveness in the livestock sector. Colombia signing free trade agreements with the EU will challenge its competitiveness and the sustainable intensification of livestock production is one measure to help counter this pressure.
- 10 • The use of sustainable agriculture techniques such as SPS is in line with Colombia's green growth strategy and its preparatory process towards achieving OECD membership.

There is a supportive policy and regulatory context for increased use of SPS in Colombia:

- 15 • The Government provides, and is scaling up, financial support for SPS through the Rural Capitalization Incentive (ICR), a credit facility administered by the Fund for Agricultural and Livestock Sector Financing (FINAGRO). The existing CMSCR project aims to leverage \$22m from the ICR over the duration of the project and the Government anticipate a continued scaling up of ICR support for SPS beyond this period.
- 20 • In its wider toolkit for reducing deforestation, the Government of Colombia has several legal instruments and incentives that will complement this intervention. Instruments such as the Peasant Enterprise Zones (Zonas de Reserva Campesina, ZRC) the Rural Development and Land Act (in preparation) and the creation of Natural Reserves of the Civil Society (Act 99, 1993) can be used to improve land tenure, promote sustainable land planning and protect forest areas. Available instruments will be studied to define the best strategy to improve the impact of the project. These are clear signals that the Government of Colombia want to use feasible and effective policy to curb the expansion of the agricultural frontier. Under the ZRC approach, farmers will receive credits to support sustainable agricultural practices but in return will have to conserve these land uses and will not be able to sell their land for a set period of time.
- 25 • Improvements are planned to national monitoring of deforestation carried out by IDEAM, with imaging moving from a 1:500,000 to a 1:100,000 level of resolution and work is in place to develop regional and national baselines.
- 30
- 35

The Colombian Government is strongly committed to tackling climate change and has made implementation of SPS part of their strategy for tackling the impact of cattle farming. With emissions from the livestock subsector expected to grow significantly, the ICF intervention could demonstrate a cost-effective and “win-win”, green economy-based approach to support livestock transformation as part of Colombia’s Strategy for Climate Change Adaptation and Mitigation.

The next few years will be key in shaping Colombia’s policies for reducing deforestation and for supporting the wider uptake of SPS. Through the Steering Committee and Public Policy Committees of this project the experiences from this intervention will feed directly back into Government policy-making. Both committees include representatives from the Ministry of Environment and Sustainable Development (MADS) and the Ministry of Agriculture (MADR). The Public Policy Committee is presided over by the Vice Ministers of Environment and Agriculture, ensuring that lessons learned are fed back to Government at the highest levels.

The activity of the CMSCR Public Policy Committee³¹ has already led to changes in public policy, for example the recent approval of an extension of ICR credit for iSPS to include the high tropics. This subsidy was only available in the past for iSPS in the low tropics (an incentive also introduced as a result of the earlier RSPS project and the work of Project partners).

³¹ This Committee, already established for the CMSCR project, would be broadened to cover the ICF extension to the project, including through representation of those involved in REDD+ policy and HMG.

The ICF project will extend the SPS approach into two active deforestation hotspots, at the request of the Colombian Government, which sees this project as a key opportunity to test whether this approach is effective as part of a toolkit of measures to reduce deforestation. The Public Policy Committee will be one avenue for using this learning to shape future Government REDD+ policy. In addition it will be a route to promote, among other things, improved access to government subsidies for small farmers, promotion of SPS through rural extensions services and enhanced monitoring and evaluation.

1.1.5 Scaling up the use of SPS in Colombia

Despite their on-farm and off-farm benefits, SPS have only been adopted to a limited extent in Colombia due to the lack of knowledge of their existence, their high initial cost, and their technical complexity.

Many of the benefits that SPS provide, such as biodiversity conservation, carbon sequestration, and water services, are externalities from the perspective of individual landholders. According to Pagiola et al. (2010), ISPS has only been adopted to a very limited extent by the poorest landholders due to financial constraints. They recommended that providing financing for investment in SPS will be required in order for the poorest farmers to increase adoption of higher investment land uses such as ISPS.

The RSPS project demonstrated that providing Payments for Environmental Services (PES)³² and technical assistance can successfully induce farmers to adopt SPS and related land use changes. At the Colombia site, PES recipients changed land use on 48% of their farm area. Four years after the RSPS project stopped PES, the farmers had been conserving and even increasing the SPS in their farms (Pagiola et al.; 2011). Equity research at the Nicaraguan RSPS study site showed that poor ranchers benefitted more from the PES on a unit area basis compared to wealthy ranchers. However, even with the provision of PES, access to the initial capital required for conversion remains a barrier for many small farmers, particularly for the more intensive forms of SPS.

Based on the success of the RSPS project and the wider evidence base for SPS, the Colombian Government and the World Bank have made scaling up SPS in Colombia a key element of their national climate change and agricultural strategies. A \$42m project implemented by FEDEGAN with support from the World Bank/Global Environment Facility (GEF) is now underway: “**Colombia Mainstreaming Sustainable Cattle Ranching**” (CMSCR project, 2010-2015). This project draws on \$22m of co-financing from the Fund for Agricultural and Livestock Sector Financing (FINAGRO) to support SPS adoption, and involves a number of NGO partners including the Centre for Research on Sustainable Agricultural Production Systems (CIPAV), the Environmental and Childhood Action Fund (Fondo Accion) and The Nature Conservancy (TNC).

The progress of the CMSCR project to date has demonstrated farmers' interest in SPS and in the approach used. It also has helped in raising awareness in the regions about the benefits of SPS, assisted by growing climate-awareness as a result of the climatic variations experienced recently.

The proposed ICF intervention will build on both the experience and the technical platform created by the CMSCR project.

1.1.6 Rationale for ICF involvement and the potential for transformational impact

The proposed project is fully consistent with the strategic policy objectives for poverty reduction and GHG emission reductions of the ICF.

³² The project developed an ecological index that ranked land-use systems in terms of their value for biodiversity protection and C sequestration, and this was used as the basis for PES to the farmers. The project developed a baseline of land uses for each farm and farms were monitored on a yearly basis to evaluate land-use changes. Payments were made on the achievement of incremental ecological points. The project monitored water, biodiversity and C sequestration on replicated and representative land uses in each pilot area.

This project covers all three thematic strands of the ICF. It will promote low carbon development in the livestock sector, increase its climate resilience, and enhance forest conservation and tree planting, and, as part of a wider set of interventions could potentially help reduce one of the key drivers of deforestation in Colombia.

5

Given the scale and impact of cattle production in Colombia, a shift to sustainable production methods could deliver huge benefits. Widespread adoption of SPS could radically change the sector, bringing social, economic, climate and wider environmental benefits. This fits with the ICF priority to demonstrate that building low carbon, climate resilient growth at scale is feasible and desirable.

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The economic viability of SPS increases the likelihood of creating this transformation. Although initially costly to convert, SPS provide a good return on investment in the medium term, and, critically, allow land to be used productively while also delivering environmental benefits such as carbon sequestration and biodiversity conservation, creating a win-win situation.

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The chances of bringing about sustainable change are increased by: the political will to support SPS; local ownership for SPS; the fact that it will bring about an increased capacity and capability to act; and the intention to use the project as a learning exercise, to test what works and share widely the results of the project.

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There is evidence of sustainability from the previous RSPS project, where farmers were found to have been conserving and even increasing SPS in their farms 4 years after the RSPS project had ceased making Payments for Environmental Services. This current intervention has the full support of the Colombian Government, which provides political will and local ownership for SPS. Removing key barriers to deployment of SPS, and providing a basis for the legal framework and financial and technical assistance for projects, lays the conditions for transformational change.

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The existing CMSCR project and policy changes being introduced by the Colombian Government are working towards this transformation. However, the area of land converted to SPS in Colombia to date, even with the CMSCR project, is very small (the area CMSCR aims to convert represents less than 0.02% of the 40m hectares occupied by cattle). In order to mainstream this approach, an increase in the number of farms is required, particularly small and medium scale farmers, and greater momentum needs to be created through dissemination and outreach.

30

Cattle ranching occupies more than a quarter of rural landscapes in Latin America. There is widespread interest in SPS throughout Latin America, and further afield, and other countries such as Brazil are looking to expand SPS as part of their sustainable agriculture and climate policies. If this project can demonstrate a successful model for conversion to SPS at scale there is significant scope for replication internationally.

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By building on the structures (e.g. management arrangements, staffing, local networks, monitoring arrangements) in place for the existing CMSCR project the ICF intervention will have a lower cost per hectare for adopting SPS compared to previous projects (e.g. £540 per hectare in comparison with £734 per hectare for the RSPS project), providing value for money. In addition, working with the existing broad set of delivery partners creates an effective network for dissemination and mainstreaming of the approach.

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Colombia is a progressive voice on climate and sustainability issues and a strong ally in the international climate change negotiations.

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The proposed ICF intervention has three major aspects that would significantly increase the impact of SPS in Colombia over and above that of the existing CMSCR project:

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1. The ICF intervention dramatically increases the scale of SPS adoption: The proposed ICF intervention is expected to lead to the conversion of around an additional 28,000 hectares of land used for extensive cattle ranching to SPS. This would bring SPS to approximately 1500 farms across seven regions of the country. This will provide significant direct benefits in these farms and also have a wider demonstration effect, potentially at the local, national and international level.

2. **The ICF intervention is focused on carbon sequestration and poverty reduction:** In Colombia, 82% of cattle farms belong to small scale producers, the majority of whom live in conditions of rural poverty. Converting their extensive pastures to SPS could help lift these farmers out of poverty, but the financial and technical obstacles are currently prohibitive. The existing efforts to implement SPS in Colombia, led by the World Bank / GEF project “*Colombia Mainstreaming sustainable cattle ranching*” (CMSCR project, 2010-2015), are focused primarily on biodiversity conservation (recruiting farms within connectivity corridors), while the ICF intervention will focus more on maximising poverty reduction and climate benefits. As a result of this poverty reduction focus the intervention will exclusively target small and medium scale farmers (between two to 200 hectares), providing tailored support for them to convert to SPS, or to increase their use of intensive SPS (ISPS)³³. Impacts of this project are expected to include co-benefits focused on the poorest sectors of society.

3. **The ICF intervention will help test whether the introduction of SPS can have an impact on deforestation:** The Government of Colombia and the World Bank have made the introduction of sustainable agricultural practices like SPS a key part of their strategy for Reducing Emissions from Deforestation and Forest Degradation (REDD+), believing that the sustainable intensification of cattle rearing will help to reduce the demand for land and thus remove one of the drivers of deforestation. However, increasing productivity could also act as an incentive for agricultural expansion, and there appears to be a lack of academic consensus on whether the sustainable intensification of agriculture can in reality bring about a reduction in deforestation. The success, or otherwise, of this approach is likely to be context-specific and depend on the design of the SPS intervention, the wider land-use and forestry policy and enforcement regime, and other socioeconomic factors. By working in two active deforestation “hotspots”, in addition to the regions where the existing CMSCR project operates (which are further from areas of active forest clearance), this project will help test what impact, if any, the adoption of SPS has on deforestation and gather evidence for peer-reviewed publications on both this and the wider costs and benefits of SPS. The Colombian Government is keen to use this learning to shape future land-use policy and programmes.

1.1.7 Making this approach replicable and sustainable in the longer term

The project could help bring about a sustainable transformation in a sector which represents a key part of the Colombian economy and one of its largest sources of GHG emissions. There are a number of factors which increase the likelihood that this intervention catalyses a change which extends beyond the lifetime and direct scope of the project:

- **Economic viability of SPS:** Although initially costly to convert, SPS provide a good return on investment in the medium term, and allow land to be used productively while also delivering environmental benefits such as carbon sequestration and biodiversity conservation.
- **Strong political support:** There is strong support for this approach from the Colombian Government and clear political willingness to continue to build an enabling policy and regulatory environment and use the experience of this project to design future support measures for SPS. This initiative supports the National Development Plan to 2014, the National Low Carbon Development Strategy (currently in preparation), the national REDD+ Strategy (as set out in the Forest Carbon Partnership Facility Readiness Preparation Proposal) and Colombia’s green growth strategy. Analysis by the National Planning Department and the World Bank on mitigation potential in Colombia has identified SPS as a key mitigation tool, and the Ministry of Agriculture and Rural Development is promoting SPS as a driver of economic competitiveness in the livestock sector.

³³ This applies to farmers who have already adopted some use of SPS through the World Bank’s existing CMSCR project. ISPS provide some of the most significant poverty reduction benefits, as they generate a greater increase in income than some other forms of SPS, but their uptake in the existing project has been limited because of the high level of initial capital investment required.

- 5 • **Existing financial support:** Existing second tier credit lines and incentives (e.g. el Incentivo a la Capitalizacion Rural, ICR – the Rural Capitalization Incentive; Agriculture Guarantee Fund, FAG) established by the Government have provided increasing support for farmers converting to SPS over the last few years. The existing CMSCR project aims to leverage \$22m from the ICR over the duration of the project and the Government anticipate a continuing scaling up of ICR support for SPS beyond this period. Experiences from the CMSCR project, fed back via the project’s Public Policy Committee, has led to FINAGRO extending the ICR to cover ISPS in the high and low tropics.
- 10 • **Strong support from the livestock sector:** The cattle ranchers’ association FEDEGAN has set a goal of transforming at least 25% of the 40 million hectares currently used for cattle ranching. The ICF project’s reliance on TECNIGANs (FEDEGAN’s technical assistance arms throughout the country) to undertake SPS technology transfer and capacity building, will support its future efforts to mainstream silvopastoral systems at a larger scale, including a national program to train
- 15 nearly 50,000 cattle ranchers annually. Fedegan is also implementing project tools in other regions of Colombia using public cofinancing and with partners such as mayoral and gubernatorial offices as well as regional autonomous corporations.
- 20 • **Wide network of motivated stakeholders:** The strength of experience in the project team and the broad network of partners involved create many channels to disseminate learning and mainstream SPS, including in other countries, for example, through the World Bank’s outreach work.
- 25 • **Established channel for feeding back learning to policy makers:** Lessons learnt from the project will be fed into national and regional policy-making through the Public Policy Committee³⁴ and outreach work by the project, HMG and the World Bank, and fed into UK REDD strategy by DECC. We will draw on these lessons and experiences throughout the project and also more formally at a 2-year review and at the close of the project.
- 30 • **Growing market and consumer support for sustainably sourced products:** Demand-side or consumer market led measures such as voluntary certification for products that are sustainably sourced have the potential to provide support for the wider uptake of SPS. Some companies have already committed to ‘no deforestation’ policies (e.g. Unilever, Nestle) and a number of groups are developing voluntary certification schemes (e.g. The Global Roundtable on Sustainable Beef,
- 35 and the Grupo de Trabalho da Pecuaria Sustentavel). FEDEGAN is involved in work on developing ecolabels in conjunction with the Rainforest Alliance. The project will seek to work with one or more of these certification schemes to increase the economic sustainability of the project and the viability of wider uptake of SPS.
- 40 • **Large scale potential application of SPS and growing interest:** Cattle grazing occupies over a quarter of rural landscapes in Latin America, and there is widespread interest in using SPS to meet climate and wider sustainability objectives throughout the region and further afield. A successful model for promoting SPS could be widely replicated.
- 45 Specific actions that we can take to ensure the project is replicable and to maximise learning, including on the impacts on deforestation are to:
 - 50 • Build on the strengths of the existing monitoring and evaluation (M&E) approach for the CMSCR project, to generate lessons learned in a useful format for policy-makers and other stakeholders, and peer-reviewed publications. The objective of maximising learning is already embedded into project design.
 - Include in project M&E arrangements for the ICF intervention a new evaluation program that capitalises on lessons learned, as well as robust and comparable data obtained in the two

³⁴ This Committee, already established for the CMSCR project, is presided over by Vice-Ministers of Agriculture and Rural Development (MADR) and/ or of Environment and Sustainable Development (MADS), and composed also by representatives of the National Planning Department (DNP), FINAGRO (second tier bank of Agricultural sector) and ASOCARS (Association of Regional Environmental Authorities, CARs)

prior initiatives. This program will compare land use changes from project beneficiaries as well as control groups, to register project impacts, including the impacts on deforestation. It will investigate the possible relationship between the introduction of incentives for SPS and changes in deforestation, and seek to explore what impact the economic and regulatory context has on the success of SPS adoption, to learn lessons for supporting wider adoption of SPS.

- Feed back lessons learned to the Steering and Public Policy Committees on an ongoing basis, with more formal reviews at the mid-point (2 years in) and end of the project. Ensure that these lessons learned are widely disseminated.
- Ensure that those responsible for developing Colombia's REDD+ policy are represented on the Public Policy Committee and that they are involved in shaping the M&E approach for the deforestation hotspot project areas in order to provide policy-relevant learning.
- DECC and FCO will feed back lessons learned from the project into HMG policy-making on REDD+, including the cross-Whitehall Forest and Climate Change Programme.
- Introduce a technical assistance strategy for the two-way sharing of experiences between farmers and technical assistants, as well as a communications strategy to support a deeper cultural change in farmers.
- Work with emerging ecolabel schemes to enhance the commercial viability of SPS.
- Act as a test-bed for wider research into SPS. The Colombian Government has made SPS a strategic research priority (in the Sistema Nacional de Regalías) and is working with the CMSCR project on research into new silvopastoral arrangements for different regional conditions with cofinancing from the Administrative Department of Science, Technology and Innovation (COLCIENCIAS).

1.1.8 Summary of Risks

The following main risks have been identified and assessed. Mitigating actions have been developed to address these risks (more detail on the risk management approach can be found in the Management Case and attached risk register):

Type of Risk	Risk	Mitigating Action
Policy design	Increased farm productivity due to SPS adoption creates an incentive for the expansion of cattle ranching, potentially causing deforestation and reducing climate benefits of the project.	Agreements to be signed with individual farmers to ensure sustainable land use planning in each farm (with a baseline assessment of land uses and close M&E) and prevent further land conversion for cattle ranching, PES would be dependent on compliance. Most project areas located away from active forest clearance, but those in deforestation hotspots will be used as a test case to gather evidence on the impact, (positive or negative) on deforestation
	FEDEGAN is perceived as being involved with illegal armed groups, particularly paramilitary groups ³⁵	Partnership management arrangement where decisions are made in a transparent and collective manner; selection criteria and screening procedures to exclude individuals associated with illegal armed groups; and a Project social communications strategy.
	Adverse environmental consequences	Several mechanisms will be used during project design to avoid negative environmental effects, including the proposed PES scheme and Integrated

³⁵ The World Bank's detailed reputational risk assessment of working with FEDEGAN on the CMSCR project is included as Annex 3B. This was conducted in 2008 and concluded that the benefits outweighed the risks. Given that the CMSCR project has been operating satisfactorily since 2010 the risks of working with FEDEGAN could now be considered as lower than at time of the WB's risk assessment.

		Pest Management Plan.
	Farmer participation involves some form of coercion or project lands that are contested	The Project will use legal procedures under Colombian regulations to verify that Project lands are not contested and are under legal ownership.
	The scheme could be unattractive or confusing for farmers	Consulting small farmers in the design of the project, engaging them in single negotiations with permanent agency representatives, and providing a user-friendly communication strategy to prevent alienation of small farmers.
Implementation	Lack of sufficient political support for the proposed strategy to warrant its adoption by key public decision makers	The Ministries of Agriculture and Environment will have key decision-making responsibilities, and the Project's communication strategy would design and implement outreach activities aimed at different target audiences.
	The multiplicity of agencies involved in Project Implementation, with varying management capacities, increase operation costs whilst reducing efficiency.	Operational accountability will remain with FEDEGAN, all parties will follow procedures set out in the Operations Manual, and this Manual will clearly identify which matters require decision by the Steering Committee. The effectiveness of arrangements will be reviewed during the project.
	Fiduciary risk (the risk that funds are not used for their intended purposes)	This is low if we work with the WB as supervising agency, but we will keep open the possibility of spot checks and forensic audit if any concerns arise.
	Inadequate provision of trained staff could undermine delivery	Training needs have been identified in FEDEGAN, and the Project will cover the design and implementation of tailor made capacity-building activities.
	Implementation is delayed by the need to set up a new trust fund at the World Bank	This may be necessary, but alternative arrangements such as using existing trust funds or a fee based services approach are also being investigated.
	British embassy does not have the capacity to effectively monitor progress	Embassy staff involved throughout project design.
Operational	Small scale farmer participation is limited due to financial constraints on iSPS adoption	Providing a PES-CS to small farmers with credit, as an incentive to approach the banking system and access FINAGRO's second tier lines and providing technical assistance and financial education to farmers to comply with requirements.
	Slow processing of farmers' credit applications could undermine implementation.	These constraints will be addressed with Finagro's support to keep participating farmers motivated. A special team will be set up to focus on ICF small farmers applications for credit.

Within the context of the ICF portfolio, we would categorise this project's risk/ reward profile as medium reward / medium risk.

- 5 In order to reduce the wider risks of delivering in Colombia, where UK HMG has limited operational presence, we are proposing to use the World Bank as the supervising agency, and to build on the arrangements in place for the existing CMSCR project, which have already been assessed as complying with the World Bank's financial management standards and are operating satisfactorily (see Annex 3). In addition, building on the approach used in CMSCR and drawing on experience from both this and the RSPS pilot study reduces the novelty and therefore the policy design and implementation risks.
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5 Much of the legal, implementation and operational frameworks for ensuring that risks are mitigated, and adequately managed throughout the project lifecycle, are already in place including agreements between the delivery partners (i.e. World Bank, FEDEGAN) and partner organisations (e.g. CIPAV), and the relevant departments within the Colombian Government (i.e. Agriculture and Environment Ministries). This intervention is therefore categorised as carrying a medium risk.

10 There is an existing body of evidence around the benefits of silvopastoral systems in Colombia, and this project carries a medium reward potential. This reflects both the direct projected benefits and the potential for catalysing a wider transformation, based on the large scale of Colombia's land surface that is dedicated to cattle production (38%); the large proportion of total GHG emissions in Colombia that result from cattle production (38%); the high rates of poverty in the rural sector (62.5%); the fact that most small scale farmers live in poverty in Colombia; and the economic and environmental viability of silvopastoral systems.

1.1.9 Risk Appetite Statement

15 Risk is an inherent part of the ICF. Climate finance is a relatively new area of expenditure. The evidence base to inform investment decisions is of variable quality, and the results chains to demonstrate impact and value for money are still relatively weak. As a result, it is important that we are clear about our appetite for risk and have robust procedures in place for minimising our exposure wherever possible.

20 The ICF Board has a medium / high risk appetite for investment risk and political risk where projects have the potential to deliver sustainable and transformative change, providing that risks can be managed appropriately. This is consistent with the strategic ambitions of the ICF and acknowledges the political climate of countries in which we will invest and the rate of failure inherent in these types of project.

25 The ICF Board has a medium risk appetite for operational risk. We will develop robust management and governance arrangements, carry out regular monitoring and reviews to manage these risks.

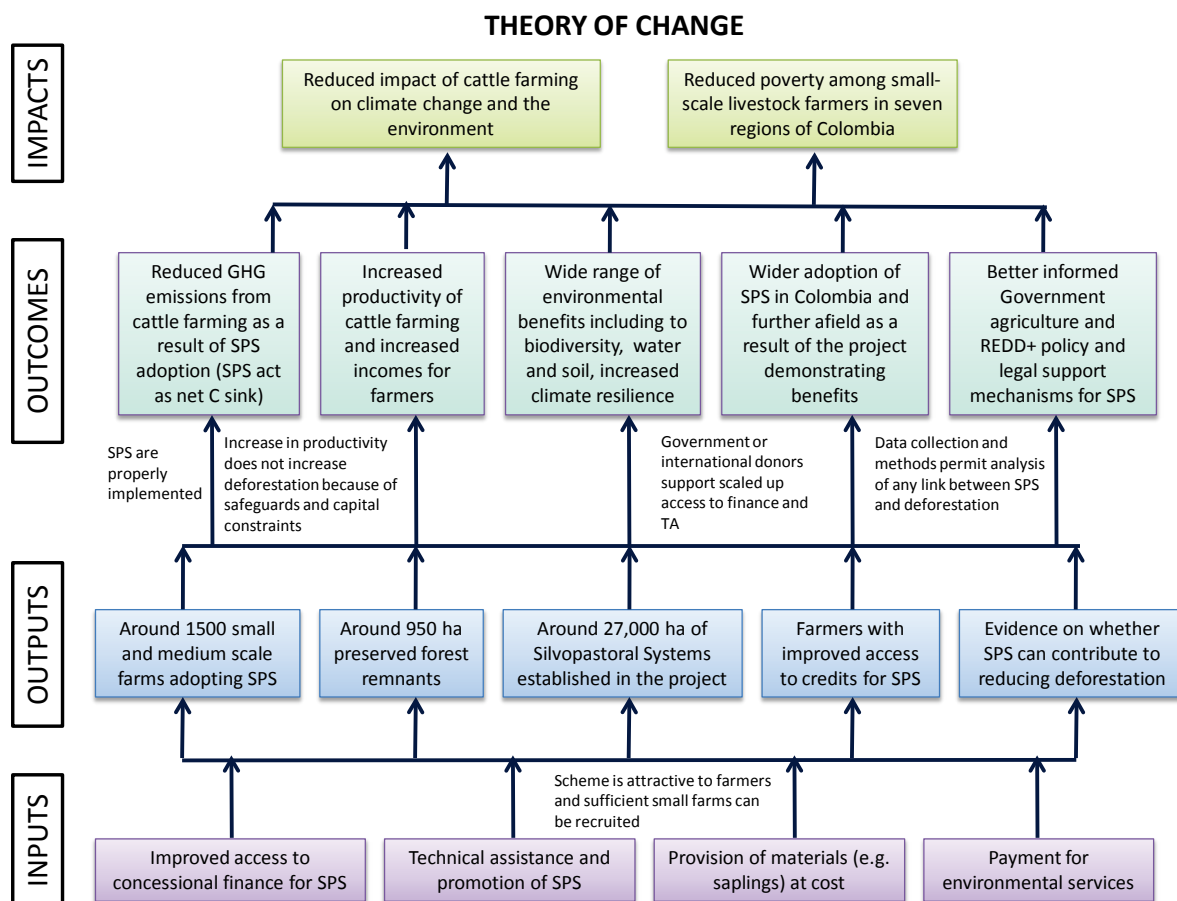
30 The ICF Board has a medium / low risk appetite for reputational risk, recognising the potential for UK public criticism on international climate spend while positively communicating our expenditure internationally through climate negotiations and wider international fora.

35 The ICF Board has a low risk appetite for financial risk, information risk and legal / compliance risk. We will not invest in organisations where fraud is suspected. HMG procedures on protecting sensitive information must be adhered to by programme and project staff. We will comply with UK legislation and in-country law where this does not conflict. This is consistent with corporate statements on minimising the risk of financial loss, protecting personal safety and the need to meet accounting officer responsibilities. Significant effort will be made to avoid these risks through the project lifecycle and appropriate skills and resource will be apportioned accordingly. The DECC ICF project lead has received counter-fraud training.

1.2 Impact and Outcome that we expect to achieve

1.2.1 Theory of Change

45 The theory of change for this project is set out in the diagram below, including key assumptions:



1.2.2 Expected results

5 The following indicative results for the project are based on findings from farms involved in the RSPS and the CMSCR projects and other data gathered in Colombia. The impact and outputs of the ICF intervention are expected to be:

Emission reductions:

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- **ICF financial support will be used to reduce GHG emissions by around 2MtCO₂ equivalent over 8 years and reductions are expected to extend beyond this period³⁶.**

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Green House Gas (GHG) emissions are reduced on land converted to SPS due to: improved capacity to store carbon in the soil and in the above ground biomass, fewer applications of nitrogen-based synthetic fertilizers (urea and others); reduced use of fire as a pasture management tool; and improved animal nutrition (methane emission reductions estimated at 21% and nitrous oxide emission reduction at 36%)³⁷. Carbon removals have been estimated at between 1.2 and 4.5 C tonnes/ha/year for SPS pastures (depending on tree density) as a result of the increase in carbon stocks in soils and biomass³⁸.

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³⁶ This time frame is based on the results of a pilot project (RSPS), where when farms were monitored 8 years after implementation (4 years after the end of the project and the cessation of PES) it was found that land converted to SPS during the project had remained as such. It is expected that GHG savings continue long after this period.

³⁷ World Bank 2008. ICR, RSPS project

³⁸ Ibrahim et al, 2010.

Based on the assumptions that around 27,000 ha of degraded pastures will be converted to SPS and around 950 ha of forests will be preserved in farms, that the carbon reduction benefits will continue for at least four years after the PES has stopped, that sufficient farms can be recruited and that the required finance can be leveraged, FEDEGAN estimates that the impact of the intervention will be a reduction of at least 2 Mt CO₂e over eight years. This assumption is based on evidence from a previous regional pilot project³⁹, which showed that the land use changes were kept by farmers after the project ended.

The estimated GHG abatement for this project is based only on the carbon sequestered in soils and vegetation biomass of trees and shrubs (see Annex 2 for details). Although models and recent literature conclude that including high quality forage plants such as *Leucaena* in the diet will reduce methane emissions between 5 and 30% this has not been included in the estimates here, owing to uncertainties, and neither have changes resulting from reduced burning or fertiliser use. This means that the figures used here are likely to be an underestimation of the actual GHG reductions resulting from this project.

Estimates of CO₂e balance of SPS are based on adequate establishment of trees and shrubs and on adequate management of the system, which will depend on good quality training and technical assistance being provided.

GHG abatement for the project is cost-effective at an estimated £6.5 per tonne CO₂e for the preferred option.

The following table summarises the estimated carbon savings for the CMSCR and ICF interventions:

	Hectares Planted CMSCR	Hectares Planted ICF	Average Avoided/reduced emissions (tonnes CO ₂ e/ha/yr)*	years	MtCO ₂ e captured or avoided CMSCR	MtCO ₂ e captured or avoided ICF	MtCO ₂ e captured or avoided Total
ISPS ⁴⁰	12,000	3,780	12.3	8	1.18	0.37	1.55
Preserved Forest areas	5,000	945	5	8	0.2	0.04	0.24
Trees in pastures	31,500	22,305	8.95	8	2.26	1.60	3.86
Degraded pastures recovered	2,000	945	1.62	8	0.03	0.01	0.04
Total	50,500	27,975			3.67	2.02	5.69

* Emissions avoided/reduced are based on the change from degraded pastures (with emissions of 0.65 tonnes/ha/year of CO₂e) to ISPS, trees in pastures and recovered pastures that act as a net sink for 11.6, 8.3 and 0.9 tonnes/ha/year respectively). See Annex 2 for further details.

Poverty reduction:

ICF support will be used to alleviate poverty in Colombia's livestock sector. Expected outcomes are:

³⁹ CIPAV 2011. Report

⁴⁰ Intensive Silvopastoral Systems: A form of agroforestry for animal production that integrates fodder shrubs planted at high densities (more than 10,000 plants ha⁻¹), intercropped with improved, highly-productive pastures (and timber trees), all combined in a system that can be directly grazed by livestock (Murgueitio and Solorio, 2008).

- **20% increase in productive assets-based patrimony of small-scale livestock farmers through the establishment of iSPS in Project's participating farms, at project closing date.**
- **10% increase in the production of beef and or milk per intervened hectare in participating farms, at project closing date, improving GHG balance.**
- **The conversion from degraded pastures to SPS (i.e. restored pasture, pasture with trees, live fences etc.) is expected to increase income per hectare by at least 50% since stocking rates are likely to double⁴¹ after seven years of the establishment of the SPS.**
- **Total farm income will rise according to the amount of land converted to each improved land use.**

The RSPS project demonstrated that SPS are more profitable than conventional production systems without trees, and provide the opportunity to increase productivity, protect biodiversity and improve competitiveness⁴². This applies to small, medium and large-scale cattle farms.

Intensive SPS can improve carrying capacity in farms from as little as 0.5 to up to 3.0 animals/ha. In addition, the improved nutrition provided by grazing in SPS increases the rate of weight gained by the cattle. A hectare of intensive SPS can increase farm income by at least USD \$440 / hectare / year, with a substantial potential impact on rural poverty. Demand for local labour also increased by 30% in those areas that had adopted SPS, although given the increase in income this still represents an increase in return on labour as a result of conversion to SPS. The results of the RSPS study countered farmers' perceptions that cleaner pastures are more productive.

Although SPS are profitable in the medium term, for the 82% of livestock farmers that are small-scale, the majority of whom live in conditions of rural poverty, the cost to convert extensive pasture to SPS is currently prohibitive: this is why the ICF intervention is required.

Wider environmental benefits:

- **A wide range of environmental benefits are expected, including biodiversity conservation and reduced soil erosion and water pollution**
- **Farmers will benefit from natural resource optimisation in their farms.**

The ICF intervention is also expected to deliver a range of wider environmental benefits. As a result of the project, globally important biodiversity would be safeguarded in seven strategic regions of the country by increasing the amount of tree cover and reducing the use of fire and pesticides in the farms. Soil erosion, desertification and water pollution are expected to be reduced.

The project is expected to increase connectivity between ecosystems, including connectivity to Protected Areas (PA) and their buffer zones, as project areas have been chosen taking into account their geographic proximity to PA. This would enhance the benefits from SPS, allowing not only more sustainable production systems and biodiversity protection within cattle farms, but also have a multiplier effect for biodiversity protection when PA biodiversity protection and SPS contributions to biodiversity mutually reinforce one another.

Reforestation and reduced deforestation

- **Tree cover will be increased by planting from 50-10,000 trees and shrubs per hectare on land converted to SPS, and existing forest fragments preserved.**
- **The project will provide evidence on whether the introduction of SPS can help remove one of the drivers for ongoing deforestation in two of the national deforestation "hotspots".**

⁴¹ World Bank 2008. ICR, RSPS project

⁴² World Bank 2008. ICR, RSPS project

SPS will be tested as a viable implementation mechanism for REDD+ initiatives. (i.e. biomass changes monitored in project farms and hotspot areas).

5 Extensive monoculture and degraded pastures will be converted to silvopastoral systems where tree cover will be increased by planting from 50 to more than 10,000 tree and shrubs per hectare.

10 The implementation of live fencing with multipurpose trees will reduce the deforestation caused to replace poles every three to four years in the farms. These planted trees will also provide wood, firewood, fruits and other resources that are currently obtained from forest areas.

15 It is hoped that the increase in livestock efficiency and productivity will reduce the need to clear more land to generate income. However, there is some debate within the academic community as to how effective agricultural intensification is as a means to reduce demand for land. Depending on the context, there is a possibility that increased profitability incentivises farmers to expand the area they farm, rather than settle for producing more from their existing land.

20 Although some economic studies suggest that cattle ranchers that adopt more profitable livestock farming practices will be inclined to expand their pasture areas⁴³, this effect depends on the specific geographical and economic context. Where the new techniques employed require greater capital, labour, or managerial efforts as is the case for SPS, this may constrain the possibility for expansion. Unlike conventional extensive cattle ranching, SPS require more rigorous management and for Intensive SPS a system of paddock rotation has to be carefully implemented.

25 Due to this complexity and the need of capital and labour, the CMSCR project team do not expect farmers to extend to new forest areas or agricultural frontiers to expand the system in the absence of TA and financial resources for this, but rather will intensify the use in the most suitable areas of their farms.

30 The design of the project will include a number of safeguards to try to reduce the risk of expansion beyond existing grazing land:

- 35 • The project will only provide support for conversion of existing extensive grazing land to SPS. The areas with greatest potential for introduction of SPS are consolidated livestock areas with extensive tree-less pastures. The project will select the most suitable areas where there is already livestock activity and it can be intensified.
- 40 • Through careful farm planning, SPS will be promoted only in the most suitable areas of each farm allowing the release of areas to land restoration and forest protection (with increase in carbon capture). The area devoted to cattle per farm is expected to be reduced as a result of the promotion of forest protection and corridor restoration in the project.
- 45 • Project design seeks to prevent the risk of further conversion of land to cattle ranching through agreements to be signed with individual farmers to ensure sustainable land use planning in each farm, with a baseline assessment of land uses and close M&E. PES payments will be dependent on compliance.

50 In addition, the Colombian Government, with support from REDD+, is now strengthening the implementation of existing laws to protect the forest (e.g. Law 2 of 1959, and law 160 of 1994, creating the Peasant Enterprise Zones (Zonas de Reserva Campesina, ZRC). If effective, this will lower the risk of agricultural expansion into forests and increase the likely success of using the ICF project approach to SPS conversion (through provisions of Technical Assistance, PES, improved access to credit and integrated land planning) as part of a wider toolkit for reducing deforestation.

There is more detail on possible rebound effects in Annex 7.

⁴³ Kaimowitz & Angelsen 2008

2 Appraisal Case

2.1 What are the feasible options that address the need set out in the strategic case?

5 2.1.1 Context

The concept note approved by the ICF Board in November 2011 was for a project to implement SPS in Colombia, building on the existing work in this area. The options presented here consider the different ways in which this approach could be implemented.

10 Prior to preparation of the concept note a wider range of options were considered and rejected by the Colombian Government and the project team. The most obvious alternative to SPS that might be used to reduce the impacts of cattle ranching would be more traditional conservation approaches that take land entirely out of production, but these were rejected as they would be costly, and

15 socioeconomically unfeasible. SPS adoption was selected as the best approach to work with as it enables land to be used productively, providing a better livelihood for farmers, while also delivering climate and wider environmental benefits. Because SPS are often profitable for farmers, these improvements can be achieved at relatively modest cost: the cost of providing some up-front financial support and technical assistance, and of providing PES payments to balance the mix of land uses

20 towards those with greater climate and environmental benefits.

All the options proposed here build on the approach and experience of the current CMSCR project, which is the first attempt to scale up the introduction of SPS in Colombia. The CMSCR project is being implemented by FEDEGAN with the support and intervention of partners including the Ministry of Environment and Sustainable Development (MESD) and the Ministry of Agriculture and Rural Development (MARD), as well as the Fund for Agricultural and Livestock Sector Financing (FINAGRO), and with finance and oversight from the World Bank/GEF.

30 Significant work and evidence has gone into designing the tools for promoting SPS used in the CMSCR project and the Colombian Government is keen to use the ICF support to scale up this approach further. The areas where the CMSCR project is working are generally located distant from areas of active forest clearance. However, the Colombian Government is keen to also test this approach in areas with active deforestation, so this is considered as an option for the ICF intervention.

35 A recent report from the National Institute of Environmental Studies (IDEAM) has identified deforestation hotspots in the country. Although the most important hotspots show little concordance with the CMSCR project areas (and in most cases would be difficult areas to operate in), two of them are considered as areas for the ICF intervention to work in. There are also important focal points of deforestation locally in all project regions that are driven by agriculture or cattle ranching and that may

40 be tackled during the project.

2.1.2 Outline of the approach

In all options considered here, the UK would provide up to £15m to be used over four years (2013-2016) to support small and medium farmers to convert open pastures to SPS, through provision of improved access to credit, technical assistance, and payment for environmental services. The following activities would be the main component of the project:

ICF funds will be used to support the following activities:

50 **Component 1. Making SPS attractive and accessible. (£995k).** The aim of this component is to create an enabling environment for small and medium scale farmers to adopt SPS, including access to technical knowledge, financial information and analysis. This enabling work is an essential prerequisite for achieving wider conversion to SPS and to maximising the results of the project. The

main activities in this component would include: (a) broad promotion of SPS to induce a cultural change in producers in seven regions of the country; (b) peer to peer exchanges for farmers in SPS demonstration farms; (c) the provision of SPS training to regional and local technical assistance (TA) providers, specifically FEDEGAN staff at the regional level; (d) training farmers in banking and loan management in order to increase uptake of loans for SPS.

Component 2. Establishment of SPS in small and medium scale farms. (£10.89m). The aim of this component is to support farmers and provide incentives for the establishment of SPS on their farms. The main activities under this component would include: (a) selection and screening of beneficiaries and baseline farm assessments; (b) provision of a PES for carbon sequestration purposes (PES-CS) to small farmers who access credit; (c) design and implementation of a payment for environmental services (PES) mechanism for natural resources management (NRM) offering short-term payments for SPS (e.g. intensive SPS, live fences, pastures with trees, watershed forest protection); (d) provision of TA to farmers for SPS implementation in seven regions of Colombia; (e) provision of seedlings, trees and organic fertilizers (at production costs) for live fences, pastures with trees and forest enrichment.

Component 3. Monitoring, evaluation and dissemination of results at local, regional and national levels. (£1.97m) The aim of this component is to ensure that the benefits of the project are delivered, and to gather evidence and implement a communication strategy that contributes to a broader adoption of SPS in Colombia. The main activities under this component would include: (a) monitoring of the benefits of SPS including contributions to climate change mitigation and adaptation, and of the link with deforestation; (b) the dissemination of results to livestock farmers and local and national institutions (including local producer associations, regional environmental authorities, municipalities, Ministries and banks). Gathering and disseminating this evidence has the potential to generate significant indirect benefits, as it will pave the way for land to be converted to SPS outside of the project areas and beyond the life of the project. In particular, the evidence gathered will influence future Colombian Government policies and support mechanisms for SPS.

Component 4. Project management and Trust fund management and oversight. (£1.15m) The main activities under this component would include: a) operational delivery (financial, technical, legal and administrative execution) of the project by FEDEGAN; (b) technical supervision and performance monitoring by the World Bank, including oversight for procurement procedures and practices, fiduciary management and environmental and social safeguards⁴⁴ and (c) FCO and DECC oversight of the project.

2.1.3 Targeting small farmers to maximise poverty reduction benefits

Previous projects have found that small farmers responded to the provision of PES and TA but their ability to invest in more profitable forms of SPS such as ISPS was restricted by a lack of initial capital. Small scale farmers are reluctant to take bank loans and sometimes even to have a bank account, due to previous bad experiences and financial costs. Large-scale farmers have implemented ISPS in several regions of the country because they have easier access to loans and the Government's Rural Capitalization Incentive (ICR).

This intervention is designed to overcome the barriers to entry for SPS that prevent small scale farmers from accessing credit. In order to remove the above mentioned barriers, and therefore, allow small farmers to get the State's support, DECC Project will:

(a) invest in making the banking system accessible to the small rancher, through financial education (particularly on Finagro's credit lines and subsidies and how to access them) and technical assistance to the small farmer (not only for building strong agribusinesses to be presented before the commercial Banks, but to go through cumbersome and time consuming procedures).

(b) provide to the small farmers who take credit to establish iSPS a cash transfer incentive, denominated a payment for environmental services for carbon sequestration (PES-CS), that could be

⁴⁴ A summary of these safeguards and links to more detail can be found at <http://go.worldbank.org/UOW39X7ZA0>. A brief summary is provided in Annex 4.

calculated as equivalent to 50% of Finagro's credit annual cost. This incentive fits well with one of the main objectives of the proposed ICF Project, since the establishment of 10,000 trees per ha (required for iSPS) represents an important carbon sink. Under the current WB-GEF project, this incentive was not considered because the environmental services of iSPS is not relevant for biodiversity purposes (GEF's priority), but the reward for carbon sequestration reflects the fact that climate change mitigation is one of the central objectives of the ICF intervention.

Currently FINAGRO operates an incentive equivalent to around 20 to 30% of total interest costs and this has proven effective for more wealthy farmers. It is envisaged that 70% of farmers participating in the ICF project would be small scale, and the rest medium scale. Experience with the CMSCR project to date suggests that it will struggle to reach that level of small farmer participation, however the ICF intervention will include additional measures to attract small farmers, as described above, and the project team consider that the target of 70% of small-scale farmers is achievable.

Another important consideration for maximising the poverty benefits will be the effective design of PES, to ensure that small farmers benefit. Considerable experience has been drawn on in the design of the PES scheme for the CMSCR project (see Annex 12) and this could be reviewed for the ICF project if necessary, to reflect the emphasis placed in this project on the participation of small farmers.

2.1.4 Summary of feasible options

The main implementation options proposed for the ICF intervention can be summarized as follows:

Option 1. Implement in existing project areas. Focus the project intervention in the same five areas where the CMSCR project is working. This was the focus of the Concept Note endorsed by the ICF Board.

Option 2. Existing areas plus neighbouring deforestation hotspots. Include two deforestation hotspots identified by IDEAM in areas adjacent to the five areas where CMSCR is working. This will widen the current intervention but will use the same institutional arrangements. The Colombian Government have requested that we try to include hotspots as pilot areas in order to test the effectiveness of SPS as a tool to avoid forest degradation and deforestation.

Option 3. Existing areas plus geographically distinct deforestation hotspots. Focus the intervention in the current five CMSCR areas but add two completely new geographical areas which are hotspots of deforestation. A new intervention strategy and arrangements would be necessary under this option.

Option 4. All new areas. Base the project intervention in five new areas where cattle ranching has been identified as one of the main drivers of deforestation.

Option 5. Do Nothing. Analysis of the impact of having no ICF/ DECC intervention.

Procurement and management options for delivering the project are considered later in this business case (sections 3 and 5).

2.1.5 Detail of the feasible options

Option 1. Implement in existing project areas.

In this option the ICF intervention would have a relatively low cost per hectare (£484) for SPS adopted compared to the RSPS project (£734), given that the institutional arrangements and procedures are already in place. The ICF project would improve capacity building and technical assistance using the previous institutional infrastructure used by FEDEGAN in five regions of Colombia. Areas adopting SPS in the CMSCR project are very small in each region and increased effort is needed to introduce SPS to more small and medium scale farmers. The ICF intervention would also benefit from the information and communication strategy already implemented that would help in recruiting extra farms needed during the project.

Concentration of activities in the same areas will have the following advantages:

- 5 1. Small farmers included in the ICF project would benefit from the experience gained by large neighbouring farms in using credit lines (successfully) during the CMSCR project. This would have an important multiplier effect, as it would help break down the mistrust of the financial system by small farmers, and contribute to a better understanding of how to access the system and how to establish and manage SPS.
- 10 2. Production and provision of seed and seedlings could be concentrated in fewer places that can take advantage of a greater scale of production per site, reducing transport and labour costs.
3. More concentrated impact on biodiversity and other environmental services such as watershed protection.

Option 2. Existing areas plus neighbouring deforestation hotspots (the preferred option).

15 Two additional neighbouring areas (hotspots) adjacent to CMSCR regions would be included in the project. Areas would be selected where cattle ranching is the driving force behind deforestation. Activities under this option would increase the cost per hectare to £540, as infrastructure would need to be set up in two new regions, including training of technicians and professionals. For other zones, the project will benefit from infrastructure and promotion already in place, with a greater area being
20 covered from existing project offices.

Despite the slightly higher cost and risk level, this is our preferred option as it provides an additional benefit of exploring whether this approach (Technical Assistance, PES, improved access to credit and integrated land planning) can work as part of a toolkit to reduce deforestation and degradation in
25 areas of active forest clearance. The Colombian Government are keen to include these deforestation hotspots and to use them as a test ground to gain expertise which could be transferred to other deforestation hotspots in the future.

Option 3: Existing areas plus geographically distinct deforestation hotspots.

30 Two additional geographically distinct areas identified as deforestation hotspots would be included in the project. This would require new intervention strategies in two different areas of the country and the average cost per hectare would be around £591.

Option 4. All new areas.

35 This would require new arrangements and intervention strategies in five deforestation hotspots in the country where FEDEGAN and other project partners have little infrastructure developed. The estimated cost per hectare would be around £923.

Option 5. Do Nothing.

40 This is the current scenario without intervention by the ICF. Under this scenario, the CMSCR project run by FEDEGAN would continue on a smaller scale and without expansion into deforestation hotspots, working mainly with medium-sized and large farms. Small farmers would continue to face barriers to SPS adoption.

45 2.2 Assessing the strength of the evidence base for each feasible option

In the table below the quality of evidence for each option is rated as either strong, medium or limited

<i>Option</i>	<i>Evidence rating</i>
1	<i>Strong</i>
2	<i>Medium</i>
3	<i>Limited</i>
4	<i>Limited</i>
5	<i>Strong</i>

Evidence for five options are based on results of the RSPS project⁴⁵ and on the evaluations already done for the CMSCR project.

5 Due to the associated uncertainties, not all of the benefits could be appraised quantitatively and monetised for the purposes of a comprehensive social cost-benefit analysis. In particular, long-term emission reductions (beyond 8 years) have not been estimated. More detail is given in the costs and benefits section below.

10 **What is the likely impact (positive and negative) on climate change and environment for each feasible option?**

15 Silvopastoral systems are an important tool in reducing the contribution of cattle to climate change. Green House Gas (GHG) emissions are reduced at SPS converted sites due to: fewer applications of nitrogen-based synthetic fertilizers (urea and others); reduced use of fire as a pasture management tool; improved animal nutrition (methane emission reductions estimated at 21% and nitrous oxide emission reduction at 36 %); improved capacity to store carbon in the soil and in the above ground biomass. Carbon removals have been estimated from 1.2 to 4.5 C tonnes/ha/year⁴⁶.

20 In addition, at a landscape level, SPS provide more ecosystem services than open pasturelands⁴⁷. They favour biodiversity by creating complex habitats that support diverse plants and animals⁴⁸, harbour a richer soil biota, and increase connectivity between forest fragments⁴⁹.

Climate change and environment risks and opportunities for options analysed.

<i>Option</i>	<i>Climate change and environment risks and impacts</i>	<i>Climate change and environment opportunities</i>
1	<i>Low</i>	<i>Medium</i>
2	<i>Low</i>	<i>High</i>
3	<i>Low</i>	<i>High</i>
4	<i>Low</i>	<i>Medium</i>
5	<i>Low</i>	<i>Low</i>

25 All options have low impact in terms of environmental and climate change since the models being promoted reduce the negative effects of cattle ranching on biodiversity, soil and water resources, and contribute to reduce GHG emissions. Though option 1 may convert a slightly greater area of land to SPS, Options 2 and 3 will provide a better understanding of the impact of this type of intervention on deforestation and could contribute to reducing deforestation in future. These long-term benefits have not been quantified, but have been taken into account in the appraisal. They also raise the level of risk of a rebound effect from the increase in agricultural productivity, but the project has been designed to avert this so this risk is considered low for the duration of the project. More detail is given in Annex 7.

35

2.3 What are the costs and benefits of each feasible option?

2.3.1 Cost benefit analysis

40 The following **costs** have been monetised and included in the social cost-benefit analysis:

- Financial costs to the ICF.

⁴⁵ WB, 2008: RSPS ICR and WB, 2009: PAD

⁴⁶ Ibrahim, M. et. al., 2010

⁴⁷ Buttler et al., 2009; Calle et al., 2009

⁴⁸ McAdam et al., 2007; Castro, 2009

⁴⁹ Rice and Greenberg, 2004; Ibrahim et al., 2006

- Increased methane and nitrous dioxide emissions from the increased stocking rate (number of animals per hectare) on farms.
- Costs to farmers, including the capital investment, the additional labour costs and the interest repayment on the capital loan.

- 5 The following **benefits** have been monetised and included in the cost-benefit analysis:
- Reduced carbon dioxide emissions from a higher number of trees, living fences and preserved forest areas.
 - Higher farm revenues as a result of productivity increases from conversion to silvopastoral systems.

- 10 The following benefits have not been monetised:
- Reduced methane emissions as a result of better animal diet.
 - Improved biodiversity and soil conservation.
 - Reduced GHG emissions and costs from lower fertiliser use by farmers.
 - Reduced GHG emissions from the use of fire as a pasture management tool.
- 15
- Adaptation benefits from making productive systems more resilient to climate change.
 - Any intrinsic value of forests.

Monetising these benefits increases the value of the project but would not be expected to change the ranking of the options.

- 20 The full explanation of the cost-benefit analysis, and the Net Present Value under different scenarios, is given in the Technical Annex for the Economic Appraisal.

The main costs to the ICF are from training farmers and technicians, SPS establishment in farms, subsidised interest rates, Payment for Environmental Services and monitoring and dissemination.

- 25 Table 1 below shows the change in GHG emissions expected under each option. The central scenario is based on 15,000-30,000 hectares of land being converted to silvopastoral systems, depending on the option. The low scenario is based on 50% less land being converted, and the high scenario is based on 50% more.

- 30 It is assumed that the abatement benefits continue for four years after the funding stops (8 years in total). This is based on evidence from the RSPS project⁵⁰. The abatement benefits are discounted at the UK Government rate of 3.5% . The other costs and benefits are discounted at 10%⁵¹.

- 35 Table 1: expected change in GHG emissions by option, over the lifetime of the intervention

PROJECT SCENARIOS	net GHG change (tCO ₂ e)		
	Low scenario	Central scenario	High scenario
Option 1 (same regions)	-1,349,291	-2,055,812	-3,115,593
Option 2 (2 hotspots adjacent to current regions)	-1,200,869	-1,829,673	-2,772,878
Option 3 (2 hotspots in different location)	-1,092,926	-1,665,208	-2,523,631
Option 4 (5 new hotspots)	-674,646	-1,027,906	-1,557,797
Option 5 (do nothing)	n/a	n/a	n/a

⁵⁰ Implementation Completion and Results Report, The World Bank; 2008, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/11/25/000333037_20081125224142/Rendered/PDF/ICR00008750ICR1isclosed0Nov02502008.pdf

⁵¹ As advised by DECC/DFID appraisal guidance for international climate finance.

Table 2 summarises the components of the partial net present value (NPV), based on the central scenario. All the costs and benefits are additional to 'business as usual'. The NPV is partial, because not all the benefits have been monetised.

5 Table 2: NPV and abatement costs for the central scenario

	Present value of costs (£m)	Present value of benefits (£m)		Partial NPV	Project abatement cost	Net abatement cost	Long-term abatement score
	Project costs	CO ₂ e avoided	Increased farm income	£	£/tCO ₂ e	£/tCO ₂ e	(3 is highest)
Option 1	11.9	37.2	11.3	36.7	5.8	0.3	1
Option 2	11.9	33.1	10.1	31.3	6.5	1.0	3
Option 3	11.9	30.1	9.2	27.5	7.1	1.6	2
Option 4	11.9	18.6	5.7	12.4	11.5	6.0	2
Do nothing	0	0	0	0	-	-	-

10 Although the net present value of option 1 is highest, option 2 is preferred because it is expected to have higher long-term abatement benefits. This is because it involves working in deforestation hotspots, where future 'business-as-usual' emissions from deforestation are expected to be particularly high. Due to the uncertainties of projecting beyond eight years, it is not possible to quantify these long term benefits. Instead, they are reflected in the long-term abatement score. If they were quantifiable, it is expected that they may tip the balance in favour of option 2.

15 The project abatement cost is based on the ICF costs only, and ranges from £5.80 to £11.50/tCO₂e. The net abatement cost also includes non-greenhouse gas benefits (farmer incomes). Comparing to the cost comparator (the weighted average discounted shadow price of carbon⁵²), which is £18/tCO₂e, all the options are cost-effective, because their abatement costs are below £18.⁵³

20 Sensitivity Analysis

25 Due to the inherent uncertainties in the cost-benefit analysis, the main assumptions (8 year lifetime of abatement benefits, carbon price, 10% discount rate, uptake by farmers) were tested to see how they affect the appraisal. Under all the sensitivity tests, the net present value of all the options remained positive and the ranking of the options did not change. The NPV was most sensitive to the assumption that the abatement benefits continue for 8 years. Using a 4 year lifetime instead reduced the NPV of the preferred option by 60%.

30 The uptake needs to be at least 30% for the preferred option to be cost effective (i.e. 30% of the land conversions expected under the central scenario need to be implemented successfully).

Full detail is given in the Technical Annex.

Table 3: Expected leverage of public and private finance under central scenario:

	Private investment leveraged £m	Public investment leveraged £m	Leverage Ratio
Option 1	24.8	2.8	1.77
Option 2	22.9	5.4	1.81
Option 3	21.1	5.3	1.68
Option 4	12.4	1.4	0.85
Option 5	-	-	-

⁵² DECC Appraisal Guidance:

http://www.decc.gov.uk/en/content/cms/about/ec_social_res/iag_guidance/iag_guidance.aspx

⁵³ The cost comparator is the same for all the options because the distribution of benefits is the same over time across the options.

Private investment leveraged is the farmers' shares of the capital investment and loan interest payment. Public investment leveraged is investment by FINAGRO to provide ICR (Incentive for Rural Capitalization) for loans and investments by the Government of Colombia via local and regional authorities to work on hotspots. This public element is about 10% of the total costs.

2.3.2 Political Appraisal

Context

The Colombian Government strongly supports this intervention. Colombia is a progressive voice and strong ally on climate change and green growth internationally, and is making serious domestic efforts to adopt a low carbon development path.

The Ministries of the Environment and Agriculture, on behalf of the Colombian government have expressed their commitment to participate in the project and contribute to the development, approval and enforcement of laws and legal tools to help reduce deforestation and poor farming practices in the country. Several of the practices to be used in this project will be supported by the Land Act for Rural Development (under preparation, see version February 2012) and other initiatives already adopted that are being reinforced.

In its recent Readiness Preparation Proposal for the Forest Carbon Partnership Facility (FCPF R-PP) the Government of Colombia expressed its clear desire to curb the expansion of the agricultural frontier and this will be reinforced with the launch of the Land Act, promoting the Peasant Enterprise Zones (Zonas de Reserva Campesina, ZRC⁵⁴) and government support for rural development. These are clear signals that the Government of Colombia wants to use feasible and effective policy to curb the expansion of the agricultural frontier.

In its wider toolkit for reducing deforestation, the Government of Colombia has several legal instruments and incentives that can be used in hotspots to complement this intervention. Instruments such as the Zonas de Reserva Campesina (ZRC) the Rural Development and Land Act (in preparation) and the creation of Natural Reserves of the Civil Society (Act 99, 1993) can be used to improve land tenure, promote sustainable land planning and protect forest areas. Available instruments will be studied to define the best strategy to improve the impact of the project.

The Colombian Government is strongly committed to tackling climate change and has made implementation of SPS part of their strategy for tackling the impact of cattle farming. With emissions from the livestock subsector expected to grow significantly, the ICF intervention could demonstrate a cost-effective and "win-win", green economy-based approach to support livestock transformation as part of Colombia's Strategy for Climate Change Adaptation and Mitigation.

The Government's 2010-2014 National Development Plan promotes the agriculture and livestock sector as a driver of development, while highlighting the need to undertake a Strategic Environmental Assessment that incorporates environmental criteria into sectoral planning. A major criterion for this is the sustainable use of the land, which the use of SPS will address. By ensuring that support for SPS will be introduced in the new law of property rights and rural development, the intervention will also help the Colombian government implement the Land Restitution Act and address under-lying socio-economic challenges of sustainable rural development.

⁵⁴ The ZRC is an environmental planning tool included in Act 160 of 1994, which will help to create a buffer zone at the agricultural frontier, contribute to sustainable development and stabilize rural populations with vulnerability to displacement, provide comprehensive implementation of rural development policies, strengthen the areas of cooperation between the state and rural communities, create conditions for the harmonization of the territory and the sustainable development of rural economy, help to regulate the occupancy and use of public lands, control the expansion of the agricultural frontier and restrict the use of land for agribusiness initiatives, oil and mining.

FEDEGAN's 2019 strategy shares the vision for a more sustainable livestock sector, and includes an aim to decrease the area of land used for cattle ranching by 10 million hectares, devolving land unsuited used for cattle ranching to other uses.

5

Choice of FEDEGAN as an implementation partner

FEDEGAN is a non profit trade association founded in 1963 and subject to Colombian private law. It brings together regional and local trade associations and other entities involved in cattle ranching activities. The WB conducted a reputational risk assessment and a financial management assessment of FEDEGAN prior to selecting it as the recipient of the GEF grant. Given FEDEGAN's key role in ensuring project impact, both through its leadership in favour of the subsector's development and its interest in the subsector's transformation towards sustainable production models, as well as its ample experience in the administration of public funds and project execution by delegation of the GoC, FEDEGAN was selected to be the GEF Grant recipient and lead executing agency⁵⁵.

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FEDEGAN has been entrusted by the MADR with the administration of the National Cattle Fund and the Stabilization Fund for the promotion of beef, dairy and sub-product exports, both of which collect non-fiscal taxes from producers to reinvest in the subsector's development. FEDEGAN is also leading a number of national initiatives, including the national foot and mouth disease eradication campaign (partnering with ICA) and specialized training of cattle ranching enterprises (with SENA) (both national public entities).

25

FEDEGAN has put in place a 10 year action plan (2019) promoting sustainable cattle ranching by reducing extensive practices and introducing SPS. FEDEGAN and FINAGRO have entered into a cooperation agreement setting up credit lines for small and medium-scale farmers for productive innovation and improved productivity.

Because of this track record, the World Bank's assessment of FEDEGAN and their central involvement in the CMSCR project which this intervention will build on, FEDEGAN is judged to be best placed to act as implementing agency for this project.

30

Choice of project areas

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The Colombian Government is keen to include deforestation hotspots within the project areas for this intervention, and Option 2, which includes working in two hotspots, would be our preferred approach to doing this. These two hotspot areas have been selected because of a) their proximity to existing project areas, allowing use of existing project infrastructure and staffing, considerably reducing the cost, b) they are areas where cattle ranching has been identified as a key driver of deforestation and c) they represent two distinct areas of ecological importance and significant biodiversity (the dry forest near the Sierra Nevada de Santa Marta, which is one of the most threatened ecosystems, with only 2% remaining, and a region of the Orinoco which is important for the connectivity between the Macarena mountains and the Andean forests).

45

Even though activities under Option 2 increase the cost per hectare compared to Option 1 (£540 vs. £484), we judge that this is the best option as, in addition to providing a valuable opportunity to test whether introducing SPS can reduce deforestation, it will secure strong political support from the Colombian government. This will maximise Colombian government ownership of transferring the expertise from these two hotspots to other deforestation hotspots in the future, in areas where it may be more difficult for international donors to fund projects because of ongoing conflict issues. It will maximise the likelihood that support for SPS will be included in the new law of property rights and rural development.

50

⁵⁵ See CMSCR Project Appraisal Document report, Annexes 6, 6A and 7 for more information.

2.4 What measures can be used to assess Value for Money for the intervention?

Four key measures are proposed to assess value for money for the intervention:

5 Leverage ratio of ICF resources to private / public investment:

10 As shown in the appraisal above, the leverage ratio is increased under option 2 in which there will be greater involvement of the Ministry of Environment and Sustainable Development, whilst preserving the possibility of obtaining further resources from government and other sources. Under this option the ICF resources used for PES-CS will help to leverage at least ten times more resources, since the capital and the interest will be assumed by the farmer.

15 Abatement costs in terms of £ per tonne of CO₂e. abated is a key indicator of cost effectiveness, and is calculated from data on project costs and outcomes. The options considered are all below the weighted average discounted shadow price of carbon⁵⁶ which we use as a comparator (£18/tCO₂e).

20 Cost per hectare converted to silvopastoral systems

The average cost per hectare converted is lower in options 1 and 2 (£483 and £540) than in options 3 and 4 (£590 and £923) respectively. Costs are also lower than previous interventions such as the RSPS project.

25 Increase of income for small-scale farmers

Farmers will have an increased income as a result of a conversion to more efficient production systems and the improvement of productivity indicators.

2.5 Summary Value for Money Statement for the preferred option

Though option 1 may be marginally more cost effective in terms of delivering the readily quantifiable short term benefits, option 2 is considered to offer greater medium term benefits, as in addition to the direct climate, poverty reduction and environmental benefits it will provide a valuable opportunity to increase the evidence base on the link between SPS and reduced deforestation and create practical learning to inform future interventions aimed at reducing deforestation. Option 2 is also the preferred option of the Ministry of Environment and Sustainable Development of Colombia, and will benefit from resources that environmental authorities have in these regions. It is expected that in Option 2 the project will help establish a strategy to reduce deforestation in the two hotspots included in project areas. Being a pilot intervention in this respect, the benefits of this cannot be quantified at this stage.

⁵⁶ DECC Appraisal Guidance:

http://www.decc.gov.uk/en/content/cms/about/ec_social_res/iag_guidance/iag_guidance.aspx

3 Commercial Case

Indirect procurement

3.1 Outline of the procurement approach

5 This project will use **Indirect Procurement** as the ICF will provide funding to a third party organisation to implement the project. Given the strong case (outlined in section 2) for this intervention to make use of the structures and arrangements in place for the existing CMSCR project, the procurement options are limited. Three main options were considered (a) The World Bank (WB) in a supervising role, as it is in the current CMSCR; (b) WB contracted under the model of Fee-based services (FBS), to be in charge of technical supervision and Fondo para la Acción Ambiental y la Niñez (FA) as implementing agency, and; (c) FA as implementing agency without support from the WB. In all cases FEDEGAN would be the executing agency, coordinating work on the ground.

Option A: The World Bank as supervising agency (preferred option)

15 The WB would be in charge of technical supervision and performance monitoring (including oversight of procurement procedures and practices), fund management and operations of the ICF project, following the WB-based procurement, risk management, screening and competitive procedures that have been implemented for the CMSCR project.

20 The WB takes a supervising role, and FEDEGAN acts as Grant Recipient and Implementing agency, as they are in the current CMSCR project. The WB has final accountability for supervision and FEDEGAN for execution for the ICF project.

25 Arrangements for results to be monitored, measured and evaluated would build on those used in the CMSCR project, in line with the ICF M&E strategy.

30 The World Bank would create a recipient executed trust fund (TF) and the funds would flow directly from DECC to the WB⁵⁷. The project money will be delivered using the WB procurement process⁵⁸. The ICF intervention could be set up as cofinancing (and fully blended operation) for the existing CMSCR project.

35 An "Administration Arrangement" would be signed between DECC and WB. TF administrative costs are estimated to be 5% of project resources. Time for project preparation and approval of the TF is estimated to be 4 months.

Fees: 5% proposed
Time to operation: 4 months

Option B: Fondo Acción as Implementing Agency, under WB supervision

40 A second option was considered, involving an arrangement where the institutional strengths of the WB and FA are complementary. Under this arrangement, FA is the implementing Agency supervising FEDEGAN as the Executing Agency. This oversight role would include enforcing recommendations of the WB. Thus, FA would have final supervision accountability for the project.

⁵⁷ Creating a Child Account of an existing Trust Fund may also be a possibility and we are exploring this.

⁵⁸ World Bank "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004 and revised October 2006; the "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004, revised October 2006.

The WB would be in charge of technical supervision and performance monitoring, including oversight of procurement procedures and practices. Bank Missions would review all relevant aspects for both the CMSCR and ICF components thereby ensuring coherence and synergies; and would provide recommendations for effective implementation.

5

Under Option B, the funds flow directly from DECC to FA. Estimated WB consultancy fees (4 years): US \$500k (around £320k, equivalent to just over 2% of the project budget). Estimated time to negotiate the consultancy agreement between the WB and DECC: 3 months. FA supervision and management fees: 3%.

10

Fees: Around 5.1% (estimated)

Time to operation: >3 months

Option C: Fondo Acción as Implementing Agency, without WB participation

15

Under this option, FA would be in charge of technical supervision and performance monitoring (including oversight to procurement procedures and practices), fund management and operations of the ICF project, following the same WB-based procurement, risk management, screening and competitive procedures used for the CMSCR project. FA would act as the implementing agency (equivalent to the WB role in the current CMSCR project) and FEDEGAN would be the executive agency, as it is in the current CMSCR project.

20

Estimated cost for project supervision is 5% of project resources; estimated time to negotiate: 1 month. Using this option, the funds flow directly from DECC to FA. The FA will supervise FEDEGAN (Executing Agency) and this oversight role will be carried out without WB participation. FA has accountability for project supervision.

25

Fees: 5%

Time to operation: >1 month

30

3.2 Why is the proposed funding mechanism/form of arrangement the right one for this intervention, with this development partner?

Option (a) is the preferred option.

35

The costs of the three different options are very similar. There is a strong case for using the implementation partners (WB and FEDEGAN) that are delivering the CMSCR project, as this will provide greater value for money than having to create new delivery structures, reduce implementation risks and significantly increase the likelihood of successful project delivery. Delivering through the WB, which is a trusted partner, and with which the UK has an existing framework agreement, will provide a high level of accountability, and reduce the risks of delivering in a country where there is no DFID office. This is the main reason why Option (a) is preferred.

40

Annex 10 sets out how the WB meets our requirements of ICF delivery partners.

45

The details of the team staffing within the WB have yet to be finalised, but will include a mix of skills suitable for the adequate supervision of the project, similar to that for the CMSCR project, composed of a rural development specialist, natural resource management specialist, environmental economist, social safeguards specialist, environmental safeguards specialist, financial management and procurement specialists, a legal advisor and project team assistant.

50

Option (b) was rejected as it is more complex than Option (a) and supervision accountability is distributed between the WB and FA, at greater risk. In addition FA is not a partner we have worked with previously and would need to undergo a detailed delivery partner review process, which could delay the project.

Option (c) was rejected as it has a very similar cost to Option (a) but would carry a higher level of risk and require FEDEGAN being subject to a detailed delivery partner review process, which could delay the project.

5 **3.3 Value for money through procurement**

Building on existing project arrangements for the CMSCR project enables the benefits of this project to be delivered at lower cost than working with a new set of implementation partners, reduces the implementation risks and significantly increases the likelihood of successful delivery of the project.

- 10 During project implementation, using the existing WB procurement processes already in use by the CMSCR project will help deliver value for money and reduce the risk of fraud. An assessment of the capacity of FEDEGAN as the Lead Executing Agency to implement procurement actions for the CMSCR project was carried out by the WB and found to be satisfactory. FEDEGAN, CIPAV, Fondo Acción and TNC are already using the WB procurement system, and will not need any additional
- 15 training.

4 Financial case

4.1 What are the costs, how are they profiled and how will you ensure accurate forecasting?

5 The ICF will provide up to £15 million for the project to run over 4 years, December 2012 – December 2016⁵⁹. Money could be transferred to the WB in one instalment and then disbursed as appropriate.

10 The composition and profile of the expenditure takes advantage of current project experience to provide accurate forecasting. An adequate monitoring program will be put in place to provide regular in-year forecasts of expenditure.

Project Cost (Thousands £)	2013	2014	2015	2016	TOTAL
Core delivery costs	3,200	3,587	3,100	2,000	11,887
Monitoring and Communication Strategy	810	480	577	100	1,967
Project Management	286.5	286.5	286.5	286.5	1,146
TOTAL	4,296.5	4,353.5	3,963.5	2,386.5	15,000

15 The main components of the budget are related to the provision of materials in the regions, provision of a PES-CS incentive to those small farmers taking credit to implement iSPS, provision of TA to farmers (a breakdown of the costs is provided in Annex 6). It is not expected that local costs of these components change with time but they depend on the number of farmers and the speed of adoption of the project.

20 Adequate measures are included in the project design to reduce the risks of fraud or corruption. These include strict selection criteria for selecting farmers to participate, periodic audits of expenditures and procedures used, and a continuous regional and in farm monitoring to ensure that funds are invested effectively. In addition DECC/FCO would reserve the right to make spot checks and to request a forensic audit if there are any grounds for concern.

25

4.2 How will it be funded: capital/programme/admin?

30 This will be capital spend from DECC's ICF budget. The conversion of land from degraded open pasture to highly productive SPS increases its value, generating tangible assets. The technical assistance activities and communication activities included in this intervention are an integral part of the project and essential to generating these assets. Without a communication strategy it would not be possible to recruit farms to the project and in the absence of technical assistance farmers would lack the knowledge or skills to convert the land to SPS. Monitoring is also integral to delivering the assets, as ongoing assessment is needed to determine the level of PES provided to farmers, which in turn is a prerequisite for incentivising conversion to the more capital intensive forms of SPS.

35

4.3 How will funds be paid out?

In order to disburse funds in 2012, a new Trust Fund will need to be established and a promissory note laid. This arrangement is estimated to take 4 months. Funds would flow directly from DECC to

⁵⁹ To note, ICF funding runs until 2015, but project delivery will continue into 2016.

the WB. A Trust Fund Administration Arrangement" would be signed between DECC and WB agreeing the terms of the project.

5 The WB will work with FEDEGAN to supervise and assist with administration of ICF resources. Funds will be transferred by DECC to the WB and the WB will in turn transfer funds to FEDEGAN according to the respective Grant Agreement to be entered between the WB and Fedegan as the Grant Recipient and implementing agency.

10 Subject to necessary internal approvals, FEDEGAN will establish subsidiary agreements with CIPAV, Fondo Acción and TNC to define the activities to be carried out by these partners and to establish the conditions for fund transfer in order to meet project outputs. Reports of expenditures must be presented by each partner in order to gain access to the funds.

4.4 What is the assessment of financial risk and fraud?

15 According to a previous assessment of FEDEGAN and its partners, carried out by the WB preparation for the CMSCR project, the residual financial management risk of the project was considered to be moderate (see Annex 4), owing in part to FEDEGAN's lack of experience with WB procedures. However, the project has now been operating successfully under its management and using WB procedures since 2010, with progress reviewed as satisfactory, so the financial risk for the ICF project could be considered low to moderate.

20 Beneficiaries of the ICF project will be selected through a strict process to guarantee that the project is directed towards small and medium scale farmers. Beneficiaries of credit will have an additional screening process. Every farmer participating will be reviewed annually to monitor changes and ensure correct use of funds. DECC/FCO will reserve the right to make spot checks and request forensic auditing if there are any grounds for concern.

4.5 How will expenditure be monitored, reported, and accounted for?

30 FEDEGAN will administer, and account for, the grant resources in accordance with its financial regulations and other applicable rules, procedures and practices keeping separate records and accounts. Grant resources will be held in a separate account so that these can be separately accounted for. Further specific arrangements on reporting, accounting and audit are set out in the project MOUs. A subsidiary contract will be signed between FEDEGAN and the other implementing agencies (CIPAV and TNC).

35 Financial Reporting: Alongside the 6 monthly reporting, the project's administrative coordinator will also provide details of actual and forecasted expenditure. Annually, FEDEGAN will provide reports on the PES system expenditures, and the amount used to support credits to small-scale farmers.

40 Audits: FEDEGAN will make available annual statements of expenditure for the project in general, duly certified by its external auditors.

45 FEDEGAN will provide, within 6 months of the end of the Guarantee Availability Period, a terminal financial statement showing the receipts, income and expenditures under the Grant Account and the remaining balance. ICF will reserve the right to appoint its own auditors, if deemed necessary. The activities funded under the ICF project will be subject to CMSCR (WB) anti-Corruption Policies and Integrity Guidelines and Principles.

Further details of financial and procurement procedures are provided in Annex 5.

5 Management Case

5.1 What are the Management Arrangements for implementing the intervention? What are the risks and how these will be managed?

5.1.1 Overview of institutions and agreements

5 The WB will provide technical supervision and assist with the administration of the ICF funds. An Administration Arrangement will be signed between DECC and the WB. The WB would be in charge of technical supervision and performance monitoring, including oversight to procurement procedures and practices. WB missions would review all relevant aspects for both CMSCR and ICF, thereby ensuring coherence and synergies providing recommendations for the effective implementation of the ICF project to DECC. DECC/FCO would aim to conduct annual visits to the project if possible to coincide with WB supervision missions.

15 The WB would be responsible for fund management and operations, following WB-based procurement, risk management, screening and competitive procedures that have been implemented in the CMSCR project. These procedures are in the CMSCR project Operational Manual (OM) and will be adapted to ICF project. This oversight role will be carried out following recommendations provided during the supervision mission by the WB

20 A **Grant Agreement** would be signed between the WB and FEDEGAN as implementing agency and recipient of the funds.

25 During the CMSCR project preparation (2009), an institutional assessment was conducted to evaluate the strengths and weaknesses of each agency, along with an assessment of the reputational risk involved in partnering with FEDEGAN (see Annex 4). Recommendations from this assessment were taken into account to determine the implementation and execution arrangement for the ICF project, as it was for the CMSCR project.

5.1.2 Parties involved in the project

30 **Lead Executing Agency.** FEDEGAN is a non-governmental non-profit trade association founded in 1963 and subject to Colombian private law. It has significant experience in the administration of public funds and project execution delegated to it by the GoC. It brings together regional and local trade associations and other entities involved in cattle ranching activities. As Lead Executive Agency, FEDEGAN would be responsible for project administration, including: (a) activity supervision; (b) procurement of goods and services for project execution, including those directly undertaken by core partner agencies in accordance with the approved Annual Operative Plans (POAs); (c) the project's financial management and accounting; (d) technical and administrative monitoring, and information consolidation and reporting.

40 FEDEGAN would manage project implementation at the local level through its Regional Development Units and technical assistance centres, and at the national level it would foster an enabling environment on the necessary institutional conditions for the broader adoption of SPS in Colombian cattle ranching, particularly by small and medium scale farmers. FEDEGAN would also administer the provision of technical assistance to participating farmers and training to TA providers, as well as lead the project's communication strategy.

50 Given FEDEGAN's key role in ensuring the project's impact, both through its leadership in favour of the subsector's development, its interest in the subsector's transformation towards sustainable production models, its ample experience in the administration of public funds and projects delegated to it by the GoC, FEDEGAN will be the grant recipient and Lead Executing Agency for both the CMSCR and ICF projects.

FEDEGAN's institutional FM systems and expertise are well developed, and according to the WB supervision missions, its support for project implementation is satisfactory. FEDEGAN's FM staff is

coordinating FM processes with the Bank and a very small increase in staff numbers will be required for ICF implementation.

5 The WB undertook a Financial Management Assessment (FMA) of FEDEGAN for the CMSCR project. The assessment concluded that FEDEGAN has sufficient capacity to manage project financial management matters and administer grant funds. The supervision missions conducted by the WB found FEDEGAN's practices to be satisfactory. FM responsibilities will be under the direction of the FEDEGAN Finance Office.

10 FEDEGAN's main FM responsibilities in the ICF project, as in the current CMSCR project would include the coordination of financial and administrative procedures related to project budgeting, treasury, general accounting, and reporting. A strong system of internal and external controls is in place at FEDEGAN. The project FM arrangements adopted by the CMSCR will be replicated in the ICF project. This includes the Operational Manual (OM) of the CMSCR.

15 **Core partner agencies.**

Partnership for execution purposes will be an alliance between FEDEGAN, the Centre for Research on Sustainable Agricultural Production Systems (CIPAV), and The Nature Conservancy (TNC) and Fondo Accion (FA). This alliance is working on a scaling-up operation that ties in with the Colombian government's interest in promoting sustainable production and stimulating private sector participation.

20 **Subsidiary agreements** would be signed between FEDEGAN (the 'Lead Executing Agency') and CIPAV, FA and TNC (hereinafter 'Core Partner Agencies'). The subsidiary agreements would detail the specific functions and amount of resources each core partner agency would execute in accordance with its area of expertise, and establish the coordination and implementation procedures. Each core partner agency would designate a project coordinator responsible for the implementation of activities foreseen in each subsidiary agreement signed with FEDEGAN, and act as the agencies' representative for all project matters.

30 **CIPAV** (Centre for Research on Sustainable Agricultural Production Systems) is an NGO founded in 1992 with a mandate to contribute to sustainable rural development in Colombia through research, training, and communication related to production systems that are appropriate for tropical agro-ecosystems. CIPAV implemented the RSPS project in Colombia and has developed a strong technical capacity to design and implement SPS. CIPAV has a technical implementation role in the CMSCR project. In the ICF project its roles will include: (i) training FEDEGAN's technicians and other TA providers in project areas in SPS implementation; (ii) supporting TA provision for SPS adoption by participating farmers; (iii) undertaking baseline farm assessments jointly with TNC; (iv) helping set up an M&E system to track generation of ES and contract compliance, including a protocol to monitor ES provision at the farm level; (v) verifying on-site land use changes and certifying PES contract compliance; (vi) leading applied research and studies.

45 **FA** (Environment Action and Childhood Fund) is a private Colombian non-profit organization, created in 2000 under the Bilateral Agreement of the Initiative for the Americas, celebrated between the governments of the United States of America and the Republic of Colombia. In the ICF project FA's role will include (i) leading the administration and negotiation of PES contracts and to make direct payments to farmers, producing necessary documentation supporting PES negotiations; (ii) administering a separate account for PES, constituted with ICF resources.

50 **TNC** (The Nature Conservancy) is an international NGO founded in 1951 with a mission to preserve the plants, animals, and natural communities that represent the diversity of life on Earth, by protecting the lands and waters they need to survive. TNC would: (i) support CIPAV during baseline farm assessments and PES contract negotiations; (ii) help design and implement the M&E system, particularly in relation to biodiversity-related effects at the landscape and eco-region levels.

55 **5.1.3 Project structures and procedures**

Project Operational Manual (OM). ICF will use an adjusted version of the OM that is guiding overall CMSCR project implementation. This OM includes rules and procedures for administration, including: (i) performance indicators to be tracked through the administrative M&E system, with standardized

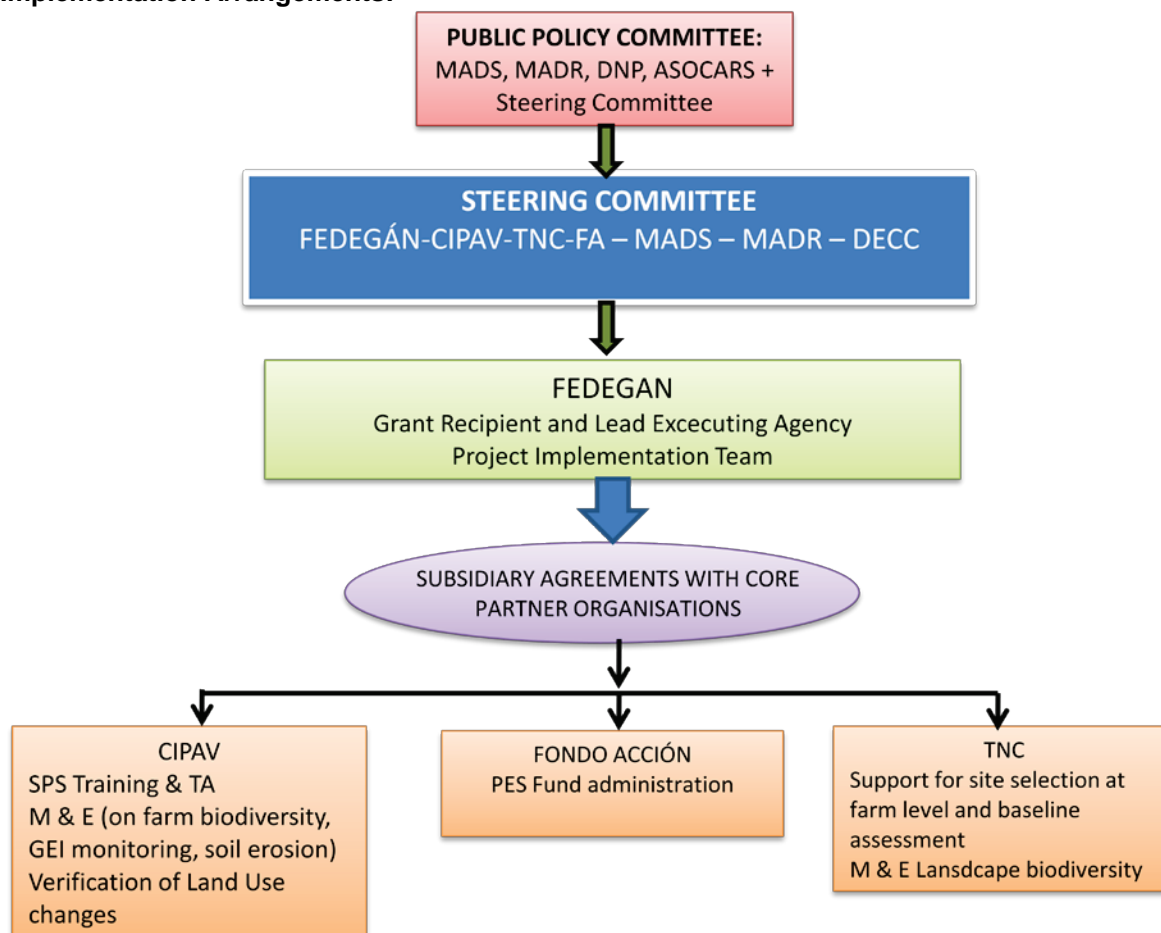
report formats to be used for their compilation (these would be modified as necessary to align them with the ICF KPIs; (ii) procurement procedures and formats; (iii) financial management procedures, including accounting, auditing, internal control, and reporting; (iv) safeguards procedures;(v) a detailed description of PES scheme operation and beneficiary selection criteria. A draft OM for ICF project will be reviewed by DECC and would be adopted in a manner satisfactory to DECC before disbursement of the funds.

A Steering Committee will be acting for the ICF project. This will be comprised of the project coordinators in FEDEGAN and Core partner agencies, . It would meet once each quarter and in extraordinary circumstances to: (a) approve POAs prepared by FEDEGAN with core partner agencies' support for submission to the WB; (b) review project progress based on M&E results; (c) make collective decisions on key technical and administrative issues for project implementation, including beneficiary selection; (d) advise Public Policy Committee actions. Ministry of the Environment and Sustainable Development (MADS), Ministry of Agriculture and Rural Development (MADR), FINAGRO, DECC/FCO and the WB would be invited to participate. Decision-making responsibilities within the project's Steering Committee would be the same as assigned in the CMSCR project OM.

A Public Policy Committee, which was designed for the ongoing CMSCR project and has been highly successful in offering high-level stewardship and guidance, would also be created for the proposed intervention. This committee would be comprised of the Ministry of the Environment and Sustainable Development (MADS) and the Ministry of Agriculture (MADR) (represented by the vice ministers of the Environment and Agriculture respectively); FINAGRO; the National Planning Department (DNP) and the Colombian Association of Environmental Authorities (ASOCARS). For the ICF project, the WB will be invited to this Committee.

This committee would advise on the overall implementation of the proposed ICF project and provide guidance on its scope. The committee would meet twice a year with the Steering Committee, and in extraordinary circumstances to: (a) advise on the CMSCR and ICF projects' performance based on progress reports prepared by FEDEGAN, the Lead Executing Agency, with the core partner agencies' support; (b) suggest adjustments based on M&E results to ensure that the proposed strategy for broader adoption of SPS in Colombia, is refined and validated under the CMSCR and ICF projects, for use in future interventions; c) offer stewardship, guidance and high-level dissemination in government spheres. Representatives of local participants and producer associations would be invited to the Public Policy Committee to assess the project's progress, discuss concerns, and suggest adjustments to the project's Steering Committee. Representatives of regional environmental and local planning authorities, and environmental services users involved in the PES mechanisms would also be invited to participate in the Public Policy Committee.

Implementation Arrangements:



- 5 **Project coordination.** The Project Implementation Team (PIT) would be the same as is implementing the CMSCR project within FEDEGAN (with additional recruitment if necessary), and is staffed with: (i) a project coordinator; (ii) one technical and one administrative coordinator; (iii) a procurement officer; (iv) an accountant; (v) an administrative assistant; (vi) a communications coordinator. If additional personnel are required for the ICF project, this should be approved by the Steering Committee.
- 10 Following the agreement with the WB, at the regional level, FEDEGAN's Regional Development Units are permanently staffed with one project coordinator per region and one administrative assistant. Implementation of the ICF project would need two more technical assistants which would be responsible for: (i) coordinating activity implementation under CMSCR and ICF projects components;
- 15 (ii) convening regional and local partners, and leading negotiations with local stakeholders for enhanced participation; (iii) consolidating information on the projects status in each area through standardized report formats to be sent to the PIT on a periodic basis.

20 **National, regional and local allies.** During CMSCR project preparation, the institutional assessment identified a number of key regional and local partners that the project can be associated with in each region to maximize its positive impact. Therefore, FEDEGAN's PIT could enter into MOU-type agreements with these stakeholders: e.g. Regional Environmental Authorities (*Corporaciones Autonomas Regionales*) CARs, governors and mayors (interested in providing co-financing for PES and/or SPS implementation), local planning councils, universities, the National Learning Service (SENA), and other local NGOs working on similar activities for sustainable rural development. ICF

25 funds would not be transferred to such stakeholders as a result of these agreements.

5.1.4 Approach to Risk Management

The register at Annex 11 sets out the risks that have been identified and assessed for this project, and details appropriate mitigating actions that have been developed to address these risks. Overall, this project is rated as Medium Risk.

5 **Reputational risk assessment**

During CMSCR project preparation an assessment was made to evaluate the reputational risk for the World Bank in partnering with the Colombian Cattle Ranching Association (FEDEGAN) for the implementation of the CMSCR project, and this would be equally applicable to the ICF project⁶⁰. The risk assessment sought to answer two questions: (i) is there a risk for the World Bank's good image in partnering with FEDEGAN for project execution? (ii) is it convenient to have FEDEGAN execute project resources? To answer these questions, four issues were analyzed: (i) the perception and possible reality of the linkages between certain cattle ranchers and illegal armed groups; (ii) the involvement of individuals with past or current links to said groups in the project; (iii) the impact of extensive cattle ranching on land occupancy conflicts with peasant and small-scale, rural producers; (iv) the risk of project resources being monopolized by cattle rancher elites.

The conclusions drawn from the analysis of the information collected were:

(i) The risk of FEDEGAN as the professional cattle rancher association in Colombia-being perceived as directly involved with illegal armed groups is moderate. The association is in good standing with the GoC and has full support from State entities involved in the sector. In addition, the association maintains a good reputation in several of the regions selected for CMSCR project intervention. FEDEGAN is a key actor to ensure positive project impact, both because of its influence on the cattle ranchers and its interest in the sector's transformation towards sustainable production models. The assessment concludes that it is a risk worth taking.

(ii) The risk of promoting extensive cattle ranching or conflicting with peasant or small-scale, rural producers is non-existent. In fact, CMSCR project's objective is to mainstream an intensive approach to cattle ranching that uses resources in a rational and sustainable manner and increases the use of local labour. In turn, the association's strategic plan is aimed at more intensive, environment-friendly, and profitable cattle ranching that would also benefit the wider community.

(iii) Including persons with current associations to illegal armed groups, or having project resources captured by national or local elites is considered a moderate to non-existent risk. As explained in the recommendation section (below), this risk is minimized by the beneficiary selection criteria and collective project management by the well-known and experienced organizations involved.

(iv) There is a substantial reputational risk for the Bank resulting from the perception by certain social groups that "cattle ranchers" have supported illegal armed groups, in particular paramilitaries. This perception, predominant among urban groups and organizations defending human and victim rights, is independent from the reality of such relationships in terms of their regional coverage, the reasons behind them, and the degree of support and percentage of farmers involved. This perception is also related to the stereotype of the Colombian cattle rancher as a very wealthy person, owning great tracts of land and thousands of animals, despite the fact that 82% of cattle ranchers fall under FEDEGAN's category of medium or small-scale producers.

Recommendations from CMSCR project's assessment.

Based on the analysis and the above conclusions, the following recommendations were made:

(i) Continue preparing the project with the partner organizations through a collaborative management structure that prevents the perception of single-handed project administration and consequently of an exclusive FEDEGAN-World Bank relationship. This would involve completing the project's design and implementation with support from the organizations involved, defining a partnership arrangement where FEDEGAN, CIPAV, Fondo Acción, and TNC have major roles and make project decisions in a collective manner

⁶⁰ See Annex 3B

5 (ii) Entrust the execution of project resources to FEDEGAN, which has ample experience in the administration of non-fiscal resources through the State's delegation, but with the involvement of the collective decision-making mechanism mentioned above. FEDEGAN would enter into the grant agreement with the World Bank, establish subsidiary agreements with the other partner organizations for specific components, and consult with them on key decisions for the project's successful implementation.

10 (iii) Adopt measures to mitigate the perception of a reputational risk by some stakeholders. Such measures include a communications strategy that emphasizes the expected sector transformation under the influence of the GEF-financed and WB-administered project, executed by FEDEGAN in alliance with renowned organizations specializing in such issues; closely monitoring the application of beneficiary selection criteria to rapidly adjust procedures, if required.

15 (iv) Link the project to the set of activities under the sustainable Peace Pillar through which the World Bank supports the peace agenda in Colombia. This project, given its implementation in certain areas where illegal armed groups were present but have now been substantially reduced/removed by the armed forces, could be an excellent example of a contribution to the post conflict healing and development process. Although the conflict with illegal armed groups continues in several parts of
20 Colombia, the opportunities offered by the project to improve the options of small-scale cattle ranchers in several regions of the country will certainly contribute to improve relations between groups of citizens, and between these citizens and the environment.

25 ICF project design and implementation is taking into account all the World Bank Reputational risk assessment recommendations.

5.2 What conditions apply (for financial aid only)?

N/A

5.3 How will progress and results be monitored, measured and evaluated?

30 Arrangements for results to be monitored, measured and evaluated will build on those used for the CMSCR project, aligned where necessary to fit with the ICF M&E strategy.

The project's M&E system has been designed to measure:

- 35 (i) the project's administrative activities at the national and regional levels, including the consolidation of the oversight and coordination mechanisms for project implementation and
- (ii) the project's progress towards achieving its development objectives, based on the results framework.

40 The M&E System would follow: (i) technical, financial, and procurement management reports as required by the WB supervision missions as included in the WB/FEDEGAN Grant Agreement; and (ii) disbursement requests and supporting documentation (unaudited statements of receipts, disbursements and fund balance, etc.).

45 The M&E plan under the proposed ICF project includes an impact evaluation with the purpose of assessing the following:

Administrative activities and implementation progress	Responsible for monitoring financial management (including budgeting, treasury, accounting, and audits), procurement management, and implementation progress against Annual Operative Plans approved by the project's Steering Committee for the ICF project. Information on implementation progress in each area would be consolidated by the project's regional coordinators located in FEDEGAN's Regional Development Units and reported to the PIT on a quarterly basis.
Progress towards achieving the	Assessing the adoption of SPS by small and medium producers in the project regions, the poverty, climate and environmental benefits achieved

Project's Objective	and lessons learned to feed back into policy making.
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A M&E protocol developed by CIPAV and TNC (CMSCR project) will be adopted by ICF project.

This protocol includes procedures and indicators at the farm (measured by CIPAV), the landscape, and the ecoregion levels (TNC). This protocol would be directly administered by CIPAV and TNC.

5 Information collection and analysis of these indicators would take place on a periodic basis, with active participation by farmers where possible.

10 Professional services, consultants, or specialized agencies would be hired to perform selected M&E activities, particularly regarding the project's impact evaluation to ensure adequate independence and objectivity.

15 **Information provided by administrative and technical progress reports would be assessed periodically by the project's Steering Committee** to address any implementation weakness and adjust project strategies as required. In addition, these reports would provide the basis for the Bank's bi-annual supervision missions, including completion assessment. Finally, impact evaluation results would enable ICF, WB, GoC, FEDEGAN and project partners to promote the proposed strategy for the adoption of sustainable cattle ranching production systems among key policy-makers.

20 **Outline M&E data to be collected (draft)**

25 The table below outlines a draft of the monitoring and evaluation approach. The project team are currently working on revising the existing CMSCR M&E approach, so the table below will be expanded as the new evaluation plan will include the wider objectives of the ICF intervention including i) assessing the relationship with deforestation, ii) capturing wider lessons learned, including understanding how economic and regulatory contexts affect the success of SPS and identifying lessons which can be fed back into policy (including exploring the potential for market / consumer drivers to support SPS).

Evaluation Question	Data Requirement and how this will be gathered/ provided	Who will gather/ analyse data	Timing for reporting
(1) Assessing the impact of introducing SPS on farm productivity and income, with particular attention to small and medium-scaled farmers	<p>To assess the impact of introducing SPS on farm productivity, treatment farms in ICF and control farms (CMSCR project) would be randomly set up from the list of eligible farmers compiled during project year 1 and year 2 , whereby nearly 600 control farms (CMSCR project) would not benefit from any instrument throughout the project. Farm selection for impact assessment will be made in a way that allows the measurement of effects of the different strategies used in the CMSCR and ICF project (PES and Technical Assistance).</p> <p>Production indicators such as milk and beef produced per hectare and animal stocking rates, along with related production costs would be measured by FEDEGAN at ICF project onset and each year thereafter.</p> <p>Farm data would be analyzed for</p>	This evaluation will be carried out by FEDEGAN and WB.	Information will be gathered during project life and reported at the end of the project.

	small and medium-scaled farmers (identified using data from the initial registry of potential beneficiaries) to monitor impact on this population		
(2) Assessing the effectiveness of loans facilities as a strategy to increase income in small farmers and to promote the adoption of SPS	Income and financial returns for selected SPS-related land use changes would also be measured and included in farm surveys. In addition, access to subsidized FINAGRO credit would also be registered and its contribution to farm productivity assessed by PY2 and PY4 in comparison with similar farmers in project areas not taking part in project.	This evaluation will be carried out by FEDEGAN	Information will be analysed and reported at midterm evaluation (end of second year) and at project end.
(3) Assessing the effectiveness of PES as a strategy to promote the adoption of SPS in each region	Annual verification of land use changes would serve to certify compliance with PES contracts and determine payment levels, as well as measure farm area under each land use listed in the Environmental Service Index and its change in hectares relative to the baseline. By the end of the project, data for this coverage indicator as part of ICF project versus treatment farms, would enable a comparison on the effectiveness of loans and PES to encourage adoption of SPS-related land use changes in small producers As in the CMSCR project, land use changes would be monitored with the support of remote sensors such as satellite images, aerial photographs, and Global Positioning Systems (GPS) according to the availability of these resources in each area. Information provided by these sensors would be processed in Geographic Information System (GIS) software, once land use changes have been verified <i>in situ</i> .	This evaluation will be carried out by CIPAV and TNC	Reports will be produced annually with information of change per land use and changes in the ES index
(4) Assessing the impact of introducing SPS in the reduction of GHG emissions in each region	The impact of introducing SPS in farms on carbon sequestration would be measured in at least twenty beneficiary farms by setting up plots by land use and measuring organic matter in the soil before the adoption of the relevant SPS and at the end of the project to compare tonnes of CO ₂ equivalent present in each plot. In addition, increase in carbon stocks in SPS land uses due to the growth of shrubs and trees in the system will also be measured in	This evaluation will be carried out by CIPAV and WB	Data on carbon content of soils will be measured and reported in years 1 and 4. Data on CH ₄ and N ₂ O emissions will be reported for years 2 and 4.

	farms of three of the project regions. CH ₄ and N ₂ O emissions will also be measured under controlled conditions in at least two of the project regions.		
(5) Assessing the impact of introducing SPS in farms on the provision of ES in each region	To measure the impact of introducing SPS in farms on the provision of environmental services (ES) in each region, three areas would be analyzed: land restoration, carbon sequestration, and biodiversity conservation.	This evaluation will be carried out by CIPAV	Land restoration and biodiversity conservation will be measured and reported at years 0, 2 and 4. Carbon sequestration at years 0 and 4.
(6) Evaluating the impact of project intervention on forest cover in the regions	Remote sensing will also be used by TNC to evaluate changes in vegetative biomass and Carbon stocks in project areas to assess deforestation trends and increases in tree biomass	This evaluation will be carried out by TNC	An assessment of the impact of the project on forest cover/deforestation will be carried out at midterm (i.e. end of second year) and at project end to measure the effect of the project both in beneficiary and neighbour farms in the regions. This will be complemented with an analysis of deforestation trends in Project areas by remote sensing
(7) Assessing the impact of introducing SPS in farms on land restoration	The impact of introducing SPS in farms on land restoration would be measured in beneficiary farms that implement any or all SPS and are located in two regions of the project. The increase in vegetation cover would be assessed against baseline values of farm areas without cover and annually measured on-site. The density and abundance of worms and dung-feeding beetles would also be measured as an indicator of soil recovery, with measurements taken prior to the start of the project in selected farms and three years after the adoption of SPS-related land use changes.	This evaluation will be carried out by CIPAV	Annual / in years 0 and 3
(8) Assessing the contributions of 3 land uses (pastures without trees, intensive SPS, and secondary forests) to sedimentation	Measurements would be taken in five participating farms for two months each year throughout project's lifetime.	This evaluation will be carried out by CIPAV	2 months each year for duration of project
(9) Assessing the	The impact on biodiversity	This evaluation	Years 0, 2 and 4.

impact on biodiversity conservation	conservation would be measured by comparing the presence of bird, dung beetles and focal plant species in two land use areas (pastures with trees and secondary forests) in beneficiary farms. At least five plots would be monitored in three of the five project areas. Biodiversity of aquatic organisms would be assessed in riparian connectivity corridors, established and selected for their bio-geographical importance. Remote sensing will be used to monitor changes in biomass and forest cover in project areas.	will be carried out by CIPAV and TNC	
(10) Assessing the impact of introduction of SPS on deforestation	IDEAM data will be used to provide a baseline for deforestation hotspots. Remote sensing will be used to monitor changes in forest cover. Deforestation rates will be measured in project and control areas.	This evaluation will be carried out by TNC	To be decided.
(10) Standardised report formats would be consolidated annually by the Project Implementation Team with the following information from each ICF area: (i) SPS established in participating farms (ii) Variations in farm productivity and income (iii) Credits and ICRs allocated to participating farmers (iv) PES contracts signed and implemented (v) Variations in ES, compiled through the ES index (vi) Training agreements with TA providers, and training in good production and environmental practices (GPEP) offered to stakeholders	Standardized report formats would be used to collect information on inputs and outputs in each region (e.g., agreements signed and implemented with local stakeholders), as well as information from Core partner agencies to track implementation status. Model formats would be included in the ICF project Operational Manual.	(i) FEDEGAN (ii) FEDEGAN (iii) FEDEGAN (iv) Fondo Accion (v) CIPAV (vi) FEDEGAN (vii) FEDEGAN	(i) annually (ii) FEDEGAN annually (iii) FEDEGAN annually (iv) Fondo Accion annually (v) CIPAV annually (vi) FEDEGAN annually (vii) FEDEGAN at project years 2 and 4.

(vii) Linkages established with policy makers and instruments			
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5 These questions and data collection will be refined in the new evaluation plan and, to the extent possible, aligned with the ICF Key Performance Indicators (KPIs) and associated methodologies that have been developed⁶¹. In finalising the M&E strategy we will ask the World Bank to review existing arrangements to ensure appropriate independence and appropriate arrangements at different levels (farm unit, project and sector wide levels).

10 Information on progress with project implementation will be provided every 6 months in line with ICF reporting requirements. More detailed reporting will be provided annually, around World Bank monitoring missions.

At the midpoint of the project (2 years in) we would look to produce interim results and lessons learned which could feed back into policy-making in Colombia, the UK and beyond.

15 5.4 Logframe

As the project will be set up as a cofinanced extension to the CMSCR project, we have agreed a results framework which aligns the ICF objectives and KPIs with the framework in place for the existing project. (This replaces the previous draft logframe.)

20 ICF PROJECT RESULTS FRAMEWORK

PDO	PROJECT OUTCOME INDICATORS
<p>Global Development Objective:</p> <p>To promote the adoption of environment-friendly silvopastoral production systems (SPS) in Colombian cattle ranching Project areas, to improve natural resource management (NRM), enhance the provision of environmental services (mainly carbon sequestration, CS) and raise the productivity in participating farms for poverty reduction.</p>	<p>1,500 small and medium scale farmers benefitting from Project instruments (technical assistance, PES, support for credit access).</p> <p>28,000 ha. of environment-friendly cattle ranching production systems implemented in 7 Project areas.</p> <p>Reduced GHG emissions from cattle grazing activities as a result of SPS adoption in Project participating farms, over baseline.</p> <p>Reduced GHG emissions from deforestation and forest degradation by preserving forest areas in the Project participating farms in the two deforestation hotspots.</p> <p>10% increase in the production of beef and or milk per intervened hectare in participating farms, improving GHG balance.</p> <p>20% increase in productive assets-based patrimony of small-scale livestock farmers through the establishment of iSPS in Project's participating farms.</p> <p>Strategy for the broader adoption of SPS by</p>

⁶¹ As this will be set up as an extension to the existing CMSCR project the M&E arrangements will need to be consistent with those for the wider project.

	small and medium scale farmers validated and adjusted during Project implementation, and ready for adoption by FEDEGAN and other strategic public and private allies (e.g. DNP, Ministries of Agriculture and Environment, local authorities, cattle ranchers, other livestock associations, etc.).
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Intermediate Outcomes	Intermediate Outcome Indicators
<p>Component 1.</p> <p>Making SPS attractive and accessible.</p>	<p>400 workshops at local and regional level for broad promotion of SPS.</p> <p>200 peer to peer exchanges in SPS demonstration farms.</p> <p>50 professionals from regional TAPs (Tecnigans) trained on SPS establishment and management.</p> <p>1,500 farmers receiving financial education and support for credit access to Finagro's second-tier loans.</p> <p>Volume (\$) of financing mobilized for the establishment of iSPS.</p>
<p>Component 2.</p> <p>Establishment of SPS in small and medium scale farms</p>	<p>1500 farmers signing contracts for the establishment of SPS.</p> <p>Provision of TA in SPS to 1500 participating beneficiaries.</p> <p>28,000 ha under PES scheme in 7 Project areas.</p> <p>3,780 ha of iSPS.</p> <p>945 ha. of forests preserved in participating farms.</p> <p>945 ha. of degraded pastures recovered</p> <p>22,330 ha of other SPS (e.g. living fences, scattered trees in pastures, fodder banks)</p> <p>10% increase in the production of beef and or milk per intervened hectare in participating farms, improving GHG balance.</p> <p>10% increase in average stocking rate (cows/ha) per intervened ha in iSPS in Project participating farms.</p> <p>600 small-scale farmers that establish iSPS increase 20% of their assets-based patrimony.</p> <p>600 small farmers receiving PES-CS (as an</p>

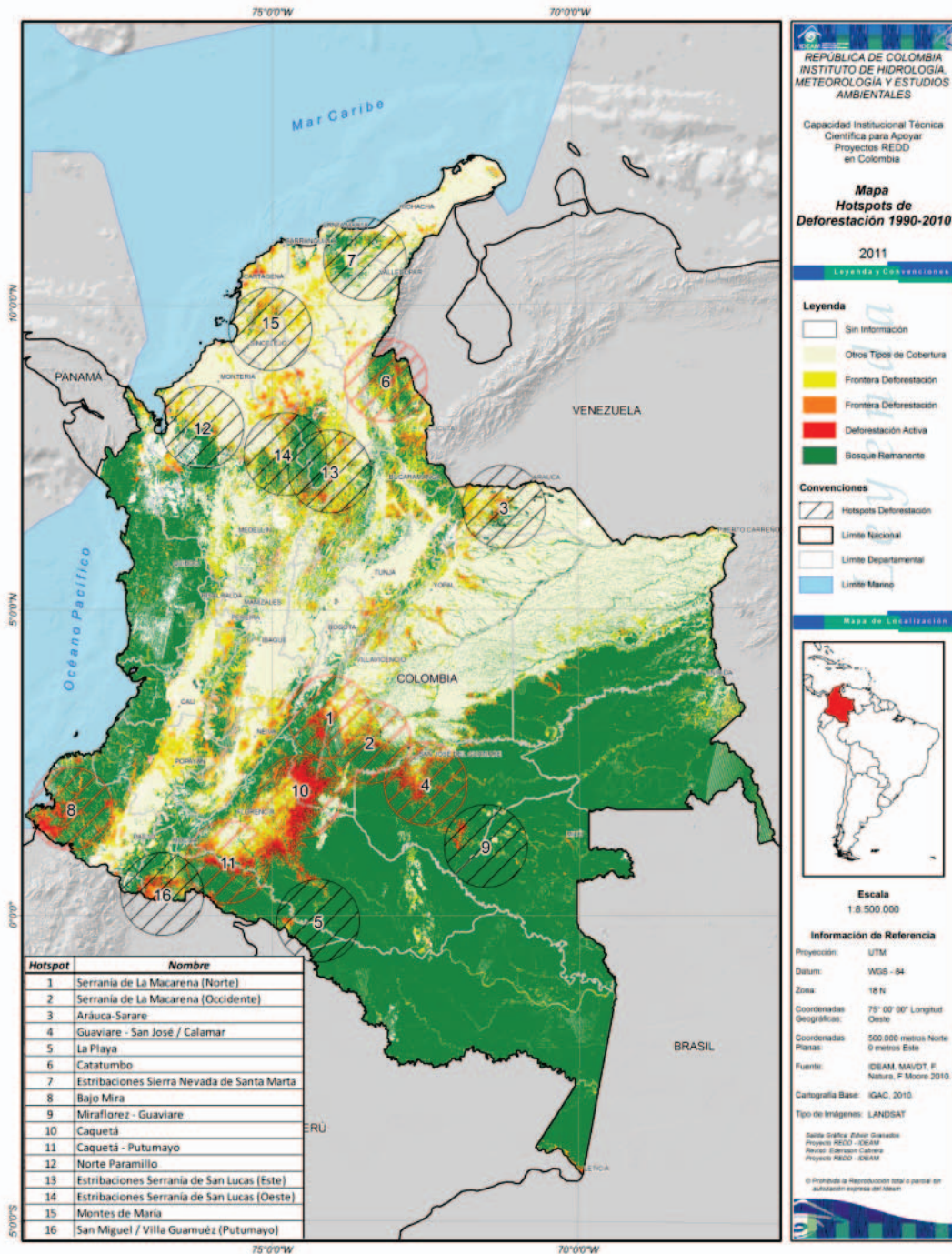
	<p>incentive to alleviate credit associated costs</p> <p>1500 farmers receiving PES-NRM.</p> <p>2 million metric tons (Mt) of CO₂-equivalent reduced/avoided (over eight years).</p> <p>Provision of seedlings, trees and organic fertilizers (at production costs) for live fences, pastures with trees and forest enrichment in 7 project areas.</p>
<p>Component 3.</p> <p>Monitoring, evaluation and dissemination of results at local, regional and national levels.</p>	<p>400 farmers not directly involved in the Project adopt SPS.</p> <p>Development of at least two market / consumer initiatives that could support the broader adoption of SPS.</p> <p>M&E system established and providing timely and relevant information on Project's direct and indirect impacts in aid of decision making processes.</p> <p>SPS have been tested as a viable implementation mechanism for REDD+ initiatives. (i.e. biomass changes monitored in project farms and hotspot areas).</p> <p>Influencing at least three government /sector policies.</p> <p>Communication strategy implemented for dissemination of results to livestock farmers, local and national institutions (including local producer associations, regional environmental authorities, municipalities, Ministries and commercial banks).</p>
<p>Component 4.</p> <p>Project management and TF management and oversight</p>	<p>PIT strengthened and working effectively to coordinate national and regional Project execution.</p> <p>Annual audit reports.</p> <p>TF administration and technical supervision and performance monitoring by the World Bank, including oversight for procurement procedures and practices, fiduciary management and environmental and social safeguards.</p>

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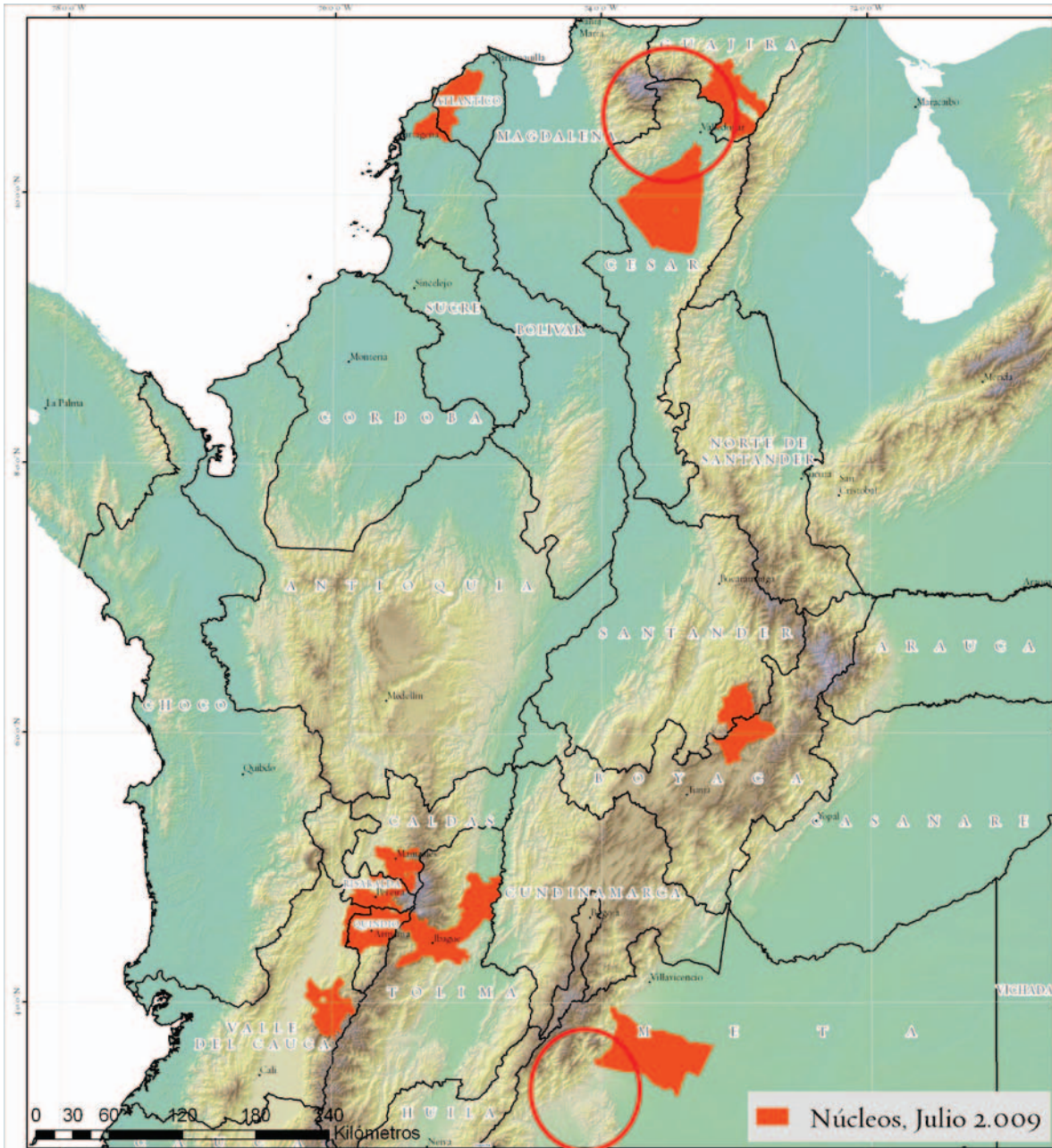
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6 Annexes

ANNEX 1. Maps of Project Zones



Map 1. Deforestation hotspots in Colombia according to IDEAM (2011)



Map 2. Project zones (Orange areas) and two deforestation hotspots (red circles) that will have project intervention in part of the area.

- 5 The proposed ICF project zones are (i) the *Cesar* River Valley (Department of Cesar and South of Guajira) including areas in the Sierra Nevada deforestation hotspot; (ii) the lower *Magdalena* River region (western part of the Department of Atlantico); (iii) the traditional dairy cattle production regions of *Boyacá* and *Santander* (linked to the “Andean Oak Forests Corridor”); (iv) the coffee producing ecoregion with Areas in Valle, Quindío, Risaralda, Caldas and Tolima departments; and (v) the low foothill region in the eastern cordillera of southern *Meta* including areas of the La Macarena (north) deforestation hotspot.

ANNEX 2. Emission of Greenhouse Gases in the Project

1. PRODUCTIVE PARAMETERS PER LAND COVER

PRODUCTIVE PARAMETERS	Conventional pasture	Improved Pasture	Living Fence & Scattered trees	Intensive Silvopastoral System ¹
Stocking rate (GA/Ha) ²	0.5	1.5	1.5	3 ³
Daily weight gain/animal (kg)	0.37	0.6	0.6	0.80
Daily weight gain/hectare (kg)	0.185	0.9	0.9	2.4
Days of growth (from 250 to 440 Kg)	514	317	317	238
Kg de meat produced per ha-year(LW)	67.5	328.5	328.5	876.0
Consumption of DM (% of LW)	1.5	1.5	1.5	2
Consumption of DM Kg/ha/year	958.1	2874.4	2874.4	7665.0
Has required to produce 1 tonne of beef/year	14.8	3.0	3.0	1.1
EMISSIONS				
CH ₄ emissions kg ha-year (as % of DM consumption) ⁴	0.021	0.062	0.062	0.165
CH ₄ emissions per ha - year (tonnes) CO ₂ eq	0.434	1.301	1.301	3.469
N ₂ O emissions per ha - year (tonnes) (faeces) ⁵	0.001	0.002	0.002	0.004
N ₂ O emissions per ha - year (tonnes) CO ₂ eq	0.224	0.673	0.673	1.347
Total emissions per ha - year (tonnes) CO₂ eq⁶	0.658	1.974	1.974	4.816
CAPTURE				
C fixed ha year (tonnes) ⁷	0.000	0.800	2.800	4.500
CO ₂ fixed ha year (tonnes) CO ₂ eq	0.000	2.933	10.267	16.500
BALANCE PER HECTARE CO₂ eq	-0.658	0.959	8.293	11.684

5 ¹ Intensive Silvopastoral System: Combination of improved pastures (Graminea and legumes) with shrubs at a high density (> 10,000 per hectare), in rotational grazing.

² FEDEGAN-FNG, CIPAV 2010. ³ Murgueitio et al., 2011.; ⁴ CH₄ emission: 21.5 g per kg of DM intake (IPCC 2006; Radrizzani et al., 2011); ⁵ Nitrogen excretions in faeces: 162 g animal⁻¹ day⁻¹ (IPCC, 2006); N₂O emissions: 2% of N excreted (IPCC, 2006). ⁶ C fixed in SPS: Ibrahim et al., 2010.

10 ⁷ Emissions due to fertilizer manufacture and use were not included. Though a reduction in CH₄ emissions have been reported for animals fed on legume trees, this is not considered in this analysis.

2. GHG BALANCE FOR DIFFERENT OPTIONS IN THE PROJECT. DIFFERENCES ARE RELATED TO THE NUMBER OF HA COVERED IN EACH LAND COVER.

GHG Balance tonne of CO ₂ eq	Improved Pasture	Living Fence & Scattered trees	Intensive SPS	Forests	TOTAL	Cost per tonne of GHG abated (£)
Option 1 same regions	12,938	1,790,112	394,962	40,000	2,238,012	7.3
Option 2 (2 hotspots adjacent to current regions)	12,226	1,597,138	373,238	37,800	2,020,403	8.2
Option 3 (2 hotspots in different location)	11,708	1,456,794	357,440	36,200	1,862,142	9.0
Option 4 (5 new hotspots)	9,704	912,958	296,220	30,000	1,248,882	14.6
Option 5 (do nothing)	0	0	0	0	0	nd

15

ANNEX 3A: World Bank's Financial Management Assessment of FEDEGAN

COLOMBIA: Mainstreaming Sustainable Cattle Ranching (CMSCR)

- 5 1. **Introduction.** This annex documents the results of the Financial Management Assessment (FMA) of "Colombia: Mainstreaming Sustainable Cattle Ranching project (the project), as conducted by Bank staff in accordance with Bank policy.
- 10 2. **Executive Summary.** The FMA of FEDEGAN was conducted during pre-appraisal in accordance with OP/BP 10.02 and the Guidelines for the Assessment of Financial Management Arrangements in World Bank Financed projects. The assessment concluded that the executing entity, FEDEGAN, has sufficient capacity to manage project financial management matters and administer grant funds. FM responsibilities will be under FEDEGAN Finance Office. FEDEGAN's main responsibilities will include the coordination of financial and administrative procedures related to project budgeting, treasury, 15 general accounting, and reporting.
- 20 3. The agreed actions implemented at the pre-appraisal stage were: (i) preparation of the draft Financial Management chapter of the Operational Manual and submitting it to the World Bank before negotiations; (ii) preparation of the specific terms of reference for the audit and including them into the Operational Manual before negotiations. No legal "non-standard" conditions are deemed necessary on FM matters.
- 25 4. The overall FM risk is assessed as moderate before and after mitigation.
- 30 5. The inherent FM risk is substantial due to FEDEGAN's lack of experience with World Bank projects. However, a strong system of internal and external controls is in operation at FEDEGAN. The mitigating control factors described in this Annex include: (I) FEDEGAN, due to the delegation of the GoC, has ample experience in the administration of public funds and project for this reason, National Cattle Fund (FNG) is audited by Contraloria General de la República (CGR) and FEDEGAN's financial statements' opinion reported by the CGR for 2006 and 2007 was unqualified and its 35 conclusion of the internal control system assessment was that it is effective and the level of risk is low; (ii) funds advanced to partner agencies will be tightly controlled by FEDEGAN's systems; (iii) the internal audit office (IAO) will prepare quarterly a technical and financial report of the project and will follow up on the implementation of the recommendations issued by the project's external auditor and the action plans agreed in the World Bank supervision missions; (iv) FEDEGAN will submit bi-annual 40 unaudited project Interim Financial Reports (IFRs) and annual audited financial statements. IFRs will be approved by the Steering Committee before being sent to the Bank; (v) an independent audit firm selected by FEDEGAN and acceptable to the World Bank will conduct the annual audit on project financial statements and expenditure eligibility.
- Hence, the residual overall FM risk, i.e. the inherent risk as mitigated by existing controls is moderate.

ANNEX 3B: World Bank, Reputational Risk Assessment for the CMSCR Project

(This risk assessment was conducted in 2008 and published in the CMSCR Project Appraisal Document)

Reputational risk assessment - Executive Summary

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1. **Objective.** The objective of the assessment was to evaluate the reputational risk for the World Bank in partnering with the Colombian Cattle Ranching Association (FEDEGAN) for the implementation of the Project 'Mainstreaming Biodiversity in Sustainable Cattle Ranching'. The risk assessment sought to answer two questions: (i) is there a risk for the World Bank's good image in partnering with FEDEGAN for Project execution?; and (ii) is it convenient to have FEDEGAN execute Project resources? To answer these questions, four issues were analyzed: (i) the perception and possible reality of the linkages between certain cattle ranchers and illegal armed groups; (ii) the involvement of individuals with past or current links to said groups in the Project; (iii) the impact of extensive cattle ranching on land occupancy conflicts with peasant and small-scale, rural producers; and (iv) the risk of Project resources being captured by elites of cattle ranchers.

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2. **Methodology.** The methodology used for information gathering consisted of collecting and analyzing primary and secondary sources of information. Primary sources included semistructured interviews with an intentional sample of 45 people involved in the sector at the national and regional levels, including in the regions of Boyaca, Meta, and Valle del Cauca, as well as people knowledgeable in the sector but not necessarily involved in it. The list of interviewees was selected using three criteria: (i) knowledge of the sector, (ii) regional representation, and (iii) diverse political views. Secondary sources included documents related to FEDEGAN or the cattle ranchers, resulting from a search of articles on the Internet, in specialized magazines and journals, and in thesis work on the subject of armed conflict, cattle ranchers and FEDEGAN. The questions asked during the semi-structured interviews in order to stimulate conversation on the four issues analyzed are included in Annex 1 of the complete report. Secondary sources were analyzed bearing in mind those same issues. More details on the methodology are provided in the full report.

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Analysis and discussion

Perception and reality of the linkages with illegal armed groups.

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3. The analysis of information collected during the assessment shows the following results. In general, written sources and interviews, including with FEDEGAN's management, admit that in the past the cattle ranchers had links to illegal armed groups (although no specific timeframe is mentioned by the interviewees, the climax of the confrontation between the insurgency - FARC and ELN- and the paramilitary forces occurred at the beginning to mid

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4. However, both secondary source texts and the majority of the interviews indicate that a relationship with illegal armed groups was a generalized phenomenon in Colombia. Indeed, it is pointed out that said phenomenon affected all production associations, their affiliates, and the sales-traders, especially those related to the agricultural and livestock sector. In this regard, some interviewees claim that the bias regarding the cattle ranchers may be unfair and does not recognize that the majority of cattle ranchers faced a hard choice between adjusting to the conditions imposed by the illegal armed groups-both of guerrilla and paramilitary origin- to abandon their land, or possibly die. This view does not deny the fact that certain individual cattle ranchers willingly supported illegal armed groups, that some became leaders of said

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groups, and that some drug traffickers acquired great extensions of land and several heads of stock as a way to launder assets that had nothing to do with an interest in cattle ranching.

Regional differences in relation to illegal armed groups

- 5 **5.** The assessment found that there are regional differences between the potential Project areas that were visited with regards to the impact of illegal armed groups: In the case of cattle ranchers in Boyaca and the north of Valle del Cauca, the influence of these groups, particularly the paramilitaries, was less evident. The two representatives of the Boyaca association interviewed indicate that the cattle ranching area of this *departamento* (with the exception of the Puerto Boyaca municipality) was not greatly affected by the armed conflict with illegal armed groups. The cattle ranching farms in this area are small and cattle ranchers have a smallscale economy. In the north of Valle del Cauca, according to the two representatives of the association and a regional journalist interviewed, the cattle ranchers did not accept the offer of security or an alliance with illegal armed groups, particularly the paramilitaries, in order to preserve the association's good image, which was by then gaining great visibility and respect. On the contrary, the representatives of the cattle ranchers in Meta who were interviewed admitted having been greatly affected by the prevalence of illegal armed groups in the cattle ranching areas. It is well known in Colombia that both insurgent and paramilitary groups have had a substantial presence in this region in the last two decades.
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- 6.** Information obtained from the interviews with association affiliates and other sources indicates that adjusting to the demands of illegal armed groups had a justification. The justification was the lack of security guarantees offered by the State and the farmers' need to protect their assets and their lives. This point of view is fairly generalized within the Colombian public opinion, as stated in media accounts, informal conversations at home and amongst friends.
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- 7.** Finally, the association's national and regional representatives who were interviewed argue that the situation is presently very different. They claim that most cattle ranchers no longer face a situation similar to that described above given the achievements of the democratic security policy and the presence of the armed forces, which guarantees the security of civilians. These representatives also argue that increased security is demonstrated by the fact that: (i) today cattle ranchers in the areas assessed do not pay extortions ("*vacunas*") or security costs to illegal armed groups; (ii) many cattle ranchers who had been absent for security reasons have returned to their activities; and (iii) investments in the sector have increased. This view is consistent with the GoC's claims regarding increased security in most of the Colombian territory.
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Risks of participation, extensive cattle ranching, and resources capture

- 40 **8.** Issues regarding the potential participation of people linked to illegal armed groups, the impact of extensive cattle ranching, and the capture of Project resources by local elites are satisfactorily addressed in the Project design. The Project has foreseen a solid beneficiary selection process based on the experience of both the RSPS Project and the activities of CIPAV. Targeted eligibility criteria that are: (i) applied in areas selected taking into account public order; (ii) adopted in a collective manner by partner NGOs with ample experience in subproject execution and beneficiary screening; and (iii) closely monitored during implementation, would help to ensure small and medium-scale farmer participation. Largescale farmers would also be encouraged to participate when it contributes to the achievement of the Project's objective.
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- 9.** The Project addresses concerns over the impact of extensive cattle ranching on social conflicts with peasant families and groups: its objective is to transform cattle ranching management to become less extensive and more sustainable and profitable. This objective is highly consistent with FEDEGAN's policy expressed in its strategic plan for 2019. The RSPS Project also demonstrated that this approach to sustainable cattle ranching creates additional jobs directly on the farm and indirectly through commercial and other activities. FEDEGAN's management is committed to this approach and to the creation or strengthening of a culture for environmental protection that, with Project support, would be increasingly adopted by the association in order to benefit the cattle ranching subsector and the community at large.
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10. The capture of Project resources by local or national elites does not represent a risk. The selection criteria and collective Project management by the partnership of organizations involved make the capture of resources by non-eligible producers (possible having in mind other interests than the Project's objectives), highly unlikely. The partner organizations have solid experience in eligible beneficiary selection and resource administration.

11. Finally, the representatives of FEDEGAN indicate that the GoC and the State agencies related to cattle ranching have placed full trust in the association. This trust is expressed in the GoC's legal delegation of authority to FEDEGAN to administer the National Cattle Fund and the Stabilization Fund for the Promotion of Beef, Dairy, and Sub-product exports", which in 2008 managed over US\$30M nominal value. FEDEGAN's performance has been assessed by the General Comptroller's Office as one of the best national entities administering public resources.

Conclusions

12. The following conclusions result from the analysis of the collected information:

(i) The risk of FEDEGAN - as the professional cattle rancher association in Colombia - being perceived as directly involved with illegal armed groups is moderate. This comes out clearly from all interviews and the literature review. The association is in good standing with the GoC and has full support from State entities involved in the sector. In addition, the association maintains a good reputation in several of the regions selected for Project intervention. FEDEGAN is a key actor to ensure positive Project impact, both because of its influence on the cattle ranchers and its interest in the sector's transformation towards sustainable production models. The willingness of the sector, which has historically been unaware of the environmental and social considerations that are promoted in the Project, is a unique opportunity for which some have waited a long time and which should be taken advantage of accordingly. Therefore, the assessment concludes that it is a risk worth taking.

(ii) The risk of promoting extensive cattle ranching or conflicts with peasant or small-scale, rural producers is non-existent. In fact, the Project's objective is to mainstream an intensive approach to cattle ranching that uses resources in a rational and sustainable manner and increases the use of local labor. In turn, the association's strategic plan is aimed at more intensive, environment-friendly, and profitable cattle ranching that would also benefit the larger community.

(iii) A moderate to non-existent risk exists of including in the Project persons with current associations to illegal armed groups, or having Project resources captured by national or local elites. As explained in the recommendation section (below), this risk is minimized by the beneficiary selection criteria and collective Project management by the well-known and experienced organizations involved.

(iv) There is a substantial reputational risk for the Bank resulting from the perception by certain social groups that "the cattle ranchers" have supported illegal armed groups, in particular the paramilitaries. This perception, predominant among urban groups and organizations defending human and victim rights, is independent from the reality of such relationships in terms of their regional coverage, the reasons behind them, and the degree of support and percentage of farmers involved. This perception is also related to the stereotype of the Colombian cattle rancher as a very wealthy person, owning great extensions of land and thousands of animals, despite the fact that 82 percent of cattle ranchers fall under FEDEGAN's categorization for medium or small-scale.

Recommendations.

13. Based on the analysis and the above conclusions, the following recommendations are made:

(i) Continue preparing the Project with the partner organizations through a collaborative management structure that mitigates the perception of single-handed Project administration and consequently of an exclusive FEDEGAN-World Bank relationship. This would involve completing the Project's design and implementation with support from the organizations involved, defining a

partnership arrangement where FEDEGAN, CIPAV, FONDO ACCION, and TNC have major roles and make Project decisions in a collective manner.

5 (ii) Entrust the execution of Project resources to FEDEGAN, which has ample experience in the administration of non-fiscal resources through the State's delegation, but with the involvement of the collective decision-making mechanism mentioned above. FEDEGAN would enter into the grant agreement with the World Bank, establish subsidiary agreements with the other partner organizations for specific components, and consult with them on key decisions for the Project's successful implementation.

10 (iii) Adopt measures to mitigate the perception of a reputational risk by some stakeholders. Such measures include a communications strategy that emphasizes the expected sector transformation under the influence of the GEF-financed and Bank-administered Project, executed by FEDEGAN in alliance with renowned organizations specializing in such issues; closely monitoring the application of beneficiary selection criteria to rapidly adjust procedures, if required.

15 (iv) Link the Project to the set of activities under the sustainable Peace Pillar through which the World Bank supports the peace agenda in Colombia. This Project, given its implementation in certain areas where illegal armed groups were present but are now substantially regained by the armed forces, could be an excellent example of a contribution to the post conflict healing and development process. Although the conflict with illegal armed groups continues in several parts of Colombian territory, the opportunities offered by the Project to improve the options of small-scale cattle ranchers in several regions of the country will certainly contribute to improve relations between groups of citizens, and between these citizens and the environment.

ANNEX 4: Overview of World Bank Environmental and Social Safeguards

The World Bank's environmental and social safeguard policies are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for bank and borrower staffs in the identification, preparation, and implementation of programs and projects. More information can be found at <http://go.worldbank.org/NR4ACMT4G0>

DECC will expect the World Bank to ensure that all appropriate safeguards are applied in the implementation of this project. Given the geographical location of the project areas it is not anticipated that there would be any impact on indigenous peoples.

Summary of World Bank Safeguard Policies

OP/BP 4.01 Environmental Assessment

The Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making

OP/BP 4.04 Natural Habitats

To promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions.

OP 4.09 Pest Management

To minimize and manage the environmental and health risks associated with:

- Pesticide use; and
- Promote and support safe, effective, and environmentally sound pest management.

OP/BP 4.10 Indigenous Peoples

To design and implement projects in a way that fosters full respect for indigenous peoples' dignity, human rights, and cultural uniqueness, so that they:

- Receive culturally compatible social and economic benefits; and
- Do not suffer adverse effects during the development process.

OP/BP 4.11 Physical Cultural Resources

To assist in preserving physical cultural resources and avoiding their destruction or damage. Physical cultural resources include resources of archaeological, paleontological, historical, architectural, religious (including burial sites), aesthetic, or other cultural significance.

OP/BP 4.12 Involuntary Resettlement

To avoid or minimize involuntary resettlement and, where that is not feasible, to assist displaced persons in improving or at least restoring their livelihoods and standards of living, in real terms, relative to pre-displacement levels or to levels prevailing prior to the start of project implementation, whichever is higher.

This policy covers direct economic and social impacts that both result from Bank-assisted investment projects and are caused by the involuntary taking of land resulting in:

- Relocation or loss of shelter;
- Loss of assets or access to assets; or
- Loss of income sources or means of livelihood, whether or not the affected persons must move to another location.

OP/BP 4.36 Forests

This policy seeks to:

- Realize the potential of forests to reduce poverty in a sustainable manner;
- Integrate forests effectively into sustainable economic development; and
- Protect the vital local and global environmental services and values of forests.

OP/BP 4.37 Safety of Dams

To ensure quality and safety in the design and construction of new dams and the rehabilitation of existing dams, and in carrying out activities that may be affected by an existing dam.

OP/BP 7.50

5 Projects in International Waterways

To ensure that Bank-financed projects affecting international waterways would not affect relations between:

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- The Bank and its borrowers and between states; and
 - The efficient utilization and protection of international waterways.

OP/BP 7.60

15 Projects in Disputed Areas

To ensure that projects in disputed areas are dealt with at the earliest possible stage, so as not to affect relations between the Bank and its member countries, or between the borrower and neighboring countries; so as not to prejudice the position of either the Bank or the countries concerned.

ANNEX 5: Key elements of financial and procurement processes

The following outlines provisional processes, based on the existing CMSCR project. These will be reviewed by the WB's financial management and procurement specialists during the preparation of the Trust Fund Administration Arrangement.

Budgeting arrangements. As in the current CMSCR project, for the ICF project, FEDEGAN will be responsible for project administration and the execution of all project resources on the basis of the project Annual Operative Plans (POAs). FEDEGAN will update and prepare the annual budgets during project implementation, and monitor their execution on a monthly basis. These POAs will be authorized by the Steering Committee composed of the project partners: FEDEGAN, CIPAV, Fondo Acción, and TNC. This task will be an integral part of FEDEGAN's own budget cycle management and processed through FEDEGAN's budgetary system NOVASOFT by project, which updates budget execution records in line with accounting. The Implementing Agency will review the annual operational and procurement plans. FEDEGAN's finance sub-directorate is composed of 16 staff with proper qualifications and experience in administration of project budgeting. This team will be responsible for overseeing budget execution for the CMSCR and ICF projects.

Accounting system. The accounting records will be separate from the CMSCR project, but follow the same processes. The ICF project accounting records will be integrated into FEDEGAN's system NOVASOFT. NOVASOFT is an online, integrated administrative and financial system, where budgeting, accounting, treasury, accounts receivables, payroll, fixed assets and accounts payables modules are connected. In accordance with the WB supervision mission the system performance has been judged to be satisfactory. The accounting for the ICF project, as in the CMSCR project, will be defined through the online cost centre that will be created once the Grant Agreement is signed, therefore NOVASOFT will be able to generate separate financial reports for CMSCR and ICF projects.

Subsidiary agreements would be signed between FEDEGAN and each partner (CIPAV, FA and TNC) before grant effectiveness.

FEDEGAN will control the execution of advanced funds to the core partner agencies, by controlling accounts using the NOVASOFT system, based on the reports issued by the core partner agencies on a monthly basis. These reports will include: (i) a control report of delivered advances; (ii) details of the reconciliation (*legalizaciones*) for the informed period; (iii) the support documents for the *legalizaciones*. This requirement should be incorporated into the subsidiary agreement signed between FEDEGAN and each agency.

FEDEGAN is responsible for the preparation and presentation of the technical and financial information required by the WB. FEDEGAN has experience in project execution sufficient to fulfil the accounting and reporting needs of the project.

Internal control and internal auditing. FEDEGAN has established an internal audit office (IAO), which is responsible for applying processes and procedures established by FEDEGAN's quality control system. As with CMSCR funds, the internal control system of the project would incorporate the policies and procedures established by the IAO. FEDEGAN's IAO is composed of 23 professionals with proper qualifications and experience in internal control function. It reports directly to the Board. IAO assessed FEDEGAN's internal control system and concluded that the level of risk is low and the control environment is adequate. This office plans annually, designing a chronogram of activities and submitting reports to the Board each semester. IAO will prepare regular technical and financial reports of the project and will follow up on the implementation of the recommendations issued by the project's external auditor and the action plans agreed in the IA supervision missions.

FEDEGAN will adopt the procedures described in the OM of CMSCR project for ICF project. Minimal increments of staffing will be required for ICF FM purposes.

Procurement Process

After one year of the CMSCR project's implementation, the procurement process is rated as satisfactory. ICF will adopt the same procurement process.

The procedures would be described in detail in the Operational Manual. For each contract to be financed by the grant, the Grant Recipient and the ICF in the Procurement Plan agree on: different

procurement methods or consultant selection methods; the need for pre-qualification; estimated costs; prior review requirements; and time frame. The Procurement Plan would be updated at least annually or as required to reflect the actual project implementation needs, and improvements in institutional capacity.

5 Procurement of goods and services would be carried out in accordance with WB norms and procedures

The procurement procedures and Harmonized Standard Bidding Documents (SBDs) to be used for each procurement method, as well as model contracts for goods procured, would be presented in the project Operational Manual.

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Assessment of the agency's capacity to implement procurement

An assessment of the capacity of FEDEGAN as the Lead Executing Agency to implement procurement actions for the CMSCR project was carried out by the WB. The supervision mission stated the qualification of FEDEGAN as Lead Executing Agency in the CMSCR project as satisfactory. The WB assessment reviewed the organizational structure for implementing the project and the interaction between the project's staff responsible for procurement within FEDEGAN. The agency is staffed with three specialists dedicated to the procurement function; these staff were trained in the World Bank's procurement guidelines and procedures. The overall project risk for procurement is low, as FEDEGAN already has experience of procurement following WB process.

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Procurement Plan

The Grant Recipient developed a procurement plan for CMSCR project implementation which provides the basis for the procurement methods and contracts subject to prior review. This Plan should be adapted for the ICF project. The Procurement Plan would be updated for ICF project and can be updated in agreement with the project team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

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Frequency of Procurement Supervision

Two times a year: at the same time as the WB procurement supervision missions of the CMSCR project.

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General flow of funds. FEDEGAN will have a Designated Account (DA) in Colombian pesos exclusively to manage the ICF grant funds, in the name of the ICF project, in a commercial bank. All payments will be made based on the Project Annual Operative Plans (POAs) approved by the Steering Committee and satisfactory to the WB.

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Disbursement arrangements. Eligible expenditures will be recognized upon payment to consultants, suppliers and PES beneficiaries. Should instances of ineligibility be brought up by audit reports or by WB supervision, the related amounts will be returned by FEDEGAN to the Designated Account or directly to the WB. FEDEGAN will be responsible for preparing and submitting withdrawal applications to the WB.

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Financial reporting. FEDEGAN will prepare Interim Financial Reports (IFRs). The IFRs agreed include the following reports generated by the accounting system NOVASOFT: (a) the project's consolidated balance sheet; (b) budgeting availability report (project commitments). In addition, IFRs should include: (c) a control report of delivered advances to the core partner agencies; (d) the consolidated cumulative investment statement (with actual and budgeted figures); (e) reconciliation between consolidated cumulative investment statement and project's consolidated balance sheet; (f) designated account (DA) reconciliation and statement of the DA; (g) narrative information regarding project execution; and (h) notes to the financial statements. Report formats are in project files.

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IFRs will be sent to the WB twice per year within 45 days after the end of each such period (that is by August 15 and February 15). The IFRs will be approved by the Steering Committee before being sent to the WB. The IFRs will serve as a basis for the annual financial statements. Audited financial statements will be prepared in accordance with acceptable accounting standards. The annual financial statements, once audited, will be submitted to the WB not later than six months after the end of each audited period. The supporting documentation of the financial statements will be maintained by FEDEGAN, and made readily accessible to WB supervision missions and to the external auditors. Annual audits on project financial statements and eligibility of expenditures will be performed in accordance within the same characteristic of the CMSCR project. An independent audit firm selected by FEDEGAN and acceptable to the WB will conduct the project audits.

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Written Procedures. For ICF project, as in the CMSCR project, financial procedures are described in the Operational Manual, (OM) which defines the roles and responsibilities of the project FM team. The OM includes: (a) interim financial reports (IFRs), format based on the agreements made with FEDEGAN; (b) cash flow charts with detailed processes; (c) internal control procedures including criteria and procedures for processing payments; (d) records management; (e) audit arrangements and Terms of Reference (TORs); (f) a copy of the subsidiary agreements signed between FEDEGAN and partner agencies; (g) the necessary documents and payment instructions for project execution. The OM would be adopted in a manner satisfactory to the WB before grant effectiveness.

Risk assessment. On the basis of the CMSCR project experience with FEDEGAN, FM assessment, the overall FM residual risk is considered low.

Types of Procurement

The various items under different expenditure categories are described in general below. For each contract to be financed by the Grant, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed between the Grant Recipient and the ICF in the Procurement Plan. The Procurement Plan would be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

Procurement of Works: Not expected.

Procurement of Goods: Seeds, trees and other related items for wind barriers or live fences, monitoring (images and GPS) and office equipment, sundry goods and small valued items, including didactic and dissemination materials would be procured under this category. The procurement method to be used is National Competitive Bidding (NCB) using Harmonized Standard Bidding Documents (SBD) and shopping.

Procurement of non-consulting services refers to all contracts for services not related to consultant services. It includes logistics, organizations of seminars, training, workshops, travel, printing and dissemination materials, production of written and audiovisual materials, facilities and related services for training purposes, baseline assessments through farm and land surveys, and verification of land use changes through farm surveys. It is expected that most of these services would be procured by shopping or commercial practices.

Under non-consulting services it is also expected that the project would finance expenditures incurred in connection with the carrying out of capacity building activities and workshops under the project, including travel costs, per diem of trainers, trainees, facilitators and stakeholders, rental of facilities, preparation and production of training materials and other activities incidental to the preparation and implementation of training activities. It is expected that most of these services would be procured by shopping or commercial practices.

Procurement of Consultant services would include legal and technical assistance to farmers, M&E, supervision, audit services, training and technical studies. Short lists of consultants for services estimated to cost less than \$350,000.00 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the World Bank Consultant Guidelines. All contracts would be procured using Bank's Guidelines for the hiring of consultants. For firms, all contracts would be procured using QCBS procedures except for small contracts for assignment of standard or routine nature and estimated to cost less than \$100,000 equivalent which may be procured using LCS. In limited instances, QBS or CQS may also be used. Single source selection (SSS) procedures may be used, with prior agreement of the Implementing Agency, for hiring services that meet the requirements of paragraphs 3.10 of the WB Consultants' Guidelines, for assignments when only one firm is qualified or has experience of exceptional worth.

Operating Costs: Operating Costs include sundry items such as office supplies and maintenance, communications, transportation and other expenses related to day-to-day project management. Supplies and some of the services would be procured using FEDEGAN procurement procedures reviewed by the implementing Agency and considered satisfactory. These procedures would be described in detail in the Operational Manual

Others: The project includes annual payments for environmental services (PES Subprojects) made to eligible participating farmers who have entered into a PES contract with the FONDO ACCION, as the PES account administrator. There are no procurement transactions identified in these payments which include costs associated with the administration of the special account to fund PES subprojects.

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Assessment of the agency's capacity to implement procurement

An assessment of the capacity of FEDEGAN as the Lead Executing Agency to implement procurement actions for the project was carried out by the WB and according with supervision mission, until now the qualification of FEDEGAN as Lead Executing Agency in the GEF-WB-FEDEGAN project is satisfactory. The WB assessment reviewed the organizational structure for implementing the project and the interaction between the project's staff responsible for procurement within FEDEGAN. The agency is staffed with three specialists dedicated to the procurement function; these staff were trained in the Bank's procurement guidelines and procedures. The overall project risk for procurement is low, as FEDEGAN already has experience of procurement following the WB process.

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ANNEX 6: Project Cost

PROJECT COSTS (£)

COMPONENT 1: Making SPS attractive and accessible	TOTAL (£)
Promotion of SPS in 7 regions	339,449
Training of farmers (peer to peer)	128,047
Training of Technical assistants	104,893
Training in financial management and processing of credits	423,077
Total component 1	995,446
COMPONENT 2: Establishment of SPS	
Beneficiary selection	394,231
Base line assessment	250,960
Agricultural Guarantee Fund	755,722
GIS monitoring of corridor areas	158,231
PES adjustment and operation	2,807,341
Technical Assistance to farmers	3,872,505
Production of seedlings and fertilisers in the regions	2,239,397
Land use change verification	413,292
Total Component 2	10,891,678
COMPONENT 3: Monitoring and Dissemination	
Communication strategy	304,490
M&E system platforms for monitoring of project components (CC and biodiversity, productivity and land use changes)	115,000
Monitoring of CC adaptation and mitigation	440,702
Monitoring of environmental services (water, soil and biodiversity)	190,385
Remote sensing measurements of biomass change at landscape level	244,038
Socioeconomic monitoring	100,000
Promotion of SPS and monitoring outside project regions	287,087
Impact Assessment	150,000
Midterm and Final Evaluation	60,000
Development of two market initiatives for broader adoption of SPS	75,000
Total component 3	1,966,702
COMPONENT 4: Operational and administrative costs	
Operational costs	307,692
Audits	76,923
Financial costs	11,539
Administrative Fees WB	750,000
Total component 4	1,146,154
TOTAL	15,000,000

ANNEX 7: Avoiding Rebound Effects

Will increasing productivity through SPS lead to expansion of the area used for cattle production?

- 5 The risk of a 'rebound effect' (an increase in total agricultural land as a result of the productivity improvement, leading to higher emissions) is reduced in the project due to the following reasons:
- 10 1. The areas with greatest potential for introduction of SPS are consolidated livestock areas occupying large extensions with tree-less pastures, and they would benefit from more efficient cattle ranching without resorting to new areas. So the project will prevent conversion of more land to farmland, by selecting strategically the most suitable areas where there is already livestock activity and it can be intensified, so it is possible to release land for other uses, including environmental protection.
 - 15 2. Through careful farm planning, SPS will be promoted only in the most suitable areas of the farm allowing the release of areas to land restoration and forest protection (with increase in Carbon capture). Therefore cattle will be concentrated in certain areas of the farm and overall increase of cattle per farm might not be so high. The area devoted to cattle per farm is expected to be reduced as a result of the promotion of forest protection and corridor restoration in the project.
 - 20 3. Project design seeks to prevent the risk of further conversion of land to cattle ranching through agreements to be signed with individual farmers to ensure sustainable land use planning in each farm, with a baseline assessment of land uses and close M&E.
 - 25 4. The PES scheme grants a baseline payment for preserved forests to recognize previous conservation efforts by participating farmers; subsequent payments would be made each year if they are preserved. Highest values, and therefore payment levels, for environmental services (ES) are assigned to existing mature forests and wetlands to discourage their conversion to production land uses
 - 30 5. Implementing a training program to increase environmental awareness of farmers and help them to recognise the value of biodiversity and forests and the environmental services that they provide.
 - 35 6. Establishing an independent monitoring program to evaluate changes in the trend of deforestation in intervention and neighbouring areas at midterm (year 2) and project end;
 - 40 7. Working with the Ministry of Environment and other authorities (that participate in the Steering Committee) to implement and enforce regulatory instruments to control deforestation. The Ministries of the Environment and Agriculture, on behalf of the Colombian government have expressed their commitment to participate in the project and contribute to the development, approval and enforcement of laws and legal tools to help reduce deforestation and poor farming practices in the country. Instruments such as the creation of Natural Reserves of Civil Society (Act 99 of 1993), Zonas de Reserva Campesina (Act 160 of 1994) and Land Act could be applied for
 - 45 the project.
 - 50 8. As for the deforestation hotspots, the proposal will work in two pilot areas in order to test the effect of project instruments (Technical Assistance, PES, improved access to credit and integrated land planning) on curbing deforestation. It will also work hand in hand with the Ministries of Agriculture and Environment, in developing strategies to secure land tenure to small-scale farmers and to make their activity more efficient, to avoid the need to deforest more areas. This approach set out by the Colombian Government in its recent Forest Carbon Partnership Facility Readiness Preparation Proposal for REDD+ is to use sustainable means to intensify cattle production as part of a wider set of policies and instruments for reducing the drivers of
 - 55 deforestation. This integrated approach is likely to lessen the possibility of rebound effects.

Evidence from other studies

According to a paper from Kaimowitz & Angelsen (2008) and the studies they reviewed:

“Cattle ranchers that adopt more profitable livestock technologies will be inclined to expand their pasture areas unless one of two conditions applies”:

1. The new technologies depress product prices...
2. The new technologies require more capital, labour, or managerial efforts per hectare of pasture and cattle ranchers have limited access to those resources.

As mentioned by the authors, SPS fall within the category of more labour and capital intensive. Intensive silvopastoral systems (ISPS) are a form of agroforestry that combines the high-density cultivation of fodder shrubs (more than 8 000 plants per hectare) for direct grazing of livestock with improved tropical grasses and trees. The top layer may consist of timber or fruit trees or palms with densities ranging from 100 to 600 individuals per ha, in accordance with the biophysical and climatic conditions of each agroecosystem (Murgueitio et al., 2010).

ISPS combine elements of traditional livestock management, fodder banks and timber plantations, but have significant differences with these three land-use systems:

Unlike conventional extensive cattle ranching, ISPS require a rigorous management, administrative control and permanent adjustments based on careful monitoring. Management protocols are simple but mandatory; for example, once the system is established, fire and herbicides cannot be used.

Cattle grazing has to change to a careful paddock rotation. Unlike mixed fodder banks or other cut-and-carry systems, ISPSs are designed to tolerate direct browsing by cattle. Electric fencing must be handled properly in order to guarantee the heavy but instantaneous grazing of narrow strips of shrubs and grasses in each paddock. These short rotations minimize the negative impact of cattle on the soil and facilitate the recovery of shrubs and grasses.

Due to this complexity and the need of capital and labour, it is not expected that farmers will extend to new forest areas or agricultural frontiers to expand the system but rather will intensify the use in the most suitable areas of their farms.

Agricultural frontiers in Colombia are located in places with reduced infrastructure such as roads and access to market and inputs and little qualified labour available. In addition, they generally are located in areas where security problems will discourage production systems that require a lot of supervision and management.

The five main areas where the ICF intervention is proposed are consolidated agriculture areas in three different regions of the country. They are located in places with a relative high value of land that would benefit from more efficient cattle ranching without resorting to new areas. As supported by White et al (2001), in areas where the agricultural frontier is closed and land prices are high, ranchers respond by trying to use land as efficiently as possible. It is worth mentioning that in their study in Esparza (Costa Rica) small ranchers have adopted the technologies more than large ranchers have. Given their limited access to land they face particularly high incentives to intensify.

Although Kaimowitz and Angelsen (2008) mention that in the long term farmers can gain enough capital to move to new forest areas, experience in the RSPS Project in Nicaragua, Costa Rica and Colombia is that farmers have preserved or even increased slightly forest areas within their farms four years after payments stopped. The new SPS areas in those farms have been implemented mainly at the expense of treeless pastures in the consolidated agriculture area of their farms (Pagiola 2011, unpublished data).

A very important point to mention is that this intervention is not simply a proposal to intensify cattle ranching using SPS. It is a much more integrated intervention that includes protection of water courses, establishing connectivity corridors, protection of biodiversity and soils within farms and establishing Best Management Practices using technical assistance, training and PES to promote more environmentally-friendly cattle ranching practices. The project will counteract the current perception that the only way to improve productivity is reducing tree cover and introducing chemical fertilizers and other external inputs to the farm.

One important outcome of the previous RSPS project in Quindío Colombia was that farmers changed their perception towards forest and biodiversity (Calle et al. 2009). This study highlighted the role of

adequate technical assistance (TA) in helping farmers understand the past and future implications of their land use decisions. They also demonstrate how Payment for Ecosystem Services (PES) can help to build initial trust, and to link the adoption of SPS to environmental and economic benefits. According to the authors, the lessons from this project can be applied in designing strategies to promote SPS and other sustainable practices at a larger scale which can potentially help to reduce land degradation and tropical deforestation.

Another factor that will help in reducing the trend to clear land is that during the last five years Colombian cattle ranchers of all scales have suffered the effects of climatic change both as longer and more severe dry seasons (El Niño) and heavier rain seasons (La Niña) that have caused important economic losses. This has made farmers more aware of the negative effects of environmental degradation and more prone to actively participate in actions to preserve natural resources.

Cattle ranching association of Colombia (FEDEGAN) in its strategic plan has a commitment to reduce the area occupied by cattle by five million hectares in the following years (PEGA 2006). It is the only agricultural sector with a plan to reduce the area occupied to release areas for environmental protection. This proposal is a step in getting the necessary knowledge to achieve these environmental and productivity goals.

Will an increase in the stocking rate of cattle increase GHG emissions from the land after conversion to SPS?

Although with intensive SPS more cattle can be raised in one hectare and therefore more CH₄ could be generated by rumen fermentation, net GHG emissions per hectare and overall GHG emissions by farmers included in the project are reduced as a result of SPS implementation due to the following reasons:

1. Due to the improvement in soil organic carbon and increase of vegetation biomass in shrubs and trees (Arias et al., 2011; Nair et al., 2010; Nair et al., 2011), carbon stocks in the SPS are increased generating a positive balance with net capture of GHG per hectare.

2. Due to an improvement in diet in SPS, it is expected that methane emissions are reduced up to 30%. This is not included in the calculations of the annex and it is expected to be corroborated during the project for local conditions.

3. Reduction in GHG emissions is also expected as a result of the reduction in the use of pesticides, fertilizers and fire as a pasture management tool (World Bank 2008).

Under the present government and cattle ranching developing plans and the trend in consumption of beef and milk in the world, an increase in the Colombian herd is expected in the following decades. Under this scenario the production under SPS is an option that will allow the increase in cattle population without increasing GHG emissions and increasing tree cover in cattle farms that have additional benefits.

ANNEX 8: Technical Annex for the Economic Appraisal

This annex provides additional detail on the monetised and non-monetised costs and benefits included in the appraisal; explains the calculations of changes in emissions and farm incomes; shows the net present value and abatement costs for each options, and tests the main assumptions through a sensitivity analysis.

Context: the International Climate Fund (ICF) intervention will be part of a broader programme, run jointly by the World Bank and the Colombian government. The total programme will cover the conversion of 77,000 hectares of land to silvopastoral systems. Of this, the ICF will fund the conversion of 28,000 hectares (including preservation of about 1,000 hectares of forest), working specifically with small and medium farms.

The appraisal follows the DFID and DECC GHG Appraisal⁶² guidance and is based on the following assumptions:

- CO₂e abatement benefits continue for four years after the funding stops (8 years in total). This is based on evidence from past interventions of this kind by the World Bank⁶³. A sensitivity analysis where the abatement benefits last for four years only is included.
- CO₂e benefits are valued at the DECC traded sector price in the central scenario, as advised by DFID/DECC appraisal guidance. Sensitivity analysis using the low scenario is included.
- CO₂e benefits are discounted at the UK Government discount rate of 3.5% (The HMT Green Book), as advised by the DFID/DECC appraisal guidance.
- All other benefits and costs are discounted at 10%, as advised by the DFID/DECC appraisal guidance when the discount rate in the intervention country is unknown. Sensitivity analysis using higher and lower discount rates (7%, 13%) is included.
- The expected farm land use under each option is shown in Table 1 for the central scenario. The total land area included in the appraisal is 30,000 hectares. In the absence of the intervention (option 5), most of this will remain as conventional pasture, with small amounts (1,000 hectares) being converted to improved systems: improved pasture, living fences and scattered trees, and intensive silvopastoral systems. Options 1-4 offer different levels of improvements on this, depending on the cost-per-unit of land converted in the various locations. For example, under option 1, all of the land is converted to improved systems (30,000 hectares). Under option 2, which is working in more challenging regions than option 1, a small amount of land will remain as conventional pasture but most land will be converted to improved systems (26,810 hectares). Option 2 is the preferred option because it offers longer term benefits, as explained below.

Table 1: land use expected by 2016 under each option

PROJECT SCENARIOS (Hectares per land use)	Conventional pasture	Improved Pasture	Living Fence & Scattered trees	Intensive SPS	Total land converted	Total land
Option 1 (same regions)	0	1000	25000	4000	30,000	30,000
Option 2 (2 hotspots adjacent to current regions)	3190	945	22283	3582	26,810	30,000
Option 3 (2 hotspots in different location)	5510	905	20307	3278	24,490	30,000
Option 4 (5 new hotspots)	14500	750	12650	2100	15,500	30,000
Option 5 (do nothing)	29000	500	300	200	1,000	30,000

⁶² http://www.decc.gov.uk/en/content/cms/about/ec_social_res/iag_guidance/iag_guidance.aspx

⁶³ Implementation Completion and Results Report, The World Bank; 2008, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/11/25/000333037_20081125224142/Rendered/PDF/ICR00008750ICR1isclosed0Nov02502008.pdf

- The expected area of forest preserved under each option is shown in table 2 below. As with the farm land use above, there is a small amount of forest preserved in the absence of the intervention, option 5, (500 hectares), with higher amounts under options 1-4.

Table 2: forest area remaining by 2016 under each option

PROJECT SCENARIOS (Hectares)	Forests
Option 1 (same regions)	1000
Option 2 (2 hotspots adjacent to current regions)	945
Option 3 (2 hotspots in different location)	905
Option 4 (5 new hotspots)	750
Option 5 (do nothing)	500

The following costs have been monetised in the cost-benefit analysis:

- Financial costs to the ICF. The main components of the cost are below. The cost profile is the same for all the options. The full breakdown is given in Annex 6.

Table 3: breakdown of ICF costs

Name of component	Cost to the ICF (£)
Making SPS attractive and accessible	995,500
Establishment of SPS	10,891,500
Monitoring and Dissemination	1,967,000
Operational and administrative costs	1,146,000
Total	15,000,000

- Increased methane and nitrous dioxide emissions from the increased stocking rate (number of animals per hectare) on farms. This is taken into account in the net greenhouse gas emissions calculations below. The full breakdown of emission sources and sinks is given in Annex 2.
- Costs to farmers of converting land to silvopastoral systems, including the capital investment, the additional labour costs and the interest repayment on the capital loan. These costs are explained in more detail in the net income calculation in the benefits section below.

The following benefits have been monetised in the cost-benefit analysis:

- Estimated changes in greenhouse gas emissions as a result of the intervention. This includes:
 - changes in methane and nitrous oxide emissions as a result of increased stocking rates (number of animals per hectare) on farms.
 - changes in carbon dioxide emissions as a result a higher number of living fences and trees, and forest areas preserved.

The emission (sequestration) factors used for the calculations are below.

- Conventional pasture emits **0.7 tCO₂/hectare/year**
- Improved pasture absorbs **1.6 tCO₂e/hectare/year**
- Living fences and scattered trees absorb **9.0 tCO₂e/hectare/year**
- Intensive silvopastoral systems (iSPS) absorb **12.3 tCO₂e/hectare/year**
- Forests absorb **5 tCO₂/hectare/year**

To calculate the change in greenhouse gas emissions, these factors are multiplied by the number of hectares converted to each land use, and multiplied by eight, the expected lifetime of the intervention. Table 4 below shows the change in emissions expected under each option as a result of the ICF intervention. The central scenario is based on the land assumption in Table

1. The low scenario is based on 50% less land being converted than under the central scenario, and the high scenario is based on 50% more.

Table 4: expected change in greenhouse gas emissions by option, over the lifetime of the intervention

PROJECT SCENARIOS	net GHG change (tCO ₂ e)		
	Low scenario	Central scenario	High scenario
Option 1 (same regions)	-1,349,291	-2,055,812	-3,115,593
Option 2 (2 hotspots adjacent to current regions)	-1,200,869	-1,829,673	-2,772,878
Option 3 (2 hotspots in different location)	-1,092,926	-1,665,208	-2,523,631
Option 4 (5 new hotspots)	-674,646	-1,027,906	-1,557,797
Option 5 (do nothing)	n/a	n/a	n/a

- Higher farm incomes as a result of conversion to silvopastoral systems, compared to the case without an ICF intervention.

The main assumptions of the income calculations, based on another silvopastoral project⁶⁴, are set out below:

- for every hectare of improved pasture, net farm income increases by **£50/year**
- for every hectare of living fences and trees planted, net farm income increases by **£110/year**.
- for every hectare of intensive silvopastoral systems (iSPS), net farm income increases by **£300/year**.

The figures take into account the increased productivity of agricultural land (from improved pasture, increased quantity of living fences and trees, and intensive silvopasture) and the additional capital and labour costs faced by farmers. The full breakdown of the productivity improvements is given in Annex 2.

The net income factors are then multiplied by the number of hectares (ha) expected to be converted, and by four, the number of years of the intervention. The farmers' share of the interest payment on the capital loan is then subtracted to get the net income change. (Farmers will cover 100% of the interest repayment, they will receive a **cash transfer incentive, denominated a payment for environmental services for carbon sequestration (PES-CS), that could be calculated as equivalent to 50% of Finagro's credit annual cost**)

The risk of a 'rebound effect' (an increase in total agricultural land as a result of the productivity improvement, leading to higher emissions) has been taken into account in the project design. The project will prevent conversion of more land to farmland by selecting strategically the most suitable areas where there is already livestock activity and where activity can be intensified, releasing land for other uses, including environmental protection. Agreements will be signed with individual farmers to ensure sustainable land use planning in each farm, with a baseline assessment of land uses and close M&E. More information is given in Annex 7.

The following benefits have not been monetised:

- Reduced methane emissions as a result of better animal diet.
- Improved biodiversity and soil conservation as a result of shrub and tree planting on agricultural land
- Reduced GHG emissions and costs from lower fertiliser use by farmers. (Because silvopastoral systems naturally increase the nutrients in the soil, less synthetic fertiliser is required.)

⁶⁴ Implementation Completion and Results Report, The World Bank; 2008, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/11/25/000333037_20081125224142/Rendered/PDF/ICR00008750ICR1isclosed0Nov02502008.pdf

- Reduced GHG emissions from the use of fire as a pasture management tool.
- Any intrinsic value of forests.
- Adaptation benefits from making productive systems more resilient to climate change.

None of these are considered likely to alter the ranking of the options in the cost-benefit analysis.

The tables below show the discounted stream of costs and benefits, which was used to calculate the net present value (NPV):

The net present value (NPV) is partial, because not all the benefits are monetised.

Although the net present value of option 1 is highest, option 2 is preferred because it is expected to have higher long-term abatement benefits. This is because it involves working in deforestation hotspots, where future 'business-as-usual' emissions from deforestation are expected to be particularly high. Due to the uncertainties of projecting beyond eight years, it is not possible to quantify these long term benefits. Instead, they are reflected in the long-term abatement score. If they were quantifiable, it is expected that they may tip the balance in favour of option 2.

Table 5: NPV summary:

	Present value of costs (£m)	Present value of benefits (£m)		Partial NPV	Project abatement cost	Net abatement cost	Long-term abatement score
	Project costs	CO ₂ e avoided	Increased farm income	£	£/tCO ₂ e	£/tCO ₂ e	(3 is highest)
Option 1	11.9	37.2	11.3	36.7	5.8	0.3	1
Option 2	11.9	33.1	10.1	31.3	6.5	1.0	3
Option 3	11.9	30.1	9.2	27.5	7.1	1.6	2
Option 4	11.9	18.6	5.7	12.4	11.5	6.0	2
Do nothing	0	0	0	0	-	-	-

The project abatement cost is based on the ICF costs only:

e.g. for option 2, the calculation is $\text{£}11,900,000 / 1,970,000 \text{ tCO}_2\text{e} = \text{£}5.8/\text{tCO}_2\text{e}$

where $\text{£}11,900,000$ is the present value of the $\text{£}15,000,000$ project cost and $1,970,000 \text{ tCO}_2\text{e}$ is the expected emissions saving from table 4.

The net abatement cost also includes non-greenhouse gas benefits:

e.g. for option 2, the calculation is $(\text{£}11,900,000 - \text{£}10,100,000) / 1,970,000 \text{ tCO}_2\text{e} = \text{£}1.0/\text{tCO}_2\text{e}$

where $\text{£}10,100,000$ is the present value of the expected increase in farm income.

Cost effectiveness:

Comparing to the cost comparator (the weighted average discounted shadow price of carbon⁶⁵), which is $\text{£}18/\text{tCO}_2\text{e}$, all the options are cost-effective, because their abatement costs are below $\text{£}18$.⁶⁶

Sensitivity analysis and stress tests:

Due to the inherent uncertainties in the cost-benefit analysis, the main assumptions were tested to see how they affect the appraisal. Under all the sensitivity tests, the net present value of all the options remained positive and the ranking of the options did not change. The NPV was most sensitive to the assumption that the GHG benefits continue beyond the ICF funding period. Taking this assumption away reduced the NPV of the preferred option by 60%.

⁶⁵ DECC Appraisal Guidance:

http://www.decc.gov.uk/en/content/cms/about/ec_social_res/iag_guidance/iag_guidance.aspx

⁶⁶ The cost comparator is the same for all the options because the distribution of benefits is the same over time across the options.

The preferred option remained cost effective under all the sensitivity tests. The project needs to be at least 30% successful for the preferred option to be cost effective (i.e. successful implementation of 30% of the land conversions expected under the central scenario is needed).

- 5 1. Abatement benefits last four years (rather than 8 years)

Table 6: greenhouse gas reductions over 8 and 4 year lifetimes

PROJECT SCENARIOS	Change in GHGs (tCO ₂ e) 8 years	Change in GHGs (tCO ₂ e) 4 years
Option 1 same regions	-2,055,812	-1,027,906
Option 2 (2 hotspots adjacent to current regions)	-1,829,673	-914,836
Option 3 (2 hotspots in different location)	-1,665,208	-832,604
Option 4 (5 new hotspots)	-1,027,906	-513,953
Option 5 (do nothing)	n/a	n/a

Table 7: cost-benefit analysis assuming a 4 year lifetime

	Present value of costs (£m)	Present value of benefits (£m)		Partial NPV	Project abatement cost	Net abatement cost	Long-term abatement score
	Project costs	CO ₂ e avoided	Increased farm income	£	£/tCO ₂ e	£/tCO ₂ e	(3 is highest)
Option 1	11.9	18.2	11.3	17.7	10.7	0.5	1
Option 2	11.9	16.2	10.1	14.4	12.1	1.8	3
Option 3	11.9	14.8	9.2	12.1	13.3	3.0	2
Option 4	11.9	9.1	5.7	2.9	21.5	11.2	2
Do nothing	0	0	0	0	-	-	

10 The weighted discounted cost comparator becomes £17/tCO₂e. Option 4 is no longer cost effective, but the other options, including the preferred option, remain cost effective.

2. Using the low carbon price scenario

15 **Table 8: cost-benefit analysis using low carbon price**

	Present value of costs (£m)	Present value of benefits (£m)		Partial NPV	Project abatement cost	Net abatement cost	Long-term abatement score
	Project costs	CO ₂ e avoided	Increased farm income	£	£/tCO ₂ e	£/tCO ₂ e	(3 is highest)
Option 1	11.9	24.0	11.3	23.4	5.8	0.3	1
Option 2	11.9	21.3	10.1	19.6	6.5	1.0	3
Option 3	11.9	19.4	9.2	16.7	7.1	1.6	2
Option 4	11.9	12.0	5.7	5.8	11.5	6.0	2
Do nothing	0	0	0	0	-	-	

20 With a low carbon price, the weighted discounted cost comparator becomes £12/tCO₂e. All the options remain cost effective.

3. Using a discount rate of 13%, rather than 10%. (Emissions discounted at 3.5% throughout)

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Table 9: cost-benefit analysis using higher discount rate

	Present value of costs (£m)	Present value of benefits (£m)		Partial NPV	Project abatement cost	Net abatement cost	Long-term abatement score
	Project costs	CO ₂ e avoided	Increased farm income	£	£/tCO ₂ e	£/tCO ₂ e	(3 is highest)
Option 1	11.0	37.2	10.5	36.6	5.4	0.3	1
Option 2	11.0	33.1	9.3	31.4	6.0	0.9	3
Option 3	11.0	30.1	8.5	27.6	6.6	1.5	2
Option 4	11.0	18.6	5.2	12.8	10.7	5.6	2
Do nothing	0	0	0	0	-	-	

4. Using a discount rate of 7%, rather than 10% (Emissions discounted at 3.5% throughout)

5 Table 10: cost-benefit analysis using lower discount rate

	Present value of costs (£m)	Present value of benefits (£m)		Partial NPV	Project abatement cost	Net abatement cost	Long-term abatement score
	Project costs	CO ₂ e avoided	Increased farm income	£	£/tCO ₂ e	£/tCO ₂ e	(3 is highest)
Option 1	12.7	37.2	12.3	36.7	6.2	0.2	1
Option 2	12.7	33.1	10.9	31.3	7.0	1.0	3
Option 3	12.7	30.1	9.9	27.3	7.7	1.7	2
Option 4	12.7	18.6	6.1	12.0	12.4	6.4	2
Do nothing	0	0	0	0	-	-	

ANNEX 9: Logframe

ANNEX B. RESULTS FRAMEWORK

5

PDO	PROJECT OUTCOME INDICATORS
<p>Global Development Objective:</p> <p>To promote the adoption of environment-friendly silvopastoral production systems (SPS) in Colombian cattle ranching Project areas, to improve natural resource management (NRM), enhance the provision of environmental services (mainly carbon sequestration, CS) and raise the productivity in participating farms for poverty reduction.</p>	<p>1,500 small and medium scale farmers benefitting from Project instruments (technical assistance, PES, support for credit access).</p> <p>28,000 ha. of environment-friendly cattle ranching production systems implemented in 7 Project areas.</p> <p>Reduced GHG emissions from cattle grazing activities as a result of SPS adoption in Project participating farms, over baseline.</p> <p>Reduced GHG emissions from deforestation and forest degradation by preserving forest areas in the Project participating farms in the two deforestation hotspots.</p> <p>10% increase in the production of beef and or milk per intervened hectare in participating farms, improving GHG balance.</p> <p>20% increase in productive assets-based patrimony of small-scale livestock farmers through the establishment of iSPS in Project's participating farms.</p> <p>Strategy for the broader adoption of SPS by small and medium scale farmers validated and adjusted during Project implementation, and ready for adoption by FEDEGAN and other strategic public and private allies (e.g. DNP, Ministries of Agriculture and Environment, local authorities, cattle ranchers, other livestock associations, etc.).</p>

Intermediate Outcomes	Intermediate Outcome Indicators
<p>Component 1.</p> <p>Making SPS attractive and accessible.</p>	<p>400 workshops at local and regional level for broad promotion of SPS.</p> <p>200 peer to peer exchanges in SPS demonstration farms.</p> <p>50 professionals from regional TAPs (Tecnigans) trained on SPS establishment and management.</p> <p>1,500 farmers receiving financial education and support for credit access to Finagro's second-tier loans.</p>

	<p>Volume (\$) of financing mobilized for the establishment of iSPS.</p>
<p>Component 2. Establishment of SPS in small and medium scale farms</p>	<p>1500 farmers signing contracts for the establishment of SPS.</p> <p>Provision of TA in SPS to 1500 participating beneficiaries.</p> <p>28,000 ha under PES scheme in 7 Project areas.</p> <p>3,780 ha of iSPS.</p> <p>945 ha. of forests preserved in participating farms.</p> <p>945 ha. of degraded pastures recovered</p> <p>22,330 ha of other SPS (e.g. living fences, scattered trees in pastures, fodder banks)</p> <p>10% increase in the production of beef and or milk per intervened hectare in participating farms, improving GHG balance.</p> <p>10% increase in average stocking rate (cows/ha) per intervened ha in iSPS in Project participating farms.</p> <p>600 small-scale farmers that establish iSPS increase 20% of their assets-based patrimony.</p> <p>600 small farmers receiving PES-CS (as an incentive to alleviate credit associated costs)</p> <p>1500 farmers receiving PES-NRM..</p> <p>2 million metric tons (Mt) of CO₂-equivalent reduced/avoided (over eight years).</p> <p>Provision of seedlings, trees and organic fertilizers (at production costs) for live fences, pastures with trees and forest enrichment in 7 project areas.</p>
	<p>400 farmers not directly involved in the Project adopt SPS.</p> <p>Development of at least two market / consumer initiatives that could support the broader adoption of SPS.</p> <p>M&E system established and providing timely and relevant information on Project's direct and indirect impacts in aid of decision making</p>

<p>Component 3.</p> <p>Monitoring, evaluation and dissemination of results at local, regional and national levels.</p>	<p>processes.</p> <p>SPS have been tested as a viable implementation mechanism for REDD+ initiatives. (i.e. biomass changes monitored in project farms and hotspot areas).</p> <p>Influencing at least three government /sector policies.</p> <p>Communication strategy implemented for dissemination of results to livestock farmers, local and national institutions (including local producer associations, regional environmental authorities, municipalities, Ministries and commercial banks).</p>
<p>Component 4.</p> <p>Project management and TF management and oversight</p>	<p>PIT strengthened and working effectively to coordinate national and regional Project execution.</p> <p>Annual audit reports.</p> <p>TF administration and technical supervision and performance monitoring by the World Bank, including oversight for procurement procedures and practices, fiduciary management and environmental and social safeguards.</p>

ANNEX 10: Delivery Partner Review

5 **ANNEX 11: Project Risk Register**

ANNEX 12: Draft Project Plan

ANNEX 13: Lessons learned from PES schemes

(This is an extract from the CMSCR Project Appraisal Document)

D. Lessons learned and reflected in the Project design

5 24. The Project design draws on the experience of two types of projects: (i) those implementing PES approaches to natural resource management and to a lesser extent to agricultural productivity, and (ii) several rural development initiatives in Colombia.

10 25. Best practices on PES schemes, particularly key lessons from the RSPS Project have been incorporated into Project design, including:

15 (i) *Differentiated mechanisms are required to promote the adoption of desired practices by farmers* - given that not all silvopastoral practices have the same profitability for farmers or contribute equally to the provision of environmental services, the Project would apply three distinct strategies to ensure an efficient use of resources with maximum environmental impacts in each area.

20 (ii) *Silvopastoral practices can play an important role in rural development* - efforts to expand the adoption of SPS under this Project have been conceived primarily as a rural development undertaking that has global environmental benefits providing a genuine example of sustainable rural development.

25 (iii) *Paying for the baseline state of biodiversity avoids perverse incentives to clear land and helps finance required investments.*

30 (iv) *Simplified ES valuation instruments help demonstrate Project impacts, while helping farmers understand the levels of payment received* - the Project would apply a land use index to differentiate payment levels, as it has proven to be a good proxy for on-site biodiversity and carbon sequestration variations, and more importantly, a tool that farmers can easily understand and use. PES would follow similar contract and operational procedures as those employed under the RSPS Project (e.g., ex post payments upon verification of land use changes), adjusted for conditions in each Project area.

35 (v) *Extensive training and knowledge transfer is instrumental to increase public awareness about the role of SPS in sustainable cattle ranching* - A comprehensive communications strategy needs to be launched from Project onset which takes into account the different target audiences and Project areas.

40 (vi) *Working directly with producers can turn them into 'protection agents'* - developing conversion plans for sustainable production systems on each farm, helps raise awareness about their role in protecting on-farm natural resources. Farmers positively value the impact of sustainable natural resource management on the price of their land.

45 (vii) *SPS contribute to climate change adaptation and mitigation* - the RSPS Project illustrated how the use of tree species that are drought tolerant and retain their foliage in the dry season provides high-quality fodder that results in stable milk and beef production, helps maintain the animals' body conditions (through reduced heat stress from increased shade), reduces methane emissions, and helps secure farmers' assets (through increased farm productivity). SPS were also associated with a significant reduction in the use of fire as a pasture management tool, as well as with significant carbon sequestration in the soil and
50 in the standing tree biomass.

(viii) *Peer-to-peer interactions have strong multiplier effects* - farmers who share the knowledge that they receive through TA with their peers and broader networks help to

disseminate production practices to a wider audience than would be possible with the extension services alone. In addition, visits to farms already implementing SPS proved fundamental under the RSPS Project as small and medium-scaled farmers were able to see that larger rural entrepreneurs also opted for SPS.

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26. Other key lessons from implemented/planned PES schemes include:

- Payment structure needs to be based on the size of benefits and the cost of providing them in each area
- An appropriate institutional structure for PES mechanism needs to be in place, including a substantial and skilled field presence trusted by farmers.
- Robust and transparent monitoring system needs to be in place to track compliance with contracts and service generation.
- Outreach and capacity-building activities based on up-front training needs of implementing agencies and Project partners result in more effective PES mechanism and Project implementation.
- National institutions need to be adequately integrated into Project implementation to ensure adoption of key results.

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