

## United Nations Development Programme

Country: Honduras

### PROJECT DOCUMENT



**Project Title:** Delivering multiple global environmental benefits through sustainable management of production landscapes

**UNDAF Outcome(s):** Government, private sector and local communities adopt good practices for the management of ecosystems, mitigation of and adaptation to climate change for the preservation of natural capital, the reduction of economic losses and the generation of employment opportunities for the most vulnerable sectors of the population

**UNDP Strategic Plan Environment and Sustainable Development Primary Outcome: Strengthened national capacities for sustainable management of the environment while ensuring adequate protection of the poor.**

**Expected CP Outcome(s):** Effect 3.2: The Government of Honduras, the private sector and communities in the areas of intervention adopt good practices of ecosystem management, solid waste management and climate change mitigation and adaptation, which allow the preservation of natural capital, the reduction of economic losses and the generation of income opportunities for vulnerable sectors of society.

**Expected CPAP Output (s) 3.2.1:** Good practices implemented for natural resource management, and generation and use of renewable energy by local communities and local and regional authorities in the area of influence of the United Nations System, which generate benefits and empowerment for communities and increase their resilience to climatic phenomena.

**Executing Entity/Implementing Partner:** Ministry of Natural Resources and the Environment (SERNA)

#### **Brief Description**

The project will support the generation of multiple global environmental benefits (GEBs) in two of the country's priority ecoregions that are severely threatened by multiple pressures of local production systems. This project proposes an innovative approach to these threats by adopting integrated multi-sector, multi-stakeholder and landscape-wide approaches that recognize the complex interactions that underlie the impacts of local production systems on GEBs. It will achieve this by removing critical barriers related to policies, markets, finance, governance, resource management planning and technical support.

#### **Implementing Entity/Responsible Partners:**

- Ministry of Agriculture and Livestock
- CATIE

Programme Period:	2013-2016
Atlas Award ID:	00072885
Project ID:	00085892
PIMS #	4741
Start date:	
End Date	
Management Arrangements	NEX
PAC Meeting Date	_____

<b>Total resources required</b>	<b><u>\$20,602,363.88</u></b>
<i>Total allocated resources:</i>	<u>\$20,411,913.88</u>
o GEF	<u>\$3,045,455</u>
o UNDP TRAC	\$35,000
o Ministry of Agriculture and Livestock	\$6,000,000
o CABI	\$10,300,000
o ICADE	\$1,031,458.88
<i>In-kind contributions:</i>	<u>\$190,450</u>
o ICADE	\$30,450
o CATIE	\$60,000
o UNDP Green Commodities Facility	\$100,000

Agreed by (Government): \_\_\_\_\_

Date/Month/Year

Agreed by (Executing Entity/Implementing Partner): \_\_\_\_\_

Date/Month/Year

Agreed by (UNDP): \_\_\_\_\_

Date/Month/Year

## Contents

<b>List of abbreviations</b> .....	<b>5</b>
SECTION I: ELABORATION OF THE NARRATIVE .....	7
<b>PART I. SITUATION ANALYSIS</b> .....	<b>7</b>
Geography, Demography and Economy .....	7
The livestock sub-sector in Honduras .....	8
Green markets 19	
Biodiversity in Honduras.....	20
Threats 21	
The target areas: characteristics and threats .....	25
Legal framework .....	34
Policy framework .....	34
Long-term solution .....	35
Baseline analysis .....	35
Barriers to achieving the solution .....	39
Stakeholder analysis .....	44
<b>STRATEGY</b> .....	<b>45</b>
Project rationale.....	45
Policy conformity .....	45
Coordination with related initiatives .....	47
Country ownership: country eligibility and country drivenness.....	47
Design principles and strategic considerations.....	48
Project objective, outcomes and outputs/activities.....	52
Incremental reasoning and expected global, national and local benefits.....	64
Key indicators, risks and assumptions.....	66
Financial modality .....	67
Cost-effectiveness.....	67
Sustainability 67	
Replicability 68	
<b>PART II. Management Arrangements</b> .....	<b>69</b>
Arrangements and responsibilities .....	69
UNDP Support Services .....	70
Collaborative arrangements with related projects .....	70
Prior obligations and Prerequisites .....	71
Audit arrangements .....	71
Agreement on intellectual property rights and use of logo on the project’s deliverables.....	71
<b>PART III. Monitoring Framework and Evaluation</b> .....	<b>72</b>
<b>PART IV. Legal Context</b> .....	<b>79</b>
SECTION II: STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT .....	80
SECTION III: TOTAL BUDGET AND WORKPLAN.....	85
SECTION IV: ADDITIONAL INFORMATION .....	93
<b>PART I. Endorsement Letter</b> .....	<b>93</b>
<b>PART II. Target calculations</b> .....	<b>94</b>
<b>PART III. Organigram of Project</b> .....	<b>105</b>
<b>PART IV. Terms of References for key project staff and main sub-contracts</b> .....	<b>106</b>
<b>PART V. Stakeholder involvement during the PPG phase</b> .....	<b>108</b>
<b>PART I. Stakeholder participation plan for project implementation phase</b> .....	<b>114</b>
<b>PART VI. Proposals for Modifications of Production Systems</b> .....	<b>117</b>

<b>Pasture improvement and establishment of compartments .....</b>	<b>117</b>
<b>Dispersed trees in pastures .....</b>	<b>118</b>
<b>Multi-layer live fences .....</b>	<b>118</b>
<b>Fodder banks (for protein and energy) .....</b>	<b>120</b>
<b>Protein Banks for cut and carry .....</b>	<b>122</b>
<b>Browsing banks.....</b>	<b>122</b>
<b>Modified Quesungual System .....</b>	<b>124</b>
<b>PART VII. Environmental Service Index based on birds (ISA-B) for Yoro Pilot Area .....</b>	<b>127</b>
<b>PART VIII. Species of global conservation priority in the target areas.....</b>	<b>129</b>
<b>PART IX. Project Cycle Management Services.....</b>	<b>141</b>
<b>PART X. Letter of Agreement .....</b>	<b>144</b>
<b>PART XI. The Legal Context .....</b>	<b>149</b>
<b>PART XII. Environmental and Social Screening.....</b>	<b>153</b>

## List of abbreviations

Abbreviation	English meaning	Spanish term
APR	Annual Project Review	
BD	Biodiversity	
CABEI	Central American Bank for Economic Integration	
CAMBIO	Central American Markets for Biodiversity	
CATIE	Tropical Agronomic Centre for Research and Teaching	Centro Agronómico Tropical de Investigación y Enseñanza
CIDA	Canadian International Development Agency	
CIPAV	Centre for Research into Sustainable Farming Systems	Centro para la Investigación en Sistemas Sostenibles de Producción Agropecuaria
CO	Country Office	
CREL	Milk Collection and Cooling Centre	Centro de Recolección y Enfriamiento de Leche
CSO	Civil Society Organization	
DIBIO	Biodiversity Directorate	Dirección de Biodiversidad
ECA	Farmer Field School	Escuela de Campo
FAO	Food and Agriculture Organization	
FSP	Full Sized Project	
GDP	Gross Domestic Product	
GEB	Global Environmental Benefit	
GHG	Greenhouse Gas	
HDI	Human Development Index	
ICADE	Institute for Cooperation and Self-Development	Instituto para la Cooperación y Autodesarrollo
ICF	Institute of Forest Conservation and Development	Instituto de Conservación y Desarrollo Forestal
IFAD	International Fund for Agricultural Development	
INE	National Institute of Statistics	Instituto Nacional de Estadísticas
INFOP	Institute for Professional Training	Instituto para Formación Profesional
IR	Inception Report	
IUCN	International Union for the Conservation of Nature	
IW	Inception Workshop	
KAP	Knowledge, Attitude, Practice	
LD	Land degradation	
METT	Management Effectiveness Tracking Tool	
M&E	Monitoring and evaluation	
NGO	Non-Governmental Organization	

NPC	National Project Coordinator	
NRM	Natural Resource Management	
OPEC	Organization of Petroleum Exporting Countries	
PA	Protected area	
PESA	Special Programme for Food Security	Programa Especial de Seguridad Alimentaria
PIF	Project Identification Form	
PIR	Project Implementation Review	
PIU	Project Implementation Unit	
PPG	Project Preparation Grant	
PSC	Project Steering Committee	
RA	Rainforest Alliance	
RCU	Regional Coordination Unit	
SAG	Ministry of Agriculture and Ranching	Secretaría de Agricultura y Ganadería
SAN	Sustainable Agriculture Network	
SERNA	Ministry of Natural Resources and the Environment	Secretaría de Recursos Naturales y Ambiente
SFM	Sustainable Forest Management	
SINAPH	National System of Protected Areas of Honduras	Sistema Nacional de Áreas Protegidas de Honduras
TPR	Tripartite Review	

## SECTION I: ELABORATION OF THE NARRATIVE

### PART I. SITUATION ANALYSIS

1. This situation analysis provides a national-level overview of geographic, demographic, economic, productive, institutional, policy and biophysical conditions of relevance to the project, and also analyses variations in certain of these conditions between different parts of the country. It also makes specific reference to two “target areas” in which the project’s activities at field level will be focused: target area 1, in the Department of Yoro in the north of the country (which is dominated by humid and semi-humid ecosystems but also includes areas of dry forest), and target area 2 which covers the dry forest agroecosystem of the hills of Choluteca and Valle Departments, on the Pacific draining of the south of the country.

#### **Geography, Demography and Economy**

2. Honduras has a total area of 112,492 km<sup>2</sup>. The country has a very varied topography, reaching a maximum altitude of 2,870m. Due to its broken topography, it is estimated that 87% of the land area is of forestry vocation, with soils suitable for forest growth but not for the maintenance of sustainable agriculture. 13% of the remaining area is of agricultural vocation, made up of extensive valleys whose productive potential is far from being fully realized. The country has a large number of watersheds of much importance for water production, however, despite its large overall hydrological potential it has serious problems of seasonal water shortage, particularly in the major population centres.

3. Perhaps the single most important factor determining productive activities in the agricultural and ranching sectors, as well as biodiversity, is the seasonality of rainfall. The north coast, and especially the north-eastern part of the country, has relatively high rainfall levels and also, more significantly, a relatively short dry season which places few limitations on production. This situation contrasts sharply with that in the south, which is in the rain shadow of the easterly trade winds: here annual rainfall levels are in places as low as 800mm and more importantly the dry season typically lasts between 6 and 10 months.

4. The population in 2009 was 7,876,197, giving an average density of 70 people/km<sup>2</sup>, with an average annual growth rate of 2.7%. It is projected that the national population will reach 8,045,990 by the end of 2010 and 8,894,975 in 2015. In 2001, the rural and urban populations made up 54% and 46% of the total, respectively, and high levels of emigration from rural areas (to urban areas as well as to the USA, Canada and Europe) mean that this division is fast approaching 50:50. 51% of the population is female and 49% male. The country has seven indigenous or autochthonous groups that make up 6.2% of the total population.

**Table 1. Summary of main demographic data for Honduras**

DEMOGRAPHIC DATA <sup>1</sup>	2000	2002	2004	2009
Total population	6,249,598	6,560,608	6,823,568	7,876,197
Life expectancy at birth (years)	69.93	-	66.15	70.45
Literacy rate (%)	72.7	-	-	80.0
Population below poverty level (%)	50.00	53.00	53.00	50.7

<sup>1</sup> [https://www.cia.gov/library/publications/the-world-factbook/region/region\\_cam.html](https://www.cia.gov/library/publications/the-world-factbook/region/region_cam.html)  
[http://www.indexmundi.com/honduras/net\\_migration\\_rate.html](http://www.indexmundi.com/honduras/net_migration_rate.html)

5. The economically active population of Honduras is around 3.5 million, but around 39.4% of this population is without work. The literacy situation has shown some improvement in recent years, with the illiteracy rate falling from 21% in 2001 to 19% at present. The level of extreme poverty has fallen from 54.2% in 1991 to 42.3% in 2006. Newborn mortality fell from 20 per 1000 live births in 1991 to 14 in 2006. The road network has increased from 13,603 km in 2002 (of which 20% was paved) to 14,240 km at present. Coverage of telephone and internet services has also greatly increased. Linked to these improvements has been an increase in the HDI from 0.655 in 1998 to 0.725 at present, with a GDP of US\$2793/year. Honduras is in 113th place for HDI out of 172 countries worldwide.

**Table 2. Trends in GDP (US\$, current prices)**

	2004	2005	2006	2007	2008	2009	2010
GDP (current prices) <sup>2</sup>	8,722	9,672	10,842	12,374	14,001	14,581	15,757
Growth rate (%) <sup>3</sup>	6.23	6.05	6.65	6.35	3.95	4.14	8.07 <sup>4</sup>

6. Table 3 presents key data on the gender situation in Honduras.

**Table 3. Comparison of poverty levels between women and men in Honduras (2006)**

Indicator	Women	Men
Life expectancy at birth (years)	70.2	61.0
Literacy (%)	6.5	7.5
Women with paid work	43.0	57.0
Mean annual income (US\$)	1,771.00	3,400.00

7. Land tenure in Honduras is highly skewed. Approximately 330,000 of the estimated 583,000 poor rural families have no or inadequate land (generally less than 1ha per family). In 1993, 72.3% of farmers were smaller than 10ha, while medium and large farms, which made up 4% of the total number covered 53% of the total area<sup>5</sup>. Forest tenure is 47% national, 23% municipal and 30% private.

### **The livestock sub-sector in Honduras**

#### ***Economic importance***

8. The agricultural, livestock and forestry sectors have for long been of fundamental importance for the country. Since the end of the 1990s, however, they have taken second place to the manufacturing industry (see Table 4).

**Table 4. Gross Domestic Product by Productive Sector (US\$ millions)**

	1995	1996	1997	1998	1999
<b>Agriculture, forestry, hunting and fishing</b>	<b>780.7</b>	<b>721.8</b>	<b>957.7</b>	<b>863.5</b>	<b>736.7</b>
Mining and quarrying	69.9	60.0	72.1	82.8	93.0
Manufacturing industry	646.4	585.6	747.5	840.4	906.1
Construction	199.0	149.2	193.1	228.6	271.0

<sup>2</sup> Cifras del 2003 al 2008 extraídas del sitio de Centro de Estudios Monetarios Latinoamericanos (CEPAL); proyecciones del 2009 y 2010 fueron extraídas de ([www.economyWatch.org](http://www.economyWatch.org))

<sup>3</sup> Cifras extraídas del sitio <http://www.economyWatch.org>

<sup>4</sup> Idem

<sup>5</sup> Salgado, Ramón, junio de 1996. Tenencia de la Tierra en Honduras, Centro de Estudios para el Desarrollo Rural, Universidad Libre de Ámsterdam.



Electricity, gas and water	197.6	199.5	230.9	232.4	225.0
Transport and communications	171.8	143.2	193.1	224.3	240.1
Commerce, restaurants, hotels	435.0	385.1	491.0	553.0	568.8
Service industry	334.1	287.0	389.6	475.5	502.0
Housing	203.5	182.0	230.5	261.3	280.0
Public administration, defence	212.4	191.7	249.1	272.3	271.8
Communal, social and personal services	374.7	328.0	408.1	478.7	509.4
<b>Total<sup>6</sup></b>	<b>3,625.1</b>	<b>3,233.1</b>	<b>4,162.7</b>	<b>4,512.8</b>	<b>4,603.9</b>

9. Currently, the livestock sub-sector is responsible for around 10.9% of Gross Domestic Product (GDP), down from 13.6% in 1990<sup>7</sup>. The sub-sector provides around 180,000 direct and 350,000 indirect jobs nationwide<sup>8</sup>. However with increasing global demands for beef and milk, Honduras has the potential to increase production and productivity.

#### *Trends in the sector*

10. Between 1952 and 1993, the area of pasture in the country increased by 86.3%, from 822,562ha to a 1,532,957ha<sup>9</sup>. There was a slump due to the impacts of Hurricane Mitch in 1998, but the national cattle herd then increased again until 2008, to a level of 2.5 million head in 96,622 production units (INE 2008).

11. Recent years have been characterized by a decline of the sector, from around 2.5 million head in 2008 to just over 1.6 million in 2011, and just over 104,000 production units in 2003 to 80,000 in 2011 (Figure 1), as large numbers of cattle were slaughtered (the number slaughtered rose from 137,746 in 2000 to 256,814 in 2011). Producers interviewed during the PPG phase indicated that is largely attributable to a reduction in the ability of ranching to compete with crops such as oil palm which are becoming increasingly profitable (between 2000 and 2007, the price for oil palm rose from Lps793/ton to Lps2,000 /ton and then to Lps4,800/ton in 2012, while total production rose from 665,000 tons in 2000 to 1,400,000 tons in 2007).

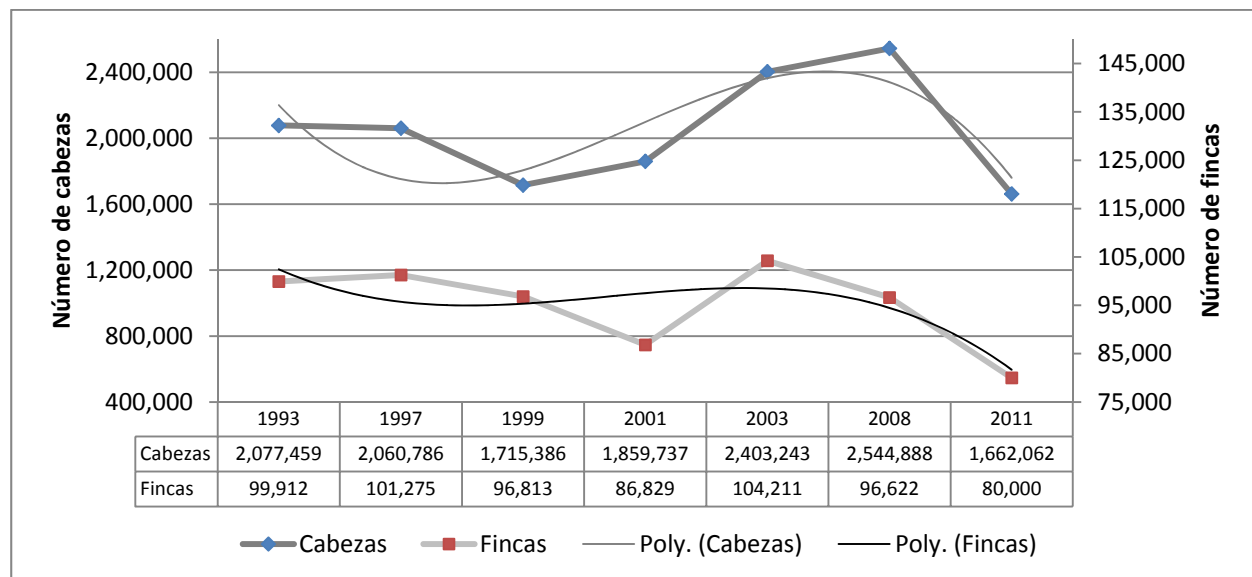
<sup>6</sup> <http://www.economyWatch.org>

<sup>7</sup> Tercero, Rubio et al. 2005

<sup>8</sup> Sanders, A., A. Ramírez, et al. (2006). CADENAS AGRICOLAS EN HONDURAS. Valle de Yeguaré, Honduras, Desarrollo Socioeconómico y Ambiente. Escuela Agrícola Panamericana, Zamorano.

<sup>9</sup> 1993 was the date of the most recent Agricultural Census and no reliable area figures are available since then.

**Figure 1. Trends in the national cattle herd in Honduras<sup>10</sup>**



**Farm characteristics**

12. Farm characteristics and production systems in Honduras vary widely between the different livestock regions in the country (Table 5).

**Table 5. Principal livestock regions in Honduras**

Region	Departments	Total herd	Number of livestock farms	Average stocking (head/ha)	Total pasture (ha)	% improved pasture	Total rainfall (mm/year)	Wet season rainfall (%)
North-east	Most of Olancho	453,924	18,648	1.67	271,000	96	1,200	85
Centre-east	El Paraíso, parts of Olancho and Francisco Morazán	217,946	12,621	1.08	201,000	78	1,186	85
West	Ocotepeque, Copan, parts of Santa Bárbara and Lempira	207,143	11,305	1.76	119,000	94	1,823	93
South	Choluteca and Valle	278,662	13,498	5.98	46,000	85	1,785	92
Centre-west	Comayagua, La Paz, part of Francisco Morazán	120,984	12,730	3.55	34,000	76	1,212	90
North	Cortés, parts of Santa Bárbara, Atlántida and Yoro	301,207	11,581	2.08	144,000	95	1,465	90
Atlantic coast	Colón, parts of Atlántida and Yoro	280,501	6,445	2.76	101,000	93	2,253	96

<sup>10</sup> Sunderlin and Rodríguez 1996; INE 2008; Ortega 2012

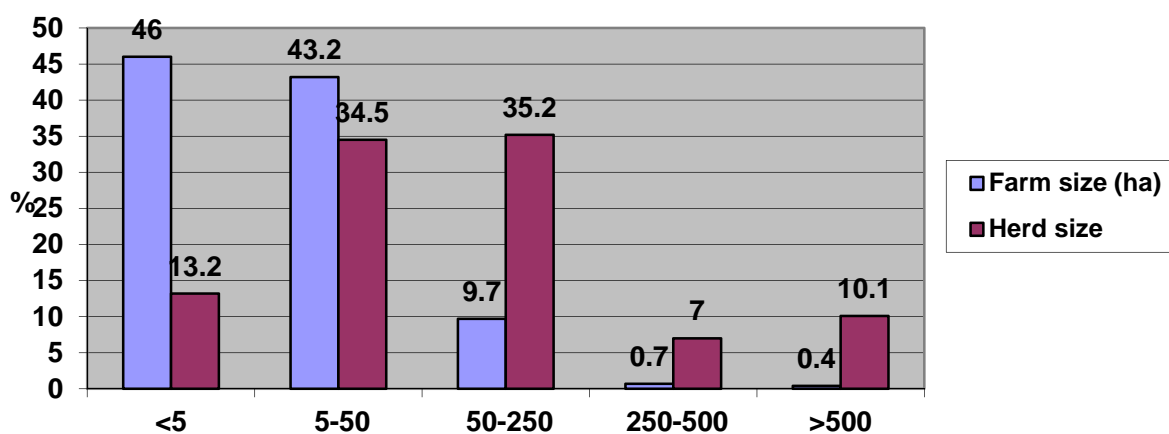
13. The vast majority of the farms with cattle in the south and west are small or very small, with herd sizes between 1 and 19 animals (on average between 3 and 6 animals) and average farm sizes between 7 and 11ha; this contrasts sharply with the Atlantic coast and northeast, where there are significant numbers of farms with more than 100 head, and average farm size is between 20 and 23ha (see Table 6 and Map 1 in Map Annex).

**Table 6. Regional variations in characteristics of farms with cattle**

Region	Number of farms	Annual milk production (t)	Annual beef production (t)	Average farm size	
				Head/farm	ha/farm
South (Choluteca)	15,335	77,329	7,022	5.9	11.3
Centre-west (Comayagua)	15,520	41,686	3,398	3.1	7.2
Atlantic (Ceiba)	6,305	77,244	6,147	14.3	23.1
Northeast (Olancho)	18,722	120,087	11,065	7.5	20.7
Centre-east (Danlí)	15,487	71,151	7,286	5.4	13.5
Northwest (Yoro)	30,177	209,478	22,077	8.1	16.8
<b>Total</b>	<b>101,546</b>	<b>596,975</b>	<b>56,995</b>	<b>6.9</b>	<b>15.2</b>

14. Overall, the size distribution of farms with cattle is highly skewed (Figure 2 and Table 7). 47.7% have herd sizes of less than 50 animals. Farms of <5ha have high social importance (accounting for 46% of the total number of farms and farmers) but limited environmental significance in terms of the area which they affect (they account for only 3.4% of the total pasture area) and limited economic importance (they contain only 13.2% of the national herd).

**Figure 2. Size distribution of farms with cattle in Honduras**

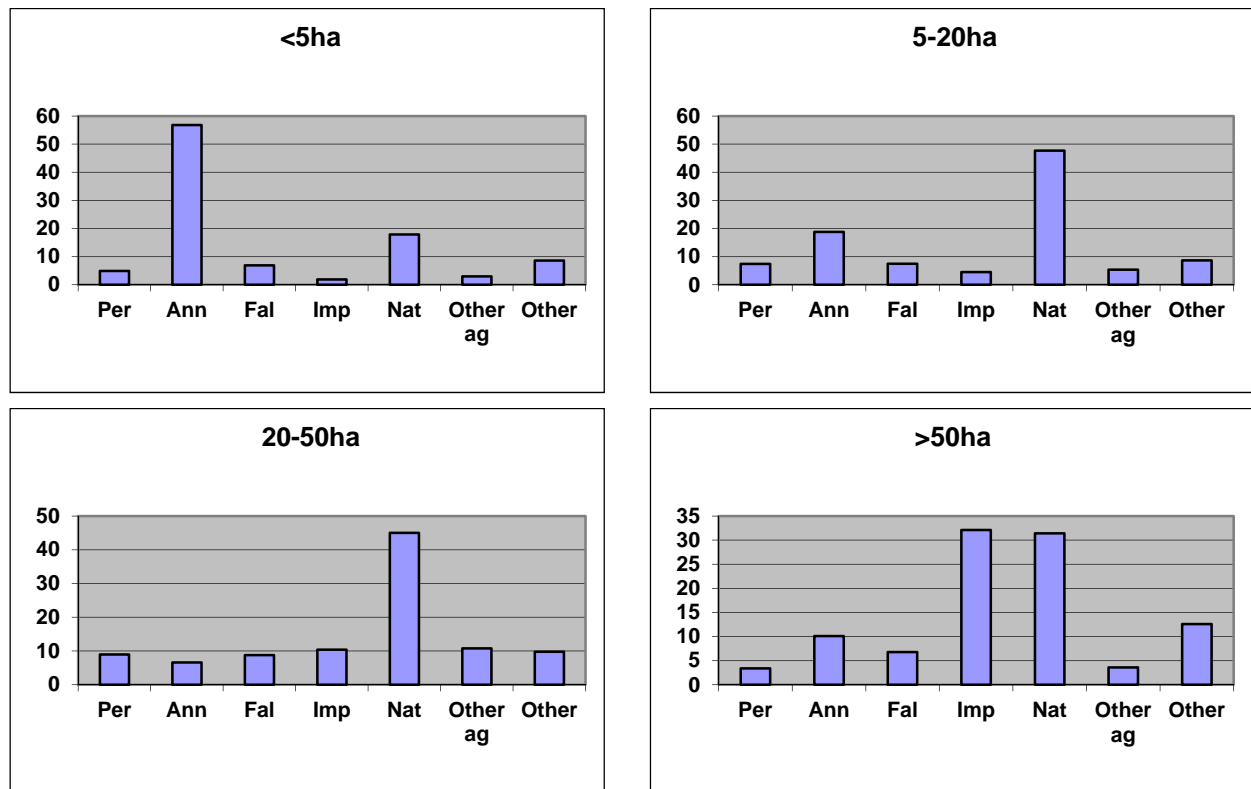


**Table 7. Relative importance of different farm sizes**

Farm size (ha)	Number of farms	Percentage of farms (%)	Number of head	Percentage of national herd (%)	Stocking (head/ha)	Area (ha)	Percentage of overall area (%)
<5	44,444	46.0	336,453	13.2	3.03	111,110	3.4
5-50	41,716	43.2	877,466	34.5	0.76	1,147,190	35.3
50-250	9,361	9.7	896,349	35.2	0.64	1,404,150	43.2
250-500	642	0.7	178,729	7.0	0.74	240,750	7.4
>500	459	0.4	255,891	10.1	0.74	344,250	10.6
<b>TOTAL</b>	<b>96,622</b>	<b>100.0</b>	<b>2,544,888</b>	<b>100.0</b>	<b>1.18</b>	<b>3,247,450</b>	

15. Most farms containing cattle are highly diverse, with cattle production accounting for only a part of farm area and of farmers' livelihoods. This is especially the case in smaller farms, where pastures (natural and improved) account for less than 20% of farm area on average. The proportion of farms in pasture increases progressively with increasing farm size (up to more than 63% in farms greater than 50ha in size), while the proportion under annual crops decreases.

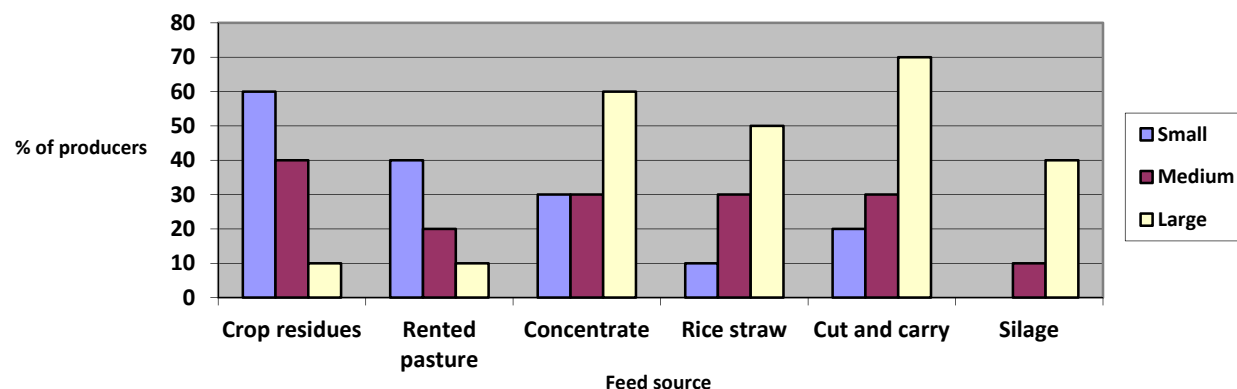
**Figure 3. Land use breakdown in farms with cattle (%)**



(Per = perennial crops, Ann = annual crops, Fal = fallow, Imp = improved pasture, Nat = natural pasture, Other ag = other agricultural uses, Other = other non-agricultural uses)

16. Production practices also vary according to farm size. As a supplement to pasture, smaller producers commonly use low-input methods integrated within their staple grain production systems, most notably by enclosing cattle in maize fields after the harvest to eat crop residues: larger producers, by contrast, more commonly use supplements such as concentrate, rice husk, 'cut-and-carry' forage and silage, and irrigate their pastures.

**Figure 4. Feed sources used by farmer size category**



17. At present, most cattle production (76% of farms and of livestock) is “dual objective” (*doble propósito*) i.e. for the production of both beef and milk: only 15% of farms are managed solely for milk and 9% solely for beef. 9% of farms are dedicated to fattening cattle purchased from other producers, for final sale.

**Table 8. Average annual income (\$) per farm, by herd size**

Head of cattle	Milk	Cattle sales	Maize	Beans	Total
1 to 5	895.60	50.51	413.56	525.25	1,884.92
6 to 10	1,270.85	235.13	816.33	456.21	2,778.52
11 to 20	2,103.46	772.80	873.89	495.96	4,246.12
21 to 30	3,180.51	1,121.50	1,390.67	790.83	6,483.51
31 to 40	4,973.17	3,259.72	1,806.21	-	10,039.11
41 to 50	8,745.48	3,967.06	1,225.62	731.06	14,669.22

### Management

18. Poor management is common throughout the livestock sector in Honduras, as evidenced by herd health, composition and productivity (Table 9). Around 60% of the cattle in Honduras is managed on natural pastures, fallows and crops residues.

**Table 9. Management quality indices in the Honduran cattle herd.**

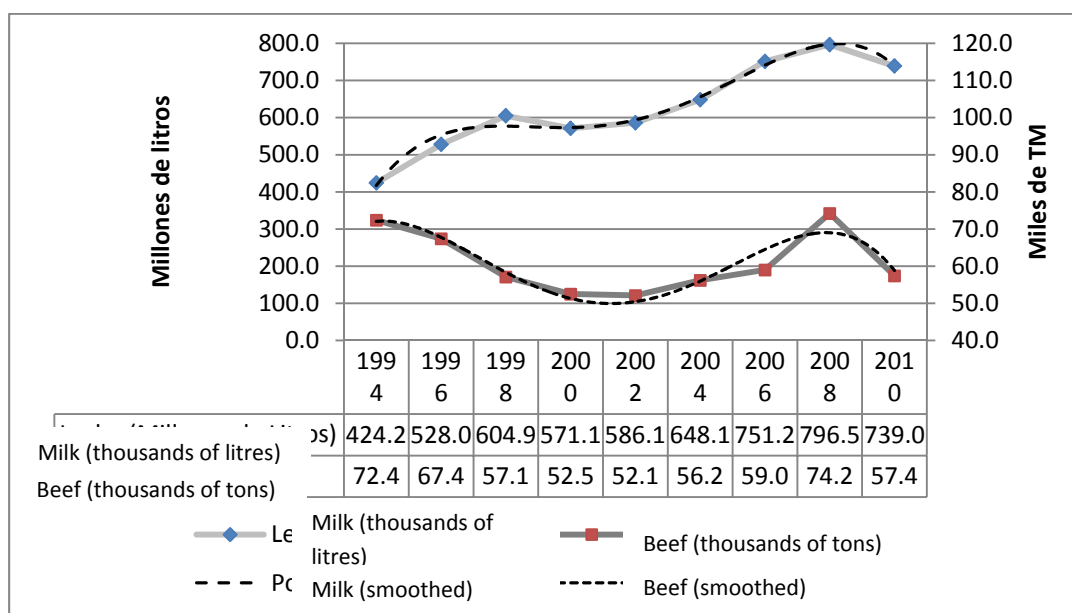
Variable	National average		Ideal for humid and sub-humid tropics
	2002	2011 <sup>a</sup>	
Calving rate	52%	48%	85%
Calf mortality	8%	10.5%	2.5%
Adult mortality	3%	2%	0.5%
Age at first calving	40-42 months	40	24 months
Interval between calving	17 months	16 months	12 months
Milk production	3.4 litres/animal/day	---	10 litres/animal/day
Lactation length	210 days	---	250 days
Weight at weaning	300 lbs.	358lbs.	480lbs.
Age at slaughtering	36 months	41.2 months	24 months
Daily weight gain	318g/day	261g/day	908g./day

**Production**

19. Beef production in Central America is currently growing at 2.4% and milk at 3.2% per year (Acosta and Valdés 2011<sup>11</sup>). Riesco (1992)<sup>12</sup> considers that increases in the production of beef and milk in Latin America are due more to expansion of herd sizes and area under pasture than to increases in productivity and this may be related to pasture degradation and loss of productivity.

20. Milk production in Honduras increased steadily until 2008 (with the exception of the 1998-2000 period, as a result of the effects of Hurricane Mitch); from 2008 to 2010 it then underwent a further decline. This latter decline may in part be attributed to the prolonged drought in 2009, associated with an El Niño phenomenon. By contrast, beef production decreased from the beginning of the 1990s, due to the collapse of US markets (the so-called “Hamburger connection”), but then increased again due to the reactivation of markets, influenced in part by the Free Trade Agreement. As with milk, there was a further decline in beef production between 2008 and 2010 (of around 23%), due to the global economic crisis and lack of support to the national ranching sector (see Figure 5).

**Figure 5. Trends in milk and beef production in Honduras**



21. Productivity also varies significantly across the country: average income per cow per year ranges from US\$-10 to US\$+40 in the south and southwest, but increases progressively from around US\$+40 in the centre of the country to as high as US\$+120 in the very north. These differences are partly related to climatic factors and partly to social and tenure conditions: productivity and profitability in the south is limited by the typically long dry season (see Map 4 in Map Annex) but also by the historical conditions of social marginalization faced by many farmers there, who have typically small holdings with limited economies of scale and limited access to technological resources and inputs. The characteristics of the different target areas of the project are described in more detail below.

<sup>11</sup> Acosta A and Valdés A. 2011. Perspectivas del sector ganadero y desafío de políticas. Documento de trabajo. 50pp.

<sup>12</sup> Riesco A. 1992. La ganadería bovina en el trópico americano: situación actual y perspectivas. In: Avances de la producción de leche y carne en el Trópico Americano. FAO. Oficina Regional de América Latina y el Caribe. 1992. Chile.

**Table 10. Milk production in Honduras<sup>13</sup>**

Region	Departments	Farms		Pasture		Milk production	
		No.	%	Ha.	%	Millions of litres	%
Northeast	Atlántida	14,118	14	297,145	19	324.1	46
	Yoro						
	Colón						
Northwest	Cortés	13,705	14	309,681	20	179.1	25
	Santa Bárbara						
	Copán						
Centre	Olancho	21,044	21	351,398	23	133.2	19
	Francisco Morazán						
East	El Paraíso	7,550	8	185,424	12	24.8	3
South	Choluteca	13,947	14	159,008	10	26.6	4

22. Milk production is highly seasonal, with reductions of between 20% and 35% between wet and dry seasons due to scarcity of dry season forage (Table 11). Dips in production also occur due to the flooding of pastures during periods of excessive rainfall, especially on the Atlantic coast.

**Table 11. Seasonal variations in milk production**

Herd size (head)	Production (litres/cow/day)		Reduction (%)
	Rainy season	Dry season	
1-9	3.3	2.9	34.7
10-49	3.7	3.1	35.3
50-249	4.5	4.0	21.2
250-499	6.1	5.2	23.5
>500	5.6	4.5	27.9

#### ***Milk: Markets and Value Chains***

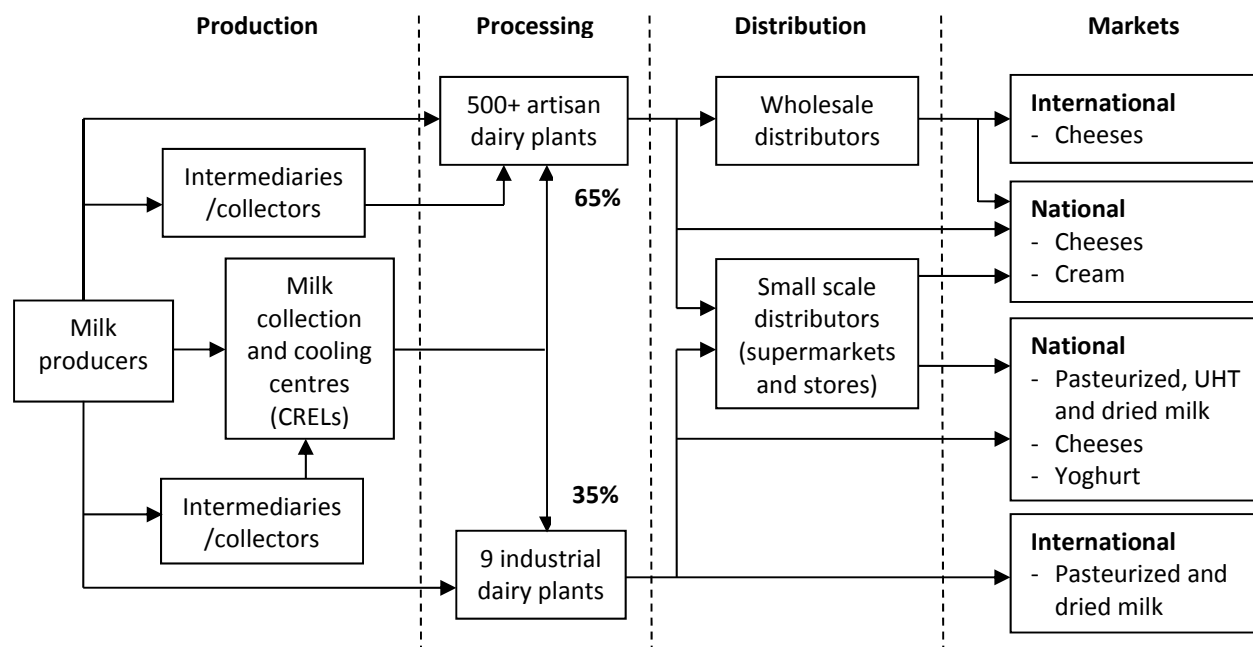
23. Global consumption of beef and milk is predicted to grow by 32% and 42% respectively by the year 2030 (FAO, 2009). In Central America, beef and milk consumption have increased by 2.3% and 2.5% annually over the last decade.

24. Markets for liquid milk in the country are oligopsonic (few buyers)<sup>14</sup>. The main actors involved in the marketing chains are producers (artisans and industrials), intermediaries/collectors, processors (artisans and industrials), smallscale and wholesale distributors and consumers. Artisan producers (<200 litres/day) typically sell their produce to artisan processors (principally cheesemakers), while industrial scale producers (>200 litres/day) typically sell their products to industrial processing plants. Industrial purchasers account for around 35% of milk purchases nationally and are dominated by one company (LACTHOSA) which accounts for around 95% of the industrial sector. The industrial sector obtains cold milk from Milk Collection and Refrigeration Centres (CRELs) and independent producers: it then pasteurizes it and packages it to a high standard, for both national sales and export. CRELs are a relatively recent phenomenon: these are managed by producer organizations, and allow small and medium-sized producers to meet the standards of quality and hygiene which previously were only attainable by larger producers with capacity to invest in processing facilities.

<sup>13</sup> Jara Almonte, cited by Alvarado 2005

<sup>14</sup> Bravo-Baumann *et al.* 1987, Parada Gómez 1997

**Figure 6. Value chains for Honduran dairy products<sup>15</sup>**



25. “Industrial” value chains (linking larger producers with the main industrial processers) are strongly concentrated in the north of the country: 89% of the milk purchased by the industrial sector comes from the humid tropics and only 11% from the dry south. LACTHOSA obtains 70% of its purchases from the north-east region (Atlántida, Yoro and Colón Departments). The CRELs, through which a large proportion of the milk purchased by these two companies passes, are also strongly concentrated in this region.

**Table 12. Geographical Distribución of CRELs by Department in 2010<sup>16</sup>**

Department	Number of CRELs	Producers	Producers/CREL
Atlántida	31	659	21
Colón	25	495	20
Yoro	22	521	24
Olancho	15	340	23
Cortés	12	178	15
Santa Bárbara	8	90	11
Copán	5	208	42
Francisco Morazán	4	86	22
Choluteca	3	38	13
Comayagua	2	42	21
Ocotepeque	1	45	45
El Paraíso	1	44	44
<b>Total</b>	<b>129</b>	<b>2746</b>	<b>25</b>

<sup>15</sup> Source: Programa Pym rural-Pronagro

<sup>16</sup> Source: SENASA-SAG, 2010



26. Artisan processors, by contrast (who account for the other 65% of purchases) consist of small, often family-based operators, who do not pasteurize, and who produce cheese and cream of lower quality (often they lack sanitary licences) for local and national markets (and to a lesser extent to local markets in neighbouring countries).

27. Seasonal variations in production levels are mirrored by corresponding variations in prices. These can swing from Lps 7/litre (\$0.35/l) in periods of dry season scarcity to as low as Lps 4/litre (US\$0.20/l) in periods of wet season surplus. Producers are placed at a further disadvantage by the complexity of the value chains (as shown in Figure 6): on average they receive only around 22% of the final sale price, due to their dependence on intermediaries, their limited organizational and negotiation capacities and the corresponding ability of the dominant industrial purchasers to dictate prices.

28. Seasonal production swings also affect export capacity, typically from around 1,600 tons over the six wetter months to around 1,000 tons in the six drier months.

29. Especially in the south of the country, a further challenge faced by producers is unfair competition from large quantities of cheap artisanal dairy products which are imported illegally from neighbouring Nicaragua.

30. Supermarkets are playing an increasingly important role in supplying the country's growing middle class. Four of the largest supermarket chains (Dispensa Familiar, Maxi Dispensa, Pais and Walmart Las Cascadas) are owned by Walmart, followed by the nationally-owned La Colonia, which has 70 stores nationwide.

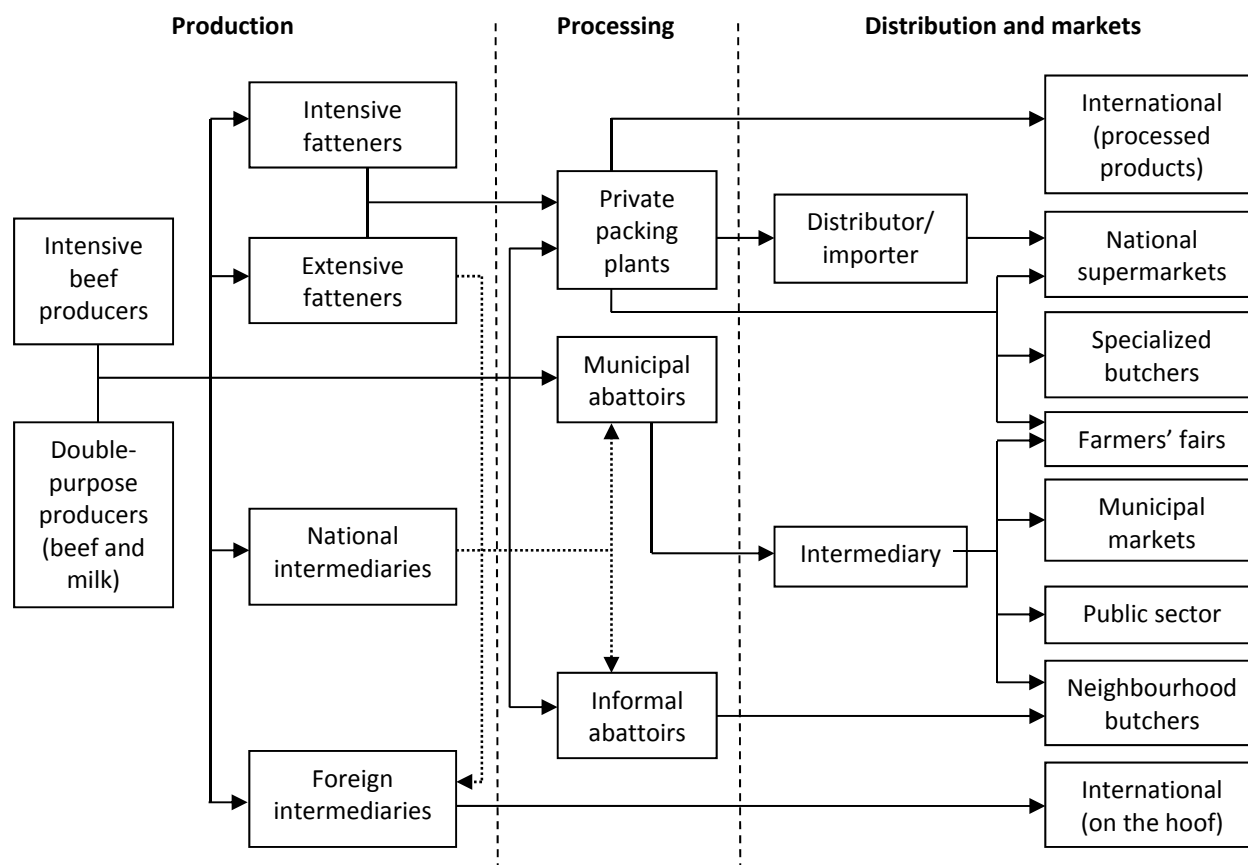
#### ***Beef: Markets and Value Chains***

31. Trends in the cattle sector in Central America have in the past been strongly influenced by the region's close economic ties with the United States: among the main causal factors of the "cattle boom" in the 1970s and 1980s were a 50% growth in the average annual beef consumption in the United States between 1960 and 1976; inflation, which promoted a search for low-cost beef; and Central America's ability to supply low-cost, pasture-fed beef (Myers 1981). Other factors included advances in the technology of refrigerated transport, government programmes initiated by the United States (including programmes for road construction to cattle zones and technical assistance and subsidised credit to ranchers) (Williams 1986), and the increasing unaffordability of United States beef on the mass-market because of the effect of rising petroleum prices on the cost of feed grains (Edelman 1985).

32. Between 1960 and 1979, the volume of beef exports from Central America to the United States grew nine-fold and the value of all beef exports from Central America increased from US\$ 8.4 million to US\$ 293.5 million (Williams 1986). Central American beef exports then declined by a factor of two between 1979 and 1984 (Parsons 1993), due largely to declining per capita beef consumption in the United States and temporary import suspensions resulting from pesticide contamination (Brockett 1988). Central American beef exports were also negatively affected by declining world prices associated with the European Economic Community becoming a net exporter (Kaimowitz 1995) and because of a 1979 law which restricted Central American access to the United States market (Kaimowitz 1995; Edelman 1995).

33. The main actors involved in beef value chains in Honduras (Figure 7) are i) primary producers, ii) "fatteners", who purchase cattle and add value to them; iii) traders/intermediaries; iv) operators of municipal abattoirs; v) industrial processors; vi) packers; vii) distributors and smallscale outlets; and viii) consumers.

**Figure 7. Value chains for Honduran beef**



**Production and markets in the two target areas**

34. In both the south and the north of the country, the ranching sector is dominated by “dual purpose” (beef/dairy) producers, who account for 90% of production in target area 1 (Yoro) and 85% in target area 2 (the hills of Choluteca/Valle), only 10% and 5% respectively being strict intensive beef producers. Another similarity is that, despite the large numbers of small producers in both areas, more than 80% of beef production comes from medium and large scale producers (Table 13).

**Table 13. Beef production by producer size in the two target areas**

Producer size	Area 1: Yoro			Area 2: Choluteca and Valle		
	Average production/farm (kg/year)	Total (kg/year)	% of total	Average production/farm (kg/year)	Total (kg/year)	% of total
Small	304	1,358,400	18.4	160	1,407,360	13.1
Medium	2,464	3,834,240	51.9	2,112	5,084,800	47.4
Large	7,040	2,191,040	29.7	7,040	4,237,280	39.5
<b>Total</b>		<b>7,383,840</b>	<b>100.0</b>		<b>10,729,440</b>	

35. The balance between industrial and artisan processors of dairy products in the two target areas mirrors that at national level, with 30% from Area 1 and 20% from Area 2 going to industrial processors.

**Table 14. Milk collection and colling centres (CRELs) in the two target areas at present**

	Area 1: Yoro	Area 2: Choluteca/Valle
Number of CRELs	2	1
% of milk production received by CRELs	30	20
Producers supplying milk to CRELs	44	33

36. The two areas are also similar in terms of the relative importance of the markets to which the beef produced is destined: 10% and 5% respectively is exported processed from Area 1 and Area 2; 30% and 40% respectively is exported on the hoof to neighbouring countries (from Area 1 to Guatemala and from Area 2 to Nicaragua and El Salvador); and the remaining 60% and 55% respectively is for the national market. 10% and 5% respectively of total production from the two areas is destined to national supermarkets.

#### ***Gender***

37. Roles of women and men vary according to the different components of the dairy value chain. Whereas in general the crop–livestock sector has a mostly masculine character (10–20% of farms are owned/managed by women), women play an important role especially in processing of milk and management of resources. In small farms (with some dairy cattle) they are sometimes also involved in feeding and milking, but in general they engage mainly in processing of milk (e.g. fresh cheese, cuajada) for household consumption and local/regional markets. In larger dairy farms with more products the men are usually engaged in production and marketing, whereas the women control inputs, do the financial administration and participate in decision processes on production and marketing<sup>17</sup>.

#### **Green markets**

38. “Green markets” for major commodities are growing sharply worldwide. Demand for certified organic beef is estimated to generate around \$5 billion worldwide, and is growing at an estimated 20% per year due to consumers’ preferences for its superior quality, low fat content and absence of pesticides and hormones. In the USA alone, income from sales of organic beef increased by 162% between 1997 and 2003.

39. Companies such as Walmart, McDonalds and major beef traders are already actively engaged in efforts to promote sustainable beef production, and are members of the Global Roundtable on Sustainable Beef and/or the Brazilian roundtable. In 2010, for example, Walmart announced a global Sustainable Agriculture Policy, which included a commitment for Central America to sell more than \$150 million from small and medium sized farms by increasing the number of local growers it sources from by 22 percent, increasing bank credit access to growers and helping train them in crop selection and sustainable farm practices. Studies conducted by CATIE and the World Bank have shown that the demand for environmental friendly or sustainable beef is increasing significantly in Europe, Japan, Norway, Sweden and the Netherlands. Marketing opportunities are further favoured by the fact that Central America has just signed a free trade agreement with Europe, within which the project will promote the marketing of sustainably produced beef. Governments and multilateral agencies will also play a major role in developing demand and it is expected that governments in the EU will begin to demand responsible beef in the same way that they currently insist on certified biofuels, pineapple, coffee, cocoa and tea.

40. Although the certification of sustainable cattle ranching according to the criteria of the Sustainable Agriculture Network (SAN) is still in its infancy compared to other products such as coffee and timber, Rainforest Alliance (RA) and CATIE have already received expressions of interest in certified ranching products from important purchasers such as Zanberg supermarket chain in the Netherlands, supermarket

<sup>17</sup> [http://cgspace.cgiar.org/bitstream/handle/10568/16971/LivestockFish\\_DairyVCHondNicarag.pdf?sequence=1](http://cgspace.cgiar.org/bitstream/handle/10568/16971/LivestockFish_DairyVCHondNicarag.pdf?sequence=1)

chains such as Walmart, restaurant chains including MacDonaldis and Burger King, and a number of hotel chains within Central America itself.

41. The Standard for Sustainable Cattle Production Systems was developed by the Rainforest Alliance and other members of the Sustainable Agriculture Network (SAN) in 2009 with guidance and research data from CATIE. The standard and several technical training inputs were developed through a rigorous public consultation process involving more than 130 organizations in 34 countries, and in-depth local consultation workshops were held in Brazil, Colombia and Central America. Members of the cattle industry, representatives from universities and national governments, and environmental and animal welfare NGOs also participated in the meetings. In addition, field tests were conducted in Australia, Brazil, Colombia, Costa Rica, Kenya and Nicaragua. This process developed the criteria and indicators for the standard, and provided information for a set of guidelines for implementation.

42. In April 2012, the standard was successfully tested on three ranches in Mato Grosso, Brazil. This included Grupo JD with 30,000 ha. and 20,000 head of cattle and the first group of certified ranches. In addition, Imaflora (RA's partner NGO in Brazil) with financial support from National Wildlife Federation, conducted three smallholder workshops to a total of 80 producers, and one event designed for larger producers. In May, Imaflora and Rainforest Alliance announced the first Chain of Custody verification awarded to Marfrig, a Brazilian supermarket chain and the world's fourth largest beef producer, operating in 22 countries and exporting to 100 countries.

43. Rainforest Alliance aims to certify 500,000ha in Brazil and an equal area in the following countries or regions combined: Mexico, Central America, Colombia, Argentina, Uruguay and Paraguay, and at the same time to start pilot projects in Namibia and Botswana. It will do this by significantly scaling up its cattle ranching initiative - prioritizing Brazil, followed by neighboring South American countries and Central America - by engaging large-scale producers in certification and working with small scale producers to provide training and improve management practices. RA will address the US cattle sector through partnerships with US-based NGOs, and will engage the largest and most influential meat-packing companies as well as major supermarket chains, restaurants, fashion design houses and leather goods companies worldwide. It will further develop its partnership with CATIE to continue testing, improving and demonstrating the effectiveness of the standard and the assumptions and data that stand behind the standard.

44. The experience of RA with certified coffee shows that supply and demand sides need to be developed simultaneously: the magnitude of (currently latent) demand will only become evident once certified products begin to come on stream for consumers to buy, and this progressive emergence of demand will in turn stimulate and permit further growth in supply. The experience of RA with certified coffee also suggests that future growth in certification of other products such as beef, leather and milk will not only depend on market demand and the availability of premium prices, but also be producer-driven, given the potential of the application of SAN standards to generate on-farm benefits in the form of improved management, reduced costs and losses, and increased productivity.

### **Biodiversity in Honduras**

45. Honduras is located in the centre of the Mesoamerican Biodiversity Hotspot (see Map 2 in Map Annex). According to the National Biodiversity Strategy and Action Plan (SERNA/DIBIO, 2001) there are 7,524 plant species registered in Honduras of which 148 are considered endemic or of limited distribution and 35 are considered threatened. The latest national birdlist counts 718 species, of which 59 are nationally threatened and 5 are on the IUCN endangered species list (including the only nationally endemic bird in Central America (*Amazilia lucidae*); there are 228 mammal species including 3 endemics

and 19 threatened species; 210 species of reptiles including 15 endemic lizards; and 111 amphibians including 36 endemics (Vreugdenhil et al., 2002; SERNA/DIBIO, 2001).

46. Despite its relatively small size, Honduras contains a wide diversity of life zones (Table 15) and ecosystems, including tropical dry forest along the Pacific coast and in interior valleys; commercially important forests of *Pinus oocarpa* in the interior, grading into higher altitude pines; cloud forest on mountain tops above 1,800m.a.s.l.; *P. caribaea* forest and savanna in the isolated Moskitia region; and tropical broadleaved forest, which is found principally along the north coast and in the east, where the largest continuous expanse of tropical rainforest in Central America is located.

**Table 15. Life zones (sensu Holdridge) in Honduras**

Altitude stratum	Life zone	Altitude range (m)	Temperature (°C)	Median annual rainfall (mm)	Humidity province <sup>18</sup>	Área (ha)	%
Basal	Subtropical dry forest	0-700	>22	500-1000	Árid	153,216	1.4
Basal	Tropical very dry forest	0-700	<24	500-1000	Árid	33,658	0.3
Basal	Tropical dry forest	0-700	>24	1000-2000	Semi-arid	1,760,866	15.9
Basal	Tropical moist forest	0-700	>24	2000-4000	Sub-humid	3,237,805	29.3
Premontane	Subtropical very moist forest	700-1400	18-24	2000-4000	Sub-humid	1,783,714	16.1
Premontane	Subtropical moist forest	700-1400	18-24	1000-2000	Semi-arid	3,557,508	32.2
Premontane	Lower montane very moist forest	700-1400	18-24	2000-4000	Sub-humid	234,279	2.1
Lower montane	Lower montane moist forest	1400-2700	12-18	1000-2000	Semi-arid	303,380	2.7

### **Threats**

47. **Deforestation** rates in Honduras have been very high in the last few decades: the national coverage of forests and woodlands declined from 46,000 km<sup>2</sup> to 31,000 km<sup>2</sup> in the twenty years from 1968 to 1988, representing a loss of 14.5%, with a mean annual rate of deforestation in the 1980s of 2.3% (UNESCO 1991-2). The Ecosystems Map of Honduras (AFE-COHDEFOR, 2002) showed that around 49% of the country is still covered with natural ecosystems.

48. Historically, the areas first affected by strongest deforestation pressures have been the intermontane valleys and the extensive plains on both coasts, which have been used for a succession of commercial crops, of which the most significant today are melons and sugarcane in the south and bananas, sugarcane and oil palm in the north. Large areas of the southern coastal plains are also occupied by low intensity cattle ranching. In the south of the country, the domination of the coastal plains by commercial agriculture and by ranching has marginalized the smallholder population to the surrounding hills: as a consequence, the areas originally covered by tropical dry forest have now been converted almost in their entirety to an “agroecosystem” consisting of a cyclically shifting mosaic of cropping areas, fallows, temporary pastures

<sup>18</sup> Humidity provinces: these are determined on the basis of median annual evapotranspiration and precipitation (Holdridge, 1968).

and small areas of secondary woodland (the characteristics of the southern hills and the threats operating there are described in more detail below).

49. At the same time, there has been a steady advance of smallholder agriculture and ranching into forest areas in the humid north of the country. At the “agricultural/ranching frontier”, extensive areas of primary forests have been subject to wholesale clearance, most notably at the western and southern limits of the Rio Platano Biosphere Reserve and the areas which adjoin it to the south and east, which together constitute the largest remaining area of tropical forest in Central America. Here, powerful land-grabbers often enlist small colonist farmers in the process of replacing forest with pasture: the small farmers clear the forest and sow staple grains for a short period, and the cleared land is then taken over by the land-grabbers and sown into pasture at very little cost. The major motivation for this process is its utility as a means of establishing *de facto* ownership rights over unoccupied forest lands (which, according to Honduran law, should by default be considered State-owned, but in practice are an open-access resource); in this situation, income from the sale of cattle or their products is largely a secondary consideration.

50. This situation at the agricultural frontier contrasts with which predominates further back from the main agricultural/ranching frontier. Here, tropical broadleaved forest remnants within existing farms are also subject to clearance. The principal driver in this case tends to be the demand for beef and dairy products, although an important secondary consideration is the desire among ranchers to reassert their ownership of the land and avoid the risk of ‘idle’ (forested) lands being invaded by colonists.

51. Other direct and indirect drivers of cattle expansion into broadleaved forest areas have included Government credit policies in support of ranching, agrarian reform policies (which have led to the colonization of frontier areas and have also motivated landowners/occupiers to demonstrate productive occupation in order to avoid expropriation), weak governance and scarce presence of State institutions at agricultural frontier areas, infrastructural development (construction of roads and bridges which has facilitated access) and a historical culture of cattle ownership<sup>19</sup>.

52. Growth of the area under pasture in the 1980s was strongly influenced by US demand for Central American beef (the “Hamburger Connection”): however by the early 1990s the rates of conversion of forest to pasture appeared to have peaked in the region<sup>20</sup>, with a stagnation in the growth of the region's cattle herd and a reversal of forest-to-pasture conversions in traditional areas of cattle production, but a continuation of such conversions at the agricultural frontier<sup>21</sup>.

53. In both the north and the south of the country, commercial crops are increasingly displacing ranchers from the lowlands to the more fragile hills, resulting in increased deforestation there. In the south, the growing profitability of melon and sugarcane production is now increasingly leading many ranchers to sell their pasture areas on the lowlands to melon and cane producers, and to shift their production to the surrounding hills where they purchase land from small farmers, converting the generally tree-rich agroecosystem to pasture. Similarly, it is estimated that around 35% of pasture areas along the lowlands of the north coast have now been converted to oil palm plantations.

54. The results of forest clearance under these differing situations are largely similar: large areas sown with grasses such as the exotic jaraguá (*Hyparrhenia rufa*) and with very low cattle stocking rates. Typically, these pastures are virtually treeless: only in longer established ranches are they bordered by living fencelines of species such as *Gliricidia sepium* and *Erythrina fusca*.

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<sup>19</sup> Cattle, Broadleaf Forests and the Agricultural Modernization Law of Honduras: The Case of Olancho. William D. Sunderlin and Juan A. Rodríguez. CIFOR Occasional Paper 7e, 1996.

<sup>20</sup> Parsons 1993: 46

<sup>21</sup> Kaimowitz (1995: 1)

55. The conversion of humid forest to pasture has major implications for forest-dependent BD, such as the IUCN near-threatened harpy eagle (*Harpia harpyja*) and the endangered Baird's Tapir (*Tapirus bairdii*), and on carbon stocks (tropical humid forest is estimated to contain approximately 950tCO<sub>2</sub>eq/ha). The structural and specific poverty of the pasture areas that adjoin and separate the remaining areas of forest also has impacts on more generalist species which are demanding in terms of range size and connectivity, such as the IUCN near-threatened panther (*Panthera onca*). The incursion of ranching into formerly forested landscapes also sometimes has more direct impacts on felines, as they are killed by ranchers in order to prevent them preying on cattle. The elimination of trees from pastures, whether intentionally in order to limit shade impacts on pasture growth, or due to the incidental suppression of regeneration due to grazing and pasture burning, directly limits habitat value and connectivity for fauna and flora species.

56. Honduras also faces severe problems of **land degradation** over much of its area. These result from a combination of the deforestation described above, the fragile nature of its soils, and the nature of post-clearance land uses. Despite having a much lower overall population density than, for example, its smaller neighbour El Salvador, more than 60% of its surface area slopes at more than 40%; another difference from its neighbours is that its soils do not benefit from periodic fertility enrichment by volcanic ash. As a result, little more than 30% of its surface area is suitable for agriculture. Permanent pastures are at particular risk from degradation: cattle can cause soil compaction and slumping due to the weight of the animals and the mechanical forces that cattle apply when walking on the soil, with negative consequences such as reduced rainfall infiltration, enhanced soil erosion (laminar, rill and/or gully) and degradation of the herbaceous vegetation cover. The susceptibility of soils to these impacts is highly dependent on slope and soil water saturation; typically, sites in Honduras with shallow slopes are managed below their carrying capacity, but steep slopes (over 50%) are managed above their carrying capacity (<200 animal units ha<sup>-1</sup> year<sup>-1</sup>).

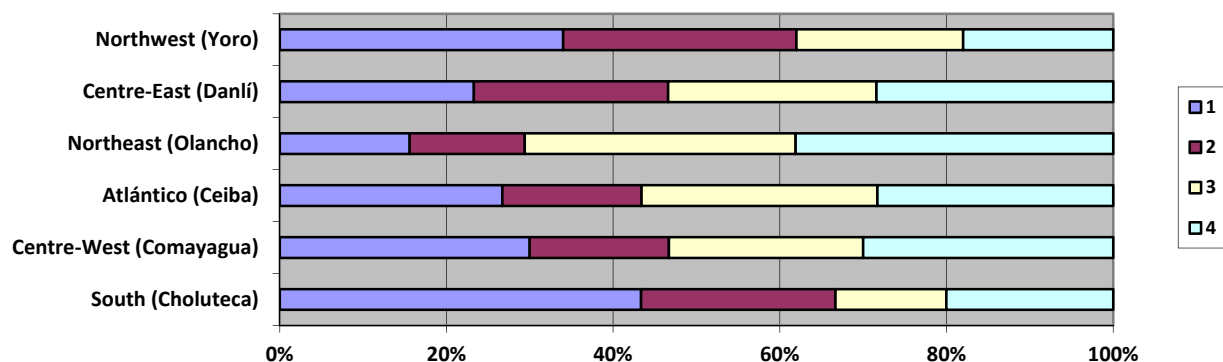
57. Participatory studies with small and medium sized farmers and extension agents in 2004<sup>22</sup> resulted in the identification of four levels of degradation of planted pastures in the country (planted pastures account for only around 40% of the total area on which cattle are raised in the country). Table 16 summarizes the characteristics of planted pastures under different levels of degradation. It was estimated that around 27% of pastures nationwide fell into category 4 (severe degradation), although this varies widely across the country: in Olancho almost 40% of planted pastures fall into this category, as compared with Choluteca and Yoro where the figure is 20% or less.

**Table 16. Symptoms of pasture degradation**

Symptom of degradation	Level of degradation			
	1 (not apparent)	2 (light)	3 (moderate)	4 (severe)
Colour	Dark green	Light green	Green-yellow	Yellow
Dead matter (%)	<10	11-20	21-30	>30
Bare soil (%)	<10	11-20	21-30	>30
Weeds (%)	<10	11-20 (narrow-leaved weeds)	21-30 (broad-leaved weeds)	>30 (native grasses)
Pasture age (years)	1-3	4-6	7-9	>10

<sup>22</sup> Holmann, F; Argel, P; Rivas, L; White, D; Estrada, RD; Burgos, C; Pérez, E; Ramírez, G; Medina, A. 2004. ¿Vale la pena recuperar pasturas degradadas? Una evaluación de los beneficios y costos desde la perspectiva de los productores y extensionistas pecuarios en Honduras. P., AR. Cali, Colombia, CIAT-DICTA-ILRI. 34 p. (196)

**Figure 8. Levels of degradation of planted pasture by region**



58. Although well-managed pastures should be able to be maintained permanently, in practice poor management and land degradation mean that the productive life of pastures over much of Honduras is typically only around 10 years: on the north coast it may be as little as 3 years (Navarro 2012). The rate of pasture renewal falls far behind, at around 5% annually (an average of once every 20 years) across Central America (CATIE 2002).

59. **Pasture burning**, used for the renovation of pasture grasses and the elimination of parasites, leads to the loss of nitrogen and other volatile nutrients, limiting long-term site productivity, and in addition exposes the soil surface to rain impact. Furthermore, fires originating in pasture areas commonly spread into forest areas, inhibiting natural regeneration and resulting in mortality of mature trees. Pasture burning is estimated to have accounted for around 12% of all fires affecting forests between 1998 and 2010 (Table 17).

**Table 17. Sources of wildfires affecting forests**

Year	Total number of fires	Área affected (ha)	Arson	Pasture burning	Agricultural burning	Other
1998	2,260	96,502	59	9	9	23
1999	1,418	39,988	55	13	10	22
2000	1,920	54,912	54	17	12	17
2001	2,336	82,227	57	13	12	18
2002	2,152	63,484	62	13	11	14
2003	1,316	56,720	60	11	11	18
2004	542	8,401	57	13	11	19
2005	1,479	156,182	58	12	12	18
2006	1,922	59,966	40	18	20	22
2007	1,692	64,296	49	16	13	22
2008	1,655	66,200	50	12	16	22
2009	1,252	62,600	69	7	6	18
2010	798	36,708	62	4	9	25
Media	<b>1,596</b>	<b>65,245</b>	<b>56</b>	<b>12</b>	<b>12</b>	<b>20</b>



60. It is estimated that pasture degradation reduces the productivity of milk and beef in Honduras by 48% and 37% respectively. This situation reflects that found throughout much of the rest of Central America, where an estimated 50-80% of pastures are in an advanced state of degradation<sup>23</sup>.

61. In addition to these direct on-farm implications, the degradation of the production potential of pasture areas due to inadequate management constitutes a further driver of the advance of the agricultural/ranching frontier into neighbouring natural ecosystems, as farmers are obliged to open up new areas to compensate for falling productivity on their existing pastures. A further factor that contributes to climate change is the emission of methane from the digestive processes of cattle, which is directly related to the nature of their diet.

62. As well as their impacts on global environmental values (BD, land and ecosystem sustainability and carbon stocks), the above processes have major social and economic implications at national level. Deforestation and forest degradation, as direct or indirect results of cattle farming, result in the loss of forest resources with major potential to sustain livelihoods and the national economy. Together with the soil compaction and loss of vegetative cover on-farm that result from grazing, they also affect hydrological processes in the water catchment areas in which most ranching is carried out: this has major implications for drinking water availability in both rural and urban populations, for the effective life of the hydroelectric schemes on which the country is becoming increasingly reliant, due to sedimentation arising from soil erosion in cattle pastures, and on the exposure of the population to the risks of mass movement and flash floods during extreme rainfall events. The dominance of the landscape by extensive cattle ranches exacerbates the already severe levels of exclusion of poor smallholders from access to land and productive resources.

### **The target areas: characteristics and threats**

63. This project will focus in particular on two contrasting target areas, which have in common the fact that the global environmental values which they contain (biodiversity, production sustainability and carbon stocks) are severely affected, either directly or indirectly, by cattle ranching. Other areas in the country, such as the ranching areas of the Department of Olancho, will be addressed through partner initiatives.

#### **Target Area 1: Yoro**

##### ***Biophysical characteristics***

64. This area 261,722 ha, and covers covers all or part of 8 municipalities in two Departments<sup>24</sup>. It consists essentially of a basin (the upper extreme of the River Aguan catchment, including the valleys of Locomapa and Yoro), bounded on three sides by a triangle of mountain protected areas (Texiguat Wildlife Refuge, Yoro Mountain National Park and Pico Pijol National Park) linked by biological corridors running along the ridges between the PAs. The area is characterized in particular by the diversity of its life zones (Table 18 and Map 6 in Map Annex) and ecosystems (Table 19 and Map 9 in Map Annex) ranging from cloud forest on the higher mountains (above around 1,800m) through to middle altitude pine forests, mixed forests in the Locomapa area and dry forests in the areas most strongly affected by rain shadow effects.

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<sup>23</sup> Szott *et al.* 2000; Días-Filho 2007

<sup>24</sup> Arizona, Esparta, La Másica and Mangulile municipalities in Atlántida Department, and Morazán, Victoria, Yorito and Yoro municipalities in Yoro Department.

**Table 18. Life zones (*sensu* Holdridge 1986) represented in Area 1 (Yoro)**

Life zone	Brief description	Area (ha)	%
<b>Very humid subtropical forest</b>	Median annual temperature 18-26°C. Potential evapotranspiration is 60% less than median total annual rainfall.	116,186	44.4
<b>Subtropical humid forest</b>	Median annual temperature 18-24°C. Average annual rainfall 1,000-2,000mm.	80,158	30.6
<b>Very humid lower montane forest</b>	Median annual temperature 12-18°C. Average annual rainfall 2,000-4,000mm.	39,619	15.1
<b>Dry tropical forest</b>	Median annual temperature 23-25 °C. Average annual rainfall 1,000-1,500mm. Dry period may last more than 6 months.	25,752	9.8
<b>Total</b>		<b>261,715</b>	<b>100.0</b>

**Table 19. Ecosystems in Area 1 (Yoro)**

Ecosystem type	Area (ha)	%
Agroproductivity system	131,600	50.3
Tropical evergreen coniferous submontane forest	66,400	25.4
Tropical evergreen seasonal coniferous montane forest	30,100	11.5
Tropical evergreen broad-leaved upper-montane forest	16,900	6.5
Tropical evergreen mixed montane forest	14,400	5.5
Tropical evergreen mixed altimontane forest	900	0.3
Tropical evergreen broad-leaved submontane forest	800	0.3
Tropical evergreen broad-leaved altimontane forest	700	0.3
<b>Total</b>	<b>261,800</b>	

65. Texiguat Wildlife Refuge and the neighbouring Pico Bonito National Park represent one of the most important areas of endemism for herpetofauna in nuclear Central America<sup>25</sup>: around a third of the species found in Texiguat Wildlife Reserve are endemic<sup>26</sup>. Texiguat is home to at least 240 species of birds, 25 mammal species, 76 macroinvertebrate species and 298 plant species including the morphologically unique national endemic *Haptanthus hazlettii*<sup>27</sup>. Pico Pijol and Yoro Mountain are reported to contain respectively, 42 and 39 species of mammals, and 156 and 74 species of birds. Pico Pijol in addition contains a reported 112 plant species, 41 species of amphibian and reptile species and 51 species of butterflies<sup>28</sup>.

66. These three PAs are home to around 22 critically endangered species, especially frogs, but also plants such as *Tontelea hondurensis*, *Connarus popenoei* and *Machaerium nicaragüense*. There are also at least 18 Endangered species, including the tapir (*Tapirus bairdii*), spider monkeys, (*Ateles geoffroyi*), the lizard *Anolis yoroensis* and the shrub *Tetrorchidium brevifolium*. Vulnerable species in the area include *Crax rubra* and *Penelopina nigra*. There is evidence from all three PAs of the presence of jaguars (*Panthera onca*) as well as other species of felines (*Puma concolor*, *Leopardus pardalis*, *Puma yagouaroundi* and *Leopardus wiedii*).

67. The limited areas of dry forest found in low lying parts affected by rain shadows are home to the endemic tree species *Leucaena lempirana*.

<sup>25</sup> Townsend *et al.* 2012

<sup>26</sup> McCranie & Castañeda 2007, Townsend *et al.* 2010b

<sup>27</sup> Shipunov y Oskolski 2011

<sup>28</sup> Gallardo y Moore 1995, AFE-COHEDEFOR 2003

### ***Biological connectivity***

68. The location of this area is highly strategic in terms of biological connectivity at national and regional levels. As shown in Map 7 (see Map Annex), it is ringed by arms of the Central corridor; it also lies at the confluence of the Central corridor and the Caribbean corridor, which links Texiguat Wildlife Refuge (at the northern apex of the area) with neighbouring the Pico Bonito range and thence to protected areas along the Caribbean coastal lowlands.

69. Biological connectivity in the north of the country is particularly crucial for ensuring the conservation status of the jaguar (*Panthera onca*). Given the position of the jaguar as a ‘top predator’, its conservation status is in turn a crucial determinant of the trophic structure and overall ecosystem health of the protected areas in which its populations are centred, and therefore of the conservation status of the other species which these contain, a number of which are of major global importance and concern (see paragraph 66).

70. The natural distribution of this species stretches from the southern United States to Argentina: despite this, and the fact that by the end of the 20<sup>th</sup> century its effective range had been reduced by around 54%, recent genetic studies show that the species has not developed sub-species, suggesting that relatively high levels of genetic flow have been maintained between populations. The maintenance of connectivity therefore constitutes a cornerstone of the conservation strategy of this species: corridors permit genetic interchange, avoiding endogamy and the reduction of population size, and increasing reproductive success. Corridors also contribute to the survival of small populations, allowing migration in the case of environmental and/or demographic pressures<sup>29</sup>. A total of 90 viable jaguar populations have been identified between Mexico and Argentina, which are connected by a total of 182 corridors. The only two populations which are not connected are Sierra de las Minas in Guatemala and Pico Bonito/Texiguat, at the northern apex of Area 1 (Yoro) targeted by this project<sup>30</sup>, which makes this an area of critical global importance for jaguar conservation.

71. The three PAs which lie at the apices of the area (Pico Pijol, Texiguat and Yoro Mountain) share the same types of ecosystems and a large proportion of their faunal diversity is common. Pico Pijol and Texiguat also share endemic species of herpetofauna. There are jaguar populations in each of the three PAs. Pico Pijol and Texiguat are 45km apart, while Texiguat and Yoro Mountain are 60km apart: the intervening zones contain numerous patches of forest (a total of 6,735 patches between the two corridors), with average sizes of between 7 and 11ha and an average distance between patches of less than 0.1km. Jaguars are capable of moving up to 15km in a night<sup>31</sup> and between 30 and 64km over the course of several months<sup>32</sup>. These corridors therefore have major potential to act as corridors if appropriately managed: at present, however, they would have to move across a landscape dominated by human activity and would be at high risk.

72. The landscape characteristics that are most crucial for jaguar movement across landscapes are: i) type of land cover; ii) percentage of coverage of trees and shrubs; iii) elevation; iv) density of human populations; v) distance from roads and human settlements<sup>33</sup>. In an agricultural landscape, silvopastoral systems have the potential to contribute significantly to increasing the numbers and cover of trees and shrubs in the landscape. As the distances between jaguar populations increase, due to the advance of the agricultural frontier in the proximity of reserves, dispersed patches of forest come to assume an increasing importance. These “stepping stones” of habitat are key elements of feline corridors, but are mostly located

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<sup>29</sup> Zeller & Rabinowitz 2011

<sup>30</sup> Rabinowitz y Zeller 2010

<sup>31</sup> De Almeida 1990

<sup>32</sup> Crawshaw & Quigley 1991

<sup>33</sup> Based on analyses of Rabinowitz & Zeller (2010)

within private properties and are surrounded by highly altered agricultural landscapes. A relatively small patch of natural habitat, which is not sufficient to maintain a single jaguar on a permanent basis, can provide food and shelter which can maintain a migrating individual for several days. A key element for jaguar survival and connectivity is the presence and abundance of prey species<sup>34</sup>, which can survive in these patches. Small mammals such as *Dasyprocta punctata*, *Agouti paca*, armadillos (*Dasyus novencimtus*), *Nasua narica*, *Procyon lotor*, deer (*Odocoileus virginianus*) and peccaries (*Tayassu* spp.) can survive if the forest patches are adequately protected by the landowner.

73. A detailed analysis was carried out during the PPG phase of landscape metrics (density, form and contiguity of different land use patches), in relation to connectivity and habitat functionality. This confirmed that forests in the connectivity areas are fragmented and immersed in a matrix dominated by pasture and croplands. Forest occupies more area than any other land use, but forest patches are widely separated and poorly connected compared to patches of pasture and crops. Many forest patches are relatively large in size (>10ha in the Texiguat-Pico Pijol corridor and >7ha in the Pico Pijol-Yoro Mountain corridor), with regular form and therefore limited edge effect, making them favourable as habitat for forest-dependent species<sup>35</sup>: while the presence of some more irregular elongated forest patches may be favourable for connectivity along corridors.

#### **Land use**

74. More than 50% of the target area is occupied by non-forest uses: of these, the most significant by area is pasture (Table 20) which occupies 34% of the whole area (68% of the non-forest area). The pastures are principally located towards the centre of the area (see Map 10 in Map Annex) but are progressively expanding upwards and outwards into the protected areas and connectivity zones on the surrounding hills.

**Table 20. Land uses in the target area**

Land use	Area (ha)	%
<b>Forest</b>	128,411.71	49.1
<b>Pasture</b>	90,160.12	34.4
<b>Crops</b>	31,091.67	11.9
<b>Bare soil</b>	9,796.00	3.7
<b>Water bodies</b>	2,263.01	0.9
<b>Total</b>	261,722.51	100.0

#### **Threats**

75. Forests throughout the area are subject to deforestation and fragmentation as a result of the expansion of staple grain cultivation, ranching (which is mostly extensive in nature) and the effects of the pine shoot borer (*Dendroctonus frontalis*). On hill lands in particular, ranchers expand their pasture areas by renting land to small farmers for the production of staple grains, and subsequently converting these cleared areas to pasture. Some areas, such as the buffer zone of Pico Pijol, are also affected by the expansion of coffee farms into native forest and by the extraction of timber to supply artisan furniture workshops in neighbouring towns. The recent introduction of oil palm to the area represents an additional threat: although this crop is normally limited to lowland areas, it has the potential to displace agricultural and ranching activity to surrounding hill lands, where they will place increasing pressures on natural ecosystems.

<sup>34</sup> Sunquist & Sunquist 2002

<sup>35</sup>Kattan, 2002

76. The Jimía Mountains corridor, which runs west from Texiguat Wildlife Refuge, is also affected by selective timber extraction of pine forests. In some cases, ranchers establish pasture into the areas from which timber has been extracted, resulting in a progressive conversion of forest to pasture land as the cattle grazing does not allow the establishment of natural regeneration.

77. These processes have had significant impacts on PAs and connectivity zones. In all of the three larger PAs in the area, the areas most affected by degradation and deforestation are those which face into the target area (the southern parts of Texiguat, the north and north-east of Pico Pijol and the north of Yoro Mountain): and the corridors that are intended to link Texiguat Wildlife Refuge to Pico Pijol National Park, and Pico Pijol to Yoro Mountain National Park, are in reality dominated by agricultural landscapes over much of their length. The road connecting the towns of Morazán and Yoro is also a threat inasmuch as it acts as a focus for economic activity and agricultural expansion, and thereby represents a barrier to biological connectivity between Texiguat and Pico Pijol PAs.

**Table 21. Principal threats affecting priority areas for biodiversity in Area 1 (Yoro)**

Area	Main threats
Biological corridors and their points of contact with protected areas	Fragmentation of pine and mixed forests, soil degradation on sloping lands, extensive ranching, timber extraction, deforestation of broadleaved forest due to expansion of agricultural/ranching frontier.
South of Texiguat Wildlife Refuge, Locomapa River region	Fragmentation of pine, mixed and broadleaved forest, increase of deforestation due to ranching, timber extraction from broadleaved forest.
Pico Pijol NP buffer zone, Cuyamapa River basin	Fragmentation of broadleaved forest due to migratory agriculture
Yoro Mountain NP buffer zone	Deforestation of broadleaved forest due to expansion of ranching (aimed at fattening).

***Target Area 2, the hills of Choluteca and Valle***

78. The dry forest zone of southern Honduras extends from sea level to around 800m.a.s.l. and consists of two clearly distinguishable zones: the extensive flat coastal plains and the heavily dissected hilly areas inland. The coastal plains are dominated by a combination of commercial agriculture – principally sugar cane and melons - and cattle pasture, much of which is extensively managed and degraded. By contrast, the dissected hilly areas inland are dominated by thousands of small-scale (*minifundista*) farmers living in small villages scattered throughout the area. The hill areas are particularly impoverished, with 50% of agricultural holdings below 2 ha in size (DGECH 1993) and high population growth rates, which have resulted in population densities increasing more than three-fold over the second half of the 20th century (Stonich 1993). The population is largely *mestizo* (mixed indigenous/Spanish) and there is little evidence of the customs and traditional attachment to the land and other natural resources that still survive in some areas of Honduras with greater indigenous presence, such as the western departments of Intibucá and Lempira. Many of these farmers do not have formal title to their land. In practice, however, individual farmers’ rights over particular areas of land, and the trees thereon, are normally recognised and respected by other community members.

***Production systems***

79. Average farm size in this area of the country is less than in the humid north (Table 6). Traditional smallholder farms on the hills of southern Honduras contain a wide diversity of land use categories. These include “*milpas*” dedicated to rain-fed annual cropping (principally staple grains including maize *Zea mays* L., the more drought-resistant “*maicillo*” *Sorghum bicolor* L. and beans *Phaseolus vulgaris* L.); pastures sown with the exotic *jaraguá* grass (*Hyparrhenia rufa* (Nees) Stapf); home gardens (*solares*);

small woodlots and, in some higher, moister areas, coffee plantations. Farm units are managed on a cyclical basis, alternating between periods of food crop production, cattle grazing and fallow. Cropping cycles usually consist of the following phases, as illustrated in Figure 1 (see Map Annex):

- Manual clearance of fallow vegetation, assisted by burning when labour is scarce and/or the vegetation is thorny. The generally steep topography means that few people are able to plough.
- Sowing of basic grains using a dibble stick (or, in the case of *maicillo*, broadcast), with two cropping periods for maize (*primera* and *postrera*) during the six-month rainy season. Irrigation is rare, limiting factors being economic resources, steep topography and erratic stream flows.
- Introduction of cattle into the fields at the end of each rainy season, to eat the crop residues (*rastrojo*).
- After repeated cropping seasons (the number of which varies according to land availability), the land is either allowed to revert to fallow, or converted to pasture by sowing grasses during the last cropping period.

80. The cyclical nature of this system, which provides for cropping areas being left to fallow periodically, is central to its sustainability. The fallows are rapidly colonized by native tree species: these either resprout from live coppice stumps which have survived throughout the cropping period, or germinate from the “seed rain” arriving from neighbouring fallow areas or from standing trees left in fields and fencelines. These naturally regenerated trees, a large proportion of which are leguminous, play a vital role in restoring soil fertility. The duration of each of these periods varies widely, depending largely on land availability, fertility and the presence or otherwise of cattle; the average lengths of cropping and fallow periods are in the order of 2 and 6 years respectively; fallow periods range from 1 to 20 years, more than 50% being shorter than 4 years. Small-scale farmers tend to have shorter fallows and crop their land more intensively.

81. Although smallholdings typically range from 2-5ha in total size, only a small proportion of this area (typically less than 1ha/farm) is normally under cultivation at any given time, due to the limited availability of family labour and the need to leave other areas of the farm fallow. Labour availability for on-farm work is generally limited by competition from off-farm labour markets, such as daily labour in the melon and sugarcane fields on the coastal plains. Smallholders commonly supplement their own cropping area by renting land from others in the community: in some cases the renter pays for this in kind by leaving crop residues for the landowner’s cattle.

### ***Threats, pressures and determining factors***

82. **Smallholder agriculture:** the initial clearance of much of the original hillside forest in the dry zone was carried out by small farmers, marginalized from the fertile lowlands by ranching and commercial agriculture. The clearance of primary forest is now a thing of the past, however, as almost all of the landscape has already been converted to a cyclical agroecosystem. Under stable demographic, productive and climatic conditions, the cyclical production systems described above are inherently sustainable: this is due to the practice of fallowing, which allows soil fertility to be restored periodically, and also to the presence of large numbers of live trees and coppice stumps in all stages of the system (up to 17,717 live stumps and seedlings/ha were reported in one study in the project area <sup>36</sup>), which contribute to water infiltration and the mechanical resistance of the soil to mass movement, even during active cropping periods.

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<sup>36</sup> Barrance AJ, Flores L, Padilla E, Gordon JE and Schreckenber K (2003): Trees and farming in the dry zone of southern Honduras I: *campesino* tree husbandry practices. *Agroforestry Systems* **59** (97-106), 2003.

83. There is evidence, however, that demographic pressures in some parts of the area are altering the balance and sustainability of the system (see Box 1): continuing reproductive growth is leading to farm subdivision and consequent reduction in the relative proportions of fallow in the system (as farms get smaller, fallows become marginalized as farmers maintain stable minimum cropping areas). This reproductive growth is to some extent offset by rural-urban migration: however there is no firm evidence as yet that this has resulted in a net cessation in growth.

84. The link between smallholder agriculture, poverty and land degradation in this area has been characterized as a “vicious circle”<sup>37</sup>, in which inadequate technology transfer, limited cropping options, low levels of marketing capacity and organization and the high labour requirements of many land conservation practices result, in turn, in low agricultural production and incomes, limited availability of financial capital and human capital (due to emigration), a failure to invest in soil conservation, and soil degradation, which in turn limits agricultural production and income.

#### **Box 1. Trends in the dry forest agroecosystem of Target Area 2**<sup>38</sup>

Farmer interviews, review of census data, field observations and the study of aerial photographs (taken in 1954 and 1983) show that, over the last 50 years, a number of processes have shaped the current landscape in southern Honduras, including:

- A gradual reduction of fallow areas and a progressive subdivision of farms, over much of the foothills. An earlier situation of scattered agricultural clearings in a matrix of fallow has changed to one dominated by fields with permanent boundaries, only a small proportion of which is in fallow at any given time.
- Maintenance of a state of relatively stable flux in the mosaic of agricultural fields and fallows in some other foothill areas, for example near the border with El Salvador.
- Organised settlement of upland farmers on large, underused lowland holdings under agrarian reform programmes of the 1960s and 1970s, resulting typically in the conversion of areas of secondary forest, formerly used for extensive grazing, to basic grain production.
- Recovery of the vegetation on some hill outliers in the coastal plains area from degradation caused by earlier extensive cattle grazing.

85. **Cattle ranching.** As with smallholder agriculture, cattle raising in the dry zone agroecosystem can be environmentally sustainable if the tolerance limits of the system are not exceeded: the practice of introducing cattle into cropping areas following harvest, to eat crop residues, contributes to nutrient cycling. If the area is allowed subsequently to revert to fallow (either immediately or following a period as a temporary sown pasture) native tree populations can recover and contribute to the restoration of soil fertility.

86. If stocking rates are excessive in these areas, however, the cattle can cause soil degradation<sup>39</sup>. Heavily grazed areas are subject to compaction, reduced aggregate stability and reduced particle size, resulting in particles which are more susceptible to erosion (see Figure 2 in Map Annex). Particle breakdown also leads to the liberation of soil organic matter, making it vulnerable to decomposition and loss, and to the loss of soil carbon reserves (see Figure 3 in Map Annex). This is exacerbated if the pasture becomes permanent, as the abundant live coppice stumps that are crucial to the sustainability of the cyclical agroecosystem are denied the chance to resprout, due to grazing and to the practice of burning

<sup>37</sup> Barrance AJ, Gordon JE and Schreckenber K (2006). Trends, cycles and entry points in the dry forest landscapes of southern Honduras and coastal Oaxaca. In: Savannas and Dry Forests – Linking People with Nature. J. Mistry and A. Berardi (eds.). Ashgate.

<sup>38</sup> Ibid.

<sup>39</sup> García, E. 2011. Evaluación del impacto del uso ganadero sobre suelo y vegetación en el Sistema Agroforestal Quesungual (SAQ) en el sur de Lempira, Honduras. M.Sc. Turrialba, Costa Rica, CATIE. 131

pasture to encourage new growth and eliminate ticks: as a consequence, they progressively disappear, leading to the loss of the soil stabilization and nutrient restoration services that they normally provide. The use of fire also leads to the loss of volatile nutrients from the system, and may lead to ecosystem degradation beyond the pasture area itself when, as commonly happens, the fire spreads uncontrolled into neighbouring fallows and woodlands.

87. There is considerable evidence from across the region that poor pasture management and the maintenance of low tree densities exacerbate land degradation. In Costa Rica, for example, natural pastures without trees have been found to have up to 60% of soil without herbaceous cover compared to 23% in the case of improved pastures with trees. The runoff threshold (the rainfall amount beyond which cross-surface runoff begins) was found to be 2.5mm in natural pastures without trees, compared to 3.2mm in the case of improved pastures with trees and 12.6mm in the case of disturbed secondary forest; and runoff in natural pastures without trees was twice that in improved pastures with trees<sup>40</sup>.

88. The establishment of permanent pastures tends to be related to farm size and income levels: only farmers with sufficient land availability once needs for stable grain production have been met are able to set aside land permanently for pasture, and only those with sufficient capital (obtained for example from off-farm work or remittances) are able to invest in fences and breeding stock.

89. There is a growing tendency in the target area for the owners of large ranches on the lowlands to sell or lease their properties to melon and sugarcane producers, due to the profitability of these crops. These ranchers then displace their cattle production to the surrounding hillsides, where they purchase cheaper land from smallholders and convert the current landscape of tree-rich milpas, fallows and small woodlands to extensive tree-poor permanent pastures, resulting in the problems of soil degradation (erosion, compactation, slumping and nutrient degradation) described above, and also to the loss of significant amounts of above- and below-ground carbon reserves from the agroecosystem.

90. **Fire** is commonly used as a tool for resource management in the dry zone. In staple grain production systems, it is often used as a site preparation method, especially in areas with thorny vegetation and where labour is scarce. As described above, in ranching areas fire is used to regenerate pasture and eliminate ticks. The balance of opinion amongst ecologists is that fire is not a natural part of dry zone ecology. Human-induced fires, occurring at frequencies far greater than anyone would suggest for wildfires, have had a drastic and, at least from the point of biodiversity, detrimental effect on the biota of the dry zone. Frequent burning affects the natural species composition by eliminating some species and favouring others<sup>41</sup> and alters the course of ecological succession.

91. Burning has been found to increase the susceptibility of soils in southern Honduras to erosion by 7.5 times<sup>42</sup>, with soil loss rates of 41.3, 18.2 and 3.4 t/ha in three successive years with burning, compared to 5.1, 3.4 and 2.3 t/ha without burning.

92. Table 22 compares soil erosion rates in the five watersheds covered by Target Area 2. The three watersheds most susceptible to erosion are Choluteca, Sampile and Negro, which are located at the eastern end of the target area. The Sampile River and Choluteca River watersheds have the highest percentage of

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<sup>40</sup> Ríos, N; Jiménez, F; Ibrahim, M; Andrade, H; Sancho, F. 2006b. Parámetros hidrológicos y de cobertura vegetal en sistemas de producción ganadera en la zona de recarga de la subcuenca del río Jabonal, Costa Rica. Recursos Naturales y Ambiente 48:111-117.

<sup>41</sup> Otterstrom, S.M., Schwartz, M.W., Velázquez-Rocha, I. Life history responses to fire in selected tropical dry forest trees. Biotropica. 38:592-598.

<sup>42</sup> Rivera, M. 2008. Determinación de la dinámica del agua en el sistema agroforestal Quesungual e identificación de factores Suelo-planta para el mejoramiento de la productividad del agua en los cultivos. Ph.D. Colombia, Universidad Nacional de Colombia. 335



their areas (40.0% and 37.9% respectively) in the severe to very severe erosion categories, followed by the Negro River (35.8%), Nacaome (32.9%) and Goascorán (28.4%). Considering only those areas with slopes greater than 33%, the watershed most affected is Sampire (50.0%), followed by Choluteca (42.9%), Negro (41.6%), Nacaome (40.3%) and finally Goascorán (36.3%).

**Table 22. Proportions of watersheds in target area 2 affected by different soil erosion rates, by slope**

Watershed	Slope (%)	Soil erosion categories (t/ha/year)				Total
		Low 0-10	Moderate 11-50	Severe 51-200	Very severe >200	
Choluteca	0-8	58.1	7.6	8.0	26.3	100.0
	8.1-35	64.7	6.1	6.4	22.8	100.0
	>35	47.3	9.8	9.1	33.8	100.0
	Overall	<b>53.7</b>	<b>8.5</b>	<b>8.3</b>	<b>29.6</b>	<b>100.0</b>
Goascorán	0-8	67.6	7.9	12.5	12.0	100.0
	8.1-35	66.6	8.9	12.3	12.2	100.0
	>35	56.1	7.6	20.0	16.3	100.0
	Overall	<b>63.5</b>	<b>8.0</b>	<b>15.0</b>	<b>13.4</b>	<b>100.0</b>
Nacaome	0-8	61.7	8.6	13.0	16.7	100.0
	8.1-35	64.0	10.1	10.5	15.4	100.0
	>35	51.2	8.5	15.7	24.5	100.0
	Overall	<b>58.2</b>	<b>8.9</b>	<b>13.5</b>	<b>19.4</b>	<b>100.0</b>
Negro	0-8	62.0	6.8	6.8	24.3	100.0
	8.1-35	60.7	8.0	6.3	25.0	100.0
	>35	47.1	11.2	8.8	32.8	100.0
	Overall	<b>55.2</b>	<b>9.0</b>	<b>7.6</b>	<b>28.2</b>	<b>100.0</b>
Sampire	0-8	64.4	3.9	10.4	21.2	100.0
	8.1-35	61.9	3.5	14.4	20.2	100.0
	>35	45.2	4.8	13.5	36.6	100.0
	Overall	<b>55.8</b>	<b>4.2</b>	<b>12.5</b>	<b>27.5</b>	<b>100.0</b>
<b>Overall</b>		56.5	8.2	10.7	24.6	100.0

### Institutional framework

93. The lead Governmental institution in the environmental sector is the **Ministry of Environment and Natural Resources (SERNA)**, which is also home to the GEF technical focal point and the CBD focal point. SERNA, through its **Directorate of Biodiversity (DIBIO)** is responsible for formulating and implementing environmental policy, for the preparation of the National Biodiversity Strategy and Action Plan, and for the definition and declaration of protected areas. The **Directorate of Environmental Management (DGA)** of the SERNA is responsible for promoting territorial land use planning (a responsibility that is shared with the Ministry of the Interior<sup>43</sup>) and for supporting the environmental capacities of municipal governments, while the **Directorate of Environmental Control** is responsible for supervising environmental impact assessment procedures as provided for in the General Environment Law.

94. The **Ministry of Agriculture and Livestock (SAG)** is the lead institution in the agriculture and livestock sector. The livestock sub-sector is led by a specific Vice-Ministry within the SAG. The **National**

<sup>43</sup> Formerly the Ministry of Governance and Justice

**Directorate for Sustainable Rural Development (DINADERS)** is a dependency of the SAG (although it has a Director of ministerial rank), which executes rural development projects nationwide under the umbrella of the National Programme for Sustainable Rural Development (PRONADERS), with support from its financial instrument the **National Fund for Sustainable Rural Development (FONADERS)**.

95. The **Institute of Forest Conservation and Development** is the lead institution in the forest sector and also has responsibility for managing protected areas (a function which it delegates in many cases to Non-Governmental Organizations under “co-management” agreements) and for the protection of wildlife.

96. The **Ministry of Social Development** is responsible for matters related to the national Poverty Reduction Strategy. The **Secretariat of the Presidency of the Republic**, through its Technical Support Unit (UNAT) coordinates socioeconomic development in the country and the implementation of the Poverty Reduction Strategy. The **Ministry of the Interior** coordinates policies on territorial land use planning, municipal development and catastro. The Technical Secretariat of Planning and International Cooperation (SEPLAN) has responsibility for national and regional planning, as well as territorial land use planning.

97. At local level, **municipal governments**, and specifically **Municipal Environment Units (UMAs)** have responsibilities for the management and protection of natural resources within their territories. These responsibilities overlap to some extent with those of the ICF. Mechanisms for local participation in natural resource management include **water catchment, sub-catchment and microcatchment level councils** provided for in the Framework Law for the Water Sector; **Regional and Local Protected Area Councils (CORAPs and COLAPs)** provided for in the Forestry Law; and **Municipal Development Councils (CODEMs)** provided for in the Municipalities Law.

#### **Legal framework**

98. The **General Law on the Environment** (Decree 104-93) is the principal legal instrument regarding environmental issues. It declares that the protection, conservation, restoration and sustainable management of the environment and natural resources are of public interest, and makes legal provision for the roles of the SERNA and its respective departments in relation to the management and protection of the environment and natural resources, as described above. The **Municipalities Law** (Decree 134-90) delegates to municipal governments responsibilities for managing and protecting the natural resources within their territories. The **Forestry, Protected Areas and Wildlife Law** (Decree 98-2007) reaffirms the legal responsibilities of ICF in relation to the management and protection of forestry resources, protected areas and wildlife: it also makes provision for the establishment of multi-stakeholder consultative entities in relation to forestry and protected area management at central, regional and municipal levels. The principal legal instrument governing the agricultural and ranching sub-sectors is the **Law for the Modernisation and Development of the Agricultural Sector (LMDSA)** of 1992: this laid the bases for the privatization of agricultural extension services, which has in practice reduced access by small farmers to extension services given their limited ability to pay for these.

#### **Policy framework**

99. The Country Vision (2010-2038) and National Plan (2010-2022) propose to improve the agricultural sector through the development of mechanisms for access to finance and technical assistance for small producers, and the implementation of reforestation and forest protection programmes. These two instruments provide to divide the country into macro-level planning units based on watershed divisions.

100. The Secretariat of Agriculture and Livestock has recently established a national Sustainable Ranching Programme (SRP), which prioritizes the promotion of environmentally sustainable forms of natural resource management, and with which the present project will be closely linked. The SRP and the

present project are both closely in line with the National Action Plan for the Combat of Desertification (2005-2021), which identifies the causes of the limited sustainability of agricultural and ranching systems as including the extensive nature of ranching, the use of inappropriate production technologies, the inequitable distribution of land, limited production infrastructure, lack of agricultural incentives and limited market access, and prioritizes the improvement, participatory validation and scaling up of sustainable agricultural and ranching systems; and the National Biodiversity Strategy and Action Plan, which proposes the development of projects aimed at using sustainable agricultural and ranching practices to achieve an appropriate use of water and soil resources.

### **Long-term solution**

101. The most effective **normative solution** to the environmental issues described above associated with cattle ranching is the adoption by cattle farmers of improved farm and silvopastoral management practices, that combine improved economic viability with the generation of on-farm environmental benefits (in terms of BD and the maintenance of the long-term potential of soil and vegetation resources to generate environmental goods and services), with enabling conditions of market and governance mechanisms capable of generating further landscape-wide benefits and avoiding the risk of intensification generating perverse incentives for deforestation (see explanation of design principles and strategic considerations, paragraph 151).

### **Baseline analysis**

#### ***Livestock sector development***

102. The Ministry of Agriculture and Livestock, with the support of the National Ranching Federation (FENAGH), has recently launched the **National Programme for Sustainable Ranching**<sup>44</sup>, and in support of this has established a multi-stakeholder **Sustainable Ranching Platform**. The main focus of the Programme is on promoting the productive sustainability of livestock in the country, for example by realizing the potential of silvopastoral systems to reduce the vulnerability of the sector to climatic variability and to provide dry season fodder, as well as improving its efficiency and its contribution to social development. ***Under the baseline scenario***, it is likely that the initiatives foreseen under the Programme will focus principally on these ‘domestic’ benefits and will fail to realize their potential to generate global benefits such as biological connectivity (for example, by tailoring the location and design of silvopastoral systems to the locations and ecological characteristics of threatened species and ecosystems), or to apply a fully integrated approach to promoting the productive and biological functioning of agricultural and ranching landscapes (for example by considering biological and productive cycles and interrelations at the level of the farm and landscape, rather than just the pasture unit itself). There is also a risk under the baseline scenario that the lack of an adequately integrated vision will lead to the generation of perverse incentives for deforestation, for example as a result of farmers reinvesting the increased income resulting from productive intensification in the expansion of their cattle herds and pasture areas, and other farmers switching from existing activities to livestock due to the demonstration by the Programme of its economic attractiveness. Furthermore, although the Platform has functioned effectively to date and has enjoyed high levels of participation, under the baseline scenario there is a risk that it will lack the kind of effective facilitation required to sustain stakeholder participation and to ensure that the interests of the diverse actors involved are reconciled; and that it will lack the consistent strategic direction required for it to be functional and sustainable.

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<sup>44</sup> [http://www.sag.gob.hn/index.php?option=com\\_content&task=view&id=3785&Itemid=1322](http://www.sag.gob.hn/index.php?option=com_content&task=view&id=3785&Itemid=1322)

### ***Protected area management***

103. In target area 1, there are 3 protected areas which have already been declared and one which is in process. The management of these PAs falls under the responsibility of the **ICF** (with delegation in practice to NGOs) within the context of the National System of Protected Areas (SINAPH), which receives a total annual budget of around \$5.5 million<sup>45</sup>. These PAs cover some of the largest forest blocks but are at risk of biological isolation and erosion in the absence of concerted actions to manage the intervening landscapes in a coherent manner. The **USAID ProParque** project is supporting the SINAPH, with the goal of having a reformed, restructured, and effective system which will be a source of sustainable and equitable economic growth opportunities for communities. The aim of ProParque is that, through direct and indirect economic opportunities such as tourism, forestry/agroforestry, and ecosystem services, these communities will be able to transition into sustainable market-based and conservation-friendly livelihoods that value and protect the natural resources<sup>46</sup>. However, *under the baseline scenario* these initiatives will not adequately address the complex landscape-wide interactions that underlie the impacts of ranching and related production systems on GEBs; furthermore, they are limited in the degree to which they consider the implications of the productive activities which they promote for GEBs (particularly biodiversity).

### ***Rural enterprises***

104. The Ministry of Agriculture and Livestock (SAG) is supporting rural enterprises in the target areas through three major projects funded by the International Fund for Agricultural Development.

- **PROMECOM**<sup>47</sup> (Improving Competitiveness of the Rural Economy in Yoro), funded by IFAD and CABIE, will help small-scale farmers and indigenous Tolupan tribes in Yoro department integrate into the market economy, as well as improving their territorial management practices and their organizational capacities, to give them a stronger voice and enable them to express their specific concerns to public and private entities. To improve opportunities for increasing incomes, the project will help the tribes increase their grain production and expand their access to seeds, fertilizers and technical assistance. It will also help them gain access to technologies and investments, and will promote alliances among producers, service providers and processing and marketing enterprises. The project will provide indigenous communities with legal services to help them clarify their land rights, and will promote the use of participatory community mapping to set the boundaries of territories and indigenous lands. The total budget of this project over the period 2008-2015 will be US\$16.7 million, including a loan from IFAD of US\$9.4 million, a Government contribution of US\$1.18 million; and a loan from CABEI of US\$4.0 million.
- The **Horizontes del Norte** project<sup>48</sup> will operate in Atlántida, Cortés and Santa Barbara Departments, to the north and west of this project's target area 1. It will focus on small agricultural producers and artisans who do not belong to any organized groups and have few or no links with markets; rural women, young people and ethnic groups; and poor rural populations that lack social and rural road infrastructure. It will offer technical assistance, venture capital and financial services, and create an innovative relationship between participants and the private sector. It will upgrade rural roads, which will facilitate market access for small producers in the zone, and reduce the vulnerability of the communities to environmental degradation. In addition, about 1,000 young women and men will receive training to improve their chances of finding jobs.

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<sup>45</sup> SINAPH funding figures are not broken down by regions..

<sup>46</sup> <https://sites.google.com/site/usaidtheproarqueenglish/>

<sup>47</sup> <http://operations.ifad.org/web/ifad/operations/country/project/tags/honduras/1407/project%20overview>

<sup>48</sup> <http://operations.ifad.org/web/ifad/operations/country/project/tags/honduras/1595/project%20overview>

The total budget of the project, which will run from 2012-2018, will be US\$21.0 million, including a loan of US\$8.7 million from IFAD.

- The **Emprende Sur** project<sup>49</sup> (Sustainable Rural Development Programme for the Southern Region) will work in selected municipalities in the departments of Choluteca, El Paraíso, Francisco Morazán, La Paz and Valle. Its aim is to increase the incomes, employment and food security of poor small-scale agricultural producers, microentrepreneurs in agricultural and non-agricultural value chains, traditional inland fish harvesters, Lenca indigenous populations, and rural women and young people. To reach these goals, the programme will help people operating small rural enterprises add value to their products and get more and better access to national and external markets. The programme will improve infrastructure, consolidate rural savings associations, increase food security and reduce vulnerability to the impacts of climate change. It will also strengthen the organizational, decision-making and entrepreneurial capacities of rural communities and producer associations, supported by enhanced municipal planning. The total cost of the project over the period 2011-2017 will be US\$37.2 million, including a loan from IFAD of US\$10.0 million, and cofinancing of US\$10.0 million from the Central-American Bank for Economic Integration (CABEI) and US\$10.0 million from the OPEC Fund for International Development (US\$10.0 million).

105. These projects have major potential to stimulate the rural economy in their target areas. However, *under the baseline scenario*, it is unlikely that they will specifically support productive options with the potential to generate environmental benefits, such as the production of beef and dairy products that comply with criteria of environmental sustainability, have environmental certification and/or are inserted into “green” value chains. There is a risk under the baseline scenario that the contrary will occur: that these projects will provide perverse incentives for the expansion of productive activities that lead to environmental degradation. The effectiveness of these initiatives is also likely to continue to be limited by poorly-developed capacities among producers to generate sound and convincing productive proposals for funding.

#### *Support to small-scale farming and livestock systems*

106. The **SAG** supports technology transfer through its Science and Technical Assistance Directorate (DICTA). Its capacities in this regard are severely limited however, in terms of technical and human resources and geographical coverage, due largely to the policy shift provided for in the 1992 Law for Modernisation and Development of the Agricultural Sector. This gap has been filled to some degree by NGOs.

107. The Institute for Cooperation and Self-Development (**ICADE**) is supporting the genetic improvement of cattle herds, the improvement of pastures, feed storage and conservation, the management of tree regeneration in pastures, the establishment of a dairy product processing plant for farmers (together with Heifer Project), and farm certification. It also works through “pass it forward” donations of pregnant cows, and supports environmental and organic agriculture fairs and field days. ICADE has offices in three municipalities with 4 technicians, and works with 45 women’s groups and 10 mixed groups

108. The **Heifer Project** provides livestock to poor families through the “pass it forward” mechanism whereby farmers are given a pregnant cow under the agreement that they pass a pregnant offspring to another community member; it also works on livestock management and nutrition, the freeing of areas for natural regeneration, reforestation, bee-keeping and the planting of fruit trees.

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<sup>49</sup> <http://operations.ifad.org/web/ifad/operations/country/project/tags/honduras/1535/project%20overview>

109. The **FAO/PESA** project is supporting silvopastoral and traditional agroforestry systems, livestock management, and soil conservation (including the avoidance of burning), through farmer-to-farmer technology transfer, demonstration farms, educational tours, training workshops and farmer visits. The activities supported by FAO incorporate lessons learnt in the FAO/Dutch Government ‘Lempira Sur’ project in the west of the country, for example regarding the potential of traditional agricultural systems and the strengthening of local governance mechanisms with the aim of reducing burning and other threats typically associated with livestock production.

110. The \$14 million **PROSADE** project (Promotion of Food Security and Economic Development in the Choluteca and Negro River Catchments<sup>50</sup>), funded principally by CIDA and executed by CARE, will run from 2010 to 2016 and aims to improve the quality of life and reduce the environmental vulnerability of 24,200 people through the development of the capacities of municipal and community-based organizations, with an emphasis on environmentally-friendly agriculture, water supply, the support of sustainable economic activities and the protection of natural resources.

111. There have also been major advances with the establishment of Farmer Field Schools (ECAs). This methodology was tested and validated in a regional project on recovery of degraded pasture lands implemented by CATIE. At present 28 organizations and institutions are supporting a total of 143 ECAs nationwide. **INFOP**, in association with **CATIE**, have supported ECAs focused on livestock in the Departments of Atlántida, Colón, Olancho, Francisco Morazán, La Paz and Copán,

112. *Under the baseline scenario*, these multiple and wide-ranging initiatives would fail to incorporate fully integrated farm- or landscape-level perspectives in addressing sustainable land management and biodiversity conservation issues, and would not provide farmers with functional, attractive and sustainable incentives for modifying their production systems. ECAs have much promise to fill the gaps left by the downscaling of traditional Government extension support, and to address the shortcomings of traditional “vertical” approaches to extension; there is particular interest in the SAG in developing an extension programme based on ECAs. To date, however, there has been no experience with livestock ECAs in either of the two areas where this project will work, and little attention has been given to defining how to make ECAs sustainable in the long term as tools for helping farmers adapt continuously to changing economic, productive, demographic and/or climatic conditions.

### ***Rural finance***

113. There are a number of entities which offer finance to rural producers and enterprises, including the National Bank for Agricultural Development (**BANADESA**), the Foundation for Rural Enterprise Development (**FUNDER**), the Central American Bank for Economic Integration (**CABEI**), the rural development projects of **IFAD** (described above) and **rural savings banks** (*cajas rurales*).

114. With the recent approval of the **Special Law for Economic Reactivation** (approved on 25<sup>th</sup> September 2012), financial sector institutions will provide for the refinancing of debts of small and medium-scale enterprises which have been classified as credit risks. In addition, this will be backed up by the establishment in 2013 of two funds, one of around US\$5 million which will provide loan guarantees to micro, small and medium-scale enterprises, and another of around US\$1 million (Agricultural Fund for Reciprocal Guarantees<sup>51</sup>). This will be assigned to the budget of the Ministry of Industry and Commerce, which will develop programmes of financial and marketing support to productive activities (such as sustainable ranching) in order to achieve the objectives of the Law.

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<sup>50</sup> [http://www.care.org\\_hn/prosade/index.php?option=com\\_content&view=article&id=647&Itemid=617](http://www.care.org_hn/prosade/index.php?option=com_content&view=article&id=647&Itemid=617)

<sup>51</sup> Decree 205-2011, Official Gazette of 26th February 2012

115. *Under the baseline scenario*, producers would have limited capacities to formulate convincing proposals for productive activities, and funding entities would have limited knowledge and conviction regarding the creditworthiness of sustainable production systems. As a result, the available funds would be under-utilised, and opportunities for developing enterprises based on sustainable value chains would fail to be realized.

### **Barriers to achieving the solution**

#### **Barrier 1: Limited clarity, experience and coordination regarding how to reconcile goals of environmental protection and productive sector development in production landscapes**

116. ***Policy conflicts:*** in common with many developing countries with high levels of poverty, strong dependence on primary production and pronounced vulnerability to environmental risks, Honduras is faced by a dilemma between short term goals of economic stimulation and development, and the longer term priority of conserving the natural resource base. The livestock sub-sector has been the focus of major promotion efforts by the Government in the past, through instruments such as the Livestock Development Programme (which supported the introduction of new breeding stock), the Livestock Fund (*Fondo Ganadero*<sup>52</sup>) and more recent export promotion initiatives such as “Honduras is open for business”. These policy initiatives have played a significant role in driving the expansion of the “ranching frontier” into primary forest and other environmentally vulnerable areas. Agrarian reform policies, aimed at stimulating the agriculture/ranching sub-sectors and reducing poverty by realizing the productive potential of “idle” (typically forested) lands, have further stimulated deforestation. This has occurred both directly through the transfer of lands for agricultural/ranching development at or near the agricultural frontier, and indirectly by motivating landholders to clear land in order to demonstrated productive occupancy and thereby avoiding (real or perceived) threats of expropriation or “invasion” by peasant groups.

117. Under the present Government, the Ministry of Agriculture (SAG) has adopted an explicit policy to promote sustainable ranching. One of the major challenges it will face in this regard will be to define how to overcome these historical conflicts between environmental and sector development priorities, and to avoid the risk of generating unintentional perverse incentives for deforestation. This is made more difficult by the narrow focus on productive and agronomic issues of many of the actors involved, which fails to take adequately into account the fact that true sustainability depends on the interaction of multiple factors (including livelihood systems, governance, demography and landscape level ecological processes, as well as agronomy).

118. ***Limited institutional coordination:*** a central strategy of the Government’s support to sustainable ranching has been the establishment of a multistakeholder “Sustainable Ranching Platform” aimed at promoting intersector collaboration (especially between the environmental sector led by SERNA and the livestock sector led by SAG). Historically, communication and collaboration between these institutions has been limited, reflecting their respective responsibilities for the at times conflicting priorities of environmental conservation and productive sector development. The situation is made more challenging by the number of institutional actors whose actions have actual or potential implications for how landscapes are managed, including not only SERNA and SAG but also the ICF (in relation to forest protection, wildlife conservation and protected area management), the INA (in relation to agrarian reform, land titling and support to peasant cooperatives), the Ministry of the Interior (in relation to territorial land use planning and socioeconomic development) and the Ministry of Commerce (in relation to export

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<sup>52</sup> <http://www.fondoganaderohn.com/quienessomos.html>

promotion). In some cases, there is overlap between the statutory roles of these institutions, for example between the SERNA and ICF in relation to PA management and wildlife conservation. A particular challenge with the Platform in this regard is to define how to develop it in such a way that it is able to go beyond the organization of meetings, conferences and short courses, to become action-oriented and to influence policies, for example through the negotiation of projects and harmonization of project objectives to a common goal.

119. **Markets:** at present, markets for beef and dairy products (principally for domestic consumption but with some destined for export) constitute major drivers for deforestation as they fail to distinguish between products originating from sustainable and unsustainable sources. There are good prospects for addressing this situation through “green markets”: there is a growing and increasingly discerning middle class in Honduras, whose food purchases come largely from a limited number of large competing supermarket chains which are vying to demonstrate environmental credentials (for example by offering degradable plastic bags and a limited range of organic vegetables); the supermarket sector in Honduras is increasingly dominated by large multinational interests (principally Walmart) which have expressed strong corporate commitment to social and environmental responsibility; and Rainforest Alliance is promoting the certification of products from the cattle sector in accordance with the norms of the Sustainable Agriculture Network in association with CATIE. To date, however, there has been little progress in putting these initiatives into practice. Experience with other sectors such as coffee and timber shows that for green markets to move into the mainstream, it is necessary to develop demand and supply simultaneously. An obstacle at present to this taking place is a lack of vertical articulation along value chains for beef and dairy products (see Figure 6 and Figure 7), which makes it difficult for purchasers to identify a base of producers with the capacity and commitment to provide them with the quality and quantity of products which they require on a reliable basis in accordance with their environmental sustainability requirements, and for producers to be proactive in targeting “green markets”, about which they have little knowledge.

120. **Financing:** Limited access to favorable and affordable credit is also an obstacle to investing in this transition. In workshops carried out during the PPG phase in the two target areas, 80% of the farmers interviewed reported having no access to credit. Of those who did have access to credit, only 25% had obtained it from the private banking sector, while 50% had obtained loans from friends and family members and the remaining 25% intermediaries, NGOs and the Government. Many of the existing sources of finance attend other sectors and/or have high interest rates with short payback periods (Table 23); they are not specifically tailored to the needs and characteristics of cattle producers; and their loans are not subject to criteria of environmental sustainability, leading to the risk of them constituting perverse incentives for the expansion of environmentally-damaging production systems. Experiences in Nicaragua with traditional credit systems for ranching, characterized by inadequate technical support, and high interests with short repayment periods, show that these have promoted the development of extensive agriculture and associated environmental degradation, as producers focus on investing the credit in activities which generate returns in the short term without considering their longer-term productive and environmental sustainability<sup>53</sup>.

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<sup>53</sup> López, M. 2009. Financiamiento al sector rural de Nicaragua: impactos productivos y ambientales. In: Políticas y sistemas de incentivos para el fomento y adopción de buenas prácticas agrícolas: como una medida de adaptación al cambio climático en América Central. Sepúlveda C. e Ibrahim M (editores). Turrialba, Costa Rica 2009. 292 p.



**Table 23. Selected sources of finance in the target areas**

Institution	Project Area	Sectors supported	Interest rates	Repayment period	Amount available (US\$)
National Coffee Bank (BANHCAFE)	1/2	Commerce, industry, transport, services	36%/year	6-48 months	500-9,000
Banco Popular	1/2	Transformation	1.6%/month	24 months	9,000-25,000
Finca de Honduras	1/2	Commerce, industry, services	3%/month	6-36 months	250-24,000
Women's Business Development Organization (ODEF)	1	Agriculture and livestock	2.17%/month	1-60 months	100-60,000
Financiera Solidaria	1/2	Commerce, industry, services, transport, agriculture	38%/year	36 months	Up to 20,000
CREDISOL OPDF	1	Agriculture and livestock	2.25%/month	36 months	Up to 12,500
ADEPES	2	Commerce	3%/month	36 months	Up to 7,500
Honduran Association for Development of Technical and Financial Services	2		3%/month	15 months	Up to 25,000
Honduran Foundation for Microenterprise Development	2	Agriculture and livestock	2.5%/month	10 months	Up to 7,500
ICADE	1/2	Livestock	18%/year	36 months	Up to 5,000

121. The limited availability of finance aimed at the livestock sub-sector is in part due to the negative experiences of financial institutions to date, a number having suffered heavy losses as producers have defaulted on credit repayments. This can in turn largely be explained by the limited capacities in the financial institutions themselves for designing appropriate credit portfolios for cattle producers, with the associated technical and organizational support that is required to enable producers to invest the credit wisely and effectively.

**Barrier 2: Farmers have limited awareness of and access to viable environmentally- and socially-sustainable forms of cattle production**

122. A range of productive options exists with the potential to generate environmental benefits and at the same time to be attractive to farmers, in terms of productive and economic viability, and compatibility with the overall functioning of their livelihood support systems (see Table 25 and SECTION IV PART VI). The adoption of these systems is commonly constrained by farmers' limited awareness of their potential benefits, for example in terms of reduced dependence on chemical fertilizers and pesticides, saving of irrigation water, the protection of soil and improvements in fertility, and the potential to generate additional income from the harvest of products such as fruit, firewood and timber (Pagiola et al. 2004).

123. In the short term, these options may require investments of labour<sup>54</sup> and/or finance, and/or limitations on farmers' ability to use pastures (for example while the tree components of silvopastoral systems are becoming established), and these factors may limit farmers' willingness to adopt the systems.

<sup>54</sup>Farmers interviewed during the PPG phase indicated that labour costs in the two target areas have increased by 40-45% over the last 5 years, and that labour scarcity is exacerbated by competition with other productive activities such as maize and bean production and, increasingly, commercial crops such as sugarcane, melon and oil palm.

Farmers in the project's target areas, interviewed during the PPG phase, made specific reference to the following factors as barriers to adoption: i) high establishment costs (for example mechanical choppers and feed stations in the case of fodder banks); ii) limited access to capital and credit; iii) low product prices, which act as disincentives to investment; iv) absence of incentives in the form of price premiums or market security for environmentally sustainable production; v) limited knowledge of silvopastoral systems and vi) scarcity of institutional support for training and technical assistance.

124. It has been amply proven by CATIE and other institutions elsewhere in the region that these systems can become attractive to farmers by virtue of their profitability and sustainability in the medium and long terms; however for this to occur it is necessary to ensure that a number of common obstacles to adoption are removed, as outlined below.

125. **Technical support:** the widespread and sustained transition by farmers to applying productive practices which further environmental sustainability and are at the same time attractive in productive and economic terms is dependent on them having access to effective and accessible technical support. The reduction of direct Government support to agricultural extension, within the context of its modernization policies over the last two decades, has not been adequately compensated by a reliable and accessible increase in the supply of extension services from other sources. Most smaller producers are not in a position to pay for technical support from private service providers, and/or are not willing to do so because of their limited conviction regarding the benefits that would result (the initial raising of awareness on benefits is indeed one of the first tasks of extension agents). Even when willingness or ability to pay is not an issue (for example in the case of the development projects of donors such as IFAD and the IADB, which provide financial support for service provision), a further barrier is the limited level of technical and organizational capacities that exist among many private service providers, which has proven to be a critical bottleneck for a number of such projects. Some of the 'slack' has been taken up by NGOs; however in many cases these only have temporary presence in the target communities and typically only work with a small proportion of the population: many have relied heavily on developing model farms with selected leader farmers, but the replication effect that has been hoped for, from these farms to other producers, has in general been limited, due largely to an inadequate understanding of the social dynamics that determine technology adoption by farmers. There is an increasing movement to address these failures through the promotion of Farmer Field Schools (*Escuelas de Campo* or ECAs: see Box 3). At present 28 organizations and institutions are supporting a total of 143 ECAs nationwide. INFOP, in association with CATIE, have supported ECAs focused on livestock in the Departments of Atlántida, Colón, Olancho, Francisco Morazán, La Paz and Copán, but to date there has been no experience with livestock ECAs in either of the two areas where this project will work. Little attention has been given to defining how to make ECAs sustainable in the long term as tools for helping farmers adapt continuously to changing economic, productive, demographic and/or climatic conditions.

126. **Finance:** the transition to more environmentally- and socially-sustainable forms of cattle production may also require appreciable levels of investment of effort and financial resources by farmers, and the productive benefits that result may not be sufficiently attractive within the context of their financial, technical and logistic resources to motivate such a transition unless they have access to suitable and adequate financial support. As described above (paragraphs 120 and 121), farmers' access to such finance is in part constrained by the limited capacities and willingness of financial institutions to support the livestock sub-sector. Even where opportunities for finance do exist, however (for example through the Central American Bank for Economic Integration CABIE which is currently executing the GEF project Central American Markets for Biodiversity CAMBIO, NGOs such as FUNDER, and the development projects of Government and NGOs which include elements of rural finance), uptake tends to be limited by limited awareness among farmers of their existence and functioning; limited capacities for the

development of viable and credible business plans and funding requests; and limited access to the technical, organizational and administrative support that is required to enable the finance provided to be invested wisely and effectively. The CAMBIO project, for example, has received hundreds of applications for credit for cattle ranching in Nicaragua but none in Honduras.

127. **Markets:** farmers in both regions typically have limited awareness of the growing range of market options that are available that reward good environmental performance, due in part to the limited outreach efforts that have been made by those involved in developing these relatively new opportunities. The length and complexity of value chains also means that producers typically deal only with intermediaries and have little or no direct contact with the industrial processors and retailers who are likely to dominate such schemes in the future; most (especially small and medium farmers) also typically lack the technical capacities required to meet these different requirements, and the contacts and experience necessary to interact effectively with market actors. An additional factor which may limit farmers' willingness to commit to "green markets" is the fact that they have ample access to markets which require no evidence of environmental sustainability (or food safety): if the requirements of green markets are perceived as being too difficult to satisfy, there is a risk of "leakage" to these alternative markets. In this regard, beef and dairy products differ from coffee and timber, where most progress has been made to date with certification and where producers are more dependent on export markets into which sustainability criteria can more easily be mainstreamed.

128. In green markets led by actors such as supermarkets, which aim at discerning customers, environmental sustainability, product quality and innocuity and consistency of supply tend to go hand in hand. Producers in both target areas, but especially area 2 (Choluteca and Valle) reported limited access to technical facilities for managing and processing dairy products in accordance with standards of quality and innocuity: at present there are two CRELs in Yoro and one in the whole of Choluteca and Valle, which process 30% and 20% of the milk production respectively in these two areas, and are supplied by only 44 and 33 farmers respectively (see Table 14).

129. **Governance and tenure:** Forest clearance is in theory controlled by the ICF, with a limited degree of decentralization to municipal governments. In practice, however, the resources of these institutions are insufficient to allow them to exercise effective control, a situation which is exacerbated, especially in the humid zone, by the personal risk that their members may face when seeking to enforce the law in certain areas. As a result, farmers in both regions are typically able to decide on their own accord how to manage the land and forests to which they have access.

130. Many farmers at or close to the agricultural frontier are motivated by the utility of cattle ranching as a tool for land-grabbing on open-access forest land, and their behavior is as a consequence largely impervious to agronomic solutions, such as productive intensification through silvopastoral systems, or economic incentives, such as access to markets which reward compliance with environmental standards. There is in fact a risk of such strategies creating perverse incentives for the expansion of the area under pasture, if they increase farmers' access to financial capital which is then reinvested in expanding pasture areas and cattle herds (see paragraph 151 for discussion of this issue). This is a viable and rational strategy, under the conditions of poorly developed governance which are typical of agricultural frontier areas and which inhibit the effective enforcement of regulations on such behavior. A number of valuable experiences of multi-stakeholder governance structures have been developed (such as the multi-stakeholder governance platform developed with the support of GEF project 1047 in the Sico Paulaya valley in northeastern Honduras), but these have yet to be applied on a significant scale to ranching and deforestation issues at the agricultural frontier. Likewise, valuable experiences have been gained with municipal ordinances regarding the use of fire in cattle pastures (for example through the FAO "Lempira Sur" project in the southwest of the country), but these remain to be widely applied. These poorly

developed governance conditions also constitute an obstacle to eligibility for market-based instruments such as certification.

**Stakeholder analysis**

Stakeholders	Project Implementation Role
Ministry of Natural Resources and the Environment (SERNA)	Provision of guidance to ensure compliance of the project with national policies and strategy documents on biodiversity and land degradation.
Ministry of Agriculture and Livestock (SAG)	Executor of the National Livestock Programme (which will constitute the project baseline and provide part of its cofinancing) and the Sustainable Ranching Platform. Recipient/joint developer of technological recommendations developed by the project and channel (through DICTA) for their dissemination to producers. Channel for recommendations of modifications on policies and strategies in the livestock sector.
Tropical Agronomic Centre for Research and Teaching (CATIE)	Executor of the project in collaboration with SERNA and SAG, providing technical inputs, generating and systematizing and documentation of lessons, developing and applying the project monitoring and evaluation system, developing strategies for sustainability and replication of the project, and coordinating the activities of field level co-executors.
Local and international development and conservation NGOs (e.g. Fundación Pantera, Heifer Project)	Local co-executors of project activities at field level, with existing structures, capacities and experiences on which the project will build in order to maximize its geographical coverage, impact, acceptance and cost-effectiveness
National Federation of Ranching Associations (FENAGH) and member associations at department level	Target group for technical recommendations generated by the project, channeling them to their members at departmental and local levels. Joint executors of pilot experiences of market incentive schemes such as farm certification and PES. There are 37 Ranching Associations throughout the country, although not all are members of FENAGH and some are not active.
Farmers	Recipients of project recommendations and participants in the development, validation and systematization of management practices and impact monitoring.

## **STRATEGY**

### **Project rationale**

131. The logic of the project, specifically how the proposed strategies respond to barriers and gaps in the baseline situation, and will contribute to the attainment of the corresponding outcomes, is summarized in Table 24.

### **Policy conformity**

132. The National Biodiversity Strategy and Action Plan proposes the development of projects aimed at using sustainable agricultural and ranching practices to achieve an appropriate use of water and soil resources. The National Action Plan for the Combat of Desertification (2005-2021) identifies the causes of the limited sustainability of agricultural and ranching systems to include the extensive nature of ranching, the use of inappropriate production technologies, the inequitable distribution of land, limited productive infrastructure, lack of agricultural incentives and limited market access. Its objectives include the improvement, participatory validation and scaling up of sustainable agricultural and ranching systems.

133. The project will contribute to Objective 2 of the Biodiversity Focal Area by promoting the mainstreaming of biodiversity considerations into sustainable cattle management at both sector and landscape levels. In accordance with GEF guidance, project strategies will include the removal of critical knowledge barriers (through the support to extension services and farmer-field schools) and the development of capacities in diverse institutions ranging from municipal governments to extension and finance agencies and farmer organizations. To increase production of BD-friendly beef and dairy products, the project will support the introduction of innovative certification schemes that take into account global BD benefits, establish training systems for farmers and resource managers on how to improve management practices; and promote the availability of the financing that farmers need to produce in a BD-friendly manner.

134. In accordance with GEF5 guidance on the Land Degradation Focal Area, the project will generate global benefits in the form of improved provision of agro-ecosystem and forest ecosystem goods and services, reduced GHG emissions from agriculture, deforestation and forest degradation and increased carbon sequestration, and reductions in the vulnerability of agro-ecosystem and forest ecosystems to climate change; as well as national benefits in the form of sustained livelihoods for people dependent on the use and management of natural resources (land, water and BD) and reduced vulnerability to impacts of climate change (CC) of people dependent on the use and management of natural resources in agricultural ecosystems. Specifically, in relation to LD Objective 1, the project will enhance the enabling environment for sustainable cattle ranching through targeting the policy, legal and regulatory framework, capable institutions, and knowledge transfer; it will promote improved management of agricultural systems through the availability of technologies and good practices for livestock production, and will seek to maintain the functionality and cover of agro-ecosystems. In accordance with LD Objective 3, it will focus on capacity development to improve decision-making in the management of production landscapes, to ensure maintenance of ecosystem services; reduce the impacts of livestock ranching on deforestation and forest degradation; build capacities to monitor and reduce GHG emissions from ranching activities and deforestation; develop innovative financing mechanisms as incentives for adopting sustainable approaches to ranching; improve the management of agricultural activities within the vicinity of protected areas, and promote integrated watershed management.

**Table 24. Summary of key elements of project rationale**

Threats	Overall solution	Barriers	Baseline	Strategies
<p><b>Region 1:</b></p> <ul style="list-style-type: none"> <li>- Advance of the agricultural/ranching frontier into large areas of forest, motivated by the desire for land-grabbing through the establishment of <i>de facto</i> ownership rights over unoccupied state-owned forest lands.</li> <li>- Clearance of smaller forest remnants within existing farms, driven by demand for beef and dairy products and by desire to assert ownership and avoid the risk of ‘idle’ (forested) lands being claimed by land-poor small farmers.</li> </ul> <p><b>Region 2:</b></p> <ul style="list-style-type: none"> <li>- Interruption of traditional cyclical production systems, when cattle are managed in permanent pastures and when farmers use fire for land clearance and pasture, due to changes in the demographic and economic conditions of the area.</li> </ul>	<p>Adoption by cattle farmers of improved farm and silvopastoral management practices, that combine improved economic viability with the generation of on-farm environmental benefits (in terms of BD and the maintenance of the long-term potential of soil and vegetation resources to generate environmental goods and services), with a backup of market and governance mechanisms capable of generating further landscape-wide benefits and avoiding the risk of intensification generating perverse incentives for deforestation</p>	<p><b>1. Limited clarity, experience and coordination regarding how to reconcile goals of environmental protection and productive sector development in production landscapes</b></p> <ul style="list-style-type: none"> <li>- Limited coordination in the development and application of production, social development and environmental sector policies</li> <li>- Markets fail to distinguish between products originating from sustainable and unsustainable sources.</li> <li>- Limited access to finance that is specifically tailored to the needs and characteristics of cattle producers, or subject to criteria of environmental sustainability</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Sustainable Ranching Programme</b> of the SAG – <i>lacks landscape-wide focus integrating social, environmental and productive considerations,</i></li> <li>- <b>Protected areas</b> (in target area 1) – <i>at risk of biological isolation and erosion in the absence of concerted actions to manage the intervening landscapes in a coherent manner, and lacking financial sustainability.</i></li> <li>- <b>Watershed management and NRM programmes</b> (PROPARQUES, PROMECOM, EMPRENDESUR) – <i>do not adequately address complex landscape-wide interactions.</i></li> </ul>	<p><b>Component 1. Favorable enabling conditions:</b></p> <ul style="list-style-type: none"> <li>- Harmonization of production and environmental sector policies regarding BD, LD and SFM/REDD in production landscapes</li> <li>- Promotion of multi-stakeholder dialogue on responsible production and trade of commodities</li> <li>- Promotion of environmental certification and commitments by national supermarket chains to sustainable sourcing</li> <li>- Promotion of access to finance that promotes sustainable forms of production</li> </ul>
		<p><b>2. Limited awareness of, access to incentives for and capacities among farmers to apply sustainable forms of natural resource management</b></p> <ul style="list-style-type: none"> <li>- Poorly developed governance and tenure conditions</li> <li>- Natural resource management pays little attention to the location of areas of importance for biodiversity, connectivity and resource sustainability</li> <li>- Inadequate coverage, access to and quality of technical and organizational support</li> <li>- Limited awareness of market options and inadequate capacities to meet market requirements.</li> </ul>		<p><b>Component 2: Delivery of GEBs in production landscapes:</b></p> <ul style="list-style-type: none"> <li>- Promote local dialogue on advance of agriculture/ranching frontier</li> <li>- Negotiation of municipal ordinances regarding the use of fire, establishment of riparian buffer strips, and use of windbreaks and live fences</li> <li>- Development of natural resource management plans that provide for biological connectivity</li> <li>- Strengthening of capacities for technical and organizational support</li> <li>- Support to agreements/and or contracts between purchasers and farmers regarding sustainable sourcing of meat and dairy products</li> </ul>

135. In accordance with Objective 2 of the SFM/REDD Focal Area, the project will strengthen the enabling environment to reduce GHG emissions from deforestation and forest degradation and enhance carbon sinks, focusing for example on building technical and institutional capacities for the monitoring and reduction of GHG emissions from deforestation and forest degradation, and testing and adopting approaches that allow for the generation of revenues from the carbon market with a particular focus on how to make these schemes sustainable in the long term.

#### **Coordination with related initiatives**

136. The project will be closely linked to the Government's Sustainable Ranching Programme, providing it with lessons and models regarding the inclusion of landscape-wide, multi-sector approaches to complement its on-farm focus.

137. A major source of fresh cofinancing for the project will be the Swedish Development Corporation (SDC) project on sustainable ranching, which is currently under design. This project will be of crucial importance as a means of multiplying the models and impacts generated through the GEF project elsewhere in the country, including the agricultural/ranching frontier zone of Olancho and elsewhere in the northeast of the country.

138. The project will collaborate with the IFAD-funded PROMECOM and EMPRENDESUR projects, both implemented by UNDP. These will provide opportunities for productive finance and technical support to producers interested in investing in sustainable ranching practices, while the project will help to mainstream sustainability issues into the operations of these projects in ranching landscapes, and will help them to identify beneficiaries. CABIE, supported by the UNDP/GEF regional project CAMBIO, will be another important source of finance and loan guarantees for producers interested in applying sustainable production practices.

139. The present project will build upon and learn from the highly successful trinational GEF/IBRD project 947 "Integrated Silvo-Pastoral Approaches to Ecosystem Management", executed by CATIE in Colombia, Costa Rica and Nicaragua, adapting the strategies and results of that project to the conditions of Honduras, and incorporating complementary strategies necessary to achieve integrated solutions to the threats posed by cattle ranching. There will be close communication and regular interchanges of experiences and lessons with GEF/IBRD project 3574 "Mainstreaming Biodiversity in Sustainable Cattle Ranching", which aims to scale up the lessons learnt from project 947 in Colombia.

140. The project will build upon the solid base of multi-stakeholder negotiation developed by GEF/UNDP project 1047 "Promoting Integrated Ecosystem and Natural Resource Management" in the Sico-Paulaya valley in order to involve ranchers at the agricultural/ranching frontier. There will also be collaboration with GEF/UNDP project 3996 "SFM: Mainstreaming Biodiversity Conservation into the Management of Pine-Oak Forests" in developing approaches to addressing the implications of grazing and pasture fires for the management of pine-oak forests.

#### **Country ownership: country eligibility and country drivenness**

141. Honduras ratified the United Nations Convention on Biological Diversity on July 31 1995 and the United Nations Convention to Combat Desertification on June 25 1997. The Secretariat of Agriculture and Livestock has recently established a national Sustainable Ranching Programme (SRP), which prioritizes the promotion of environmentally sustainable forms of natural resource management, and with which the present project will be closely linked. The SRP and the present project are both closely in line with the National Action Plan for the Combat of Desertification (2005-2021), which identifies the causes of the limited sustainability of agricultural and ranching systems as including the extensive nature of ranching, the use of inappropriate production technologies, the inequitable distribution of land, limited

production infrastructure, lack of agricultural incentives and limited market access, and prioritizes the improvement, participatory validation and scaling up of sustainable agricultural and ranching systems; and the National Biodiversity Strategy and Action Plan, which proposes the development of projects aimed at using sustainable agricultural and ranching practices to achieve an appropriate use of water and soil resources.

### **Design principles and strategic considerations**

#### ***Recovery of degraded pastures as a strategy for delivering environmental benefits***

142. CATIE has accumulated a significant body of evidence indicating that the intensification of management practices, for example through the introduction of agroforestry systems and improved herd and pasture management practices, can generate attractive economic and environmental benefits for farmers by maximizing their return on land and other inputs. Data from Colombia, for example show that such systems can lead to improvements in forage production/ha, carrying capacity/ha, average daily weight gain/animal and annual beef production/ha of more than 100%, 190%, 120% and 500% respectively, while milk production can increase by around 500%, with similar levels of improvement in milk quality.

143. Studies from humid montane forest areas in Costa Rica have shown that landscapes containing silvopastoral systems can contain up to 45% of the bird species, 54% of the mammal species and 37% of the woody plant species found in natural forest<sup>55</sup>. Studies from subtropical humid forests in Costa Rica show that multi-layer live fences and pastures with trees have significantly greater numbers of bird and butterfly species than degraded pastures (see Figure 4 in Map Annex).

144. Agroforestry and silvopastoral systems also have the potential to deliver significant carbon storage benefits (see Figure 5 in Map Annex): carbon storage has been found to increase over a period of 9 years to around 24.1tC/ha, compared with around 9tC/ha in 50-year old agricultural systems and 61-115tC/ha in the case of tropical forest<sup>56</sup>. The amount of carbon stored depends on the number of trees or the extent of the forest cover present, the rotation period applied, as well as climate, solar radiation, soil and vegetation types and the tree species used.

#### ***Integrated approach addressing farm and livelihood systems and landscapes***

145. The project will differ from most other initiatives to date in the country which have endeavoured to promote sustainability in production systems, inasmuch as it will take into account the fact that, almost invariably, livestock production forms only one of the multiple and diverse elements that make up farm families' economies and livelihood support systems. The relative importance of these different elements varies according to farm size (see Figure 3). There is typically a high degree of interaction between these different elements; and farmers' decisions regarding the management of any given element of their farm and livelihood systems are always based on considerations of their implications for the other elements. For example, interest in on-farm intensification may be limited by the opportunity cost it represents if off-farm work is available; cattle may play an important role as savings and security for small farmers, and as a means of asserting land occupancy for larger farmers, even if not in theory profitable in limited financial terms; and traditional cyclical systems (see Figure 1 in Map Annex) may help to maintain nutrient flows between different elements of the farm, while generating diverse products (such as firewood and posts) for subsistence use.

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<sup>55</sup> Daily et al. 2003; Mayfield y Dayly 2005

<sup>56</sup> Kanninen, 2001



146. Similarly, the landscape-wide approach of the project recognizes that production systems, and their impacts and dependencies, often go beyond the limits of the farm itself. Many farmers lease land for grazing from neighbours, and under this arrangement there may be little motivation on the renter to manage the pastures well, or ability of the owner to require that this happens: while ranching on established farms, even if they are located on stable and less fragile lowland areas, may generate pressures on fragile agricultural frontier areas to which cattle are typically taken for subsequent fattening. The dynamics of ranching, and in particular the level of pressure which this places on natural ecosystems, is heavily influenced by the dynamics of other sectors competing for the same land: in both of the target areas, evidence was found during the PPG phase that highly profitable monocultures (oil palm in the north and sugarcane and melons in the south) were displacing ranching from the lowlands to the more fragile hills, or threatened to do so.

### ***Target area selection***

147. The two regions to be included in the project – the predominantly humid north and the seasonally dry south - were selected because they share a common threat to their GEBs, in the form of cattle ranching, yet are sufficiently contrasting to offer the opportunity to generate lessons and models of widespread replication potential throughout the country. The humid north is where the agricultural/ranching frontier is advancing most aggressively into remnant habitat blocks, posing major threats to globally important humid forest biodiversity; the seasonally dry south is where land degradation, related directly and indirectly to cattle ranching, has the most severe implications for livelihood sustainability of poor farmers and for demographic stability at national and international levels (due to emigration motivated by livelihood collapse). In both regions there are excellent opportunities for project activities to be delegated to and co-executed by existing NGOs and institutions, which will reduce the significance of potential concerns about project overstretch between these two geographically separated regions.

148. A number of alternative areas were considered in the north of the country for specific targeting by the field level activities of the project. The most severe processes of advance of the agricultural/ranching frontier into forest areas are occurring at the western and southwestern limits of the Río Plátano Biosphere Reserve and the other PAs which adjoin it to the south and east, especially in the Department of Olancho. However, this area was rejected for direct attention by the GEF project for two reasons (although it will be a priority area for replication and will be addressed directly by partner initiatives such as the ASDI project on sustainable ranching): producers there have relatively limited insertion into formal markets, and there are significant governance problems there, associated for example with land tenure conflicts between large ranchers, *mestizo* peasants and indigenous groups. These factors would risk limiting the rate at which the project would be able to get farmers to sign up to participating in sustainable value chains, meaning that they would remain as a niche issue and would not succeed in being put on a course towards achieving the critical mass needed for sustained uptake in the long term. Another alternative considered was the littoral strip of the north coast; however this was also rejected given that cattle ranching is rapidly losing significance there, both in terms of its economic and social importance, and as the major threat to diversity, due to its increasing displacement by commercial crops, in particular oil palm.

149. The target area that was finally selected was chosen for the following reasons:

- It contains a wide diversity of biophysical, productive and socioeconomic conditions which would maximize its potential as a “laboratory” for sustainable land management, lessons and models from which would have the potential to be replicated across a wide range of conditions elsewhere in the country.

- It is relatively well inserted into national markets for beef and dairy products, and governance conditions are relatively well developed, making it favourable for the development of sustainable value chains and the rapid bulking up of supply into these chains.
- It provides an opportunity to generate significant global environmental benefits, given its strategic location with three important protected areas at its apices, linked by biological corridors which form its sides; both the PAs and the corridors are currently threatened by ranching and associated production systems, and the introduction of sustainable ranching systems has major potential to address these threats.

### ***Beneficiary profile***

150. The project will work with a diverse beneficiary population, including large as well as small producers, and producers located both within and outside the areas with greatest importance in relation to global environmental values. The inclusion of small producers will allow the project to deliver simultaneous poverty reduction and environmental benefits, in accordance with the institutional priorities of UNDP, as implementing agency. The inclusion of medium and large scale producers, meanwhile (even if these are not located in areas with greatest potential to deliver short term biodiversity, sustainable land management or carbon storage benefits per unit area), will increase the impact of the project in terms of the positioning of sustainable (certified and other) production within the marketplace, due to the high proportion of national production for which they are responsible (see paragraph 34). As has been shown in the case of coffee, in order to move from being a marginal or niche element to being sustainable in the long term, it is necessary for a 'critical mass' of sustainable production to be inserted into the market: as shown in Table 13, medium and large producers account for more than 80% of beef production in the two target areas.

### ***Safeguards against the generation of perverse incentives from intensification***

151. Kaimowitz and Angelsen (2008)<sup>57</sup> suggest that in many contexts making cattle production more productive may create perverse incentives for putting more pressure on forests, not less. Key arguments in this regard include the following:

- It is probable that higher profitability, resulting from intensification, will increase the attractiveness of ranching relative to other land uses.
- Increasing the profitability of ranching may provide farmers with additional capital that will allow them to finance livestock expansion, in some cases attracting labour and capital into areas (such as the agricultural frontier) where shortages of these factors may initially constrain expansion.
- In theory, new technologies could increase supply to such an extent that prices fall, reducing the economic attractiveness of such expansion. It is unlikely, however, that technological improvements in livestock production in the Latin American tropics will raise supply enough to reduce prices significantly and have such a limiting effect.
- Even if the new technologies do reduce the price of livestock products, ranchers may not reduce their pasture area if one main reason they plant pasture is to obtain secure land tenure, rather than to earn profits from cattle raising.
- If ranchers have few alternatives to investing their saving besides ranching, they may continue to expand their pastures even after prices decline.
- Ranchers are only likely to adopt technologies that use capital and labor more intensively once land has already become scarce and most forest has disappeared.

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<sup>57</sup> Will livestock intensification help save Latin America's tropical forest? Journal of Sustainable Forestry 27(1-2), pp6-24

152. In order to limit this risk, the project will only promote increases in productivity, efficiency and/or market access when these are accompanied by effective safeguards: these will include market instruments (to be defined with support from the Sustainable Ranching Platform), by increasing the proportion of production that is destined to markets which require evidence of environmental sustainability, including avoiding the clearance of new areas for pasture; improved governance mechanisms, to ensure that pasture expansion is not carried out in contravention of national or local regulations or against the interests of the population as a whole in the area; and awareness raising among farmers regarding the long term benefits for them of maintaining an appropriate balance of pasture and other land uses on farm.

#### ***Maintenance of traditional agroecosystem processes and production systems***

153. The agroecosystem in the dry zone of southern Honduras consists of a mosaic of maize and bean fields (*milpas*), fallows (*guamiles*), temporary pastures and small secondary woodlands, which typically alternate in a cyclical manner, as shown in Figure 1 in Map Annex. Large numbers of native trees (mostly leguminous) exist in all stages of this cycle: they are cut down when fallows or woodlands are converted to *milpas* and thence to temporary pastures, but remain alive in the form of unobtrusive coppice stumps and resprout when the *milpas* and pastures are allowed to return to fallow. These resprouting coppice stumps are complemented by new seedlings arising from seed “raining” into *milpas* from neighbouring fallows and woodlands. Even in the form of live coppice stumps, it is probable that these trees (and their root systems) provide vital ecosystem services, fixing nitrogen, storing carbon, facilitating water infiltration and stabilizing the soil against slumping in the case of extreme rainfall events. The continued survival of these populations of native trees, and their ability to provide these services, is therefore dependent on them being allowed periodically to resprout, when *milpas* and pastures are returned to fallow. The establishment of permanent pasture would interrupt this cycle and lead to the loss of these populations.

154. In order to allow the perpetuation of these populations of native trees, the project will therefore refrain from actively promoting the conversion of cyclical production systems to permanent pasture.

#### ***Land tenure***

155. It is commonly assumed that it is necessary to invest in increasing the security of farmers’ land tenure rights in order to increase their access to the credit needed for intensification. This project will not work directly on land tenure, for two reasons: i) it would be unrealistic to expect the project to make a significant impact, given the complexity and magnitude of this issue, relative to the resources available and ii) studies to date fail to provide convincing evidence of a clear link between tenure and access to finance. In a study covering Honduras and Nicaragua before and after the implementation of ‘market friendly’ land reforms, Boucher et al. (2005) found that “while titling... advanced substantially (except perhaps among very small landholders) and land rental markets especially have become more active in the wake of reforms, formal credit access [did not improve] for the majority of rural households [and] formal credit remain[ed] strongly skewed against low wealth households... [Furthermore], receipt of a private land title may not provide the type of tenure security that was anticipated. Jansen and Roquas (1998)<sup>58</sup> provide evidence that the titling program in Honduras unintentionally exacerbated land conflicts by creating multiple claims to land and by undermining existing institutions for conflict resolution.”

#### ***Gender***

156. The project has the potential to improve to the economic and social status of women, but also to increase their marginalization if gender aspects are not adequately addressed, due to the traditional

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<sup>58</sup>Jansen, K. and Roquas, E. (1998), Modernizing Insecurity: The Land Titling Project in Honduras. Development and Change, 29: 81–106.

domination of the livestock sector by men (see paragraphs 37 and 207). In order to maximize benefits and minimize risks, the project will adopt the following strategies:

- It will ensure, in agreement with partner institutions, that at least 10% of the beneficiary farms are female-run (reflecting the approximate breakdown in farms as a whole) and where possible specifically and preferentially targeting female-led producer organizations.
- It will advise retailers collaborating with the project on strategies for generating gender benefits, for example by stipulating that a minimum percentage of their supplier farms are female-run, providing specific preferential support to female-run small businesses producing, processing and/or commercializing beef and dairy products, and including analyses/audits of the impacts of the direct and indirect impacts of their support on the status of women.
- Develop and apply strategies for affirmative action to provide preferential support to women producers, in order to increase their capacities to access technical and financial support and to participate effectively in value chains for beef and dairy products.
- It will advise those participating in ECAs on how to analyse the gender implications of the productive options being considered, and actively promote female participation in the ECAs themselves.
- It will promote female participation in the processes of preparing farm plans, and advise farmers on how to take into account gender considerations in the plans.

#### **Project objective, outcomes and outputs/activities**

157. The Objective of the project is to reduce the environmental impacts of cattle ranching in Honduras, through the promotion of integrated multi-sector, multi-stakeholder and landscape-wide approaches that recognize the complex interactions that underlie the impacts of local production systems on GEBs. It will achieve this by removing critical barriers related to policies, markets, finance, governance, resource management planning and technical support.

158. The present project would build on and replicate/adapt the successful pilot experiences generated in the trinational GEF/IBRD project 947 “Integrated Silvo-Pastoral Approaches to Ecosystem Management” in Colombia, Costa Rica and Nicaragua, and the GEF/IBRD project 3574 “Mainstreaming Biodiversity in Sustainable Cattle Ranching” in Colombia.

159. In geographic terms, the project will focus most strongly on two of the country’s principal ecosystems: firstly, the north of the country, where the most rapid processes of deforestation and forest degradation are occurring as a result of cattle production activities; and secondly, the dry forest agroecosystem of the Pacific slopes, where cattle production is most directly related to the livelihood support systems of poor smallholders, and where the biological, productive and livelihood conditions within which cattle production is carried out are most sensitive to global climate change.

160. The technical options to be promoted by the project are summarized in Table 25, and described in more detail in SECTION IV PART VI. These systems include the introduction of tree and shrub species to enrich soils and provide fodder; live fences to promote biological connectivity; the semi-enclosed management of animals; the establishment of fodder banks; pasture rotation and herd management in order to avoid overgrazing and soil erosion; and the revival and expansion of traditional agroforestry systems based on naturally regenerated native tree species.

161. As explained in relation to Component 2 below, technologies will be selected and adapted to the particular biophysical and socioeconomic conditions of the different areas and producer types to be targeted by the project. For example, technologies with higher labour demands, such as fodder banks, may be more attractive to farmers with less pronounced labour constraints; their ability to produce fodder in

the short term may also serve to offset the short term opportunity costs to farmers of having to avoid using their pastures during the process of establishing silvopastoral systems.

**Table 25. Summary of strategies for delivering environmental benefits (see SECTION IV PART VI for more detail)**

Current (baseline) practices and impacts	Practices and benefits expected under the GEF alternative
<b><i>Humid broadleaved forest zone:</i></b>	
<p>Elimination of trees from pasture areas in order to reduce effects of shade on pasture growth, resulting in:</p> <ul style="list-style-type: none"> <li>- Climate change due to reduction of in-field carbon stocks</li> <li>- Reductions in tree populations and interference with plant population dynamics</li> <li>- Reductions in the attractiveness of pastures as habitat and connectivity routes for fauna (e.g. felines)</li> </ul>	<p>Planting and/or maintenance of dispersed trees in pastures and fencelines, resulting in:</p> <ul style="list-style-type: none"> <li>- Improved productivity/ha of ranching due to reduced heat stress and diversified fodder sources, leading reductions in the amount of forest area that needs to be cleared to yield given levels of production or income.</li> <li>- Improved habitat and connectivity value of pastures for BD, as fauna use the trees, and especially clumps, as stepping stones between neighbouring areas of intact habitat</li> <li>- Improved gene flow and enhanced population dynamics of plant species</li> </ul>
<p>Clearance of on-farm and off-farm forests for conversion to agriculture and ranching, resulting in:</p> <ul style="list-style-type: none"> <li>- Climate change impacts due to reduction of on-farm forest carbon stocks</li> </ul>	<p>Protection of set-aside areas of forest, including borders, made possible through productive intensification together with market and economic incentives for sustainable production, and improved governance conditions, resulting in:</p> <ul style="list-style-type: none"> <li>- Reduction in area converted annually from forest to pasture, from 100ha/yr to 50ha/yr, resulting in a net avoided deforestation over the project period of 250ha, with a net carbon benefit of 32,250tC, due to market and governance instruments</li> <li>- Reduced pressures on endangered fauna such as <i>Panthera onca</i> and <i>Harpia harpyja</i> due to reductions in loss of forest habitat and connectivity</li> <li>- Stabilized basin stream flows and reduced sediment load due to improved infiltration rates and soil cover</li> </ul> <p>Productive intensification of existing cattle farms in order to maintain production capacity of pastures and limit the area under pasture, and governance safeguards in order to avoid intensification acting as a perverse incentive for pasture expansion through capital accumulation, resulting in:</p> <ul style="list-style-type: none"> <li>- Reduced pressures on endangered fauna and flora such as <i>P. onca</i> and <i>H. harpyja</i> due to reductions in loss of forest habitat and connectivity</li> <li>- Stabilized basin stream flows and reduced sediment load due to improved infiltration rates and soil cover</li> <li>- Reductions in levels of social conflict</li> </ul>
<p>Incursion into habitat of wild felines, leading to them being hunted by ranchers to avoid cattle predation.</p>	<p>Zoning of cattle production, education of cattle ranchers and promotion of ecotourism in association with the Panthera NGO<sup>59</sup></p>
<b><i>Dry zone Pacific slope agroecosystem</i></b>	

<sup>59</sup> <http://www.panthera.org/programs/jaguar/jaguar-corridor-initiative/jaguar-footprint>

Current (baseline) practices and impacts	Practices and benefits expected under the GEF alternative
<p>Conversion of cyclical staple grain, pasture and fallow rotation system to permanent pastures, resulting in:</p> <ul style="list-style-type: none"> <li>- Climate change impacts due to reduction of on-farm forest carbon stocks</li> <li>- Increased rates of soil degradation (e.g. erosion and compaction)</li> <li>- Reduced rates of water infiltration and nutrient cycling</li> <li>- Reduced productivity of production systems and increased vulnerability to climate variations</li> </ul>	<p>Periodic rotation of cropping, pasture and fallow areas, and semi-enclosed management of cattle, with fodder banks and cut and carry systems, resulting in:</p> <ul style="list-style-type: none"> <li>- Increased populations of native tree species (trees and/or live stumps) on farm, protecting the soil against slumping and landslides, allowing soil recovery through nitrogen fixation and the recycling of below-ground nutrients, and increasing levels of above- and below-ground carbon</li> <li>- Reduction in area converted annually from tree-rich agroecosystem to pasture, from 200ha/yr to 100ha/yr, resulting in a net avoided agroecosystem loss over the project period of 500ha, with a net carbon benefit of 1,305tC.</li> </ul>
<p>Burning of pasture areas to control parasites, resulting in:</p> <ul style="list-style-type: none"> <li>- Reduction in live woody component of pastures, leading to reduced carbon stocks, nutrient cycling and water infiltration</li> <li>- Loss of volatile nutrients</li> </ul>	<p>Pasture rotation in order to avoid pest buildup and need for burning, and municipal guidelines and regulations on burning, resulting in:</p> <ul style="list-style-type: none"> <li>- Increased ground cover, reducing soil surface crusting and erosion and facilitating infiltration</li> <li>- Water flows</li> <li>- Reduction in loss of nitrogen from cropping systems</li> <li>- Reduction in carbon emissions</li> </ul>

162. The activities of the project will be structured within two closely-integrated and interdependent components.

***Component 1. Favorable enabling conditions (policies, markets and finance) for delivering multiple global environmental benefits in managed landscapes:***

163. Activities under this component will principally be carried out at a national level, and will focus on creating market and financial incentives for the adoption of sustainable natural resource management practices in production landscapes.

**Output 1.1. National Platform for Sustainable Ranching strengthened for coordination of key stakeholders across the supply chain**

164. Improved coordination of relevant stakeholders at national and local levels is critical to ensure current efforts to promote sustainable beef and dairy are synergized and knowledge and experience utilized. Multi-stakeholder involvement is also important to ensure a more comprehensive understanding of the issues which are multi-faceted and involve root problems.

165. The project will strengthen the already existing National Platform for Sustainable Ranching that is under the leadership of SAG, utilizing the global experience of UNDP’s Green Commodities Facility<sup>60</sup> in establishing commodity platforms (such as the recently-established Sustainable Pineapple Platform in Costa Rica, see Box 1), whose aim is to facilitate a multi-stakeholder dialogue around the common purpose of defining and achieving a responsible model for pineapple production in that country. The National Platform involves key players from the public (Ministry of Agriculture and Livestock, Ministry of Environment, Ministry of Trade) and private sector – both domestic and international buyers eg

<sup>60</sup>[http://www.greencommodities.org/attachments/169\\_Green%20Commodities%20Facility%20Brochure%2014Nov11.pdf](http://www.greencommodities.org/attachments/169_Green%20Commodities%20Facility%20Brochure%2014Nov11.pdf)

Walmart, as well as the producer associations and representatives of small, medium and big cattle farmers, CSOs/NGOs, research and training institutions (CATIE, CIPAV) and development partners.

166. As a result of project support, the Platform will come to be a powerful mechanism for public private partnership, bringing governance and supply chain efforts together to tackle the structural problems in the sector which currently hinder the widespread and sustained adoption of forms of beef and dairy production capable of delivering net environmental benefits. Specifically, the Platform will provide an opportunity to address issues such as limited linkages between purchasers and producers in the development of “green” value chains, the ineffective and/or counterproductive provision of technical and financial support, and areas of potential conflict between sector development initiatives and the conservation priorities of SERNA and ICF.

167. Representatives of stakeholders will participate in the working groups supported by the project. Working groups are committees formed by representatives of the sectors or institutions that have an interest or specific mandate regarding a particular issue. These are discussion groups at a technical level. Working groups meet monthly, supported by the project, and will provide analysis of specific issues, or generate events that they deem necessary. The working groups’ monthly results will be discussed during the plenary sessions. The working groups’ areas of analysis are derived from the Situation Analysis conducted by the project as part of the project preparation. These working groups need strong facilitation in order to prioritize issues for joint work programming.

168. Plenary sessions will be held every 3-4 months. By bringing all stakeholders together plenary sessions allow to discuss in an organized and inclusive way all relevant issues. Plenary sessions are meant to share all different points of view, discuss main sustainability issues of the beef and dairy production, define main priorities, discuss and produce a joint Vision for the sector, define roles and responsibilities of each stakeholder for joint Work Programmes and discuss how to things to improve in the platform.

169. The Platform provides national space for the pilots in this and other related projects to contribute to national replication and policy to transform the sector towards sustainability. The platform will be supported for 3 years during which time the following will be produced:

- National Vision of sustainable beef and dairy
- Joint work programme
- Agreements across the supply chain
- Policy reform recommendations
- Improved data on the cattle practice
- Website of the platform

## **Box 2. Costa Rica Pineapple Platform**

*The National Platform of Responsible Production and Trade of Costa Rican Pineapple* is a 24-month long multi-stakeholder and interinstitutional dialogue, implemented by the Vice-Ministry of the Republic, and facilitated by UNDP’s Green Commodities Facility, with financial support from the Dutch Cooperation Agency, ICCO.

It coordinates actions among all the major stakeholders of the supply chain, such as producers and companies involved in production and exports of pineapple from Costa Rica, national and international buyers, civil society organizations, and relevant ministries. The dialogue by these stakeholders will revolve around the definition of a model for *responsible production and trade of pineapple in Costa Rica*. The model is constructed through an inter-institutional and cross-sectoral definition of the main positive and negative impacts of pineapple production in Costa Rica.

This is through specialist thematic Task Forces, led by volunteer parties of the Platform e.g. a task force on soil management led by Dole. These Task Forces feed information to the plenary in order to inform and develop a

national strategy. This strategy will then be implemented by Platform partners to achieve sectoral reform.

170. Advantage will also be taken of the Platform for analysis and discussion of the dynamics of deforestation processes at the agricultural frontier, resulting in the generation of concrete policy recommendations. This will allow the policy impact of the project to go beyond the cattle sector itself. In support of this, an analysis document will be produced, accompanied by easily-accessible policy briefs, which will include a review of existing academic literature from across the region regarding agricultural frontier dynamics, and an analysis (based on reviews of national statistics and local validation studies) of how these studies relate to the situation in Honduras.

**Output 1.2. Commitments by national supermarket chains and exporters to certify, source and market beef and dairy products on the basis of environmental sustainability in order to generate GEBs in production landscapes**

171. The project will also explore market-based approaches, based on the certification of cattle products as coming from sources that comply with criteria of environmental sustainability<sup>61</sup>. The project will seek to develop, with the principal supermarket chains in the country’s main urban centers, internal schemes for the responsible sourcing of dairy and beef products. In Central America, Walmart (which owns four of the country’s five main supermarket chains<sup>62</sup>) has committed to “sell more than \$150 million from small and medium sized farms by increasing the number of local growers it sources from by 22 percent, increasing bank credit access to growers and helping train them in crop selection and sustainable farm practices”. Both of the major competing chains have placed much emphasis on their environmental credentials, and one of them, which has in recent years featured a specific section for organic vegetables, is a subsidiary of a major US chain with a well-developed corporate social and environmental responsibility programme.

172. During the PPG phase, a survey was carried out of 200 supermarket customers to determine their interest in purchasing products with some form of environmental certification. 78% of those interviewed expressed preferences for such products and stated that they would be prepared to pay up to 15% more for them. The level of interest and the willingness to pay was directly related to income levels (Table 26).

**Table 26. Interest in certified products among consumers in supermarkets in Tegucigalpa**

Monthly income (US\$)	% with interest in purchasing certified products	% more consumers would be willing to pay
>1000	95%	20%
500-1000	80%	15%
<500	60%	10%
Average	78%	15%

**Output 1.3. National programme for promoting the certification of cattle farms according to Sustainable Agricultural Network (SAN) principles**

173. The project will also promote at national level the concept of farm certification, based on the Sustainable Agriculture Network norms and criteria for sustainable cattle ranching, using a certification scheme recently developed by CATIE and Rainforest Alliance.

<sup>61</sup> Detailed guidance on the practical definitions of environmental sustainability (including the avoidance of invasive alien species) for application in the project will be developed at the beginning of the implementation phase.

<sup>62</sup> Dispensa Familiar, Maxi Dispensa, Pais and Walmart Las Cascadas



174. The SAN principles for coffee and timber have been widely applied by producers and have also shown wide acceptance among consumers, as they combine environmental and social considerations, generate on-farm benefits for farmers in terms of efficiency, productivity and sustainability, and are relatively accessible in cost terms (although certification and auditing costs constitute barriers for some producers). SAN principles for sustainable ranching have only recently been developed (in 2009) and as yet have not been applied by producers on any significant scale, or achieved widespread acceptance among retailers or consumers. Experience with coffee and timber have shown that for such certification schemes to take off it is necessary to achieve a critical mass of both supply and demand, and that this requires strong promotion and support at the beginning at both ends.

175. Building on UNDP's experience with coffee certification, taking advantage of the specific expertise of CATIE, the UNDP's Green Commodities Facility and Rainforest Alliance with green markets, and working with and through the national NGO ICADE (which has significant experience with coffee certification in Honduras and is also active in the ranching sector), the project will invest in promoting sustainable ranching certification among both producers and consumers. These promotional efforts will focus on raising awareness of the concepts of certification; of the content of the SAN Standard; of the procedures and costs of obtaining and maintaining certification; and of the financial and other benefits that can be expected from it. This will be achieved through the development and dissemination of promotional materials and the realization of workshops. Emphasis will be placed on involving producers, exporters and retailers simultaneously, with a view to developing commercial relations between them for the production and purchase of certified beef and dairy products. These national level initiatives will complement, and be closely coordinated with, the field level initiatives proposed under Outcome 2 aimed at developing farmers' capacities to supply green markets.

Output 1.4. Loan plans from at least 5 public and private financial institutions that support forms of management of production landscapes that generate multiple GEBs

176. The project will use rural finance as a tool for promoting environmental sustainability in two closely interrelated ways.

177. Firstly, it will work with financing sources in the development of environmental criteria for loans, in order to minimize the risk of loans for the cattle sector constituting perverse incentives for the expansion of ranching into areas of natural vegetation.

178. Secondly, it will promote the development and marketing of credit lines that are specifically aimed at enabling farmers to undertake the types of investment required to increase environmental sustainability. These forms of credit will be made conditional on the recipient farmers participating in technical assistance programmes, which they will be charged for on top of loan interest payments. Cash flow limitations mean that farmers typically require credit support for between 2 and 7 years in order to carry out the productive intensification required for increasing environmental sustainability, depending on the production system in question<sup>63</sup> An example of this type of investments are mechanized choppers that will allow them to process feed from fodder banks, to be fed to animals managed in semi-enclosed conditions under "cut and carry" systems, and electric fencing that will enable farmers to rotate herds between pastures easily.

179. In the north of Honduras, it is estimated that an investment of US\$2,577 is required to enable a small farm to generate biodiversity benefits through the establishment of improved pastures with legumes and the protection of natural regeneration areas with multi-layer live fences. Medium-sized farms required

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<sup>63</sup> Holmann, F.; Argel, P.; Rivas, L.; White, D.; Estrada, R. D.; Burgos, C.; Pérez, E.; Ramírez, G.; Medina, A. 2004. ¿Vale la pena recuperar pasturas degradadas? Una evaluación de los beneficios y costos desde la perspectiva de los productores y extensionistas pecuarios en Honduras. CIAT Documento de Trabajo No. 196. CIAT, Cali, Colombia. 34p.

an estimated US\$5,295 to protect gallery forest, establish improved pastures with legumes and protect natural regeneration areas with multi-layer live fences. In the south, an estimated US\$1,189 and US\$5,535 is required in small and medium farms, respectively, for the establishment of improved pasture with legumes and forage banks, the protection of natural regeneration areas with multi-layer live fences, and the planting of trees in pastures.

180. This support will build on and learn from the positive experiences of the GEF/UNDP CAMBIO project to date in financing sustainable forms of production. In Nicaragua, for example, CAMBIO has financed 635 producers to establish agroforestry and silvopastoral systems, over 1,058ha. These investments have been shown to be highly attractive options for Nicaraguan farmers, with gross income of US\$127.72/ha/year for silvopastoral systems vs. US\$75.42/ha/year for traditional systems, due to increased productivity, reduction in the need to purchase feed and reduced production costs for milk (US\$0.19/kg vs. US\$0.22/kg)<sup>64</sup>. Similar findings have been reported in the Departments of Yoro (the location of project Area 1) and Colón in Honduras<sup>65</sup>. The shadow price of capital in double purpose cattle production systems varies between US\$1.38 in small farms and US\$2.14 in medium-sized farms, which implies that investment in intensification will allow finance costs to be paid. These figures do not take the price differentials that such producers may be able to obtain from products with environmental credentials.

181. GEF funds will not be used directly as a source of such finance; rather, UNDP will partner with and build capacity of financial institutions to promote lending to environmentally sustainable forms of production activities (focusing on environmental aspects in particular rather than financial issues with which the target audience is already well versed). GEF funds will also strengthen the business management and plans of small producers and cooperatives in order to improve their chances of securing loans (see Outcome 2.1:Output 2.4 below).

182. In particular, the project will partner with the following institutions as sources of financial support for farmers:

- The Central American Bank for Economic Integration (CABEI) which, through the GEF/UNDP project Central American Markets for Biodiversity (CAMBIO) supports micro, small and medium sized businesses to invest in projects that support biodiversity conservation. BCIE works with a network of intermediary financial institutions, providing credit guarantees. Finance of up to US\$10,000 is available for micro-businesses and up to US\$1,000,000 for small and medium-sized businesses, with repayment periods of 2 years for preinvestment and technical assistance funding, 3 years for working capital and 10 years for investments.
- The PROMECOM<sup>66</sup> and EMPRENDESUR<sup>67</sup> projects, in target areas 1 (Yoro) and 2 (Choluteca/Valle) respectively. These projects form part of the portfolio of the SAG aimed at promoting economic competitiveness and sustainable rural development; they are implemented by UNDP and combine funding from IFAD, OPEC and CABIE. PROMECOM supports local stakeholders in generating and applying business development plans, and EMPRENDESUR provides for coinvestment in on-farm activities, in agroindustries and small rural businesses, and

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<sup>64</sup> Suárez, JC; Ibrahim, M; Villanueva, C; Sepúlveda, C. (2011). Impacto de los sistemas silvopastoriles de fincas ganaderas de doble propósito en el trópico subhúmedo de Nicaragua. p 113-130. In: Manejo agroecológico como ruta para lograr la sostenibilidad de fincas con café y ganadería. Editors: Villanueva C, Sepúlveda C, Ibrahim M. 1era edición, Turrialba, Costa Rica, CATIE. Serie técnica 378.

<sup>65</sup> Alvarado, IE. (2005). Modelo de optimización económica para el análisis y simulación de la innovación tecnológica en sistemas de producción de ganado de doble propósito de la región nororiental de Honduras. Tesis Mag. Sc. Turrialba, CR, CATIE. 149p.

<sup>66</sup> [http://sag1.infoagro.hn/sites/default/files/sagm\\_promecom.pdf](http://sag1.infoagro.hn/sites/default/files/sagm_promecom.pdf)

<sup>67</sup> [http://sag1.infoagro.hn/sites/default/files/sagm\\_emprendesur.pdf](http://sag1.infoagro.hn/sites/default/files/sagm_emprendesur.pdf)

in environmental service payment schemes, and supports the expansion of rural financial services.

***Component 2. Delivery of multiple global environmental benefits (biodiversity conservation, reduced land degradation, reduced carbon emissions and increased carbon storage) in production landscapes:***

183. The project will support demonstrations of strategies for promoting sustainable forms of natural resource management, that deliver GEBs in the form of: a) enhanced on-farm BD; b) reduced rates of off-farm deforestation; c) reduced rates of LD and d) increased levels of on-farm carbon storage. It will adopt a multi-pronged, integrated approach in this regard, addressing issues of governance, spatial planning and markets as essential complements to the provision of support on agronomic aspects, in order to ensure that productive changes are accompanied by effective safeguards against the risk of generating perverse incentives for deforestation (see paragraphs 151 and 152).

184. This component will generate direct environmental benefits during its lifetime as summarized in 1.-PART I.PART II IV PART II, and will create long term capacities for these to be sustained and expanded in the longer term.

**Output 2.1 Permanent multi-stakeholder sustainable ranching platforms in both target areas**

185. In each target area, the project will support the establishment and facilitation of regional platforms aimed at realizing opportunities for synergies, and managing conflicts of interest, between the multiple stakeholder groups with actual or potential interest in relation to sustainable ranching. The project team will include a full time facilitator, whose time will be divided between the two project areas, with the support of the project technicians based in each area. The team will work in collaboration with project partners whose remits also include the strengthening of local processes of governance and participation. The project team (facilitator and technicians) will work closely with local project partners (taking advantage of their local knowledge, experience and contacts) to identify the stakeholders to be invited to the forum meetings, and the facilitator will initially play a key role in mediating the forums and developing and implementing conflict resolution strategies. In consultation with local partners, the facilitator will develop a gender strategy for the forums, which will include, for example, quotas for female participation in forum meetings and proposals of specific gender-related issues to be included in the agendas of forum meetings (using additional specialized external support on a short-term basis as necessary): the strategy will also include indicators of the adequacy and quality of gender-disaggregated participation. The close involvement of local (long term or permanent) partner institutions will be a key factor in helping to ensure the sustainability of the forums and their outcomes.

186. Key stakeholders likely to be involved in these platforms will include the following:

- Members of regional ranching associations (AGAY in target area 1 and AGACH in target area 2)
- Peasant cooperatives with ranching interests
- Municipal governments (municipal environment units or UMAs), especially in target area 1 given the more limited number of municipalities which that area covers
- Regional offices of SAG (especially DICTA) and ICF.
- NGOs and Government projects working on social development, productive development and natural resource management.
- Environmental authorities (ICF, SERNA, police, fiscals).

187. The functions of these platforms may include the following (these will be subject to definition by their members once established, under the advice of the project):

- The identification and realization of opportunities for collaboration between different stakeholder groups (for example members of AGACH and peasant groups) in channeling support from external agencies (private or public), such as processing facilities, technical assistance or finance.
- The pooling of efforts to lobby the Government on issues of common interest, for example how to combat unfair competition which producers in the south face from cheap (often illegal) imports of dairy products from neighbouring countries.
- Joint negotiation of access to markets (subject to criteria of environmental sustainability) with external actors: this collaboration between diverse producers will allow purchasers to demonstrate the generation of social benefits (in line with corporate social responsibility programmes) and at the same time be assured of the quantities and consistency of supply which they require.
- The discussion, management and/or resolution of conflicts associated with natural resource management in productive landscapes, such as the incursion of ranching activities into forest areas of importance for water supply, the generation of wildfires as a result of pasture burning and, conversely, the imposition of restrictions on the productive activities of ranchers in order to limit such impacts.
- The discussion of emerging issues with implications for the dynamics of the landscapes in question, such as the growth of the oil palm, melon and sugarcane sectors, and the generation of joint proposals for responses.
- Discussion, interchange of experiences and generation of proposals regarding technical approaches to sustainable ranching.
- The discussion and negotiation with municipal governments of proposals for the zoning of productive and protective initiatives in the areas, in order to optimize their coincidence with the interests of the diverse members of the platform.
- Channelling of support for the activities of the authorities in applying environmental legislation.

#### Output 2.2 Strengthened local institutions supporting the sustainable management and conservation of production landscapes

188. The long term sustainability of the approaches to resource management proposed by the project depend their being backed up by adequate local institutionality.

189. The project will provide training and limited logistical support to Municipal Environment Units (UMAs). This will allow UMA representatives to accompany and advise other environmental authorities in the investigation of alleged infractions of environmental regulations and the application of corresponding sanctions. It will provide UMA staff with training and advice in order to allow them to participate in an informed and effective manner in the regional sustainable ranching platforms. It will also provide UMAs with technical advice on the development and application of local regulations regarding environmental threats associated with ranching, such as the use of fire (building on the experiences of the FAO Lempira Sur project), and on the development, refinement and application of spatial land use plans (paying particular attention to issues such as the location of areas of environmental fragility and biological connectivity in relation to proposed productive and infrastructural developments and the indirect implications of the expansion of monocultures). This support will be accompanied by the provision of limited amounts of software and hardware for information management.

190. It will also provide support, in the form of advice and facilitation, to local level participation mechanisms such as Municipal Development Councils, Local Protected Area Councils (COLAPs) and village-level water committees (*juntas de agua*). This support will have the objective of optimizing the participation of local stakeholders in discussions, plans and decisions concerning natural resource management in the target areas, particularly those specifically related to cattle ranching, for example the

formulation of local regulations, support to environmental authorities and the declaration of protected micro-catchments around water sources.

Output 2.3 Farm management plans allowing for the maximisation of environmental benefits and sustainability through the appropriate siting of land uses

191. The project will support farmers in preparing farm management plans which will specify the spatial and temporal arrangements of different land uses across their farms, motivated both by their inherent utility to them for promoting on-farm sustainability and by the requirements of “green markets” for such plans. Criterion 11.1 of the Sustainable Agriculture Network Standard for Sustainable Management of Cattle Production Systems requires farmers to “have a land use plan, which identifies and maps areas for a) cattle (pastures and other feedstock); b) ecosystem conservation and restoration; c) restricted and vulnerable areas and d) other land use.” The project will support the inclusion of similar requirements into the environmental sustainability criteria of other “green market” systems, such as the responsible sourcing systems applied by supermarkets and exporters.

192. Factors to be taken into account will include maximum slope limits for agriculture and pastures, provision for the recuperation of degraded areas (through fallowing and/or active management measures such as silvopastoral systems), and the location of set asides in such a way as to maximize their value for connectivity (for example along riparian strips or at other strategic locations where they can function as “stepping stones” between other habitat remnants). The preparation of the plans will be a highly participatory process led by the farmers themselves, in order to maximize their appropriation and application of the plans’ provisions; support by the project will be focused on the provision of technical advice regarding the compatibility of different land uses with the different biophysical conditions found across the farm.

Output 2.4 Effective, relevant and sustainable support programmes applied by Government, NGOs and/or private sector service providers

193. The project will ensure that farmers receive the technical, organizational, marketing and financial support they require, to be able to apply sustainable farm/ranch management practices which combine on-farm benefits with economic attractiveness and the generation of global environmental benefits, and to be able to generate products with the consistent quality and quantities demanded by supermarkets, exporters and retailers. The project will also pay attention to developing institutional capacities to ensure the continued provision of such support in the long term.

194. In order to maximize cost-effectiveness, the project will work with partner projects and institutions with existing mechanisms and capacities for working with farmer, advising them on how to incorporate the issues of specific relevance to this project (in particular sustainability issues, silvopastoral systems, farm management plans and the requirements of green market and finance programmes). This will be complemented by more direct support in the form of courses and workshops provided by the project technicians themselves, by visiting specialists from CATIE, or from specialist consultant hired on a short term basis. The project will also assist producers in developing business management plans and funding requests to increase their ability to access finance: this support will complement that provided to the funding institutions themselves as described under 173.

195. Coverage will be maximized, and the potential risks of this strategy reduced, by working with several different projects and institutions in each pilot area, including the following:

- **CABIE**<sup>68</sup>/**CAMBIO** and its partner financial institutions, as a source of financial support: the project will support farmers in developing business and financial plans and funding requests for productive initiatives based on sustainable resource/ranch management.
- The Institute for Cooperation and Self-Development (**ICADE**)<sup>69</sup>: ICADE is supporting Farmer Field Schools (ECAs) in coordination with the World Food Programme in the west of Honduras, which have the potential to function as channels for replication of project models; it is working with small farmers in the municipalities of El Triunfo, Namasigüe, Choluteca, Marcovia, Pespire, San Lorenzo, Nacaome, Goascoran, Langue and San Francisco de Coray in Target Area 2, among whom there is potential to promote sustainable production systems in collaboration with, and with incremental support from, the project; it has experience with the environmental certification of agricultural products such as coffee and cocoa and has interest in extending this to livestock products, in Yoro, Olancho and the west of the country, in collaboration with this project; and it has experience with strengthening small producers in relation to rural finance, on which this project can build in relation to sustainable ranching systems.
- The **PROMECOM**, **Horizontes del Norte** and **EMPRENDESUR** projects<sup>70</sup> (see paragraph 182), in the north and south of the country respectively. These projects promote farmers' access to technical and organizational assistance by working through local "service providers" (such as local NGOs and private technical support businesses): the GEF project will work at two levels, supporting the mainstreaming of sustainable management messages into the projects as a whole (ensuring that they are reflected in the terms of reference of service providers and taken into account in monitoring and oversight systems) and directly advising the service providers on how to incorporate these issues in their operations. The GEF project will also assist in identifying farmers as potential beneficiaries of the financial support provided by these projects, and will support them in developing business plans and meeting the other requirements of the projects.
- The Pespire Development Association (**ADEPES**) in target area 2: ADEPES is a well-established local organization which works through the Farmer Field School (ECA) modality (see paragraph 196 and Box 3 below) with a large number of local communities in the south.
- The **Heifer Project**, a US-based which also has a long-established presence in target area 2 and works principally through the "pay it forward" model whereby farmers are provided with a pregnant cow under the agreement that they then pass the offspring, also pregnant, to another community member. The Heifer Project also works through the ECA modality. Heifer has expressed interest in working with the project in 18 municipalities in Choluteca and Valle Departments<sup>71</sup> (see
- Regional ranching organisations attached to **FENAGH**: **AGAY** in target area 1 and **AGACH** in target area 2. In addition to providing training directly to these associations, the project will advise them on the development of plans for obtaining technical assistance from private service providers, research institutions and others.

196. The project (in collaboration with partners) will place particular emphasis on establishing and/or strengthening Farmer Field Schools (*Escuelas de Campo* or ECAs), which constitute a cornerstone of the SAG's policy regarding private and public agricultural extension. This model (Box 3) has proven to be particularly effective in maximizing the relevance and ownership of technologies among farmers, due to

<sup>68</sup>CABIE has committed to providing \$10.5 million cofinance for this project.

<sup>69</sup>ICADE has committed to providing \$1,061,908.88 cofinance for this project.

<sup>70</sup>

<sup>71</sup> Choluteca, Sta Ana de Yusguare, Apacilagua, San Marcos de Colón, El Corpus, Concepción de María, El Triunfo, Namasigüe, Orocuina, Goascorán, Langue, San Francisco de Coray, La Libertad, Curarén, Pespire, San José, San Isidro and Nacaome

their highly participatory nature; they also have the potential to allow farmers to adapt their technology development processes on a continuous basis in response to changing conditions. CATIE, in association with INFOP, has already supported ECAs on livestock in 6 Departments of Honduras: this project would build on these experiences by expanding the model to three additional Departments (Choluteca, Valle and Yoro) and incorporating additional aspects of environmental benefits. The ECA model will be complemented by more “vertical” knowledge inputs which will allow farmers to benefit from technical advances and experiences generated by CATIE and other partners.

**Box 3. Farmer field schools (*Escuelas de Campo* or ECAs)**

The Farmer Field School is a form of adult education, which evolved from the concept that farmers learn optimally from field observation and experimentation. It was developed to help farmers tailor their Integrated Pest Management (IPM) practices to diverse and dynamic ecological conditions.

In regular sessions from planting till harvest, groups of neighboring farmers observe and discuss dynamics of the crop’s ecosystem. Simple experimentation helps farmers further improve their understanding of functional relationships (e.g. pests-natural enemy population dynamics and crop damage-yield relationships). In this cyclical learning process, farmers develop the expertise that enables them to make their own crop management decisions. Special group activities encourage learning from peers, and strengthen communicative skills and group building. A detailed description of the Farmer Field School approach is given by Pontius *et al.*<sup>1</sup>

IPM Farmer Field Schools were started in 1989 in Indonesia to reduce farmer reliance on pesticides in rice. Policy-makers and donors were impressed with the results and the program rapidly expanded. Follow-up training activities were added to enhance community-based activities and local program ownership. Eventually, IPM Farmer Field School programs for rice were carried out in twelve Asian countries and gradually branched out to vegetables, cotton and other crops. From the mid-nineties onwards, the experience generated in Asia was used to help initiate IPM Farmer Field School programs in other parts of the world. New commodities were added and local adaptation and institutionalization of these programs was encouraged. At present, IPM Farmer Field School programs, at various levels of development, are being conducted in over 30 countries worldwide.

197. Farmers’ abilities to meet the requirements of supermarkets, exporters and retailers for consistent quality and quantities will further be promoted by the provision of support to the establishment and/or improvement of processing facilities for beef and dairy products, including the establishment of a new Milk Collection and Cooling Centre (CREL) in target area 2 (Choluteca/Valle). Use of these facilities will be limited to producers meeting environmental sustainability criteria and participating in sustainable value chains: given that limited access to processing facilities is mentioned by many farmers as one of the main obstacles to the development of the sector, this conditionality will provide an incentive to farmers to ‘sign-up’ to sustainable production and value chains. These investments will be financed through public/private co-investments between the supermarkets and other purchasers participating in sustainable value chains, Government investment projects and other financing sources such as CABIE/CAMBIO, complemented by more limited amounts of highly targeted GEF funds.

**Output 2.5 Agreements/and or contracts between purchasers and farmers regarding the sourcing of products produced in accordance with the generation of GEBs**

198. Support under this output will complement that described under Output 1.2 above, by consolidating the producer end of “sustainable value chains” feeding into supermarkets, exporters and other retailers committed to marketing beef and dairy products that meet sustainability requirements. The project will support producers, who will have acquired the capacities to meet the technical, organizational and quality requirements of sustainable value chains, to negotiate and enter into agreements and/or contracts with purchasers and to satisfy their administrative requirements.

199. Different farmers are likely to be interested in different forms of green markets, ranging from the less demanding internal sustainability criteria developed by supermarket chains such as Walmart, to the more demanding and more wide-ranging criteria of the Sustainable Agricultural Network. The internal sustainability criteria of supermarkets will normally constitute the entry point of most farmers into working with sustainable value chains; it is expected that a sub-set of them will then build on this experience and carry out additional investments enabling them to graduate to SAN certification. The project will help producers to decide which of these schemes suits them best, on the basis of their capacities and aspirations, the requirements of the schemes and the benefits offered by each; advise them on how to interpret and meet their respective requirements of these different schemes; and how to interact with the purchasers, certifiers and auditors involved in each scheme.

#### **Incremental reasoning and expected global, national and local benefits**

200. The GEF investment will build upon a major baseline of investments in the cattle sector. The most significant of these will be the National Livestock Programme of the SAG. Additional elements of the baseline will include NGO activities in support of sustainable agriculture and poverty reduction, and the investments of external donors aimed at promoting natural resource management and related rural businesses, which will be quantified during the PPG phase.

201. These baseline investments are aimed principally at developing the productive potential of the cattle sector, and its corresponding contribution to the national economy and to poverty reduction. Without GEF investment, and against the background of recent Government initiatives aimed at stimulating exports, such as 'Honduras is Open for Business', and the recent trade agreement between Honduras and the EU, there is a significant risk that this baseline activity will generate major perverse incentives for the expansion of unsustainable forms of cattle production. The GEF investment will contribute value added to this baseline, by creating capacities and incentives that will help ensure that future developments in the cattle sector will be undertaken in ways that are compatible with the generation of environmental benefits.

202. The project will generate major BD benefits. The project will benefit off-farm BD at landscape level, by promoting the intensification and stabilization of cattle ranching, which will reduce the motivations for farmers to clear new areas of natural vegetation in order to maintain incomes. This will reduce rates of habitat loss, which will benefit species across a wide range of ecosystems, such as the IUCN near-threatened harpy eagle (*Harpia harpyja*) and the endangered Baird's Tapir (*Tapirus bairdii*) that rely on the tropical broadleaved forest that is most threatened by the advance of the agricultural/ranching frontier.

203. On farm, it will result in increased native trees being managed in cattle pastures, thereby increasing their habitat value and facilitating connectivity for fauna and flora species, and it will support the spatial farm planning of productive activities, leading to the establishment of set-asides in the areas of the farm with highest biodiversity value and connectivity function. This will particularly benefit species that are demanding in terms of range size and connectivity, such as the IUCN near-threatened panther (*Panthera onca*). The geographical location of the project's pilot sites and related investments will furthermore be determined in part by analyses (to be undertaken during the PPG phase) of where it is likely to be able to yield the greatest BD benefits, for example by promoting connectivity within regional corridors linking protected areas and other high BD-value land units, such as the jaguar corridor which runs along the whole length of the north coast.

204. The land degradation benefits will include the protection of the long-term productive capacity of cattle farms, through the adoption of silvopastoral practices which limit the degradation of soil and vegetation resources and promote the functioning of nutrient and hydrological cycles. It has been demonstrated that the introduction of improved ranching practices can reduce soil erosion rates by almost



95 % (from 70t/ha/year in the case of degraded natural pasture to under 4t/ha/year with silvopastoral systems). Increases in the functional diversity and density of trees on farms will in addition help to buffer against the impacts of climate change, by increasing and stabilizing access to high quality feed in the form of tree fodder and fruits, improving soil health, providing a range of microclimatic conditions which will help to reduce animal heat stress and increase their productivity, and promoting water infiltration, thereby helping to stabilize hydrological flows and at the same time contributing to carbon stocks.

205. The project will contribute to the long term viability of rural livelihoods by promoting stable, robust and diverse livestock production systems, which will protect the natural capital available to farm families and buffer their incomes against climatic shocks and longer term climate change, thereby addressing some of the most significant drivers of livelihood collapse, migration and rural depopulation. By helping to stabilize the dynamics that link immigration, smallholder colonist farming, ranching and land grabbing at the agricultural frontier, the project will contribute to governance, security and the equity of access to land and natural resources between different social strata. The economic instruments proposed will more than compensate the short term costs to farmers of the transition to sustainable forms of production, given that (as found by the trinational GEF/IBRD project in Colombia, Costa Rica and Nicaragua), in the medium to longer terms the more sustainable production systems tend to be more profitable for farmers than existing practices. Farm certification will motivate the generation of social benefits in accordance with the requirements of the Sustainable Agriculture Network norms and criteria, which cover aspects such as fair pay, adequate living conditions and safe working conditions for workers.

206. The project will recognize and provide for the current diversity of producer types in its target communities, particularly the fact that their poorer members tend to be ineligible for financial support for productive activities, due largely to their inability to provide adequate guarantees. In order to avoid exacerbating these inequities, the project will include in its target group small, medium and large producers, with the intention of applying distinct menus of strategies among each group: larger producers are likely to be easier to involve in finance and market instruments, while attention among poorer producers will focus more on technical and organizational strengthening – which in the longer term has the potential to increase their eligibility for finance and market instruments.,

207. The potential implications of the project for gender relations include the following:

- Improvements in opportunities for women to generate and control financial resources, as a result of the support to be provided by the project and its partners to small-scale processing enterprises (dairy product processing is the area where women tend to have greatest participation in livestock sector value chains)
- Conversely, there is a risk that increasing the insertion of farm families into formal value chains will shift power and benefits from women (who typically participate more in informal, artisan processing activities and value chains) to men. The project will counter this risk by promoting the preferential targeting and strengthening of female-led business, to help them make the transition from the informal to formal value chains.
- Under the baseline scenario, there is a risk that overall support to the male-dominated livestock sector would increase its importance in the landscape and in farm economies, relative to other land uses and productive activities which typically generate greater benefits for women and in which they have a greater proportional participation, such as staple grain production and forests or fallows of importance for the provision of water and fuelwood. Under the GEF scenario, this risk will be mitigated through the use of governance and market instruments to limit the expansion of pastures into the tree-rich agroecosystems where (especially in the south) cyclical production of staple grains is carried out, as well as into forests and fallows.

### **Key indicators, risks and assumptions**

<b>Risk</b>	<b>Rating</b>	<b>Risk Mitigation Strategy</b>
Limited clarity among partners regarding the specific focus of this project on the generation of environmental benefits through sustainable cattle production, as opposed to the promotion of the cattle sector per se.	Medium	Events and materials to promote concrete involvement of partners in the project, together with publicity materials explaining the aims of the project.
Failures in the functioning of relations with partners and co-executors, with/through which the project will work at local level in order to maximize impact, geographical coverage and cost effectiveness.	Medium	Real involvement of partners in project design, following on from processes commenced during the PIF formulation phase. Joint development and application of work plans and indicators. Regular monitoring and discussion on the functioning of relationships and definition of contingency plans including back-up options of partners if necessary.
Poorly developed tenure and governance conditions limit producers' eligibility for PSA, REDD and certification schemes, and allow uncontrolled land grabbing to continue	Low-Medium (depending on location)	Linkages with and support to negotiation and conflict-management initiatives, and coordination with land titling initiatives undertaken by the National Agrarian Institute INA. In a limited number of cases (for example land grabbers at the agricultural frontier with links to organized crime), alternative strategies, beyond the scope of the present project, may be required.
Short time horizons in decision-making by cattle ranchers, leading them to prefer unsustainable low-input production systems	Medium	Promotion of low-interest credit, demonstration of the medium-term economic benefits of sustainable ranching practices, and generation and dissemination of sustainable practices with low input requirements
Changes in relative prices for different land uses	Medium	Raising of awareness among farmers regarding the benefits of sustainable production systems that go beyond short-term sector-specific financial profitability, such as the avoidance of risk to market fluctuations and reduced exposure to environmental risks
Rural depopulation (driven in part by climate change-related livelihood collapse) and corresponding shortages of rural labour, together with increased availability of financial resources in the form of remittances from emigrés, motivate extensive forms of cattle production	Medium	Development and promotion of low labour-requirement livestock production systems with financial input requirements tailored to the conditions of farm families, determined through processes of participatory appraisal and farmer field schools.

### **Financial modality**

208. GEF funds will be provided as a grant to support the development of sustainable capacities among national institutions and local stakeholders. Table 27 summarizes how the project will be funded.

**Table 27. Total Project Budget per Outcome**

Project Components	GEF Financing		Co-Financing		Total (\$)
	(\$)	%	(\$)	%	
1. Favorable enabling conditions (policies, markets and finance) for delivering multiple global environmental benefits in managed landscapes	533,900	17.6	2,500,000	82.4	3,033,900
2. Delivery of multiple global environmental benefits (biodiversity conservation, reduced land degradation, reduced carbon emissions and increased carbon storage) in production landscapes in the humid broadleaved forest zone (Region 1) and the dry forest agroecosystem of the south and southwest (Region 2)	2,359,849	14.3	14,161,051.07	85.7	16,520,900
Project Management	151,706	14.5	895,857.81	85.5	1,047,564
<b>Total Project Costs</b>	<b>3,045,455</b>	<b>14.8</b>	<b>17,556,908.88</b>	<b>85.2</b>	<b>20,602,364</b>

### **Cost-effectiveness**

209. The emphasis of the project on the use of market-based instruments and on promoting commercial relations between farmers and purchasers (retailers/exporters) will serve to maximize cost-effectiveness (as well as sustainability, see below) given that, following relatively short-term and limited investment by the project in facilitation, the ongoing transaction costs of these instruments and relations will be absorbed by the stakeholders involved, resulting in major benefits relative to the initial project investment.

210. Cost-effectiveness will further be promoted by working with and through existing institutions that already have organizational and logistical capacities established at local level, thereby limiting the level of investment that the project will need to make in such capacities.

### **Sustainability**

211. The project will promote institutional sustainability by working with, and strengthening, the technical capacities of existing Governmental and non-Governmental institutions, in order that they are able to continue the provision of technical and other support in the long term. It will also work with and strengthen local institutions such as municipal governments and multi-stakeholder negotiation forums, thereby creating a solid basis of local governance that will further social sustainability. The emphasis of the project on market-based solutions and on production options that have been proven to yield concrete and significant financial benefits for farmers makes it highly probable that the resource management practices will be continued autonomously by farmers in the long term, following the withdrawal of support by the project and its partner institutions.

212. In order to promote the sustainability of farmers' participation in certification schemes, the project will encourage farmers to enter into group certification in order to reduce their certification and audit costs. The project will also bundle incentive mechanisms, for example working with local finance and credit institutions to develop 'green credit' packages so that farmers can invest in good practices and thereby maximize their chances of meeting the standards of certification, helping in this way to ensure that they receive adequate returns on their investment in certification. This grouping of farmers will also generate incidental benefits in terms of increased market influence and negotiating power.

### **Replicability**

213. The lessons learnt through the project will have wide replication potential in areas with similar socioeconomic, productive, market and biophysical conditions in Central America and beyond. The biophysical conditions (which are the principal determinants of productive options) of target area 1 are repeated throughout much of the Atlantic littoral of Central America, and those of target area 2 throughout much of the Pacific slopes and, to a lesser extent, the interior valleys influenced by rain-shadow effects. The replication potential of the market-based instruments promoted by the project is more likely to be limited by possible differences in the structure of national markets between countries of the region.

214. Particular attention will be paid to replicating the lessons learned in target area 1 to ranching areas of Olancho and the agricultural/ranching frontier zone of the Río Plátano Biosphere Reserve and adjoining protected areas. For the reasons explained in paragraph 148, this area was not selected for immediate attention by the project; but it is expected that it will be possible for approaches to sustainable ranching based on links to sustainable value chains to gain an increasing hold there once they have gained initial impetus through the project's actions in target area 1 and at national level (through the actions proposed under Component 1).

215. The Sustainable Ranching Platform, which the project will support by funding a facilitator, will be of particular value as a channel for the communication of experiences gained in the pilot areas, and for the promotion and dissemination of approaches to sustainable ranching, including certification and other sustainable value chains. Replication will also be promoted through the close relations that will exist between the project and other major Government initiatives, particularly the ASDI-funded project on sustainable ranching, and the PROMECOM and EMPRENDESUR projects in the north and south of the country respectively. The project will also target other actors and initiatives active in target areas for replication in the country, such as the National Agricultural University in Olancho, with the aim that they will incorporate the lessons and models generated into their activities and thereby function as channels for replication.

## **PART II. Management Arrangements**

### **Arrangements and responsibilities**

216. This 5 year project will be executed by under the National Execution modality, according to the standards and regulations for UNDP cooperation in Honduras. The Implementing Partner (IP) of the project will be the Ministry of the Environment and Natural Resources, SERNA. The project's organizational structure is shown in SECTION IV1.-PART I.PART III.

### ***Project Board***

217. The duration of the project will be 5 years. Implementation of the project will be carried out under the general guidance of a Project Board (Steering Committee), specifically formed for this purpose. The composition, responsibilities and rules of operation of the Board will be confirmed during its first meeting. Subject to the decision of this meeting, it is proposed that the Board will be responsible for approving the operational plans and annual reports of the project as well as the terms of reference and appointments of key members of staff, and will be composed of representatives of SERNA (chair/executive), UNDP (secretary/Senior Supplier), the Ministry of Agriculture and Livestock (SAG), the Institute of Forest Conservation and Development (ICF) and private sector representatives. The Board will meet at least two times per year and in addition could be convened extraordinarily by the Chair, on the request of individual members.

218. The Project Board will be responsible for making executive decisions for the project, in particular when guidance is required by the Project Coordinator. The Project Board will play a critical role in facilitating inter-ministerial coordination, project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It will ensure that required resources are committed and will arbitrate on any conflicts within the project or negotiate a solution to any problems with external bodies. In addition, it will approve the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the Project Board will also consider and approve the quarterly plans and will also approve any essential deviations from the original plans.

219. In order to ensure UNDP's ultimate accountability for the project results, Project Board decisions will be made in accordance to standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with the UNDP.

### ***Project Director***

220. The project will be under the overall leadership of a National Project Director (NPD), who will be a representative of SERNA to be designated by the Minister of SERNA. The NPD will be responsible for orienting and advising the National Project Coordinator on Government policy and priorities. The NPD will also be responsible for maintaining regular communication with the lead institutions in the agriculture and livestock sectors and ensuring that their interests are communicated effectively to the National Project Coordinator.

### ***Project Implementation Unit***

221. Project implementation will be the responsibility in practice of a Project Implementation Unit (PIU), led by a National Project Coordinator (NPC), who will be contracted directly by UNDP (through a selection process in which Government representatives will also participate). The NPC will:

- Be the signing authority of requests to UNDP for disbursements of project funds.
- Ensure the logistical, administrative and financial effectiveness of the IP in fulfilling its roles set out above

- To this end, provide monitoring, supervision and guidance to the technical teams based in the project areas
- Promote incidence in and coordination with the SERNA, SAG and the donor agencies that are supporting them.

222. The NPC will also have specific responsibility for Outputs 1.3 and 1.4 of the project (national programme for promoting the certification of cattle farms, and financing plans from public and private financial institutions). The NPC will be supported by a Monitoring and Evaluation Specialist and a Technical/Administrative Assistant.

223. Two Responsible Parties will be involved in project execution:

- 1) **The Ministry of Agriculture and Livestock (SAG)**, with the support of a National Dialogue Coordinator for the Sustainable Ranching Platform, who will be responsible for Output 1.1 (strengthened National Platform for Sustainable Ranching) and Output 1.2 (commitments by national supermarket chains and exporters).
- 2) **CATIE**, which through its Ranching and Environmental Management (GAMMA) team with headquarters in Costa Rica, will be responsible for all Outputs under Component 2 (see Total Budget and Work Plan in SECTION III for the amounts for which CATIE will be responsible), under direct contract and/or agreement with SERNA. The team, to be appointed by CATIE will consist of the following members (experts from CATIE’s headquarters will also provide technical backstopping to the project):
  - Field Coordinator (based in one of the target areas)
  - Lead field technician (one in each target area)
  - Support field technician (one in each target area)
  - Local dialogue facilitator (based in one of the target areas).

#### **UNDP Support Services**

224. UNDP will provide **Project Assurance**, supporting the Project Board Executive by carrying out objective and independent project oversight and monitoring functions.

#### **Collaborative arrangements with related projects**

225. The project will collaborate with the IFAD-funded PROMECOM and EMPRENDESUR projects, both implemented by UNDP. These will provide opportunities for productive finance and technical support to producers interested in investing in sustainable ranching practices, while the project will help to mainstream sustainability issues into the operations of these projects in ranching landscapes, and will help them to identify beneficiaries. CABIE, supported by the UNDP/GEF regional project CAMBIO, will be another important source of finance and loan guarantees for producers interested in applying sustainable production practices.

226. There will be close communication and regular interchanges of experiences and lessons with GEF/IBRD project 3574 “Mainstreaming Biodiversity in Sustainable Cattle Ranching” in Colombia. The project will build upon the solid base of multi-stakeholder negotiation developed by GEF/UNDP project “Promoting Integrated Ecosystem and Natural Resource Management” at the humid zone agricultural/ranching frontier. There will also be collaboration with GEF/UNDP project “SFM: Mainstreaming Biodiversity Conservation into the Management of Pine-Oak Forests” in developing approaches to addressing the implications of grazing and pasture fires for the management of pine-oak forests.

227. The project will build on and complement the advances of Rainforest Alliance (with USAID support) in the development of markets for sustainable beef and milk products: the existence of that

initiative reduces the level of funding that this project needs to assign to demand-side issues. In addition, CATIE is currently working on a number of complementary projects with Rainforest Alliance, for example to study levels of demand for sustainably produced beef and milk and to establish a baseline of farms and estimate investment costs. Complementing those initiatives, the present project will use GEF and local resources to work with local private partners (including Regional Milk Refrigeration Centres, companies such as Walmart and LACTHOSA, and beef exporters) to target the creation of demand and to develop incentives for promoting certified sustainable livestock products.

#### **Prior obligations and Prerequisites**

N/A

#### **Audit arrangements**

228. The Government will provide the Resident Representative with certified periodic financial statements. The project will be audited according to the UNDP Financial Rules and Regulations and applicable audit policies. The Audit will be conducted by a special and certified audit firm. UNDP will be responsible for making audit arrangements for the project in communication with the Project Implementing Partner.

229. UNDP and the project Implementing Partner will provide audit management responses and the Project Manager and project support team will address audit recommendations.

230. As a part of its oversight function, UNDP will conduct audit spot checks at least two times a year.

#### **Agreement on intellectual property rights and use of logo on the project's deliverables**

231. In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF.

### **PART III. Monitoring Framework and Evaluation**

232. The project will be monitored through the following M&E activities. The M& E budget is provided in the table below.

#### **Project start:**

233. A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

234. The Inception Workshop should address a number of key issues including:

- a) Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis à vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- b) Based on the project results framework and the relevant GEF Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- c) Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- e) Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

235. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

#### **Quarterly:**

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc... The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

#### **Annually:**

- Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared by the Project Coordinator to monitor progress made since project start and in particular for the previous



reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

236. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR
- Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

#### **Periodic Monitoring through site visits:**

237. UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

#### **Mid-term of project cycle:**

238. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (insert date). The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the [UNDP Evaluation Office Evaluation Resource Center \(ERC\)](#).

239. The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

#### **End of Project:**

240. An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

241. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the [UNDP Evaluation Office Evaluation Resource Center \(ERC\)](#).

242. The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

243. During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

### Learning and knowledge sharing:

244. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

245. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

246. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

### M& E workplan and budget

247. A detailed programme and methodologies for the measurement of indicators will be developed at project startup, by the full time M&E specialist with support from the international expert on M&E, who will also provide follow-up support in years 3 and 5 to ensure that the required M&E data have been collected and analysed prior to the mid-term and end of project external evaluations.

248. Measurement of farm-level indicators will principally be carried out by the project's institutional partners at local level. The M&E specialist, with support from the international expert on M&E, will advise and support these partners in the adjustment and application of their M&E systems as necessary. In the case of BCIE, the project will take advantage of the well-developed M&E system which has been developed with support from the GEF/UNDP CAMBio project.

**Table 28. Indicative M&E work plan and budget**

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	<ul style="list-style-type: none"> <li>▪ Project Manager</li> <li>▪ UNDP CO, UNDP GEF</li> </ul>	Indicative cost: <b>3,000</b>	Within first two months of project start up
Measurement of Means of Verification of project results.	<ul style="list-style-type: none"> <li>▪ UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.</li> </ul>	To be finalized in Inception Phase and Workshop. Indicative cost: <b>46,000</b> (Satellite images for monitoring of land use changes, and materials for monitoring of impact indicators)	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on <i>output and</i>	<ul style="list-style-type: none"> <li>▪ Oversight by Project Manager</li> <li>▪ Project team</li> </ul>	To be determined as part of the Annual Work Plan's preparation. Indicative cost: <b>184,800</b> (87 days of international specialist in M&E, spread over years 1, 3 and 5, and	Annually prior to ARR/PIR and to the definition of annual work plans

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
<i>implementation</i>		100% of salary of in-house M&E specialist for years 1-5)	
ARR/PIR	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RTA</li> <li>▪ UNDP EEG</li> </ul>	None	Annually
Periodic status/ progress reports	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> </ul>	None	Quarterly
Mid-term Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: 19,103 (30 days of external evaluator plus DSA and tickets)	At the mid-point of project implementation.
Final Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team,</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost : 19,103 (30 days of external evaluator plus DSA and tickets)	At least three months before the end of project implementation
Project Terminal Report	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ local consultant</li> </ul>	0	At least three months before the end of the project
Audit	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ Project manager and team</li> </ul>	15,000 (Indicative cost per year: 3,000)	Yearly
Visits to field sites	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ UNDP RCU (as appropriate)</li> <li>▪ Government representatives</li> </ul>	For GEF supported projects, paid from IA fees and operational budget	Yearly
<b>TOTAL indicative COST</b> Excluding project team staff time and UNDP staff and travel expenses		US\$ 267,903 (8.8% of total budget)	

**Table 29. Impact Measurement Template**

Key Impact Indicator	Target (Year 5)	Means of Verification	Sampling frequency	Location
Nearest neighbour index for patches of woodland and fallow in, covering 1,200km <sup>2</sup>	Nearest neighbour index for patches of woodland and fallow: - 24.0 in T-PP - 42.0 in PP-MY	Satellite imagery	Project end	Texiguat-Pico Pijol (T-PP) and Pico Pijol-Montaña de Yoro (PP-MY) corridors in Target area 1
Juxtaposition index for patches of woodland and fallow Texiguat-Pico Pijol (T-PP) and Pico Pijol-Montaña de Yoro (PP-MY) corridors in Target area 1, covering 1,200km <sup>2</sup>	Juxtaposition index for patches of woodland and fallow: - 90.0 in T-PP - 65.0 in PP-MY	Satellite imagery	Project end	Texiguat-Pico Pijol (T-PP) and Pico Pijol-Montaña de Yoro (PP-MY) corridors in Target area 1
Occurrence in Texiguat-Pico Pijol and Pico Pijol-Montaña de Yoro corridors of jaguars ( <i>Panthera onca</i> )	Target values to be determined at project startup	Camera traps	Continuous	Texiguat-Pico Pijol and Pico Pijol-Montaña de Yoro corridors
Number of producers and area over which the project model (sustainable and integrated landscape-wide and market-based	12,500 producers nationwide, covering 500,000ha	Interviews with institutional representatives, with field	Continuous	Nationwide

Key Impact Indicator	Target (Year 5)	Means of Verification	Sampling frequency	Location
approach, delivering combined global and local environmental benefits and social benefits) is being promoted through other initiatives of private or public actors elsewhere in the country		verification		
Proportion of beef and milk purchases of retailers and exporters that are subject to environmental sustainability criteria	20% of beef and milk products (1,700t/year of beef and 22 million litres/year of milk)	Interviews with retailers and exporters	Bi-monthly	Nationwide
Increase in volumes of beef and milk to which retailers and exporters have committed to applying environmental sustainability criteria by 5 years after project end	2,100t/year of beef and 28 million litres/year of milk are included in commitments by retailers and exporters for application of environmental sustainability criteria by 5 years after project end (to 25% of their beef and milk purchases)	Publications and agreements expressing commitment	Continuous	Nationwide
Volume of finance provided for ranching that is subject to criteria of environmental sustainability	<b>Target area 1:</b> - \$2.3 million disbursed to 540 producers covering 23,000ha <b>Target area 2:</b> - \$2.0 million disbursed to 490 producers covering 21,000ha	Databases of financial institutions	Monthly	National and target areas
Knowledge, Attitude, Practice (KAP) indices <sup>72</sup> (to be defined at project start) among target farmers (650 in Target Area 1 and 600 in Target Area 2)	To be determined at start up	KAP surveys in collaboration with local institutional partners	Mid-term and end of project	Representative sample of beneficiary farms by size and gender in both target areas
Areas of pastures (improved, degraded and non-degraded) and silvopastoral systems, and lengths of live fences in target farms	<b>Target area 1:</b> An estimated 3,741ha of SSP in 650 target farms, (an increase of <b>3,174ha</b> , due to conversion of pastures) and 967km of multi-layer live fences (an increase of 376km) <b>Target area 2:</b> An estimated 3,703ha SSP in 600 target farms, covering 18,211ha (an increase of <b>3,147ha</b> , due to conversion of pastures) and 1,218km of multi-layer live fences (an increase of 275km)	Farmer interviews and field inspections, in association with local institutional partners	Yearly	All beneficiary farms in both target areas
Area of forests or tree rich agroecosystems outside of target farms directly or indirectly affected by expansion of ranching	<b>Target area 1</b> Approximately 50ha/year of forest converted to pasture, resulting in avoided loss of 250ha of forest agroecosystem (net benefit	Satellite imagery and interviews with livestock associations, communities and municipalities	Interviews yearly, satellite image analysis at mid-term	Target areas

<sup>72</sup> [http://www.fao.org/Participation/ft\\_more.jsp?ID=8468](http://www.fao.org/Participation/ft_more.jsp?ID=8468)

Key Impact Indicator	Target (Year 5)	Means of Verification	Sampling frequency	Location
	of 32,250tC stock) over project lifetime  <b>Target area 2</b> Approximately 100ha/year of agroecosystem on hills converted to pasture due to displacement of ranching by commercial crops on lowlands, resulting in avoided loss of 500ha of agroecosystem (net benefit of 1,305tC stock) over project lifetime		and end	
Seasonal variations in milk production in target farms	<b>Target area 1:</b> 6% seasonal variation in milk production in 650 target farms <b>Target area 2:</b> 23% seasonal variation in milk production in 600 target farms	Farmer interviews and field inspections, in association with local institutional partners	Every 6 months	All beneficiary farms in both target areas
Diversity of livelihoods in small and medium farms and equity of benefit distribution between men and women	Project does not result in significant narrowing of livelihood base or exacerbate imbalances of income and power between men and women.	Farmer questionnaires and focus groups	Yearly	Representative sample of beneficiary farms by size and gender in both target areas
Production of beef and milk from target farms	<b>Target area 1:</b> 2,065,600kg/yr of beef (an increase of 241,257kg/year) and 22,554,041kg/yr of milk (an increase of 696,397kg/year) in 650 target farms <b>Target area 2:</b> 1,601,570kg/year of beef (an increase of 193,562kg/year) and 18,480,137kg/yr of milk (an increase of 558,259kg/yr) in 600 target farms	Farmer questionnaires and focus groups	Yearly	
Numbers of farms, by area, in the target areas that are meeting criteria for insertion into sustainable value chains	<b>Target Area 1</b> 200 farms covering 8,000ha <b>Target Area 2</b> 125 farms covering 5,000ha	Farmer interviews and field inspections, in association with local institutional partners	Yearly	
Amounts of beef and dairy products in target areas that area inserted into sustainable value chains	<b>Target Area 1</b> 320t/year of beef and 3.5 million kg/year of milk <b>Target Area 2</b> 150t/year of beef and 1.8 million kg/year of milk		Yearly	
Reduction in the numbers of land managers using fire in target area 2	10% of the 600 target farmers use fire, over 135ha		Yearly	
Area covered by municipal territorial land use plans that take	60% of both target areas	Review of territorial land	Continuous	All municipalities in target areas

<b>Key Impact Indicator</b>	<b>Target (Year 5)</b>	<b>Means of Verification</b>	<b>Sampling frequency</b>	<b>Location</b>
into account considerations of landscape-wide sustainability of ranching landscapes		use plans		
Appropriation of project concepts by local institutional partners	All local institutional partners commit to applying project concepts in long term	Strategic planning documents of local institutional partners	Continuous	Both target areas

#### **PART IV. Legal Context**

249. This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA [or other appropriate governing agreement] and all CPAP provisions apply to this document.

250. Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

251. The implementing partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

252. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

253. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

## SECTION II: STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT

<p><b>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:</b> Effect 3.2: The Government of Honduras, the private sector and communities in the areas of intervention adopt a good practices of ecosystem management, solid waste management and climate change mitigation and adaptation, which allow the preservation of natural capital, the reduction of economic losses and the generation of income opportunities for vulnerable sectors of society</p>
<p><b>Country Programme Outcome Indicators:</b> 3.2.1: Good practices implemented for natural resource management, and generation and use of renewable energy by local communities and local and regional authorities in the area of influence of the United Nations System, which generate benefits and empowerment for communities and increase their resilience to climatic phenomena.</p>
<p><b>Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one):</b> Strengthened national capacities for sustainable management of the environment while ensuring adequate protection of the poor.</p>
<p><b>Applicable GEF Strategic Objective and Program:</b>            BD2: Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes, Seascapes and Sectors            LD3: Integrated Landscapes: Reduce pressures on natural resources from competing land uses in the wider landscape            SFM-REDD 1: Reduce pressures on forest resources and generate sustainable flows of forest ecosystem services</p>
<p><b>Applicable GEF Expected Outcomes:</b>            BD2 Outcome 2.1: Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation.            BD2 Outcome 2.2: Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks.            LD3 Outcome 3.1: Enhanced cross-sector enabling environment for integrated landscape management            LD3 Outcome 3.2: Integrated landscape management practices adopted by local communities            LD3 Outcome 3.3: Increased investments in integrated landscape management            SFM-REDD1 Outcome 1.3: Good management practices adopted by relevant economic actors</p>
<p><b>Applicable GEF Outcome Indicators:</b>            BD2 Indicator 2.1: Landscapes and seascapes certified by internationally or nationally recognized environmental standards that incorporate biodiversity considerations (e.g. FSC, MSC) measured in hectares and recorded by GEF tracking tool.            BD2 Indicator 2.2: Policies and regulations governing sectoral activities that integrate biodiversity conservation as recorded by the GEF tracking tool as a score.            LD3 Indicator 3.1 Policies support integration of agriculture, rangeland, forest, and other land uses            LD3 Indicator 3.2 Application of integrated natural resource management (INRM) practices in wider landscapes            LD3 Indicator 3.3 Increased resources flowing to INRM and other land uses from diverse sources            SFM-REDD1 Indicator 1.1: Effectiveness of policies that integrate SFM principles (score as recorded by tracking tool).            SFM-REDD1 Indicator 1.2 (b): Enhanced carbon sinks from reduced forest degradation.</p>

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<p><b>Objective:</b> To mainstream biodiversity conservation, sustainable land management and carbon sequestration objectives into</p>	<p>Improvements in connectivity indices in Texiguat-Pico Pijol (T-PP) and Pico Pijol-Montaña de Yoro (PP-MY) corridors in Target area 1, covering 1,200km<sup>2</sup>.            - Nearest neighbour index indicates distance between patches (low values are good for connectivity)</p>	<p>Nearest neighbour index for patches of woodland and fallow:            - 27.0 in T-PP            - 46.7 in PP-MY</p>	<p>Nearest neighbour index for patches of woodland and fallow:            - 24.0 in T-PP            - 42.0 in PP-MY</p>	<p>Satellite imagery</p>	<p>- Variations in global commodity prices            - Impacts of climate change and variability and extreme weather events on productivity            - Weak governance conditions that permit</p>
		<p>Juxtaposition index for patches of woodland and fallow:</p>	<p>Juxtaposition index for patches of woodland and fallow:</p>		



	<b>Indicator</b>	<b>Baseline</b>	<b>Targets End of Project</b>		<b>Source of verification</b>	<b>Risks and Assumptions</b>
production landscapes and sectors in humid broadleaved and dry zone agroecosystems	- Juxtaposition index indicates homogeneity of distribution of vegetation patches throughout the landscape (high values are good for connectivity)	- 83.7 in T-PP 58.9 in PP-MY	- 90.0 in T-PP 65.0 in PP-MY			deforestation and reductions in connectivity - Limited interest in farmers in incurring additional levels of effort required to apply sustainable practices and participate in sustainable value chains
	Increased occurrence in Texiguat-Pico Pijol and Pico Pijol-Montaña de Yoro corridors of jaguars ( <i>Panthera onca</i> ), of importance for trophic conditions in neighbouring PAs	Baseline values to be determined at project startup	Target values to be determined at project startup		Camera traps	
	Improvements in area-weighted Environmental Service Index (ESI) based on birds over 3,174ha in 650 farms of <u>Target Area 1</u> (see PART VII for explanation)	<b>Year 0</b>	<b>Year 4</b>	<b>Increase</b>	Application of generalized values for ESI, soil erosion rates and carbon sequestration rates per land use to land-use breakdowns determined through farmer interviews and field inspections, in association with local institutional partners	
		0.9375	1.3590	0.4215		
	Reductions in assumed soil erosion rates in 600 farms in Target Area 2, due to introduction of silvopastoral systems and more sustainable cropping systems (SPS)	<b>Yr. 0-1 (t/year)</b>	<b>Yr. 5 (t/year)</b>	<b>Net reduction over years 2-5 (t)</b>		
		384,019	214,800	-203,061		
Increases in assumed carbon sequestration (tCO <sub>2</sub> eq) in 650 target farms in Target Area 1 and 600 target farms of Target Area 2, due to introduction of SPS and more sustainable cropping systems	<b>Yr. 0 (tCO<sub>2</sub>eq/year)</b>	<b>Yr. 5 (tCO<sub>2</sub>eq/year)</b>	<b>Total net benefit over 5 years (tCO<sub>2</sub>eq)</b>			
	<b>Target Area 1:</b> 49,428	80,118	36,827			
	<b>Target Area 2:</b> 25,003	41,623	19,944			
<b>Outcome 1:</b> Favorable enabling conditions (policies, markets and finance) exist for delivering multiple global environmental benefits in managed landscapes	Percentage of beef and milk purchases of retailers and exporters that are subject to environmental sustainability criteria	0%	20% of beef and milk products (1,700t/year of beef and 22 million litres/year of milk)		Interviews with retailers and exporters	- Limited interest among financial institutions in adapting loans to cattle farmers and attaching criteria of environmental and social sustainability - Limited interest among farmers and/or retailers/exporters in schemes that reward the generation of GEBs
	Volume of beef and milk purchases to which retailers and exporters have committed (through private sector policies, publications and written agreements) to apply environmental sustainability criteria by 5 years following the end of the project	0 (Walmart has made general commitments to supporting small farmers and sustainable agriculture in Central America)	Retailers and exporters have committed through publications and written agreements to applying environmental sustainability criteria to 2,100t/year of beef and 28 million litres/year of milk (25% of their purchases by 5 years after project end)		Publications and written agreements expressing commitment	

	<b>Indicator</b>	<b>Baseline</b>	<b>Targets End of Project</b>	<b>Source of verification</b>	<b>Risks and Assumptions</b>
	Volume of finance provided for ranching that is subject to criteria of environmental sustainability (including non-encroachment on natural ecosystems or tree-rich agroecosystems)	0	<b>Target area 1:</b> - \$2.3 million disbursed to 540 producers covering 23,000ha  <b>Target area 2:</b> - \$2.0 million disbursed to 490 producers covering 21,000ha	Databases of financial institutions	
<b>Outputs:</b>					
1.1. National Platform for Sustainable Ranching strengthened for coordination of key stakeholders across the supply chain					
1.2. Commitments as expressed in private sector policies, publications and written agreements by national supermarket chains and exporters to certify, source and market beef and dairy products on the basis of environmental sustainability in order to generate GEBs in production landscapes					
1.3. National programme for promoting the certification of cattle farms according to Sustainable Agricultural Network (SAN) principles					
1.4. Loan plans from at least 5 public and private financial institutions that support forms of management of production landscapes that generate multiple GEBs					
<b>Outcome 2.</b> Multiple global environmental benefits (biodiversity conservation, reduced land degradation, reduced carbon emissions and increased carbon storage) are delivered in production landscapes in the humid broadleaved forest zone (Region 1) and the dry forest agroecosystem of the south and southwest (Region 2)	Increase in Knowledge, Attitude, Practices (KAP) indices (to be defined at project start) among target farmers (650 in Target Area 1 and 600 in Target Area 2)	To be determined at start up	To be determined at start up	KAP surveys in collaboration with local institutional partners	- Limited interest among farmers in converting conventional pastures to silvopastoral systems - Apertura de parte de socios - Limited interest among farmers and/or retailers/xporters in schemes that reward the generation of GEBs - Limited governance conditions and commitment by farmers in relation to the use of fire
	Area of pastures in target areas converted to silvopastoral systems (SPS) with on-farm benefits (for habitat and connectivity in target area 1 and sustainable land management in target area 2, and increased carbon content in both)	<b>Target area 1:</b> An estimated 567ha SSP in 650 target farms  <b>Target area 2:</b> An estimated 556ha SSP in 600 target farms, covering 18,211ha	<b>Target area 1:</b> An estimated 3,741ha SSP in 650 target farms, (an increase of <b>3,174ha</b> )  <b>Target area 2:</b> An estimated 3,703ha SSP in 600 target farms, covering 18,211ha (an increase of <b>3,147ha</b> )	Farmer interviews and field inspections, in association with local institutional partners	
	Length of structurally and compositionally diverse live fences in 650 target farms of Target Area 1 in order to deliver BD connectivity benefits and generate productivity benefits for farmers	591km (estimate, to be confirmed at project start)	967km (an increase of <b>376km</b> )		
	Length of structurally and compositionally diverse live fences in 600 target farms of Target Area 2 to generate productivity benefits for farmers	943km (estimate, to be confirmed to project start)	1,218km (an increase of <b>275km</b> )		

	<b>Indicator</b>	<b>Baseline</b>	<b>Targets End of Project</b>	<b>Source of verification</b>	<b>Risks and Assumptions</b>
	Reduction in area of forests or tree rich agroecosystems outside of target farms directly or indirectly affected by expansion of ranching (through displacement, fattening or transhumance), due to insertion in sustainable value chains and improved governance conditions	<p><b>Target area 1</b> Approximately 100ha/year of forest (with 130tC/ha) converted to pasture (with 1tC/ha), resulting in loss of 64,500tC stock over project lifetime</p> <p><b>Target area 2</b> Approximately 200ha/year of agroecosystem on hills (with 3.6tC/ha) converted to pasture (with 1tC/ha) due to displacement of ranching by commercial crops on lowlands, resulting in loss of 2,610tC stock over project lifetime</p>	<p><b>Target area 1</b> Approximately 50ha/year of forest converted to pasture, resulting in avoided loss of 250ha of forest agroecosystem (net benefit of 32,250tC stock) over project lifetime</p> <p><b>Target area 2</b> Approximately 100ha/year of agroecosystem on hills converted to pasture due to displacement of ranching by commercial crops on lowlands, resulting in avoided loss of 500ha of agroecosystem (net benefit of 1,305tC stock) over project lifetime</p>	Satellite imagery and interviews with livestock associations, communities and municipalities	
	Reduction in seasonal variations in milk production in target farms	<p><b>Target area 1:</b> 13% seasonal variation in milk production in 650 target farms</p> <p><b>Target area 2:</b> 41% seasonal variation in milk production in 600 target farms</p>	<p><b>Target area 1:</b> 6% seasonal variation in milk production in 650 target farms</p> <p><b>Target area 2:</b> 23% seasonal variation in milk production in 600 target farms</p>	Farmer interviews and field inspections, in association with local institutional partners	
	Increases in productivity of farms due to introduction of SPS	<p><b>Target area 1:</b> 1,824t/yr of beef and 19 million litres/yr of milk in 650 target farms,</p>	<p><b>Target area 1:</b> 2,066t/yr of beef (an increase of 242t/year) and 22.5 million litres/yr of milk (an increase of 3.5 million litres/year) in 650 target farms</p>		
		<p><b>Target area 2:</b> 1,408t/yr of beef and 15.6 million t/yr of</p>	<p><b>Target area 2:</b> 1,602t/yr of beef (an increase of 194t/yr) and</p>		

	<b>Indicator</b>	<b>Baseline</b>	<b>Targets End of Project</b>	<b>Source of verification</b>	<b>Risks and Assumptions</b>
		<b>milk</b> in 600 target farms	<b>18.5 million kg/yr of milk</b> (an increase of 2.9 million litres/yr) in 600 target farms		
	Numbers of farms, by area, in the target areas that are meeting criteria for insertion into sustainable value chains	0	<b>Target Area 1</b> 200 farms covering 8,000ha <b>Target Area 2</b> 125 farms covering 5,000ha		
	Amounts of meat and dairy products in target areas that are sold through sustainable value chains	0	<b>Target Area 1</b> 320t/year of beef and 3.5 million kg/year of milk <b>Target Area 2</b> 150t/year of beef and 1.8 million kg/year of milk		
	Reduction in the numbers of land managers using fire in target area 2	70% of the 600 target farmers use fire, over 950ha/year	10% of the 600 target farmers use fire, over 135ha		
	Area covered by municipal territorial land use plans that take into account considerations of landscape-wide sustainability of ranching landscapes	0	60% of both target areas	Review of territorial land use plans	
<b>Outputs:</b>					
2.1 Permanent multi-stakeholder sustainable ranching platforms in both target areas					
2.2 Strengthened local institutions supporting the sustainable management and conservation of production landscapes					
2.3 Farm management plans allowing for the maximisation of environmental benefits and sustainability through the appropriate siting of land uses					
2.4 Effective, relevant and sustainable support programmes applied by Government, NGOs and/or private sector service providers					
2.5 Agreements/and or contracts between purchasers and farmers regarding the sourcing of products produced in accordance with the generation of GEBs					

### SECTION III: TOTAL BUDGET AND WORKPLAN

<b>Award ID:</b>	00072885	<b>Project ID(s):</b>	00085892
<b>Award Title:</b>	Delivering multiple global environmental benefits through sustainable management of production landscapes		
<b>Business Unit:</b>	HND10		
<b>Project Title:</b>	Delivering multiple global environmental benefits through sustainable management of production landscapes		
<b>PIMS #:</b>	4741		
<b>Implementing Partner (Executing Agency)</b>	Ministry of Natural Resources and Environment		

GEF Outcome/ Atlas Activity	Responsible party	Source of funds	ERP/ATLAS Budget Description/ Input	Atlas Budgetary Account Code	Year 1	Year 2	Year 3	Year 4	Year 5	Total
					US\$	US\$	US\$	US\$	US\$	US\$
1		GEF	1. International Consultants	71200	24,300	30,800	11,000	-	3,000	69,100
			2. Local Consultants	71300	33,000	16,000	16,000	-	-	65,000
			3. Contractual Services - Individ	71400	69,660	69,660	69,660	29,660	29,660	268,300
			4. Travel	71600	4,500	2,500	2,500			9,500
			5. Training	75700	19,000	16,000	19,000	4,000	4,000	62,000
			6. Audio Visual&Print Prod Costs	74200	6,000	16,000	16,000	16,000	6,000	60,000
			<b>GEF Subtotal Outcome 1</b>					<b>156,460</b>	<b>150,960</b>	<b>134,160</b>
2		GEF	7. International Consultants	71200	8,700	-	8,700	-	8,700	26,100
			8. Local Consultants	71300	4,000	-	-	-	-	4,000
			9. Contractual Services - Individ	71400	227,700	227,700	227,700	227,700	227,700	1,138,500
			10. Travel	71600	62,209	61,160	57,840	50,689	50,632	282,530
			11. Contractual Services- Companies	72100	50,600	43,200	43,500	35,200	25,500	198,000
			12. Equipment and Furniture	72200	158,000	-	-	-	-	158,000
			13. Materials and Goods	72300	23,000	-	-	-	23,000	<b>46,000</b>
			14. Supplies	72500	9,400	9,400	9,400	9,400	9,400	47,000

			15. Grants	72600	25,406	5,000	5,000	5,000	5,000	45,406		
			16. Rental & Maintenance-Premises	73100	9,085	9,085	9,085	9,085	9,085	45,425		
			17. Rental & Maint of Other Equip	73400	9,000	9,000	9,000	9,000	9,000	45,000		
			18. Training	75700	40,640	36,240	36,240	38,240	30,740	182,100		
			19. Audio Visual&Print Prod Costs	74200	13,700	45,700	7,200	1,988	19,200	87,788		
			20. Miscellaneous Expenses	74500	10,800	10,800	10,800	10,800	10,800	54,000		
			<b>GEF Subtotal Outcome 2</b>		<b>652,240</b>	<b>457,285</b>	<b>424,465</b>	<b>397,102</b>	<b>428,757</b>	<b>2,359,849</b>		
PM	UNDP	GEF	21. International Consultants	71200	-	-	15,000	-	15,000	30,000		
			22. Contractual Services - Individ	71400	25,440	15,440	5,440	5,440	5,440	57,200		
			23. Travel	71600	-	-	4,103	-	4,103	8,206		
			24. Contractual Services- Companies	72100	3,000	-	-	-	-	3,000		
			25. Professional Services	74100	3,000	3,000	3,000	3,000	3,000	15,000		
			26. Direct Project Services	74500	8,300	8,100	7,500	7,200	7,200	38,300		
				<b>GEF subtotal project management</b>		<b>39,740</b>	<b>26,540</b>	<b>35,043</b>	<b>15,640</b>	<b>34,743</b>	<b>151,706</b>	
				TRAC	27. Contractual Services - Individ	71400	6,000	6,000	5,000	5,000	4,500	26,500
					28. Travel	71600	1,500	1,500	1,000	1,000	1,000	6,000
					29. Miscellaneous	74500	500	500	500	500	500	2,500
					<b>TRAC subtotal project management</b>		<b>8,000</b>	<b>8,000</b>	<b>6,500</b>	<b>6,500</b>	<b>6,000</b>	<b>35,000</b>
		<b>Total project management</b>		<b>47,740</b>	<b>34,540</b>	<b>41,543</b>	<b>22,140</b>	<b>40,743</b>	<b>186,706</b>			
	Totals by financing source	GEF		848,440	634,785	593,668	462,402	506,160	3,045,455			
		TRAC		8,000	8,000	6,500	6,500	6,000	35,000			
<b>Totals</b>				<b>856,440</b>	<b>642,785</b>	<b>600,168</b>	<b>468,902</b>	<b>512,160</b>	<b>3,080,455</b>			

**Summary by Atlas category**

		<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Totals</b>
International Consultants	71200	33,000	30,800	34,700	0	26,700	125,200
Local Consultants	71300	37,000	16,000	16,000	-	-	<b>69,000</b>
Contractual Services - Individ	71400	328,800	318,800	307,800	267,800	267,300	<b>1,490,500</b>
Travel	71600	68,209	65,160	65,443	51,689	55,735	<b>306,236</b>
Contractual Services-Companies	72100	53,600	43,200	43,500	35,200	25,500	<b>201,000</b>
Equipment and Furniture	72200	158,000	-	-	-	-	<b>158,000</b>
Materials and Goods	72300	23,000	-	-	-	23,000	<b>46,000</b>
Supplies	72500	9,400	9,400	9,400	9,400	9,400	<b>47,000</b>
Grants	72600	25,406	5,000	5,000	5,000	5,000	<b>45,406</b>
Rental & Maintenance-Premises	73100	9,085	9,085	9,085	9,085	9,085	<b>45,425</b>
Rental & Maint of Other Equip	73400	9,000	9,000	9,000	9,000	9,000	<b>45,000</b>
Professional Services	74100	3,000	3,000	3,000	3,000	3,000	<b>15,000</b>
Training	75700	59,640	52,240	55,240	42,240	34,740	<b>244,100</b>
Audio Visual&Print Prod Costs	74200	19,700	61,700	23,200	17,988	25,200	<b>147,788</b>
Miscellaneous Expenses	74500	19,600	19,400	18,800	18,500	18,500	<b>94,800</b>
		<b>856,440</b>	<b>642,785</b>	<b>600,168</b>	<b>468,902</b>	<b>512,160</b>	<b>3,080,455</b>

**Summary of Funds by Outcome**

	<b>C1</b>	<b>C2</b>	<b>PM</b>	<b>Total</b>
International Consultants	69,100	26,100	30,000	125,200
Local Consultants	65,000	4,000		69,000
Contractual Services - Individ	268,300	1,138,500	83,700	1,490,500
Travel	9,500	282,530	14,206	306,236
Contractual Services-Companies		198,000	3,000	201,000
Equipment and Furniture		158,000		158,000
Materials and Goods		46,000		46,000
Supplies		47,000		47,000
Grants	-	45,406		45,406
Rental & Maintenance-Premises		45,425		45,425

Rental & Maint of Other Equip		45,000		45,000
Professional Services			15,000	15,000
Training	62,000	182,100		244,100
Audio Visual&Print Prod Costs	60,000	87,788		147,788
Miscellaneous Expenses		54,000	40,800	94,800
	533,900	2,359,849	186,706	3,080,455

### Budget notes

Budget note	Atlas category	Atlas code	Amount per budget code (\$)	Amount per item (\$)	Budget notes
<b>Component 1</b>					
1	International Consultants	71200	69,100	16,000	- 40 days @ \$400/day of specialist in certification, over project years 2 and 3
				21,600	- 54 days @ \$400/day of specialist to carry out market studies for sustainable value chains, over project years 1 and 2
				22,800	- 57 days @ \$400/day of specialist to develop financing strategies for producers inserted in sustainable value chains, over project years 1 and 2
				8,700	- 21.75 days @ \$400/day of monitoring and evaluation specialist, spread over years 1, 3 and 5 (1/4 of the total time assignation of this specialist, the rest of which will be assigned to Component 2)
2	Local Consultants	71300	65,000	7,500	- 30 days @ \$250/day for market specialist, in project year 1
				7,500	- 30 days @ \$250/day for environmental finance specialist, in project year 1
				2,000	- 8 days @ \$250/day for national consultant to produce handbook of rules and procedures for dialogue facilitation and conflict resolution for the Sustainable Ranching Platform, in project year 1
				48,000	- 192 days @ \$250/day for facilitator for Sustainable Ranching Platform, spread over project years 1-3
3	Contractual Services - Individ	71400	268,300	116,800	- 58.4% of salary of full time Project Coordinator, @ \$40,000/year, over project years 1-5
				31,500	- 26.25% of salary of full time administrative/technical assistant @\$24,000, over project years 1-5
				120,000	- 100% of salary of full time National Dialogue Coordinator for Sustainable Ranching Platform, @\$40,000, over project years 1-3
4	Travel	71600	9,500	7,500	- Travel to Honduras by Green Commodities Facility international technical advisor to monitor and give recommendations - 2 times/year
				2,000	- Study tour of platform coordinator and visit by SAG representatives to Costa Rica to learn from the experience of the Sustainable Pineapple Platform
5	Training		62,000	12,000	- \$3,000/year for project years 1-4 for courses on sustainable production systems and value chains for national institutions



Budget note	Atlas category	Atlas code	Amount per budget code (\$)	Amount per item (\$)	Budget notes
				5,000	- \$1,000/year for project years 1-5 for workshops to disseminate project concepts and lessons learnt
				9,000	- \$3,000/year in years 1, 3 and 5 for forums on financial mechanisms and policies for sustainable land management
				36,000	Plenaries, Working Groups and workshops expenses and materials in support of Sustainable Ranching Platform
6	Audio Visual&Print Prod Costs	74200	60,000	30,000	- \$6,000/year for maintenance of project website
				30,000	- \$10,000/year for each of project years 2, 3 and 4 for project briefs on environmental safeguards, financial mechanisms and certification
<b>Component 2</b>					
7	International Consultants	71200	26,100	26,100	- 65.25 days @ \$400/day of monitoring and evaluation specialist, spread over years 1, 3 and 5 (3/4 of the total time assignation of this specialist, the rest of which will be assigned to Component 1)
8	Local Consultants	71300	4,000	4,000	- 16 days @ \$250/day of national consultant in local governance
9	Contractual Services - Individ	71400	1,138,500	69,000	- 34.50% of salary of full time Project Coordinator, @ \$40,000/year, over project years 1-5. C1: 39.25% + C2: 34.50% + PM: 26.25% = 100%
				150,000	- 100% of salary of facilitator of local governance platforms, covering both target areas, @\$30,000/year, in project years 1-5
				150,000	100% of salary of monitoring and evaluation specialist, @ \$30,000/year, for years 1-5
				175000	100% of salary of field coordinator, @ \$35,000/year, for years 1-5
				300,000	- 100% salary of two lead technicians (one in each target area), @ \$30,000, for project years 1-5
				200,000	- 100% salary of two secondary technicians (one in each target area), @ \$20,000, for project years 1-5
				45,500	- 37.92% of salary of full time administrative/technical assistant @\$24,000, over project years 1-5
				49,000	- 100% of salary of secretary @ \$9,800 based in one of the target areas, for project years 1-5
10	Travel	71600	282,530	102,060	- 252 DSA nights each, @ \$81/night, for national travel of 5 members of project team (coordinator, technicians and local platform facilitator) traveling between project sites
				97,200	- A total of 1,200 DSA nights @ \$81/night, for local members of local partner organizations participating in courses and field interchanges in target areas
				61,570	- 470 DSA nights for international consultants @ \$131/night
				21,700	- 31 international tickets @ \$700, for international consultants (including taxes and terminal expenses)

Budget note	Atlas category	Atlas code	Amount per budget code (\$)	Amount per item (\$)	Budget notes
11	Contractual Services-Companies	72100	198,000	56,000	- 28 days/year @ \$400/day for project years 1-5, of international expert in sustainable ranching and environment
				40,000	- 20 days/year @ \$400/day for project years 1-5, of international expert in biodiversity and GIS
				40,000	- 25 days/year @ \$400/day for project years 1-4, of international expert in participatory methodologies and knowledge management
				30,000	- 15 days/year @ \$400/day for project years 1-5, of international expert in policy and governance
				24,000	- 20 days/year @ \$400/day for project years 1-3, of international expert in organizational strengthening
				5,000	- Legal advice for producer organizations in both target areas in project year 1
				3,000	- Local launch event for project in each target areas in project year 1
12	Equipment and Furniture	72200	158,000	75,000	- 3 4x4 vehicles (one for each target area and one for coordinator travel between target areas) @ \$25,000
				10,000	- 2 motorbikes @ \$5,000 (one for each target area) for use by secondary technicians
				1,200	- 2 digital cameras @ \$600
				3,200	- 8 GPS @ \$400
				300	- 6 diameter tapes @ \$50
				1,500	- 6 clinometers @ \$250
				300	- 6 measuring tapes @ \$50
				800	- 2 binoculars @ \$400
				6,000	- 6 laptop computers @ \$1,000 (for coordinator, 4 technicians and secretary)
				4,000	- 4 sets of computer software @ \$1,000
				2,000	- 2 photocopiers @ \$1,000
				1,200	- 2 printers @ \$600
				52,500	- Investment in equipment for beef/dairy product processing, handling and packaging for use by project beneficiaries (\$41,250 in each target area)
13	Materials and Goods	72300	46,000	40,000	- Satellite images for monitoring of land use changes
				6,000	- Materials for monitoring of impact indicators
14	Supplies	72500	47,000	45,000	- Fuel for vehicles in target areas
				2,000	- Office supplies for target areas
15	Grants	72600	45,406	25,000	- \$5,000 year for Fundación Panthera, for monitoring of felines and training on management of predator/livestock conflicts
				20,406	- Grant for local NGOs or producer organisations, for establishment of germplasm banks for production of seed and vegetative material for silvopastoral systems

Budget note	Atlas category	Atlas code	Amount per budget code (\$)	Amount per item (\$)	Budget notes
16	Rental & Maintenance-Premises	73100	45,425	45,425	- \$4,542.50/year for rental of project offices in each target area
17	Rental & Maint of Other Equip	73400	45,000	45,000	- \$9,000/year for maintenance of project vehicles in target areas
18	Training		182,100	30,000	- Field interchanges by producers, partner institutions and credit officials in finance institutions to raise awareness of silvopastoral systems sustainable value chains (years 1-5)
				22,000	- Short courses for project partner institutions on strategic and thematic issues (years 1-4)
				4,000	- Training workshops with technical specialists in partner institutions on ECAs (years 1 and 4)
				118,700	- ECA workshops (30 ECAs in each target area), in years 1-5, and support to experimentation activities of ECAs (planting materials, tolos and inputs)
				2,400	- Project planning workshops (1 per target area), in year 1
				5,000	- Local workshops in target areas for dissemination of project plans, results and lessons learnt (years 1-5)
19	Audio Visual&Print Prod Costs	74200	87,788	10,000	- Technical and methodological guidelines for field technicians in partner institutions (6 subjects and 100 copies in each target area)
				14,000	- Pamphlets for farmers (6 subjects, 2,000 copies)
				4,500	- Posters on key project issues (3 subjects, 500 posters in each target area and Project Implementation Unit)
				10,000	- Videos (on ECAs and sustainable value chains)
				10,000	- Manuals on good ranching practices
				10,000	- Manual on participatory methodologies
				10,000	- Manual on farm planning
				14,288	- Documents for systematization and documentation of lessons learnt
				3,500	- Mass communication programme
1,500	Printing of materials for farm plans				
20	Miscellaneous Expenses	74500	54,000	18,000	- Car insurance
				4,000	- Motorbike insurance
				12,000	- Utility charges for project offices in target areas
				20,000	- Costs of meetings of local dialogue platforms
<b>Project Management</b>					
21	International Consultants	71200	30,000	30,000	- International consultants for mid-term and final evaluations (30 days each @ \$500/day)
22	Contractual	71400	57,200	14,200	- 7.1% of salary of full time Project Coordinator, @ \$40,000/year, over project

Budget note	Atlas category	Atlas code	Amount per budget code (\$)	Amount per item (\$)	Budget notes
	Services - Individ			43,000	years 1-5 - 35.83% of salary of full time administrative/technical assistant @\$24,000, over project years 1-5
23	Travel	71600	8,206	5,806	- DSA for external project evaluators at mid-term and end of project (15 days @ \$96 and 7 days @ \$209 for each evaluation)
				2,400	- International tickets for external project evaluators at mid-term and end of project (1 ticket/evaluation @ \$1,200)
24	Contractual Services- Companies	72100	3,000	3,000	- Project inception workshop in project year 1
25	Professional Services	74100	15,000	15,000	- Independent financial audit (\$3,000/year in years 1-5)
26	Direct Project Services	74500	38,300	38,300	Estimated costs of Direct Project Services requested by the GoH to UNDP for executing services (procurement; travel etc) and as requested by the GoH through the Letter of Agreement (Section II Part X). Direct project service costs will be charged at the end of each year based on the UNDP Universal Pricelist (UPL) or the actual corresponding service cost. The amounts indicated here are estimations based on the services indicated in Section II Part IX, however as part of annual project operational planning the direct project services to be requested during that calendar year would be defined and the amount included in the yearly budgets. As noted these costs would be charged based on actual services provided at the end of the year and would be reported to the implementing partners (GoH).
27	Contractual Services - Individ	71400	26,500	26,500	TRAC
28	Travel	71600	6,000	6,000	TRAC
29	Miscellaneous Expenses	74500	2,500	2,500	TRAC

## SECTION IV: ADDITIONAL INFORMATION

### PART I. Endorsement Letter



August 11, 2011

To: Mr. Yannick Glemarec  
GEF Executive Coordinator  
United Nations Development Program  
304 East 45<sup>th</sup> Street, 9<sup>th</sup> Floor  
New York City, NY 10017, USA  
Fax: +1 (212) 906-6998

Subject: Endorsement for “Delivering multiple global environmental benefits through sustainable management of production landscapes”

In my capacity as GEF Operational Focal Point for Honduras, I confirm that the above project proposal (a) is in accordance with my government’s national priorities and our commitments to the relevant global environmental conventions; and (b) was discussed with relevant stakeholders, including the global environmental convention focal points.

I am pleased to endorse the preparation of the above project proposal with the support of the GEF Agency(ies) listed below. If approved, the proposal will be prepared and implemented by The Secretary of Natural Resources of Honduras (SERNA). I requested the GEF Agency(ies) to provide a copy of the project document before it is submitted to the GEF Secretariat for CEO endorsement.

The total financing (from GEFTF, LDCF and/or SCCF) being requested for this project is US\$3,460,000, inclusive of project preparation grant (PPG), if any, and Agency fees for project cycle management services associated with the total GEF grant. The financing requested for Honduras is detailed in the table below.

Source of Funds	GEF Agency	Focal Area	Amount (in US\$)			
			Project Preparation	Project	Fee	Total
GETF	UNDP	BD	58,382	1,777,982	183,636	2,020,000
GETF	UNDP	LD	22,543	686,548	70,909	780,000
GETF	UNDP	SFM/REDD	19,075	580,925	60,000	660,000
Total GEF Resources			100,000	3,045,455	314,545	3,460,000

I consent to the utilization of Honduras’s allocations in GEF-5 as defined in the System for Transparent Allocation of Resources (STAR).

Sincerely,

Irina Helena Pineda Aguilar  
Director of External Cooperation and Resource Mobilization  
GEF Operational Focal Point



Copy to: Convention Focal Point for UNCBD  
Convention Focal Point for UNCCD

Edificio Principal: Despacho de Recursos Naturales y Ambiente, 100 metros al sur del Estadio Nacional  
Teléfonos: 232-2011, 239-4298 • Fax: 232-6250 • Apartado Postal 1389,4710.  
Tegucigalpa, M. D. C., Honduras, C. A.

GEF Operational Focal Point Endorsement Template, September 2010

Calculations

participant farmers in Target Area 1, by farm size and nature of participation

Participating in ECAs only		Receiving "green" finance		Receiving green finance and participating in green value chains		Total beneficiaries	
Numbers of producers	Total area (ha)	Numbers of producers	Total area (ha)	Numbers of producers	Total area (ha)	Numbers of producers	Total area (ha)
50	128.5	30	77.1	30	77.1	110	282.6
30	370.6	50	636.3	60	763.6	140	1,770.5
20	651.6	80	2,828.2	80	2,828.2	180	6,308.1
20	1,072.6	100	7,560.8	100	7,560.8	220	16,194.1
120	2,223.3	260	11,102.4	270	11,229.7	650	24,555.3

breakdown in Target Area 1 (ha/farm)

	Fallow		Pasture			Silvopastoral systems	Other agriculture	Other uses	Live fences		Total
	Young	Mature/ woodland	Improved	Undegraded natural	Degraded natural				Simple	Multi-stratum	
2	0.16	0.02	0.02	0.22	0.22	0.03	0.08	0.05	0.11	0.05	2.50
5	0.75	0.19	0.38	2.98	2.98	0.19	0.68	0.56	0.36	0.17	12.50
1	2.16	0.92	2.80	7.88	7.88	0.70	3.78	2.37	0.79	0.26	35.00
8	3.06	2.04	22.20	11.78	11.78	1.88	2.70	7.72	1.27	0.46	75.00

Changes in Target Area 1, by participant type (ha)

Pasture (ha)		Silvopastoral systems (ha)	Live fences (ha)	
Undegraded natural	Degraded natural		Simple	Multi-stratum
only				

<5	-0.05	-0.05	-0.40	0.50	-0.56	1.30
5-20	-0.39	-0.39	-3.12	3.90	-1.09	2.54
20-50	-2.80	-2.80	-22.40	28.00	-1.59	3.70
>50	-15.00	-15.00	-120.00	150.00	-2.54	5.92
Totals	-18.24	-18.24	-145.92	182.40	-5.77	13.46
<b>Receiving "green" finance</b>						
<5	-0.03	-0.03	-0.24	0.30	-0.67	1.55
5-20	-0.65	-0.65	-5.20	6.50	-3.63	8.47
20-50	-11.20	-11.20	-89.60	112.00	-12.70	29.64
>50	-75.00	-75.00	-600.00	750.00	-25.39	59.24
Totals	-86.88	-86.88	-695.04	868.80	-42.39	98.90
<b>Receiving green finance and participating in green value chains</b>						
<5	-0.06	-0.06	-0.48	0.60	-1.00	2.33
5-20	-2.28	-2.28	-18.24	22.80	-6.53	15.25
20-50	-22.40	-22.40	-179.20	224.00	-19.05	44.45
>50	-187.50	-187.50	-1,500.00	1,875.00	-38.08	88.86
Totals	-212.24	-212.24	-1,697.92	2,122.40	-64.67	150.89
<b>All participants</b>						
<5	-0.14	-0.14	-1.12	1.40	-2.22	5.18
5-20	-3.32	-3.32	-26.56	33.20	-11.25	26.26
20-50	-36.40	-36.40	-291.20	364.00	-33.34	77.79
>50	-277.50	-277.50	-2,220.00	2,775.00	-66.01	154.03
Totals	-317.36	-317.36	-2,538.88	<b>3,173.60</b>	-112.82	263.26

#### 4. Targets for carbon fixation benefits in Target Area 1 (tCO<sub>2</sub>eq)

Farm size class (ha)	Pasture			Silvopastoral systems	Live fences		Totals
	Improved	Undegraded natural	Degraded natural		Simple	Multi-stratum	
Assumed net fixation rates per land use	5.5	1.8	-0.2	12.1	6	13	

(tCO <sub>2</sub> /ha/year)							
Without project total net fixation rates for target land uses ([annual rate per land use] x [area occupied]) (t/year)							
<5	13.61	44.30	-4.92	33.28	73.26	172.84	332.37
5-20	227.49	751.28	-83.48	317.63	304.92	719.39	2,237.22
20-50	2,467.08	2,551.50	-283.50	1,524.60	857.30	1,444.72	8,561.70
>50	24,444.42	4,662.90	-518.10	4,991.25	1,675.67	3,041.04	38,297.18
Totals	27,152.61	8,009.98	-890.00	6,866.75	2,911.16	5,377.98	<b>49,428.47</b>
With project total net fixation rates for target land uses ([annual rate per land use] x [area occupied]) (t/year)							
<5	12.84	44.05	-4.70	50.22	59.94	240.18	402.53
5-20	209.23	745.30	-78.16	719.35	237.40	1,060.73	2,893.84
20-50	2,266.88	2,485.98	-225.26	5,929.00	657.27	2,456.02	13,569.88
>50	22,880.67	3,848.40	-3,794.10	33,993.75	1,279.61	5,043.38	63,251.71
Totals	25,369.63	7,123.73	-4,102.22	40,692.31	2,234.21	8,800.31	<b>80,117.96</b>
Net benefit for project period {([total with project fixation]-[total without project fixation]) x (4 years)}							
<5	-0.92	-0.30	0.27	20.33	-15.98	80.81	84.19
5-20	-21.91	-7.17	6.37	482.06	-81.02	409.61	787.94
20-50	-240.24	-78.62	69.89	5,285.28	-240.05	1,213.56	6,009.82
>50	-1,876.50	-977.40	-3,931.20	34,803.00	-475.28	2,402.81	29,945.43
Totals	-2,139.58	-1,063.50	-3,854.67	40,590.67	-812.33	4,106.79	<b>36,827.39</b>
<b>Total net benefit (tCO<sub>2</sub>eq)</b>							

### 5. Targets for beef production benefits in Target Area 1 (kg)

Farm size class (ha)	Pasture			Silvopastoral systems	Totals
	Improved	Undegraded natural	Degraded natural		
t/ha/year	150	125	95.6	180	
Without project (total kg/year)					
<5	371.25	3,076.56	2,352.96	495.00	6,295.77
5-20	6,204.38	52,171.88	39,901.05	4,725.00	103,002.30



20-50	67,284.00	177,187.50	135,513.00	22,680.00	402,664.50	
>50	666,666.00	323,812.50	247,651.80	74,250.00	1,312,380.30	
Totals	740,525.63	556,248.44	425,418.81	102,150.00	<b>1,824,342.87</b>	
With project (total kg/year)						
<5	350.25	3,059.06	2,245.88	747.00	6,402.20	
5-20	5,706.38	51,756.88	37,361.91	10,701.00	105,526.16	
20-50	61,824.00	172,637.50	107,674.28	88,200.00	430,335.78	<b>Average increase/year</b>
>50	625,041.00	289,125.00	35,419.80	573,750.00	1,523,335.80	
Totals	692,921.63	516,578.44	182,701.88	673,398.00	<b>2,065,599.94</b>	<b>241,257.07</b>
Net increase for project period					<b>Total increase per size class</b>	<b>Average increase per farmer</b>
<5	-25.20	-21.00	-128.49	302.40	127.71	1.16
5-20	-597.60	-498.00	-3,046.96	7,171.20	3,028.64	21.63
20-50	-6,552.00	-5,460.00	-33,406.46	78,624.00	33,205.54	184.48
>50	-49,950.00	-41,625.00	-254,678.40	599,400.00	253,146.60	1,150.67
Totals	-57,124.80	-47,604.00	-291,260.31	685,497.60	289,508.49	445.40

## 6. Targets for milk production benefits in Target Area 1 (kg)

Farm size class (ha)	Pasture			Silvopastoral systems	Totals
	Improved	Undegraded natural	Degraded natural		
t/ha/year	<b>1600</b>	<b>1359.4</b>	<b>883.61</b>	<b>2100</b>	
Without project (total kg/year)					
<5	3,960.00	33,458.23	21,747.85	5,775.00	64,941.08
5-20	66,180.00	567,379.58	368,796.72	55,125.00	1,057,481.30
20-50	717,696.00	1,926,949.50	1,252,517.18	264,600.00	4,161,762.68
>50	7,111,104.00	3,521,525.70	2,288,991.71	866,250.00	13,787,871.41
Totals	7,898,940.00	6,049,313.01	3,932,053.45	1,191,750.00	<b>19,072,056.46</b>
With project (total kg/year)					

<5	3,736.00	33,267.92	20,758.21	8,715.00	66,477.12	
5-20	60,868.00	562,866.37	345,328.04	124,845.00	1,093,907.41	
20-50	659,456.00	1,877,467.34	995,209.94	1,029,000.00	4,561,133.28	<b>Average increase/yr</b>
>50	6,667,104.00	3,144,292.20	327,377.51	6,693,750.00	16,832,523.71	
<b>Totals</b>	<b>7,391,164.00</b>	<b>5,617,893.82</b>	<b>1,688,673.70</b>	<b>7,856,310.00</b>	<b>22,554,041.52</b>	<b>696,397</b>
Net increase for project period					<b>Total per size class</b>	<b>Average per farmer</b>
<5	-268.80	-228.38	-1,187.57	3,528.00	1,843.25	2.60
5-20	-6,374.40	-5,415.85	-28,162.42	83,664.00	43,711.33	397.38
20-50	-69,888.00	-59,378.59	-308,768.68	917,280.00	479,244.73	2,995.28
>50	-532,800.00	-452,680.20	-2,353,937.04	6,993,000.00	3,653,582.76	18,267.91
<b>Totals</b>	<b>-609,331.20</b>	<b>-517,703.02</b>	<b>-2,692,055.71</b>	<b>7,997,472.00</b>	<b>4,178,382.07</b>	<b>7,883.74</b>

## 7. Targets for Environmental Service Index based on Birds, in Target Area 1

Farm size class (ha)	Pasture			Silvopastoral systems	Live fences		Totals per size class
	Improved	Undegraded natural	Degraded natural		Simple	Multi-stratum	
<b>Index value /land use</b>	<b>0.17</b>	<b>0.15</b>	<b>0.01</b>	<b>0.53</b>	<b>0.32</b>	<b>0.65</b>	
Without project							
<5	0.0045	0.0392	0.0026	0.0155	0.0415	0.0917	0.1950
5-20	0.0101	0.1065	0.0071	0.0237	0.0277	0.0612	0.2361
20-50	0.0271	0.1031	0.0069	0.0324	0.0222	0.0350	0.2266
>50	0.1005	0.0797	0.0053	0.0448	0.0183	0.0312	0.2798
<b>Totals</b>	<b>0.1421</b>	<b>0.3284</b>	<b>0.0219</b>	<b>0.1163</b>	<b>0.1096</b>	<b>0.2191</b>	<b>0.9375</b>
With project							
<5	0.0042	0.0385	0.0025	0.0234	0.0328	0.1295	0.2309
5-20	0.0091	0.1049	0.0066	0.0501	0.0220	0.0866	0.2793
20-50	0.0241	0.1001	0.0055	0.1173	0.0177	0.0554	0.3202

>50	0.0917	0.0720	0.0014	0.3014	0.0148	0.0473	0.5286
<b>Totals</b>	0.1292	0.3155	0.0161	0.4922	0.0873	0.3187	<b>1.3590</b>
Net benefit for project period							
<5	-0.0003	-0.0007	-0.0002	0.0080	-0.0087	0.0378	0.0359
5-20	-0.0009	-0.0016	-0.0005	0.0264	-0.0057	0.0254	0.0432
20-50	-0.0029	-0.0030	-0.0013	0.0850	-0.0045	0.0204	0.0936
>50	-0.0088	-0.0076	-0.0039	0.2566	-0.0035	0.0161	0.2488
<b>Totals</b>	-0.0130	-0.0129	-0.0058	0.3759	-0.0223	0.0996	<b>0.4215</b>

### Target area 2 (Choluteca/Valle)

#### 2.2. Target numbers of participant farmers in Target Area 2, by farm size and nature of participation

Farm size class (ha)	Assumed average farm size	Participating in ECAs only		Receiving "green" finance		Receiving green finance and participating in green value chains		Total beneficiaries	
		Numbers of producers	Total area (ha)	Numbers of producers	Total area (ha)	Numbers of producers	Total area (ha)	Numbers of producers	Total area (ha)
<5	2.5	40	95.7	25	59.8	25	59.8	90	215.3
5-20	12.5	20	238.4	50	596.0	50	596.0	120	1,430.3
20-50	35	20	680.6	75	2552.1	75	2552.1	170	5,784.8
>50	75	20	1464.4	100	7321.8	100	7321.8	220	16,108.0
Total:		100	2479.0	250	10529.7	250	10529.7	600	23,538.3

#### 2.3. Baseline land use breakdown in Target Area 2 (ha/farm)

Farm size class (ha)	Crops		Fallow		Pasture			Silvopastoral systems	Other agriculture	Other uses	Live fences		Total
	Perennial	Annual	Young	Mature/ woodland	Improved	Undegraded natural	Degraded natural				Simple	Multi-stratum	
<5	0.12	1.42	0.16	0.02	0.02	0.22	0.22	0.03	0.08	0.11	0.06	0.05	2.50
5-20	0.93	2.35	0.75	0.19	0.38	2.98	2.98	0.19	0.68	0.51	0.32	0.26	12.50
20-50	3.15	2.31	2.16	0.92	2.80	7.88	7.88	0.70	3.78	2.46	0.54	0.43	35.00

>50	2.55	7.58	3.06	2.04	22.20	11.78	11.78	1.88	2.70	7.67	0.99	0.79	75.00
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#### 2.4. Targets for land use changes in Target Area 2, by participant type

Farm size class (ha)	Pasture			Silvopastoral systems	Live fences	
	Improved	Undegraded natural	Degraded natural		Simple	Multi-stratum
<b>Participating in ECAs only</b>						
<5	-0.04	-0.04	-0.32	0.40	-0.24	0.56
5-20	-0.26	-0.26	-2.08	2.60	-0.65	1.51
20-50	-2.80	-2.80	-22.40	28.00	-1.08	2.52
>50	-15.00	-15.00	-120.00	150.00	-1.98	4.62
Totals	-18.10	-18.10	-144.80	181.00	-3.95	9.21
<b>Receiving "green" finance</b>						
<5	-0.03	-0.03	-0.20	0.25	-0.30	0.70
5-20	-0.65	-0.65	-5.20	6.50	-3.23	7.53
20-50	-10.50	-10.50	-84.00	105.00	-8.10	18.90
>50	-75.00	-75.00	-600.00	750.00	-19.80	46.20
Totals	-86.18	-86.18	-689.40	861.75	-31.43	73.33
<b>Receiving green finance and participating in green value chains</b>						
<5	-0.05	-0.05	-0.40	0.50	-0.45	1.05
5-20	-1.90	-1.90	-15.20	19.00	-4.84	11.29
20-50	-21.00	-21.00	-168.00	210.00	-12.15	28.35
>50	-187.50	-187.50	-1,500.00	1,875.00	-29.70	69.30
Totals	-210.45	-210.45	-1,683.60	2,104.50	-47.14	109.99
<b>All participants</b>						
<5	-0.12	-0.12	-0.92	1.15	-0.99	2.31
5-20	-2.81	-2.81	-22.48	28.10	-8.71	20.32
20-50	-34.30	-34.30	-274.40	343.00	-21.33	49.77
>50	-277.50	-277.50	-2,220.00	2,775.00	-51.48	120.12
Totals	-314.73	-314.73	-2,517.80	<b>3,147.25</b>	-82.51	192.52

### 8. Targets for carbon fixation benefits in Target Area 2 (tCO<sub>2</sub>eq)

Farm size class (ha)	Pasture			Silvopastoral systems	Live fences		Total
	Improved	Undegraded natural	Degraded natural		Simple	Multi-stratum	
Assumed net fixation rates per land use (tCO <sub>2</sub> /ha/year)	2.4	0.6	-0.1	6.6	2.6	8	
Without project total net fixation rates for target land uses ([annual rate per land use] x [area occupied]) (t/year)							
<5	4.86	12.08	-2.01	14.85	14.04	80.64	124.46
5-20	108.00	214.65	-35.78	148.50	100.62	577.92	1,113.92
20-50	1,142.40	803.25	-133.88	785.40	238.68	1,370.88	4,206.74
>50	11,721.60	1,554.30	-259.05	2,722.50	566.28	3,252.48	19,558.11
Totals	12,976.86	2,584.28	-430.71	3,671.25	919.62	5,281.92	<b>25,003.22</b>
With project total net fixation rates for target land uses ([annual rate per land use] x [area occupied]) (t/year)							
<5	4.58	12.01	-1.92	22.44	11.47	99.12	147.70
5-20	101.26	212.96	-33.53	333.96	77.98	740.46	1,433.09
20-50	1,060.08	782.67	-106.44	3,049.20	183.22	1,769.04	6,737.78
>50	10,785.60	982.80	-3,697.05	20,587.50	432.43	4,213.44	33,304.72
Totals	11,951.52	1,990.45	-3,838.93	23,993.10	705.10	6,822.06	<b>41,623.29</b>
Net benefit for project period {([total with project fixation]-[total without project fixation]) x (4 years)}							
<5	-0.33	-0.08	0.11	9.11	-3.09	22.18	27.89
5-20	-8.09	-2.02	2.70	222.55	-27.17	195.05	383.01
20-50	-98.78	-24.70	32.93	2,716.56	-66.55	477.79	3,037.25
>50	-1,123.20	-685.80	-4,125.60	21,438.00	-160.62	1,153.15	16,495.93
Totals	-1,230.41	-712.60	-4,089.86	24,386.22	-257.42	1,848.17	<b>19,944.09</b>

### 9. Targets for soil erosion benefits in Target Area 2 (t)

Farm size	Pasture	Silvopastoral	Totals
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class (ha)	Improved	Undegraded natural	Degraded natural	systems	
<b>Assumed erosion rates per land use (t/ha/year)</b>	<b>6.98</b>	<b>9.89</b>	<b>70</b>	<b>3.92</b>	
Without project total erosion rates for target land uses ([annual rate per land use] x [area occupied]) (t/year)					
<5	15.71	221.29	1,566.25	9.80	1,631.74
5-20	314.10	3,538.15	25,042.50	88.20	28,982.95
20-50	3,322.48	13,240.24	93,712.50	466.48	110,741.70
>50	34,090.32	25,620.05	181,335.00	1,617.00	242,662.37
<b>Totals</b>	<b>37,742.61</b>	<b>42,619.72</b>	<b>301,656.25</b>	<b>2,181.48</b>	<b>384,018.75</b>
With project total erosion rates for target land uses ([annual rate per land use] x [area occupied]) (t/year)					
<5	14.83	220.05	1,496.25	14.70	1,569.91
5-20	294.49	3,510.36	23,468.90	198.35	27,472.09
20-50	3,083.07	12,901.01	74,504.50	1,811.04	92,299.62
>50	32,153.37	22,875.57	25,935.00	12,495.00	93,458.94
<b>Totals</b>	<b>35,545.75</b>	<b>39,506.99</b>	<b>125,404.65</b>	<b>14,519.09</b>	<b>214,800.56</b>
Net benefit for project period {([total with project erosion]-[total without project erosion]) x (4 years)}					
<5	-1.05	-1.48	-84.00	5.88	-74.20
5-20	-23.54	-33.35	-1,888.32	132.18	-1,813.02
20-50	-287.30	-407.07	-23,049.60	1,613.47	-22,130.50
>50	-2,324.34	-3,293.37	-186,480.00	13,053.60	-179,044.11
<b>Totals</b>	<b>-2,636.22</b>	<b>-3,735.27</b>	<b>-211,501.92</b>	<b>14,805.13</b>	<b>-203,061.83</b>

#### 10. Targets for beef production benefits in Target Area 2 (kg)

Farm size class	Pasture	Silvopastoral	Totals
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(ha)	Improved	Undegraded natural	Degraded natural	systems		
<b>Beef production per land use (t/ha/year)</b>	<b>115</b>	<b>100</b>	<b>65</b>	<b>135</b>		
Without project (total kg/year)						
<5	258.75	2,237.50	1,454.38	337.50	3,859.31	
5-20	5,175.00	35,775.00	23,253.75	3,037.50	67,241.25	
20-50	54,740.00	133,875.00	87,018.75	16,065.00	291,698.75	
>50	561,660.00	259,050.00	168,382.50	55,687.50	1,044,780.00	
<b>Totals</b>	<b>621,833.75</b>	<b>430,937.50</b>	<b>280,109.38</b>	<b>75,127.50</b>	<b>1,407,579.31</b>	
With project (total kg/year)						
<5	244.38	2,225.00	1,389.38	506.25	3,930.04	
5-20	4,851.85	35,494.00	21,792.55	6,831.00	68,969.40	
20-50	50,795.50	130,445.00	69,182.75	62,370.00	312,793.25	
>50	529,747.50	231,300.00	24,082.50	430,312.50	1,215,442.50	
<b>Totals</b>	<b>585,639.23</b>	<b>399,464.00</b>	<b>116,447.18</b>	<b>500,019.75</b>	<b>1,601,135.19</b>	
Net increase for project period					<b>Total increase per size class</b>	<b>Average increase per farmer</b>
<5	-57.50	-50.00	-260.00	675.00	<b>307.50</b>	3.08
5-20	-1,292.60	-1,124.00	-5,844.80	15,174.00	<b>6,912.60</b>	46.08
20-50	-15,778.00	-13,720.00	-71,344.00	185,220.00	<b>84,378.00</b>	421.89
>50	-127,650.00	-111,000.00	-577,200.00	1,498,500.00	<b>682,650.00</b>	1,365.30
<b>Totals</b>	<b>-144,778.10</b>	<b>-125,894.00</b>	<b>-654,648.80</b>	<b>1,699,569.00</b>	<b>774,248.10</b>	30,969.92

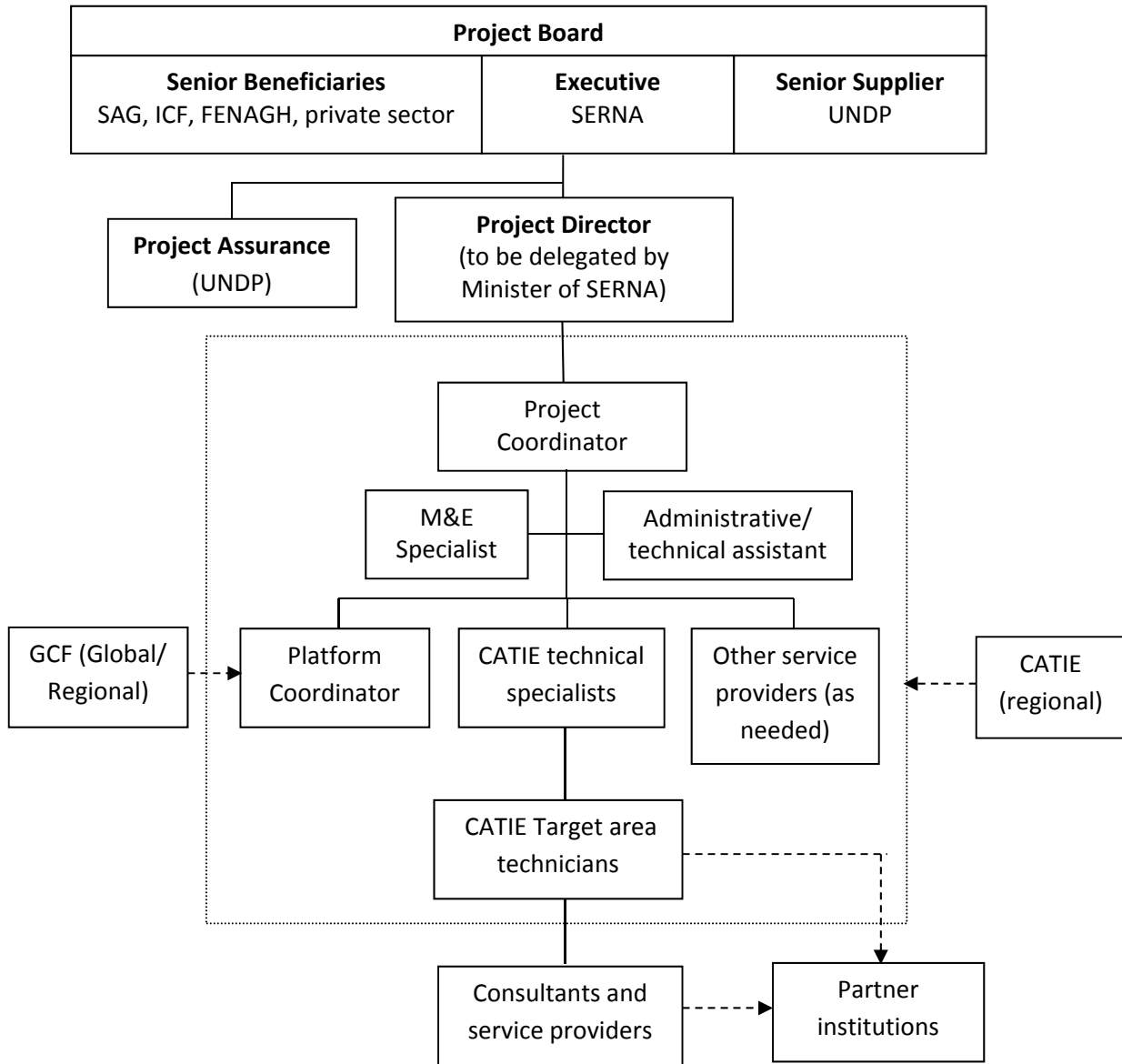
#### 11. Target for milk production benefits in Target Area 2 (kg)

Farm size class (ha)	Pasture			Silvopastoral systems	Totals
	Improved	Undegraded natural	Degraded natural		

<b>Milk production per land use (t/ha/year)</b>	<b>1300</b>	<b>1071</b>	<b>720</b>	<b>1700</b>		
Without project (total kg/year)						
<5	2,925.00	23,963.63	16,110.00	4,250.00	42,524	
5-20	58,500.00	383,150.25	257,580.00	38,250.00	737,480	
20-50	618,800.00	1,433,801.25	963,900.00	202,300.00	3,218,801	
>50	6,349,200.00	2,774,425.50	1,865,160.00	701,250.00	11,690,036	
Totals	7,029,425.00	4,615,340.63	3,102,750.00	946,050.00	<b>15,688,841</b>	
With project (total kg/year)						
<5	2,762.50	23,829.75	15,390.00	6,375.00	43,544	
5-20	54,847.00	380,140.74	241,394.40	86,020.00	762,402	
20-50	574,210.00	1,397,065.95	766,332.00	785,400.00	3,523,008	<b>Average</b>
>50	5,988,450.00	2,477,223.00	266,760.00	5,418,750.00	14,151,183	<b>increase/year</b>
Totals	6,620,269.50	4,278,259.44	1,289,876.40	6,296,545.00	<b>18,480,137</b>	<b>558,259</b>
Net benefit for project period					<b>Total per size class</b>	<b>Average per farmer</b>
<5	-650.00	-535.50	-2,880.00	8,500.00	4,434.50	44.35
5-20	-14,612.00	-12,038.04	-64,742.40	191,080.00	99,687.56	830.73
20-50	-178,360.00	-146,941.20	-790,272.00	2,332,400.00	1,216,826.80	7,157.80
>50	-1,443,000.00	-1,188,810.00	-6,393,600.00	18,870,000.00	9,844,590.00	44,748.14
Totals	-1,636,622.00	-1,348,324.74	-7,251,494.40	21,401,980.00	11,165,538.86	18,304.16



**PART III. Organigram of Project**



## **PART IV. Terms of References for key project staff and main sub-contracts**

### **1) Project Coordinator**

Under the overall supervision of the National Project Director (NPD, the Director of Biodiversity of SERNA), the Coordinator will have the following responsibilities:

- Coordination of project actions, in compliance with Annual Work Plans and Budgets (APWBs).
- Supervision of the activities of the technical members of the Project Implementation Unit (PIU), thereby ensuring their relevance, effectiveness and efficiency.
- Preparation of terms of reference for external consultants contracted by the project, supervision and coordination of their work, and review and approval of their products.
- Ensuring that the project is implemented with the full participation of local actors and that functioning mechanisms exist that ensure that their interests are taken into account, communicated and reflected in the implementation of the project.
- Promotion of the coordinated participation of Government institutions and NGOs, at central and local levels, in project implementation.
- Realization of continuous and periodic monitoring of project impacts, in relation to the achievements foreseen in the APWBs and the impacts foreseen in the project results framework.
- In communication with the NPD, ensuring that the project is implemented in accordance with the policies and plans of the SERNA, as Executing Agency.
- In communication with the Programme Official of UNDP, ensuring that the project is implemented in accordance with the United Nations Development Assistance Framework (UNDAF) in Honduras.
- Identification and promotion opportunities for actions by other agencies of the UN system in the project areas.
- Ensuring that a cross-cutting gender focus is incorporated into the actions of the project.
- Together with UNDP, preparation of Periodic Implementation Reports (PIRs), detailing project progress, to be presented to GEF.
- Together with UNDP and the project team and in discussion with local stakeholders, preparation of APWBs for approval by the NSC and the GEF.
- With support from the project administrative team, ensuring efficient and transparent execution of financial and physical resources, in conformity with the rules of the Government, GEF and UNDP.
- Design and implementation of professional development plans for the members for the PIU.
- Identification of risks that could affect the achievement of the foreseen impacts of the project, and the definition and application of corresponding mitigation strategies.
- Support to the functioning of the PSC, through the provision of advice and logistics.
- Preparation and oversight of the implementation of the operational manuals for the implementation of the project.
- Organization and support of external evaluations of the project.

### **2) National Platform Coordinator**

#### **1. Team management, budget and reporting**

- Lead staff, including consultants
- Budget management
- Prepare quarterly and annual progress report and all other substantive, management and financial reports.
- Meet with GCF technical advisors who will give technical support to the process

- Design and establish a Monitoring and Evaluation Plan to track progress
- Supervise development and updating of the webpage
- Make sure that project activities are in line with those supported by other organizations/donors.
- Prepare Terms of Reference for consultants and contractors and present to GCF and National Project Coordinator for their approval
- Design of a mechanism for exchanging experiences and lessons learned
- Represent the project at forums and meetings -related to project's objectives- at a regional and global level, with previous approval of steering committee.

## **2. Organize events**

- Ensure 3-4 Plenaries take place a year with maximum attendance of stakeholder and maximum participation during the plenaries. Ensure strong senior government and private sector participation.
- Establish up to 5 working groups based on platform priorities and ensure they are resourced with facilitation so they produce concrete results with agreed deadlines. Responsible to ensure meetings are held once a month with good attendance.

## **3. Build relationships and trust between stakeholders**

- Promote and establish close relations with project partners, as well as other UNDP projects and complementary projects related to sustainability and agricultural production.
- Identify stressed relationships and find ways to resolve them bilaterally
- Regularly hold bilateral meetings with key platform members to ensure they are having their concerns addressed and continue seeing added value in the platform

## **4. Producing concrete agreements and results**

- Generate support data on baseline in order for decisions to be made
- Gain commitments from platform members during working group meetings
- Follow up to make sure stakeholders follow up on their commitments
- Report progress on commitments back to the plenaries

## **5. Reporting lines**

Report to National Project Coordinator monthly and UNDP commodity team on a quarterly basis

## **PART V. Stakeholder involvement during the PPG phase**

### **1. Initial stakeholder consultation workshop**

On 10<sup>th</sup> May 2011, at the beginning of the process of drafting the PIF, a multi-stakeholder workshop was held to generate ideas for project design and obtain initial expressions of interest in participation (see Table 30 below).

### **2. PPG planning and analysis meetings**

A core group of institutional stakeholders participated in an inception meeting on 9<sup>th</sup> February 2012, in which the project (as approved in the PIF) was presented and discussed and a work plan was developed for the PPG phase.

#### **Participants in PPG inception meeting**

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A series of subsequent meetings of the PPG consultant team (led by CATIE) were held throughout the PPG phase, in which representatives of SERNA (DIBIO and Water Resources), SAG and ICF participated on a regular basis. These actors were thereby fully involved in the process of selection of the project's target sites and strategies.

### **3. Sustainable Ranching Platform**

The project preparation team participated on an approximately monthly basis in meetings of the Sustainable Ranching Platform, a multi-stakeholder initiative led by the Vice-Minister of SAG with responsibility for livestock. Advantage was taken of these meetings to maintain SAG and the other participants (from other sector ministries including SERNA, academia, NGOs and the private sector) fully informed of progress with project design and strategic aspects of the project proposal.

### **4. Interviews during fieldwork phase of PPG**

During the fieldwork phase, meetings were held with the actors shown in Table 31 to obtain information on their activities and to discuss their potential participation in the project.

In addition, one workshop was held in each of the two project zones to discuss environmental sustainability issues in relation to cattle ranching and the strategies to be applied by the project (see Table 32).

**in PIF Consultation Workshop, 10th May 2011**

<b>ORGANIZACIÓN</b>	<b>NOMBRE</b>	<b>CARGO</b>	<b>TELEFONOS</b>	<b>CORREO ELECTRONICO</b>
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i)	Ing. Gustavo Avila	Técnico	2232-4605	<a href="mailto:gaar267@gmail.com">gaar267@gmail.com</a>
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	Ing. Jorge Handal Hawit	Ministro - Presidente	2237-2201	
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	Akihiko Yamada	Director	2232-6727	
icano de mica	Eugenio Sánchez	Oficina de Relaciones Institucionales	2240-2243	
- BCIE	José Flores Rodas		2240-2108/ 2240 2162	<a href="mailto:info@proyectocambio.org">info@proyectocambio.org</a>
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	Sr. Martin Ochoa	Representante	2239-4551/55	
ana (GIZ)	Dr. Heinz Gehard Jansen	Coordinador de Cooperación	2238-1906	
	José Eguren	Oficial a cargo	2220-1100	
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29	TNC	Ing. Victor Leonal Archaga	Director	2223-6800	<a href="mailto:varchaga@tnc.org">varchaga@tnc.org</a>
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33	EL CORTIJO	Ing. Joseph Wlater Brens	Gerente General	2226-5544	<a href="mailto:joseph@polloscortijo.com">joseph@polloscortijo.com</a>
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35	SEDINAFROH	Luis Fernando Green	Ministro	98584364	<a href="mailto:copiaf@gmail.com">copiaf@gmail.com</a>
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40	IRBIO	Dr. Oliver Komar	Director		<a href="mailto:okomar@zamorano.edu">okomar@zamorano.edu</a>
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43	FENAGH	Edgardo Leiva	Director Ejecutivo	2231-0271	<a href="mailto:eleiva@fenagh.net">eleiva@fenagh.net</a>
44	Agenda Forestal	Ing. Juan Blas Zapata	Director Ejecutivo	238-1343 /5530	<a href="mailto:afh@rds.org.hn">afh@rds.org.hn</a>
45	Proyecto HEIFER	Marco Machado		99673862	<a href="mailto:marco.machado@heifer.org">marco.machado@heifer.org</a>

**Table 31. Interviews with institutional stakeholders during fieldwork phase:**

**Zone 1:**

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Harry Castillo	FAO	Técnico		97098768
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Osman Santos	AGANY	Vice-presidente		
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Byron Rosales	Creel Yoro	Administrador		96002469
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Sergio Vargas	DICTA-Ceiba	Encargado de ganadería		33046152/97737305
Liliana Fernández	DICTA-Ceiba			99099080
Danilo Figueroa	DICTA-Ceiba	Coordinador		
Carlos Estrada	SAGO	Presidente		95605830
José Jesús Flores	Fetrixy-Palmar-Yoro	Presidente caja rural		98006683
Tony Ventura	Creel Sociedad Colectiva y Asociados Cosme Roberto Isaula.	Presidente		97816531
Willians Bonilla	Leyde	Jefe de compra de leche cruda	willians.bonilla@leydehn.com	96912845
Miguel Angel Lemus	Lacthosa	Jefe de recibo de leche, Sula norte	miguel.lemus@lacthosa.com	97000378
Marlon Gaitan	Lacthosa	Jefe de recibo de leche, Tegucigalpa	marlon.gaitan@lacthosa.com	22024060 ext 5903
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Guillermo Verhelst	Lacthosa	Gerente		

**Zone 2:**

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Edwin Espinal	OXFAM	Coordinador regional	<a href="mailto:eebrundo@gmail.com">eebrundo@gmail.com</a>	98569018
Octavio Sánchez	ANAFAE	Coordinador	<a href="mailto:coanafae@cablecolor">coanafae@cablecolor</a>	2230-7864
Juan Francisco Argeñal	AGACH	Presidente		27820833
Luis Manuel Ochoa	ICADE	Coordinador zona sur	<a href="mailto:icadesur@yahoo.com">icadesur@yahoo.com</a>	3330 6430
Silvio Morales	ICADE	Técnico	<a href="mailto:silviomoralesherrera@yahoo.es">silviomoralesherrera@yahoo.es</a>	95821862
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César Morán	Lacteos Julita			32670481/27826699
Javier Casco	ADEPES	Director	<a href="mailto:adepespire@yahoo.com">adepespire@yahoo.com</a>	97718094
Oscar Cruz	SEPLAN			95821862
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Jhalmar Maradiaga	CARE	Coordinador cuenca y agricultura sostenible	<a href="mailto:jhalmar.maradiaga@ca.care.org">jhalmar.maradiaga@ca.care.org</a>	99370964
German Marquez	AGASM	Presidente		27882509
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Héctor Geovany	Creel Patagonia			99543701
Julio Morales	UMA-Choluteca			99197217
Desiderio Martínez	DICTA	Coordinador		96170385



Table 32.

Zona	Tipo de productor/ institución	Nombre de la persona	Lugar
2	Mediano	Santiago Bellino	Morazán
2	Mediano	Juan Martínez	Morazán
2	Mediano	Carlos Urbina	Morazán
2	Pequeño	Olman Hernán Montaya	Morazán
2	Pequeño	Juana Francisca Monte	Morazán
2	Pequeño	Lesbia del Rosario Betancurt	Morazán
1	Mediano	Pedro Aguilar	Morazán
1	Mediano	Enrique Joya	Morazán
1	Mediano	Alfredo Martínez	Morazán
1	Pequeño	Juan Jesús Flores	Morazán
1	Pequeño	Juan Carlos Corrales	Morazán
1	Pequeño	Evaristo Medina	Morazán
1	CARE International	Olman Galeas	Choluteca
1	Ayuda en Acción	Ivanna Sierra	Orocuina
2	Pequeño	Arcadia Betanco	Apacilagua
2	Mediano	Walter Mendoza Larios	Apacilagua
1	Mediano		El Palmar, Yoro
1	AGAY	Armando Murillo	Yoro
2	ADEPES	Oscar Pinel	Choluteca
0	LUPE (proyecto)	Olman Oriando Rivera	Tegucigalpa
0	FAO	German Flores	Tegucigalpa
2	CARE	Sergio Lantagne	Choluteca
0	FAO PESA	Alicia Portilla	Tegucigalpa
1	Asociación Ganaderos de la Atlántida	Héctor Nolasco	La Ceiba

## PART I. Stakeholder participation plan for project implementation phase

Active participation of the project's diverse stakeholders will be promoted through the following mechanisms:

- **Project Board (Steering Committee):** in addition to being a formal mechanism for project oversight and monitoring, required according to UNDP and GEF procedures, the Board will constitute a valuable opportunity for the input of strategic advice into project management decisions by its main stakeholder groups at central level, and for them to express and discuss any concerns or suggestions which they may have about its strategic directions and its implications for their interests. The membership of the Board will be diverse, including the lead Government institutions in relation to environmental and productive (agricultural and ranching) sectors, private sector (retailers) and producers (rancher associations). Given that the Board is formally located at the head of the project's organizational structure, the project team will be obliged to take the recommendations of the Board into account.
- **Sustainable Ranching Platform:** project advances and strategic directions will be reported and discussed on a regular basis in this platform, in which key Government agencies, national and international research institutions, private sector actors, producers, NGOs and international cooperation agencies will participate.
- **Regional sustainable ranching platforms:** these will be established in each of the project's two target areas and will allow the participation of local stakeholders. They will be used by the project for the presentation of project strategic directions and advances that are of specific relevance to actors in these two areas, and will at the same time act as forums for them to express concerns, interests and suggestions.

Specific strategies in relation to each principal stakeholder group will be as follows:

Stakeholder	Role and participation mechanism
Ministry of Agriculture and Livestock (SAG)	The Vice-Minister with responsibility for the livestock sector (or his/her delegate) will function as Project Director, allowing and requiring regular discussions with the Project Coordinator on strategic aspects of project implementation (subject to the overall guidance of the Project Board). He/she will also sit on the Project Board, and will thereby have joint responsibility for project oversight and guidance, including the approval of project reports, work plans and budgets.
Ministry of Natural Resources and Environment (SERNA)	A Vice-Minister of SERNA, the Director of Biodiversity or their delegate will chair the Project Board and will thereby have joint responsibility for project oversight and guidance, including the approval of project reports, work plans and budgets. The position of the SERNA in the chair of the Board will help to ensure the cross-sector focus of the project, balancing and integrating environmental and productive issues.
Farmers	Farmers owning cattle will constitute the main beneficiary group of the project. In order to maximize coverage and cost-effectiveness, the project will principally work with them through its institutional partners (Government and NGOs). The project will therefore depend to a large extent on the participation mechanisms managed by each of these partners for obtaining feedback and inputs from participating farmers regarding its strategies and impacts. When possible, project staff will participate directly in these mechanisms (such as strategic planning workshops with beneficiary participation). At project startup, the project will jointly review these provisions for participation with

Stakeholder	Role and participation mechanism
	<p>the partner institutions and suggest modifications as necessary in order to ensure their adequacy for its ends.</p> <p>A representative of the National Federation of Ranchers (FENAGH) will sit on the Project Board. Representatives of the Department-level Rancher Associations attached to FENAGH in the two target areas (AGAY and AGAS) will in addition participate in the regional ranching platforms to be established in the two target areas. The membership of FENAGH and its regional member associations tends predominantly to consist of medium-sized to large ranchers. FENAGH will participate in the Sustainable Ranching Platform at national level, which will provide opportunities to provide inputs on the strategic directions of the SAG and related institutions and initiatives, including the present project.</p> <p>Farmer Field Schools (ECAs) will provide the opportunity for farmers of all sizes to participate actively in the development and selection of technologies.</p>
<p>Civil Society/Non-Governmental Organizations (e.g. ADEPES, CARE, Heifer Project)</p>	<p>CSOs/NGOs will play a key role as the link between the project and its target beneficiary groups, channeling project messages and technical/financial support as well as feedback from the beneficiaries regarding its strategies and impacts. The relations between the project and CSOs/NGOs will include the following:</p> <ul style="list-style-type: none"> <li>- Provision of training to CSO/NGO staff on key elements of relevance to the project, including agronomic aspects of silvopastoral and related production systems, the nature and functioning of sustainable value chains and green finance schemes and opportunities for working with them, and the identification and analysis of environmental sustainability issues.</li> <li>- Joint funding of the provision of technical assistance to project beneficiaries by the CSOs/NGOs, under the oversight of project staff.</li> <li>- Support by project technicians to the development of management and monitoring tools for application by CSO/NGO partners, including environmental checklists for vetting productive proposals and easily-applicable indicators of environmental/sustainability impacts of their interventions.</li> <li>- Support by the project to the establishment of links between second-tier financial institutions and those CSOs/NGOs which function as first-tier institutions, leading to their capitalization to finance productive initiatives proposed by beneficiaries which comply with criteria of environmental sustainability.</li> </ul> <p>Project staff in each target area will hold six-monthly review meetings/workshops with CSO/NGO partners, to discuss progress and strategies. Project staff will in also involve them in the development of annual work plans and budgets. Additionally, in reflection of the financial support to be provided by the project to these CSOs/NGOs, the project will request periodic (quarterly) progress reports from them.</p>
<p>Rural development projects attached to Government (e.g. EMPRENDESUR, PROMECOM, Horizontes del Norte, Proparque)</p>	<p>The role of these projects, and the interactions of the GEF project with them and their beneficiaries, will be broadly the same as in the case of CSOs/NGOs as described above.</p> <p>Relations between the GEF project and these initiatives will further be promoted through participation in the Sustainable Ranching Platform and, in the case of the projects funded by IFAD (EMPRENDESUR and Horizontes del Norte) and the World Bank (PROMECOM) by discussions and joint planning</p>

<b>Stakeholder</b>	<b>Role and participation mechanism</b>
	between the Programme Officers within UNDP responsible for the implementation of the IFAD and GEF projects.

## PART VI. Proposals for Modifications of Production Systems

### Pasture improvement and establishment of compartments

A major obstacle for the establishment of improved pastures in the south of the country is the length of the dry season (which can last for 6 to 8 months), which is typically followed by torrential rains, which, when combined with the typically clayey soil texture in the zone can lead to water accumulation and flooding. The pasture species with greatest potential to stand these conditions include *Brachiaria humidicola*, *Cynodon nlemfuensis* and *Brachiaria brizantha*. The replacement of degraded pastures with improved pastures containing such grasses can reduce CO<sub>2</sub> emissions by 60% (Veldkamp 1993).

Conditions in the north of the country are less harsh, and a number of pasture species have been introduced here, including *Brachiaria brizantha* Marandú and Toledo, *B. decumbens*, *B. híbrido* (Mulato) and *Panicum maximum* (Guinea and Mombaza). However, as a result of poor management, the productive life of pasture is typically short, in some cases as little as 3 years. The project will seek to promote the recovery of degraded pastures with improved species already present in the zone, without ruling out the option of introducing new species.

Pasture division is an important strategy to be promoted in this regard: this increases the opportunity to introduce live fences and thereby to increase on farm tree cover, but also to improve management and thereby increase productivity. The number and layout of pasture compartments are defined in such a way as to permit individual access to each of them by cattle with a minimum of effort, free access to water, and management provides for considerations such as pasture establishment, periodic rotation, fertility management, mowing to uniform pasture height, and rest periods. Pasture division can also be carried out with electric fences. The sizes of pasture divisions depend on the size (total weight) of the herd to be grazed, the forage production potential of the pasture, and the grazing period that is foreseen.

### Costs

The costs of establishing improved pastures or recovering degraded pastures depend on the level of degradation that is present. In Honduras, it is estimated that the recovery of lightly degraded pastures may cost an average of around US\$29/ha and take around 2.5 months: this may rise to between US\$149 and US\$178/ha, and take around 6 months, in the case severely degraded pastures (Holmann *et al.* 2004). Other determining factors included labour costs, input costs, the degree of mechanization used, the use of seed or vegetative material, and whether legumes are included in the new pastures. Severely or very severely degraded pastures can normally be used around a year after restoration.

### Estimated costs for the establishment of improved pastures in the south of Honduras:

Item	Quantity/ha	Unit	Unit cost (Lps)	Total (Lps/ha)
<b>Labour</b>				
Site preparation*	20	Man-days	100	2,000
Sowing	13	Man-days	100	1,300
Weed control (with herbicides)	3	Man-days	100	300
Fertilization	4	Man-days	100	400
<b>Sub-total</b>				<b>4,000</b>
<b>Inputs and materials</b>				
Improved pasture seed	4.5	Kg	400	1,800
Herbicide**	3	Litres	200	600
Fertilizer (18-46-0)**	2	qq	600	1,200
<b>Sub Total</b>				<b>3,600</b>
<b>Total</b>			Lps.	<b>7,600</b>
			\$	<b>390.54</b>

\*In the north of the country this can be done with machinery, at approximately the same cost as by hand in the south.

\*\*Herbicides and fertilizers can be used to a limited degree. Once pastures are well-established, weeds can be controlled through rotational grazing and pastures can be fertilized by spraying with corral dung.

### **Dispersed trees in pastures**

The project will promote the natural regeneration of native trees in pastures, without ruling out the planting of other species, according to producers' needs for timber, fuelwood, fruit and income generation) and their potential to favour biodiversity and generate other ecosystem services. Young trees (whether naturally regenerated or planted) require protection from cattle, at least during the first two years after establishment. Currently the tree component present in pastures in both of the target areas consists of between 5 and 30 trees of different sizes per hectare.

Dispersed trees in pastures play an important role in animal production. Milk and beef production are estimated to increase by between 10 and 15% in pastures with high tree cover compared to those with low cover or without trees (Restrepo 2004). This is attributed to the effects of shade, which reduces heat stress, especially in the humid and sub-humid tropics. This is however offset to some extent by reductions in pasture production due to the effect of shade on pasture grasses, especially when tree cover exceeds 30%. An optimum level may be around 20%. Tree shade can be regulated by managing tree density and carrying out pruning and pollarding, depending on the type and size of the trees, their height, width, opacity and the form of their crowns.

On the plains of southern Honduras, the predominant pasture tree is Jicaro (*Crescentia alata* and *C. kujete*), which is one of the few species capable of adapting to these conditions (the soil typically dries out and cracks in the dry season and floods in the wet season. Typical species on the hills, between 100 and 900m above sea level, include Laurel (*Cordia alliodora*), *Diphysa robinoides*, *Bauhinia* sp., *Casearia* sp., *Byrsonima crassifolia*, *Guazuma ulmifolia*, *Simarouba glauca*, *Lonchocarpus* sp., *Psidium sartorianum*, *Tabebuia rosea*, Carreto (*Albizia saman*) and Guanacaste (*Enterolobium cyclocarpum*).

Many of these species have foliage with high fodder value, such as Tigüilote (*Cordia dentata*), Carbón blanco (*Mimosa platycarpa*), Nacascolo (*Caesalpinia coriara*), Carbón negro (*Mimosa tenuiflora*), Madreado (*Gliricidia sepium*) and Pintadillo (*Caesalpinia eriostachys*). *C. dentata* and *G. sepium* are also easily reproduced by stakes and so are commonly used in live fences. The fruit of *C. alata*, *C. kujete*, *A. saman* and *E. cyclocarpum* are also highly palatable for cattle, as these species originally depended for seed dispersion on their fruit being eaten by now-extinct herbivores that were present during the Pleistocene period.

Trees in pastures have been found to generate a number of ecosystem benefits including increased soil water infiltration, and consequently reduced cross-surface runoff and soil erosion (Ríos et al. 2007), enhanced biodiversity (Sáenz et al. 2007), improved carbon capture (Ibrahim et al. 2007) and improved soil nutrient cycling (Sandoval 2005; Castro 2010).

### **Multi-layer live fences**

These constitute trees, shrubs and/or palms planted in line as a support for barbed wire or electric fences which delimit or divide properties. Live fences can be formed exclusively of live trees or of a combination of live trees and dead posts, and may vary widely in the number of tree species which they contain.

In both target areas, live fences are traditionally used to divide pastures. The species most commonly used is *Gliricidia sepium*: in the north of the country, fences are commonly composed only of this species, while in the south other species used include *Cordia dentata* and *Bursera simaruba*. All three species resprout easily and are therefore typically established in fences in the form of live stakes obtained by pollarding. Both *G. sepium* and *C. dentata* are excellent fodder species, as well as providing high quality firewood.

The diversification of existing live fences through the establishment of additional species results in a diversification of the products generated for farmers, including the generation of higher quality timber, and diverse types of fruit. Candidates include native species such as Laurel (*Cordia alliodora*) and *Bombacopsis quintata* (which is easily established by stakes), and exotics with proven markets such as *Gmelina arborea*, teak (*Tectona grandis*), and *yeronima alchornoides*. Fruit species commonly incorporated in live fences in the south of the country include cashew (*Anacardium occidentale*) and *Spondius purpurea*. The sale of *S. purpurea* fruit is an important source of dry season income for many families in the south, and there have also been a number of experiences of women's groups processing and marketing cashew nuts.

One kilometre of multi-layer live fence may include as many as 575 individuals of *Gliricidia sepium* and/or *Bursera simaruba*, 33 fruit trees such as lemon or avocado and 124 trees of *C. alliodora* and/or *Cedrela* (Villanueva, Ibrahim et al. 2008). It is proposed through this project to promote multi-layer live fences through the establishment of stakes of multi-purpose species such as *G. sepium*, *B. simaruba* and *C. dentata* at a spacing of around 3m (333 stakes/km). Other species, for timber and/or fruit, would be planted between these, giving a total of around 666 trees/km. Once the crowns of the timber and fruit trees meet, they would be thinned, resulting in an average final spacing of 6m. This would ensure greater survival than the typical practice of starting off with an initial spacing of 6-8m. The final composition of the fence would therefore be 333 individuals of multi-purpose service trees (such as *G. sepium*, *C. dentata* or *B. simaruba*) per kilometer and 166 timber and/or fruit trees, giving a total of around 499 trees/km.

#### *Establishment costs*

Establishment costs vary depending on whether the fence is new, or adapted from a simple live fence or dead fence.

Cost item	New			Adapted from existing simple live fence		Adapted from existing dead fence	
	Amount	Unit costs (Lps)	Total (Lps)	Amount	Total (Lps)	Amount	Total (Lps)
<b>Labour costs (man days)</b>							
Site preparation	16	100.00	1,600.00	16	1,600.00	16	1,600.00
Planting	20	100.00	2,000.00	15	1,500.00	20	2,000.00
Manual weeding	10	100.00	1,000.00	10	1,000.00	10	1,000.00
Fertilization (twice)	4	100.00	400.00	4	400.00	4	400.00
Construction of fence	20	100.00	2,000.00				
<b>Sub-total</b>			<b>7,000.00</b>		<b>4,500.00</b>		<b>5,000.00</b>
<b>Inputs and materials</b>							
Timber or fruit trees**	333	5.00	1,665.00	333	1,665.00	333	1,665.00
Stakes	333	2.00	666.00			333	666.00
Fertilizer (18-46-0) (quintales)	2	600.00	1,200.00	2	1,200.00	2	1,200.00
Dead posts	100	15.00	1,500.00				
Barbed wire (336 m rolls)	8	750.00	6,000.00				
Staples (kg)	8	20.00	160.00				
<b>Sub Total</b>			<b>11,031.00</b>		<b>2,865.00</b>		<b>3,531.00</b>
<b>Total</b>		<b>Lps.</b>	<b>18,031.00</b>		<b>7,365.00</b>		<b>8,531.00</b>
		<b>\$.</b>	<b>926.57</b>		<b>378.47</b>		<b>438.39</b>

#### *Management of live fences*

Management depends upon the objective of the fence: if this is to optimize biodiversity and biological connectivity, then tree crowns should be allowed to develop freely, while if the objective is to generate products for the farm (timber, posts, firewood, fruit etc.) then the fence should be subject to thinning and pruning.

#### *Fodder production*

Live fences have the potential to generate between 3.5 and 6 tons/km of dry matter (Romero et al. 1993). In general, live fences contain woody species that produce high quality fodder.

#### *Ecological benefits of live fences*

Live fences can make a significant contribution to biodiversity, especially those with high levels of tree species and structural diversity (Harvey et al. 2008). Multi-layer live fences show greater richness and abundances of bird and butterfly species than simple fences, and than pastures with high tree densities (>30/ha): in some cases their biodiversity may approach that of secondary forests or fallows (Sáenz et al. 2007; Tobar et al. 2007). Live fences can make an important contribution to biological connectivity in agricultural landscapes as they facilitate the movement of fauna (Chacón and Harvey, 2006); however effective biodiversity conservation depends on plant cover and diversity across the landscape as a whole (Enríquez et al. 2007).

#### *Producer types*

Multi-layer live fences are suitable for all scales of producers; however interviews during the PPG phase suggest that larger producers are more interested in obtaining timber from them, while smaller farmers (especially in the south) are more interested in their potential to produce fruit.

#### **Woody species commonly found in live fences**

Common name	Scientific name	Uses
Madreado, madero negro	<i>Gliricidia sepium</i>	Multiple use
Guachipilín, macano	<i>Diphysa americana</i>	
Sauco negro	<i>Sambucus mexicanus</i>	
Poró, pito, búcaro	<i>Erythrina sp.</i>	
Indio desnudo, tambor, jiote	<i>Bursera simaruba</i>	Fodder, medicine
Limón	<i>Citrus lemon</i>	Fruit
Mandarin	<i>Citrus reticulata</i>	
Cashew	<i>Anacardium occidentale</i>	
Orange	<i>Citrus sinensis</i>	
Ciruelo, jocote	<i>Spondias sp.</i>	Fruit, fodder
Mahogany	<i>Swietenia macropylla</i>	Timber
Laurel	<i>Cordia alliodora</i>	
Roble de sabana, macuelizo	<i>Tabebuia rosea</i>	
Pochote	<i>Pachira quinata</i>	
Cedro	<i>Cedrela odorata</i>	
Izote, espadillo	<i>Yucca elephantipes</i>	
Pinón, yupur, tempo	<i>Jatropha curcans</i>	Food, ornamental
		Live fence

Source: Cordero y Boshier (2003).

#### **Fodder banks (for protein and energy)**

The low productivity of livestock in Honduras is due in part to the low protein content of cattle diets, especially in the dry season. During the rainy season, tropical pastures contain between 7 and 11% of protein, but in the dry season the content may fall as low as 4%, similar to that of the crop residues which are widely used as feed in both target zones. (Cruz and Nieuwenhuys 2008).

In a protein bank, leguminous trees and shrubs or other fodder species are established at high density, in a compact block, to maximise the production of high quality fodder (Pezo and Ibrahim 1999). Protein banks are used to supplement pastures, reducing and even eliminating the need for concentrates. They can be managed by browsing or but cut-and-carry, and the density of planting depends on the system to be used. They can be used all year round, although their most important contribution is in the dry season (Turcios et al. 2009).

The establishment and management of legume shrubs is more expensive than that of improved pastures, especially in locations where labour is scarce: this factor has limited uptake of the system in Central



America (Cruz and Nieuwenhuys 2008). The significance of this as a limiting factor can be reduced through management. The production system in question should be a specialized for beef or milk, and intensified, for example by keeping the animals enclosed, by removing from the herd animals with low productive potential, and by improving the genetic composition of the herd. The cattle enclosures and feeding points should be established close to the fodder bank, good access routes for the fodder should be ensured and if possible the fodder should be transported by vehicle or animal traction.

Species with proven potential in fodder banks in dry climates include *Cratylia argentea* and *Flemingia macrophylla* (Peters et al. 2003). Permanent grasses such as sugar cane and other cut-and-carry grasses may also be used.

#### Woody species with potential for use in fodder banks

Species	Dry season fodder production	Fodder production in areas without pronounced dry season	Adaptation to poorly drained soils	Adaptation to acid soils (pH<5.5)	Adaptation to alkaline soils (pH>7.5)
<i>Leucaena leucocephala</i>	High	Low	Low	Low	Good
<i>Cratylia argentea</i>	Very high	High	Low	Moderate/good	Low
<i>Gliricidia sepium</i>	High	High	Low	Moderate	Good
<i>Erythrina sp.</i>	Moderate	Very high	Moderate	Low	Moderate

In economic terms, fodder banks can increase milk production by between 10% and 20% (Ibrahim *et al.* 2001). In social terms, they generate rural employment, especially when they are managed under cut-and-carry systems (Sánchez 2007). In ecological terms, they can function as habitat for small migratory birds (Sáenz 2007) and they also have high potential for storing carbon (Ibrahim *et al.* 2007).

Fodder banks are ideally accompanied by practices for conserving fodder produced during periods of abundance, for use in periods of scarcity (the dry season), for example in the form of hay and silage. Very little attention has been paid to these practices in the target areas, but the farmers interviewed in the PPG phase expressed much interest in them.

Another alternative which offers similar benefits is the establishment of short-cycle grasses such as sorghum and fodder Maize, and legumes such as Cigras 06 soya, for silage production, especially in the north zone.

In addition to cattle fodder, some species can be used for human food. These can be established under a number of production systems, such as in association with cut and carry fodder, in association with maize cultivation, or alone in areas dedicated to the production of cattle fodder and grains for human food.

#### Fodder legumes with potential for the target zones, which can also be used for human food.

Name	Adaptation	Use	Productive potential	Productive cycle
Lablab bean ( <i>Lablab purpureus</i> )	Well drained loams to heavy soils. Tolerates prolonged droughts but loses its leaves, does not tolerate flooding, ranges from 0 to 2500 masl	Human food. Green manure, soil cover, hay, silage, concentrate, cut and carry, grazing.	4-10 t/ha/year of forage dry matter, 2-7t/ha/year of green beans for human food.	3-6 months. Sometime biannual or even perennial
Vigna bean ( <i>Vigna radiata</i> )	Low fertility and Sandy soils. Tolerates drought and shade. Does not tolerate flooding. 600 to 1800 masl		3-7 t/ha/year forage dry matter. 0.5-1.5 t/ha/year of beans for human food.	50 days for forage, 70 days for beans
Cow pea ( <i>Vigna unguiculata</i> )	Soils from low to high fertility, acids, well drained. Drought tolerant. 0 to 1600 masl		3-8t/ha/year forage dry matter, 0.5-3t/ha/year of beans for human feed.	2-4 months
Pigeon pea	Wide range of soils.		Human food, soil cover,	2-12 t/ha/year of

<i>(Cajanus cajan)</i>	Intolerant of frosts and floods, but tolerates droughts and shade. 0 to 2000 masl	live barrier, windbreak, protein bank, hay, silage, concentrate, cut and carry, feed for poultry and pigs	forage. High production of seed for human and animal consumption.	perennial, needs to be resown every 5 years
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Source: (Peters *et al.* 2003).

### Protein Banks for cut and carry

Periodically branches and leaves are cut and chopped, to be given to livestock in feeding troughs. The species used are leguminous shrubs which have a high resprouting capacity and are favoured by livestock; however when feed is scarce, the livestock will eat even less favoured species. This system is highly demanding of labour and requires the construction of feed troughs.

Generally between 2 and 4 harvests are carried out per year. Species such as *Cratylia argentea*, planted by producers in Muy Muy, Nicaragua, have shown yields of 100-300g dry matter per plant per harvest, when planted at densities of 14-19,600 plants/ha. *Leucaena* in the Petén región of Guatemala has shown 700 kg/ha dry matter per harvest. This type of bank is most useful when dry season feed is required (Cruz and Nieuwenhuys 2008). Seed of *Cratylia*, and from other species which require sexual seed for establishment, needs to be obtained initially from recognised institutions such as CIAT. However, with adequate training and equipment farmers can subsequently produce seed themselves.

Protein banks for cut and carry which are pruned frequently tend to become degraded rapidly due to the extraction of nutrients from the system: it may therefore necessary to apply a programme of fertilization.

### Browsing banks

In this system, livestock enter the field to browse the leaves and young shoots of the shrub in question. The shrubs regenerate easily if browsing is not excessive. A browsing bank can be used between 6 and 12 times per year. The shrubs are established at a density which allows a good ground cover, but which also allows the free movement of livestock through the bank. Browsing banks should also be associated with pasture grasses, in order for livestock to have access to both feed sources; diets based solely on legumes can lead to health problems in livestock. A balance of 30% legumes and 70% pasture grasses is recommended. This system is most useful in specialized dairy farmer and double-purpose systems, with intensive forms of management.

Establishment costs vary depending on the type of bank to be established. The association of pasture grasses with browsing banks increases costs. Costs also depend on the species used: those established by stakes are generally less costly, given that the stakes can normally be obtained locally, although this can be demanding in terms of labour costs.

Both types of protein bank require maintenance. This involves weed control, fertilization, and pruning of browsing banks to keep them uniform. Cut and carry banks require harvesting, transport, chopping and distribution of food in feeding areas. The maintenance costs of *Leucaena leucocephala* Banks managed through browsing in the Petén ranged from US\$23 to \$40/ ha/year; in contrast, Banks of *Gliricidia sepium* managed through cut and carry in Rivas (Nicaragua) ranged from US\$46 to 314/ha/year; and in one of *Cratylia argentea* in Esparza (Costa Rica) costs were US\$237/ha/year. In the case of cut and carry banks, costs of harvesting can range from US\$175 to 490/ha/year for *Gliricidia sepium*, and y US\$114/ha/year for *Cratylia argentea* (Pezo *et al.* 2012). The difference in these costs from one site and one producer to another depends on the costs of labour, and the particular conditions of each farm (infrastructure, equipment, access to forage, etc.).

### Establishment costs for one hectare of *Cratylia* protein bank for cut and carry, in médium and small scale farms.

Description	Amount	Unit	Unit	Total paid	Total that	Total
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			costs (L)	by farmer (L)	requires financial support (L)	(L)
<b>Labour</b>						
Site preparation (slashing)	20	Man/day	100.00	2,000.00		2,000.00
Direct sowing	13	Man/day	100.00	1,300.00		1,300.00
First weeding (manual)	20	Man/day	100.00	2,000.00		2,000.00
Fertilization (2 events)	10	Man/day	100.00	1,000.00		1,000.00
Insecticide application	3	Man/day	100.00	300.00		300.00
Second weeding (chemical)	3	Man/day	100.00	300.00		300.00
<b>Sub Total labour</b>						<b>6,900.00</b>
<b>Inputs and materials</b>						
Seed	7	kg.	250.00		1,750.00	1,750.00
Seed protection (insecticide, fungicide)	1	kg.	250.00		250.00	250.00
Herbicide**	3	Lts.	150.00	450.00		450.00
Insecticide**	3	Lts.	200.00	600.00		
Urea fertilizer**	3	qq	500.00		1,500.00	1,500.00
Fertilizer (18-46-0)**	3	qq	600.00		1,800.00	1,800.00
<b>Sub Total inputs and materials</b>						<b>5,750.00</b>
<b>Total</b>			<b>L.</b>	<b>7,950.00</b>	<b>5,300.00</b>	<b>13,250.00</b>
			<b>US\$</b>	<b>408.53</b>	<b>272.35</b>	<b>680.88</b>

**Establishment costs for one hectare of protein browsing bank of *Leucaena* and one species of *Brachiaria*, in médium to small scale farms**

Description	Amount	Unit	Unit costs (L)	Total paid by farmer (L)	Total that requires financial support (L)	Total (L)
<b>Mano de obra</b>						
Site preparation (slashing)	20	Man/day	100.00	2,000.00		2,000.00
Direct sowing	13	Man/day	100.00	1,300.00		1,300.00
First weeding (manual)	20	Man/day	100.00	2,000.00		2,000.00
Fertilization (2 events)	10	Man/day	100.00	1,000.00		1,000.00
Insecticide application	3	Man/day	100.00	300.00		
Second weeding (chemical)	6	Man/day	100.00	600.00		600.00
Direct sowing of <i>Brachiaria</i>	13	Man/day	100.00	1,300.00		1,300.00
<b>Sub Total Mano de obra</b>						<b>8,200.00</b>
<b>Insumos y materiales</b>						
<i>Leucaena</i> seed	3	kg.	250.00		750.00	750.00
Seed protection (insecticide, fungicide)	1	kg.	250.00		250.00	250.00
<i>Brachiaria sp.</i> seed.	4	kg.	400.00		1,600.00	1,600.00
Herbicide**	6	Lts.	150.00	900.00		900.00
Insecticide**	2	Lts.	200.00	400.00		
Urea fertilizer**	3	qq	500.00		1,500.00	1,500.00
Fertilizer (18-46-0)**	3	qq	600.00		1,800.00	1,800.00
<b>Sub Total inputs and materials</b>						<b>6,800.00</b>
<b>Total</b>			<b>L.</b>	<b>9,800.00</b>	<b>5,900.00</b>	<b>15,700.00</b>
			<b>US\$</b>	<b>503.60</b>	<b>303.19</b>	<b>806.78</b>

#### *Pasture associated with browsing banks*

The woody shrubs typically used in fodder banks are highly favoured by cattle. For this reason, the pasture species associated with them should also be selected as being similarly favoured.

Species such as mulato (*Brachiaria hibrida*), suazi (*Digitaria swazilandensis*), *Brachiaria decumbens* and *Brachiaria brizantha* (cultivar Marandú) have functioned successfully. In moisy climates, Retana (*Ischaemum indicum*) may also function. All of these species have a low habit and do not get tangled around the shrubs. Others, such as star grass (*Cynodon plectostachyu*), produce excellent quantity fodder but do get tangled in the shrubs, while others such as *Panicum maximum* grow tall and compete with the shrubs for light. One species which has been reported as having limitations in browsing banks is *Brachiaria brizantha* (cultivar Toledo or Victoria), as it is not attractive to cattle relative to the shrubs.

#### *Producer types*

Protein banks have been widely promoted in the Yoro area, by national institutions such as SAG and international institutions such as CIAT, however they have had limited uptake, apparently due to the fact that they require significant labour investment. Adoption may prove to be greater however among smaller farmers who depend more on family labour. Labour requirements may be justified if productivity is increased through specialization in either beef or milk, cattle are kept enclosed, unproductive animals are discarded and the genetic quality of the herd is improved; and labour requirements can be reduced if the distance between protein banks and the livestock is kept to a minimum, routes for transporting the cut material are improved and vehicular or animal traction is used.

#### **Modified Quesungual System**

This system is based on traditional farmer practices of managing natural tree regeneration and pruning or pollarding trees in fields, which are present throughout much of the south of Honduras, with local variations. This system has been particularly publicized in the south of Lempira Department, where very high densities of trees are maintained in fields. The system involves a period of crop production (maize and sorghum or beans), a grazing phase and a fallow phase. Cattle are introduced into fields to feed on crop residues. This system has been successful in maintaining low livestock densities, but in recent years livestock activity has increased and this has led to soil degradation (García 2011). However, the system has proven to be successful in providing human food in a sustainable manner and, with a moderate animal load (< 200 animal unit days /ha/year), and some modifications, it can be effective in ensuring availability of dry season feed for livestock.

It is therefore proposed to implement a modified Quesungual-type system, in order to allow producers to continue receive benefits from the system and at the same time to increase the efficiency of its livestock component. The proposed modifications seek, principally, to increase the quantity and quality of fodder available, increasing the density of fodder trees and shrubs, allowing them to be managed through direct browsing or cut-and-carry, depending on the fragility of the land in question. It is of fundamental importance to evaluate land fragility in order to decide which system to use: direct browsing should only be carried out on slopes of less than 45%, without the presence of young trees, and with good soil cover. If cut and carry is used instead, attention must be given to managing fertility in order to compensate for the nutrient losses when fodder is taken out of the system.

A large part of the trees and shrubs in the system can be derived from natural regeneration, however in order to increase the quantity and quality of fodder it may be necessary to introduce new species, either scattered, in rows, in live fences or compact blocks (as in the case of protein banks). Species with particular potential for establishment in these systems include *Cratylia argentea* in cut and carry banks; *Cordia dentata* and *Gliricidia sepium* in live fences; and *G. sepium* and *Leucaena leucocephala* for establishment inside the field itself. In the case of *L. leucocephala*, it may be established in rows or dispersed in crop fields, and used as a browsing bank once the crops have been harvested; or on sites with high vulnerability to degradation, it can be managed for cut and carry (during cropping periods or after the harvest).

*Gliricidia sepium* has a great potential for being planted inside crop fields, given its relative ease of establishment and its multiple uses (including fodder, nitrogen fixation, posts and firewood). Stakes of this species can be planted in crop fields at a square spacing of 2-3m, in rows at 3-5m between rows (depending on slope) and 0.7-1.2 m between stakes. The same pattern can be used with *L. leucocephala*, although in this case establishment is by direct sowing, which is carried out at the same time as the sowing of the food crop, or using potted plants produced in nurseries.

Depending on land availability, these systems can be complemented by energy banks containing sugar cane, cut-and-carry fodder grasses or fodder sorghum, as these would provide fresh material in addition to the dry crop residues.

#### *Management*

The pruning of naturally regenerated trees in fields is a traditional practice in the south of Honduras, in order to reduce the light competition between trees and crops. Introduced trees and shrubs will also require pruning, for the same reason. The pruned material can be used as mulch, or as cattle fodder, depending on the period of the year and the feed needs of the cattle.

The fundamental principles of the Quesungual system as applied and promoted in the south-west of Honduras have been the avoidance of burning, the natural regeneration of native species, minimum soil disturbance, permanent soil cover and localized fertilizing: the key principle among these, on which the others depend, is non-burning.

#### *Producer types*

This system is suitable for small farmers in the south of Honduras, who produce staple grains and traditionally feed their cattle crop residues in the dry season. Labour availability is likely a key determinant of uptake, especially among farmers with larger holdings: one of the key management activities required is pruning, which may have to be applied to up to 1,000 trees/ha, while at least 2,000 stumps/ha may have to be subjected to severe pollarding (at 1.5m). This system is therefore most likely to be suitable for smaller farmers.

#### *Establishment costs*

The basic element of this system, which is the cultivation of staple grains in the midst of populations of scattered trees, is already present over much of the target area in the south of Honduras, as is the practice of grazing cattle on crop residues in fields, in the dry season. The additional cost of converting these existing practices into 'modified Quesungual' systems would be the introduction of new woody species with high fodder potential. The costs of site preparation, weed control etc. would be shared between the existing crops and the introduced tree or shrub species. When new trees and shrubs arise through natural regeneration, the only cost involved is the protection of the young plants.

#### **Establishment costs for 1ha of modified Quesungual system, with *L. leucocephala* in alleys, in an existing maize field.**

Description	Quantity	Unit	Unit price (L)	Total/ farmer (L)	Requiring finance (L)*	Total (L)
<b>Labour</b>						
Direct sowing of <i>Leucaena</i> **	8	M/D	100.00	800.00		800.00
Manual weed control***	20	M/D	100.00	2,000.00		2,000.00
Insecticide application (with knapsack sprayer)	4	M/D	100.00	400.00		
Fertilization (2 events)	10	M/D	100.00	1,000.00		1,000.00
<b>Sub Total Labour</b>						<b>3,800.00</b>
<b>Inputs and materials</b>						
<i>Leucaena</i> seed****	1	kg.	250.00		250.00	250.00
Insecticide/fungicide for protecting seed	1	kg.	250.00		250.00	250.00
Insecticide	3	Lts.	200.00	600.00		600.00

Description	Quantity	Unit	Unit price (L)	Total/ farmer (L)	Requiring finance (L)*	Total (L)
Urea fertilizer	1	qq	500.00		500.00	500.00
18-46-0 fertilizer	1	qq	600.00		600.00	600.00
<b>Sub Total Inputs and materials</b>						<b>2,200.00</b>
<b>Total</b>			L.	<b>4,800.00</b>	<b>1,600.00</b>	<b>6,400.00</b>
			US\$	<b>246.66</b>	<b>82.22</b>	<b>328.88</b>

\* Producers interviewed stated that they would require financial support for this element.

\*\*Sown at the same time as the maize, so the costs of land preparation are borne by the crop.

\*\*\*Weed control must be manual in order to avoid damaging the young trees.

\*\*\*\*If seed are obtained locally: if they are brought from outside they may cost up to \$60/kg.

#### Maintenance costs

The additional maintenance costs associated with the Quesungual system are related to the pruning of trees prior to the sowing of maize, although this cost is compensated for by reduced weed control costs, due to the shade and soil cover provided by the system. The forrage species can be directly browsed by cattle, and if cut and carry is opted for, this can be carried out by family labour in the case of small farms. The labour necessary for site preparation for the sowing of Maize in this system is between 14 and 16 man-days/ha (US\$ 86.33 to 98.66/ha), compared to the conventional system which requires between 20 and 22 man-days/ha (US\$ 123.32 to 135.66/ha) (PESA 2012).

#### Dry matter content, raw protein and foliage digestibility of trees and shrubs with fodder potential in Central America<sup>73</sup>

Species	Dry matter %	Raw protein %	Dry matter in vitro digestibility %*
Chicasquil fino ( <i>Cnidocolus aconitifolius</i> )	16,5	42,4	86,6
Morera ( <i>Morus sp</i> )	28,7	23,0	79,9
Jicaro ( <i>Crescentia alata</i> ) (flores)		11,0	77,6
Chicasquil ancho ( <i>Cnidocolus chayamansa</i> )	9,3	30,8	74,8
Tora morada ( <i>Verbesina myriocephala</i> )	19,8	23,0	71,5
Chilca ( <i>Senecio salignus</i> )	26,5	23,4	71,5
Amate ( <i>Ficus sp.</i> )		14,4	71,3
Tora blanca ( <i>Verbesina turbacensis</i> )	20,6	20,8	70,8
Clavelón ( <i>Hibiscus rosa-sinensis</i> )	24,8	21,0	70,0
Chaperno ( <i>Lonchocarpus guatemalensis</i> )		19,5	69,4
Ramón blanco ( <i>Brosimum alicastrum</i> )		12,7	67,2
Zorrillo ( <i>Roupala complicata</i> )	26,6	42,5	66,9
Amapola ( <i>Malvaviscus arboreus</i> )	16,5	22,4	64,5
Chichipince ( <i>Hamelia patens</i> )		17,5	61,6
Carbón blanco ( <i>Mimosa platycarpa</i> )		16,0	60,0
Madero negro ( <i>Gliricidia sepium</i> )	25,1	21,6	59,2
Nacascolo ( <i>Libidibia coriaria</i> )		16,0	59,0
Ramón colorado ( <i>Trophis racemosa</i> )		12,9	56,5
Poró enano ( <i>Erythrina berteriana</i> )	22,9	24,3	55,0
Guácimo ( <i>Guazuma ulmifolia</i> )	37,6	15,6	54,3
Mano de león ( <i>Dendropanax arboreus</i> )		12,1	52,7
Guarumo ( <i>Cecropia peltata</i> )	19,7	19,8	51,8
Poró gigante ( <i>Erythrina poeppigiana</i> )	24,0	23,8	51,3
Poró de cerca ( <i>Erythrina cocleata</i> )	24,3	21,6	51,2
Copal ( <i>Stemmadenia donnel-Smithii</i> )	19,1	24,4	50,6
Bilil ( <i>Polimnia sp.</i> )	17,9	22,1	45,2
Tiguilote ( <i>Cordia dentata</i> )	41,0	16,0	36,0

<sup>73</sup> Adapted from: Hernández y Benavides, 1992; Araya et al., 1993; Mendizábal et al., 1993; Reyes y Medina, 1992; Godier et al., 1992; Medina, 1992 y Rodríguez et al., 1987.

## PART VII. Environmental Service Index based on birds (ISA-B) for Yoro Pilot Area

### Methodology

This methodology uses the assumed habitat value of different land uses for birds as a proxy for overall biodiversity value, and then translates this into a farm- or landscape level index by weighting the values per land use according to the relative proportions of each land use present in the farm or landscape. The use of birds as proxy indicators in this way is based on the assumption that the responses of individual species may reflect those of other fauna species (MacNally & Fleishman 2004, Fleishman et al. 2005): birds are particularly useful in this regard due to their sensitivity to habitat conditions and their ease of observation (Gregory 2006, Niemelä 2000).

The methodology used is modified from that proposed by Sáenz et al. (2006) and is based on lists of bird species found in the bibliography for the target area 1 (Yoro), together with data collected in Copán, Honduras by the project “The impact of improved cattle production practices on biodiversity in Central America”, managed by GAMMA/CATIE. The values will require validation during the implementation phase of the project.

The Environmental Service Indices are calculated according to the following formula:

$$\text{Environmental Service Index for Biodiversity in each land use category (ISAB)} = (\sum VI_j * Abun + VI_{j_i} + \dots) * S_i$$

Where:

**VIxAbun** = Importance Value (VI) for each species, multiplied by its abundance category (1= common throughout the year; 2= common, observed at least once per week; 3= observed less than once per week and 4= observed once or twice per year), including its IUCN threat status: 1= Least Concern, 2= Threatened, Valor 3= Vulnerable.

**S<sub>ha</sub>**: The proportion of the bird species richness in a given land use relative to the total registered.

### Baseline and target values for ISA-B at landscape and farm levels

Land use	ISA-B	Baseline		Year 4		Difference	
		Area (ha)	ISA-B weighted by area	Area (ha)	ISA-B weighted by area	Area (ha)	ISA-B weighted by area
Broadleaved forest	1.19	3,458	0.27	3,458	0.27	0	0
Mixed forest	1.19	472	0.04	472	0.04	0	0
Pine forest	0.48	2,700	0.09	2,700	0.09	0	0
Secondary vegetation	0.91	710	0.04	1,100	0.07	+390	+0.03
Silvopastoral systems	0.53	500	0.02	4,300	0.15	+3,800	+0.13
Pastures without trees	0.15	1,070	0.01	570	0.01	-500	0
Degraded pastures	0	4,590	-	900	-	-3,690	0
Crops	0	1,500	-	1,500	-	0	0
<b>Total</b>		<b>15,000</b>	<b>0.47</b>	<b>15,000</b>	<b>0.63</b>	<b>0</b>	<b>+0.16</b>

### Small farms

Land use	ISA-B	Baseline		Year 4		Difference	
		Area	ISA-B weighted	Area	ISA-B weighted	Area	ISA-B weighted

		(ha)	by area	(ha)	by area	(ha)	by area
<b>Forest</b>	1.19	0	0.00	0	0.00	0	0
<b>Fallow</b>	0.91	0	0.00	2	0.12	+2.0	+0.12
<b>Pastures with trees</b>	0.53	1.7	0.06	7.7	0.27	+6.0	+0.21
<b>Pastures without trees</b>	0.15	3.5	0.04	3.3	0.03	-0.2	-0.01
<b>Degraded pastures</b>	0	7.8	0.00	0	0.00	-7.8	0
<b>Crops</b>	0	2	0.00	2	0.00	0	0
<b>Total</b>		<b>15</b>	<b>0.10</b>	<b>15</b>	<b>0.42</b>	<b>0</b>	<b>+0.32</b>

### Medium-sized farms

Land use	ISA-B	Baseline		Year 4		Difference	
		Area (ha)	ISA-B weighted by area	Area (ha)	ISA-B weighted by area	Area (ha)	ISA-B weighted by area
<b>Forest</b>	1.19	2	0.06	2	0.06	0	0
<b>Fallow</b>	0.91	0	0.00	4	0.09	+4.0	+0.09
<b>Pastures with trees</b>	0.53	5.9	0.08	22.4	0.30	+16.5	+0.22
<b>Pastures without trees</b>	0.15	13.9	0.05	9.6	0.04	-4.3	-0.02
<b>Degraded pastures</b>	0	16.2	0.00	0	0.00	-16.2	0
<b>Crops</b>	0	2	0.00	2	0.00	0	0
<b>Total</b>		<b>40</b>	<b>0.19</b>	<b>40</b>	<b>0.48</b>	<b>0</b>	<b>+0.29</b>



Species of global conservation priority in the target areas

Conservation priority in Yoro target area

Order	Species	Common name	IUCN Status	Observations
	<i>Bolitoglossa cataguana</i>	Salamander	CR	Endemic to Honduras, PN Montaña de Yoro
	<i>Bolitoglossa cf. porrasorum</i>	Salamander	CR	Endemic to Honduras
	<i>Bolitoglossa dofleini</i>	Salamander	NT	
	<i>Nototriton sp.</i>	Salamander	CR	Endemic to RVS Texiguat
	<i>Nototriton barbouri</i>	Salamander	CR	Endemic Honduras (south side of Texiguat, Pico Bonito y Yoro)
	<i>Nototriton tomamorum</i>	Salamander	CR	Endemic to RVS Texiguat
	<i>Oedipina leptopoda</i>	Salamander	EN	Endemic Honduras
	<i>Oedipina gephyra</i>	Salamander	EN	Endemic to RVS Texiguat
	<i>Rhinella chrysophora</i>	Toad	EN	Endemic to Honduras
	<i>Incilius leucomyos</i>	Toad	EN	Endemic to Honduras
	<i>Craugastor aurilegulus</i>	Rain frog	EN	Endemic to Honduras
	<i>Craugastor saltuarius</i>	Rain frog	CR	Endemic to Honduras
	<i>Craugastor stadelmani</i>	Rain frog	CR	Endemic to Honduras
	<i>Craugastor rostralis</i>	Rain frog	NT	
	<i>Duellmanohyla salvavida</i>	Honduran red-eyed frog	CR	Endemic to Cordillera Nombre de Dios
	<i>Isthmohyla insolita</i>	Texiguat frog	CR	Endemic to RVS Texiguat
	<i>Plectrohyla chrysopleura</i>	Frog	CR	Endemic to Cordillera Nombre de Dios
	<i>Plectrohyla guatemalensis</i>	Frog	CR	México, Guatemala and Honduras
	<i>Ptychohyla spinipollex</i>	Frog	CR	Endemic to Cordillera Nombre de Dios
	<i>Craugastor stadelmani</i>	Rain frog	CR	
	<i>Agalychnis moreletii</i>	Frog	CR	
	<i>Anolis kreutzii</i>	Lizard	CR	Endemic to RVS Texiguat
	<i>Anolis loveridgei</i>	Lizard	EN	Endemic to Cordillera Nombre de Dios
	<i>Anolis yoroensis</i>	Lizard	EN	Endemic to Cordillera Nombre de Dios
	<i>Anolis zeus</i>	Lizard	EN	Endemic to Cordillera Nombre de Dios
	<i>Anolis pijolense</i>	Lizard		
	<i>Bothriechis marchi</i>	Snake	EN	
	<i>Dromochilus chlorotis</i>	Snake	VU	

Group	Family/Order	Species	Common name	IUCN Status	Observations
Reptiles	Serpientes	<i>Geophis damiani</i>	Snake	CR	Endemic to RVS Texiguat
Reptiles	Serpientes	<i>Ninia pavimentata</i>	Snake	EN	
Birds	Momotidae	<i>Electron carinatum</i>	Clock bird	VU	
Birds	Ramphastidae	<i>Ramphastos sulfuratus</i>	Toucan		CITES II
Birds	Trochilidae	All species	Hummingbird		CITES II
Birds	Psittaciformes	All species	Parrots and parakeets		CITES II
Birds	Strigiformes	All species	Nocturnal birds		CITES II
Birds	Falconiformes	All species	Birds of prey		CITES II
Birds	Cracidae	<i>Crax rubra</i>	Pajuil	VU	
Birds	Cracidae	<i>Penelopina nigra</i>	Pava de montaña	VU	
Birds	Odontophoridae	<i>Cyrtonyx ocellatus</i>	Quail	VU	
Birds	Trogonidae	<i>Pharomachrus mocinno</i>	Quetzal	NT	
Birds		<i>Dendroica chrysoparia</i>	Yellow-cheeked warbler	EN	
Mammals	Perissodactilos	<i>Tapirus bairdii</i>	Danto, Tapir	EN	CITES I
Mammals	Felidae	<i>Panthera onca</i>	Jaguar	NT	CITES I
Mammals	Felidae	<i>Puma concolor</i>	Puma		CITES II
Mammals	Felidae	<i>Herpailurus yaguarondi</i>	Yaguarundi		CITES I
Mammals	Felidae	<i>Leopardus pardalis</i>	Ocelot		CITES I
Mammals	Felidae	<i>Leopardus wiedii</i>	Tigrillo	NT	CITES I
Mammals	Tayassuidae	<i>Tayassu tajacu</i>	Saino		CITES II
Mammals	Cebidae	<i>Ateles geoffroyi</i>	Spider monkey	EN	CITES I
Mammals	Cebidae	<i>Alouatta palliata</i>	Howler monkey		CITES I
Mammals	Cebidae	<i>Cebus capucinus</i>	White-faced monkey		CITES II

#### Flora of global conservation priority in Yoro target area

Family/Order	Habit	Species	Common name	IUCN Status	Observations
Bignoniaceae	Shrub	<i>Amphitecna molinae</i>		EN	
Celastraceae	Vine	<i>Tontelea hondurensis</i>		CR	
Connaraceae	Tree	<i>Connarus popenoei</i>		CR	
Cornaceae	Tree	<i>Cornus disciflora</i>		VU	
Euphorbiaceae	Tree	<i>Tetrorchidium brevifolium</i>		EN	
Fagaceae	Tree	<i>Quercus skinnerii</i>		VU	

Family/Order	Habit	Species	Common name	IUCN Status	Observations
Fagaceae	Tree	<i>Quercus bumelioides</i>		VU	
Haptanthaceae	Shrub	<i>Haptanthus hazletii</i>			Endemic to Honduras
Juglandaceae	Tree	<i>Juglans olanchana</i>		EN	
Lauraceae	Tree	<i>Persea schiedeana</i>		VU	
Leguminosae	Tree	<i>Leucaena lempirana</i>		VU	Endemic to Honduras
Magnoliaceae	Tree	<i>Magnolia yoroconte</i>		VU	
Meliaceae	Tree	<i>Swietenia macrophylla</i>	Mahogany	VU	CITES II
Meliaceae	Tree	<i>Cedrela odorata</i>	Cedro real	VU	
Myrsinaceae		<i>Gentlea molinae</i>		CR	
Myrtaceae	Tree	<i>Eugenia coyolensis</i>		CR	Endemic to Honduras
Nictaginaceae		<i>Neea acuminatissima</i>		EN	
Pinaceae	Tree	<i>Pinus tecunumanii</i>		VU	
Polygonaceae	Tree	<i>Coccoloba lindaviana</i>		CR	
Rubiaceae		<i>Tocoyena pittieri</i>		VU	
Ticodendraceae	Tree	<i>Ticodendron incognitum</i>		VU	
Violaceae	Tree	<i>Gloeospermum boreale</i>		CR	
Zygophyllaceae	Tree	<i>Guaiacum sanctum</i>	Hollywood lignum	EN	

**Bird species suggested in Texiguat Wildlife Reserve and valleys between Texiguat and Pico Pijol National Park (based on literature review)**

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
<b>Tinamidae</b>	<i>Tinamus major</i>	R	LC	X				2
	<i>Crypturellus soui</i>	R		X	X			2
	<i>Crypturellus cinnamomeus</i>	R				X	X	2
<b>Cracidae</b>	<i>Ortalis vetula</i>	R	LC	X		X	X	1
	<i>Penelope purpurascens</i>	R	LC	X				2
	<i>Penelopina nigra</i>	R	VU	X	X			2
	<i>Crax rubra</i>	R	NT	X				2
<b>Odontophoridae</b>	<i>Dendrortyx leucophrys</i>	R		X	X			2
	<i>Colinus cristatus</i>	R				X	X	1
	<i>Odontophorus guttatus</i>	R		X				2
	<i>Rhynchortyx cinctus</i>	R	LC	X				3, 4

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
Ardeidae	<i>Bubulcus ibis</i>	R				X		1
	<i>Butorides virescens</i>	R				X		1
Cathartidae	<i>Coragyps atratus</i>	R		X	X	X	X	1
	<i>Cathartes aura</i>	R		X	X	X	X	1
	<i>Sarcoramphus papa</i>	R	LC	X	X	X		2
Accipitridae	<i>Leptodon cayanensis</i>	R	LC	X				2, 3
	<i>Elanoides forficatus</i>	R-M		X	X			1
	<i>Elanus leucurus</i>	R				X	X	1
	<i>Ictinia plumbea</i>	R		X				1
	<i>Leucopternis albicollis</i>	R	LC	X				1
	<i>Buteogallus anthracinus</i>	R	LC	X	X			1
	<i>Buteo magnirostris</i>	R				X		1
	<i>Buteo nitidus</i>	R		X	X	X		1
	<i>Buteo albicaudatus</i>	R	LC		X		X	3
	<i>Buteo jamaicensis</i>	R			X			1
	<i>Spizaetus tyrannus</i>	R	LC	X				1
	<i>Spizaetus ornatus</i>	R	LC	X				2.3
Falconidae	<i>Micrastur ruficollis</i>	R	LC	X				2.3
	<i>Micrastur semitorquatus</i>	R	LC	X				1.2
	<i>Caracara cheriway</i>	R				X	X	1
	<i>Herpetotheres cachinnans</i>	R		X	X	X	X	1
	<i>Falco sparverius</i>	R			X	X	X	1
	<i>Falco ruficularis</i>	R		X		X		1
Rallidae	<i>Laterallus ruber</i>	R		X		X		1
	<i>Aramides cajanea</i>	R		X		X		1
Burhinidae	<i>Burhinus bistriatus</i>	R				X	X	1.2
Charadriidae	<i>Charadrius vociferus</i>	M				X	X	1
Jacaniidae	<i>Jacana spinosa</i>	R				X	X	1
Scolopacidae	<i>Actitis macularius</i>	M				X	X	1
Columbidae	<i>Patagioenas flavirostris</i>	R		X	X	X		1
	<i>Patagioenas nigrirostris</i>	R		X				1.2
	<i>Zenaida asiatica</i>	R-M			X	X	X	1
	<i>Columbina inca</i>	R				X	X	1

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
	<i>Columbina passerina</i>	R				X	X	1
	<i>Columbina talpacoti</i>	R				X	X	1
	<i>Claravis pretiosa</i>	R		X				1.2
	<i>Leptotila verreauxi</i>	R			X			1
	<i>Leptotila plumbeiceps</i>	R		X				1
	<i>Geotrygon albifacies</i>	R		X				1.2
	<i>Geotrygon montana</i>	R		X				1
<b>Psittacidae</b>	<i>Aratinga holochlora</i>	R	LC		X	X		1
	<i>Aratinga nana</i>	R	LC	X		X		1
	<i>Pytilia haematotis</i>	R	LC	X				1
	<i>Pionus senilis</i>	R	LC	X				1
	<i>Amazona albifrons</i>	R	LC	X		X	X	1
	<i>Amazona autumnalis</i>	R	LC	X			X	1
	<i>Amazona farinosa</i>	R	LC	X				1.2
<b>Cuculidae</b>	<i>Piaya cayana</i>	R		X		X	X	1
	<i>Morococcyx erythropygus</i>	R				X	X	1
	<i>Geococcyx velox</i>	R			X	X	X	1
	<i>Crotophaga sulcirostris</i>	R			X	X	X	1
<b>Tytonidae</b>	<i>Tyto alba</i>	R				X	X	1
<b>Strigidae</b>	<i>Megascops guatemalae</i>	R		X			X	1
	<i>Glaucidium brasilianum</i>	R	LC	X	X	X	X	1
	<i>Ciccaba virgata</i>	R	LC	X	X			1
<b>Caprimulgidae</b>	<i>Chordeiles minor</i>	R-M			X	X	X	1
	<i>Nyctidromus albicollis</i>	R		X	X	X	X	1
<b>Nyctibiidae</b>	<i>Nyctibius grandis</i>	R	LC	X				2
<b>Apodidae</b>	<i>Cypseloides niger</i>	R-M	LC	X	X	X	X	2,3
	<i>Streptoprocne zonaris</i>	R		X	X	X	X	1
	<i>Chaetura vauxi</i>	R		X	X	X	X	1
<b>Trochilidae</b>	<i>Phaethornis longirostris</i>	R		X				1
	<i>Phaethornis striigularis</i>	R		X				1
	<i>Phaeochroa cuvierii</i>	R		X				2
	<i>Campylopterus hemileucurus</i>	R		X				1
	<i>Florisuga mellivora</i>	R		X		X		1

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
	<i>Colibri delphinae</i>	R	LC	X				2
	<i>Colibri thalassinus</i>	R		X	X			1
	<i>Anthracothorax prevostii</i>	R				X	X	1
	<i>Chlorostilbon canivetii</i>	R		X		X		1
	<i>Thalurania colombica</i>	R		X				1
	<i>Hylocharis leucotis</i>	R		X	X			1
	<i>Amazilia candida</i>	R		X		X		1
	<i>Amazilia cyanocephala</i>	R		X	X			1
	<i>Amazilia tzacatl</i>	R		X		X		1
	<i>Amazilia rutila</i>	R		X		X	X	1
	<i>Eupherusa eximia</i>	R		X				2
	<i>Lampornis viridipallens</i>	R		X	X			1
	<i>Lampornis sybillae</i>	R		X	X			1
	<i>Eugenes fulgens</i>	R			X			1
	<i>Tilmatura dupontii</i>	R		X	X			1
	<i>Archilochus colubris</i>	M		X	X	X	X	1
	<i>Atthis ellioti</i>	R		X	X			1
<b>Trogonidae</b>	<i>Trogon massena</i>	R		x				1
	<i>Trogon melanocephalus</i>	R		X				1
	<i>Trogon caligatus</i>	R		X	X			1
	<i>Trogon elegans</i>	R		X	X	X	X	1
	<i>Trogon collaris</i>	R		X	X			1
	<i>Pharomachrus mocinno</i>	R	NT	X				2
<b>Momotidae</b>	<i>Momotus momota</i>	R		X				1
	<i>Electron carinatum</i>	R	LC	X				1
	<i>Eumomota superciliosa</i>	R		X	X	X	X	1
<b>Alcedinidae</b>	<i>Chloroceryle amazona</i>	R		X		X	X	1
	<i>Chloroceryle americana</i>	R		X		X	X	1
<b>Galbulidae</b>	<i>Galbula ruficauda</i>	R		X				1
<b>Ramphastidae</b>	<i>Aulacorhynchus prasinus</i>	R		X				1
	<i>Pteroglossus torquatus</i>	R	LC	X		X	X	1
	<i>Selenidera spectabilis</i>	R	LC	X				3,4
	<i>Ramphastos sulfuratus</i>	R		X		X		1

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
Picidae	<i>Melanerpes formicivorus</i>	R			X	X		1
	<i>Melanerpes pucherani</i>	R		X				1
	<i>Melanerpes aurifrons</i>	R		X	X	X	X	1
	<i>Sphyrapicus varius</i>	M			X			1
	<i>Colaptes auratus</i>	R			X			1
	<i>Ceuleus castaneus</i>	R		X				1
	<i>Dryocopus lineatus</i>	R		X		X	X	1
	<i>Campephilus guatemalensis</i>	R		X				1
Furnariidae	<i>Sclerurus mexicanus</i>	R	LC	X				2
	<i>Anabacerthia variegaticeps</i>	R		X				2
	<i>Automolus ochrolaemus</i>	R		X				1
	<i>Dendrocincla anabatina</i>	R		X				1
	<i>Dendrocincla homochroa</i>	R		X				1
	<i>Sittasomus griseicapillus</i>	R		X				1
	<i>Glyphorhynchus spirurus</i>	R		X				1
	<i>Xiphocolaptes promeropyrhynchus</i>	R		X	X			1
	<i>Dendrocolaptes picumnus</i>	R			X			1
	<i>Xiphorhynchus flavigaster</i>	R		X				1
	<i>Xiphorhynchus erythropygius</i>	R		X				1
	<i>Lepidocolaptes souleyetii</i>	R		X		X		1
Thamnophilidae	<i>Thamnophilus doliatus</i>	R		X		X	X	1
	<i>Dysithamnus mentalis</i>	R		X				2
	<i>Myrmotherula schisticolor</i>	R		X				2
	<i>Microrhophias quixensis</i>	R		X				2
	<i>Cercomacra tyrannina</i>	R		X				1
Formicariidae	<i>Formicarius analis</i>	R		X				1
Grallariidae	<i>Grallaria guatimalensis</i>	R		X	X			1
Tyrannidae	<i>Elaenia flavogaster</i>	R				X		1
	<i>Mionectes oleagineus</i>	R		X		X		1
	<i>Oncostoma cinereigulare</i>	R		X				1
	<i>Todirostrum cinereum</i>	R				X		1
	<i>Platyrinchus cancrominus</i>	R		X				1
	<i>Myiobius sulphureipygius</i>	R		X				2

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
	<i>Contopus cooperi</i>	M		X	X			1
	<i>Contopus pertinax</i>	R			X			1
	<i>Contopus sordidulus</i>	R-M		X	X	X		1
	<i>Empidonax flaviventris</i>	M		X				1
	<i>Empidonax flavescens</i>	R		X	X			1
	<i>Empidonax minimus</i>	M		X				2
	<i>Myiarchus tuberculifer</i>	R		X	X	X	X	1
	<i>Pitangus sulphuratus</i>	R			X	X	X	1
	<i>Megarynchus pitangua</i>	R		X		X		1
	<i>Myiozetetes similis</i>	R		X		X	X	1
	<i>Myiodynastes luteiventris</i>	R-M		X		X		1
	<i>Tyrannus melancholicus</i>	R		X	X	X	X	1
<b>Tityridae</b>	<i>Pachyramphus major</i>	R		X	X			1
	<i>Pachyramphus aglaiae</i>	R		X	X			1
	<i>Tityra semifaciata</i>	R		X		X		1
<b>Pipridae</b>	<i>Manacus candei</i>	R		X				1
	<i>Pipra mentalis</i>	R		X				1
<b>Vireonidae</b>	<i>Vireo flavifrons</i>	M		X	X			3
	<i>Vireo plumbeus</i>	R			X			3
	<i>Vireo olivaceus</i>	M		X				1
	<i>Hylophilus ochraceiceps</i>	R		X				1
	<i>Cyclarhis gujanensis</i>	R		X		X	X	1
<b>Corvidae</b>	<i>Cyanolyca cucullata</i>	R		X	X			2,3
	<i>Psilorhinus morio</i>	R		X		X	X	1
	<i>Cyanocorax yncas</i>	R		X		X		1
	<i>Cyanocorax melanocyaneus</i>	R		X	X			1
	<i>Cyanocitta stelleri</i>	R		X	X			1,2
<b>Hirundinidae</b>	<i>Progne subis</i>	M			X			1
	<i>Stelgidopteryx serripennis</i>	R		X	X	X	X	1
	<i>Hirundo rustica</i>	M				X	X	1
<b>Certhidae</b>	<i>Certhia americana</i>	R			X			1
<b>Troglodytidae</b>	<i>Campylorhynchus zonatus</i>	R			X	X		1
	<i>Campylorhynchus rufinucha</i>	R				X	X	1



Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
	<i>Thryothorus maculipectus</i>	R		X		X		1
	<i>Thryothorus rufalbus</i>	R				X	X	2
	<i>Thryothorus modestus</i>	R		X		X		1
	<i>Troglodytes aedon</i>	R				X	X	1
	<i>Henicorhina leucosticta</i>	R		X				1
	<i>Henicorhina leucophrys</i>	R		X	X			1
	<i>Microcerculus philomela</i>	R		X				2,3
<b>Poliopitilidae</b>	<i>Ramphocaenus melanurus</i>	R		X				1
	<i>Poliopitila plumbea</i>	R		X				1
<b>Turdidae</b>	<i>Sialia sialis</i>	R			X	X		1
	<i>Myadestes unicolor</i>	R	LC	X	X			1
	<i>Catharus aurantiirostris</i>	R			X			1
	<i>Catharus frantzii</i>	R		X	X			2
	<i>Catharus mexicanus</i>	R		X				2
	<i>Catharus ustulatus</i>	M		X				2
	<i>Hylocichla mustelina</i>	M		X	X			1
	<i>Turdus plebejus</i>	R	LC	X				2
	<i>Turdus grayi</i>	R		X	X	X	X	1
	<i>Turdus assimilis</i>	R		X	X			1
<b>Mimidae</b>	<i>Dumetella carolinensis</i>	M		X		X	X	1
<b>Bombycillidae</b>	<i>Bombycilla cedrorum</i>	M			X	X		1
<b>Parulidae</b>	<i>Vermivora chrysoptera</i>	M		X	X			1
	<i>Oreothlypis peregrina</i>	M		X	X	X		1
	<i>Oreothlypis superciliosa</i>	M		X	X			1
	<i>Setophaga pitiauyumi</i>	R		X	X			1
	<i>Setophaga petechia</i>	M		X	X	X	X	1
	<i>Setophaga pensylvanica</i>	M		X	X		X	1
	<i>Setophaga magnolia</i>	M		X	X	X	X	1
	<i>Setophaga chrysoparia</i>	M	EN	X	X			2
	<i>Setophaga virens</i>	M		X	X	X		1
	<i>Setophaga townsendi</i>	M		X	X			1
	<i>Setophaga occidentalis</i>	M		X	X			1
	<i>Setophaga fusca</i>	M		X		X		1

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
	<i>Mniotilta varia</i>	M		X	X	X	X	1
	<i>Setophaga ruticilla</i>	M		X	X	X	X	1
	<i>Helmitheros vermivorum</i>	M		X				1
	<i>Seiurus aurocapilla</i>	M		X	X		X	1
	<i>Parkesia noveboracensis</i>	M		X				1
	<i>Geothlypis trichas</i>	M		X	X	X		1
	<i>Geothlypis poliocephala</i>	R		X		X		1
	<i>Setophaga citrina</i>	M		X	X		X	1
	<i>Cardellina pusilla</i>	M		X	X	X	X	1
	<i>Myioborus miniatus</i>	R		X	X			1
	<i>Basileuterus rufifrons</i>	R		X	X			1
<b>Coerebidae</b>	<i>Coereba flaveola</i>	R		X				3
<b>Thraupidae</b>	<i>Lanio aurantius</i>	R		X				3
	<i>Ramphocelus sanguinolentus</i>	R		X		X		1
	<i>Ramphocelus passerinii</i>	R		X		X		1
	<i>Thraupis episcopus</i>	R		X		X	X	1
	<i>Thraupis abbas</i>	R		X		X		1
	<i>Tangara larvata</i>	R		X				1
	<i>Chlorophanes spiza</i>	R		X				1
	<i>Cyanerpes cyaneus</i>	R		X				1
<b>Incertae Sedis</b>	<i>Saltator coerulescens</i>	R			X	X		1
	<i>Saltator maximus</i>	R		X		X		1
	<i>Saltator atriceps</i>	R		X		X		1
<b>Emberizidae</b>	<i>Volatinia jacarina</i>	R				X		1
	<i>Sporophila americana</i>	R				X	X	1
	<i>Sporophila torqueola</i>	R				X	X	1
	<i>Tiaris olivaceus</i>	R		X	X	X		1
	<i>Arremon aurantirostris</i>	R		X				1
	<i>Arremon brunneinucha</i>	R		X	X			1
	<i>Aimophila rufescens</i>	R			X	X		1
	<i>Chlorospingus ophthalmicus</i>	R		X	X			1
<b>Cardinalidae</b>	<i>Piranga flava</i>	R			X			1
	<i>Piranga rubra</i>	M		X	X	X	X	1

Family	Genus and Species	Status	IUCN	Broadleaved forest	Pine forest	Agricultural systems	Dry forest	Scale of abundance
	<i>Piranga bidentata</i>	R			X			1
	<i>Piranga leucoptera</i>	R		X	X			1
	<i>Habia rubica</i>	R		X		X		1
	<i>Habia fuscicauda</i>	R		X		X		1
	<i>Caryothraustes poliogaster</i>	R		X				1
	<i>Pheucticus ludovicianus</i>	M			X	X		1
	<i>Cyanocompsa cyanoides</i>	R		X		X		1
	<i>Passerina caerulea</i>	M				X		1
	<i>Passerina cyanea</i>	M				X	X	1
<b>Icteridae</b>	<i>Sturnella magna</i>	R				X	X	1
	<i>Dives dives</i>	R		X	X	X	X	1
	<i>Quiscalus mexicanus</i>	R		X	X	X	X	1
	<i>Molothrus aeneus</i>	R				X	X	1
	<i>Molothrus oryzivorus</i>	R		X				1
	<i>Icterus spurius</i>	M				X	X	1
	<i>Icterus pectoralis</i>	R				X	X	1
	<i>Icterus gularis</i>	R				X	X	1
	<i>Icterus galbula</i>	M		X		X	X	1
	<i>Amblycercus holosericeus</i>	R		X				1
	<i>Psarocolius wagleri</i>	R		X		X		1
	<i>Psarocolius montezuma</i>	R		X		X		1
<b>Fringillidae</b>	<i>Euphonia affinis</i>	R		X		X		1
	<i>Euphonia hirundinacea</i>	R		X		X		1
	<i>Euphonia elegantissima</i>	R			X			1,2
	<i>Euphonia gouldi</i>	R		X				1
	<i>Spinus notatus</i>	R		X	X			1
	<i>Spinus psaltria</i>	R				X		1
<b>Passeridae</b>	<i>Passer domesticus</i>	R				X		1

#### Abbreviations

R= Resident

M=Migrant

R-M= One resident and one

#### Scale of abundance

1= Common to abundant (can be observed daily)

2=Common (can be observed at least weekly but not daily)

3=Infrequent: can be seen occasionally, less than once per week

migratory population

**IUCN Categories**

EN= Endangered peligro

VU= Vulnerable

NT= Near Threatened

LC= Least Concern

4=Rare: observed two or three times per year

**PART IX. Project Cycle Management Services**

Stage	Country Office <sup>74</sup>	UNDP/GEF
<b>Identification, Sourcing/Screening of Ideas, and Due Diligence</b>	Identify project ideas as part of country programme/CPAP and UNDAF/CCA.	<ul style="list-style-type: none"> <li>• Technical input to CCA/UNDAFs and CPAPs where appropriate.</li> <li>• Input on policy alignment between projects and programmes.</li> <li>• Provide information on substantive issues and specialized funding opportunities (SOFs).</li> <li>• Policy advisory services including identifying, accessing, combining and sequencing financing.</li> <li>• Verify potential eligibility of identified idea.</li> </ul>
	Assist proponent to formulate project idea / prepare project idea paper (e.g. GEF PIF/PPG).	<i>Technical support:</i> <ul style="list-style-type: none"> <li>• Research and development.</li> <li>• Provide up-front guidance.</li> <li>• Sourcing of technical expertise.</li> <li>• Verification of technical reports and project conceptualization.</li> <li>• Guidance on SOF expectations and requirements.</li> <li>• Training and capacity building for Country Offices.</li> </ul>
	<i>Appraisal:</i> <ul style="list-style-type: none"> <li>• Review and appraise project idea.</li> <li>• Undertake capacity assessments of implementing partner as per UNDP POPP.</li> <li>• Environmental screening of project as and when included in UNDP POPP.</li> <li>• Monitor project cycle milestones.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide detailed screening against technical, financial, social and risk criteria.</li> <li>• Determine likely eligibility against identified SOF.</li> </ul>
	<i>Partners:</i> <ul style="list-style-type: none"> <li>• Assist proponent to identify and negotiate with relevant partners, cofinanciers, etc</li> </ul>	<ul style="list-style-type: none"> <li>• Assist in identifying technical partners.</li> <li>• Validate partner technical abilities.</li> </ul>
	<i>Obtain clearances:</i> <ul style="list-style-type: none"> <li>• Government, UNDP, Implementing Partner, LPAC, cofinanciers, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain SOF clearances.</li> </ul>
<b>Project Development</b>	<i>Initiation Plan:</i> <ul style="list-style-type: none"> <li>• Management and financial oversight of Initiation Plan</li> <li>• Discuss management arrangements</li> </ul>	<ul style="list-style-type: none"> <li>• Technical support, backstopping and troubleshooting.</li> <li>• Support discussions on management arrangements</li> <li>• <b>Facilitate</b> issuance of DOA</li> </ul>
	<i>Project Document:</i> <ul style="list-style-type: none"> <li>• Support project development, assist proponent to identify and negotiate with relevant partners, cofinanciers, etc.</li> <li>• Review, appraise, finalize Project Document.</li> <li>• Negotiate and obtain clearances and signatures – Government, UNDP, Implementing Partner, LPAC, cofinanciers, etc.</li> <li>• Respond to information requests, arrange</li> </ul>	<i>Technical support:</i> <ul style="list-style-type: none"> <li>• Sourcing of technical expertise.</li> <li>• Verification of technical reports and project conceptualization.</li> <li>• Guidance on SOF expectations and requirements.</li> <li>• Negotiate and obtain clearances by SOF</li> <li>• Respond to information requests, arrange revisions etc.</li> <li>• Quality assurance and due diligence.</li> <li>• Facilitate issuance of DOA</li> </ul>

<sup>74</sup> As per UNDP POPP with additional SOF requirements where relevant.

Stage	Country Office <sup>74</sup>	UNDP/GEF
	revisions etc. <ul style="list-style-type: none"> <li>Prepare operational and financial reports on development stage as needed.</li> </ul>	
<i>Key UNDP/GEF management performance indicators/targets for Project Development:</i>		
<ol style="list-style-type: none"> <li>Time between PIF approval to CEO endorsement for each project:               <ul style="list-style-type: none"> <li>Target for GEF trust fund project: FSP = 18 months or less, MSP 12 months or less.</li> <li>Target for LDCF and SCCF: FSP/MSP = 12 months or less.</li> </ul> </li> <li>Time between CEO endorsement (or PAC for non GEF funded projects) to first disbursement for each project:               <ul style="list-style-type: none"> <li>Target = 4 months or less</li> </ul> </li> </ol>		
<b>Project Oversight</b>	<i>Management Oversight and support</i>	<i>Technical and SOF Oversight and support</i>
	<i>Project Launch/Inception Workshop</i> <ul style="list-style-type: none"> <li>Preparation and coordination.</li> </ul>	<ul style="list-style-type: none"> <li>Technical support in preparing TOR and verifying expertise for technical positions.</li> <li>Verification of technical validity / match with SOF expectations of inception report.</li> <li>Participate in Inception Workshop</li> </ul>
	<i>Management arrangements:</i> <ul style="list-style-type: none"> <li>Facilitate consolidation of the Project Management Unit, where relevant.</li> <li>Facilitate and support Project Board meetings as outlined in project document and agreed with UNDP RTA.</li> <li>Provide project assurance role if specified in project document.</li> </ul>	<ul style="list-style-type: none"> <li>Technical input and support to TOR development. Troubleshooting support.</li> <li>Support in sourcing of potentially suitable candidates and subsequent review of CVs/recruitment process.</li> </ul>
	<i>Annual WorkPlan:</i> <ul style="list-style-type: none"> <li>Issuance of AWP.</li> <li>Monitor implementation of the annual work plan and timetable.</li> </ul>	<ul style="list-style-type: none"> <li>Advisory services as required</li> <li>Review AWP, and clear for ASL where relevant.</li> </ul>
	<i>Financial management:</i> <ul style="list-style-type: none"> <li>Conduct budget revisions, verify expenditures, advance funds, issue combined delivery reports, ensure no over-expenditure of budget.</li> <li>Ensure necessary audits.</li> </ul>	<ul style="list-style-type: none"> <li>Allocation of ASLs, based on cleared AWP</li> <li>Return of unspent funds to donor</li> <li>Monitor projects to ensure activities funded by donor comply with agreements/ProDocs</li> <li>Oversight and monitoring to ensure financial transparency and clear reporting to the donor</li> </ul>
	<i>Results Management:</i> <ul style="list-style-type: none"> <li>Alignment: link project output to CPAP Outcome in project tree in Atlas, link CPAP outcome in project tree to UNDP Strategic Plan Environment and sustainable Development Key Result Area as outlined in project document during UNDP work planning in ERBM.</li> <li>Gender: In ATLAS, rate each output on a scale of 0-3 for gender relevance.</li> <li>Monitoring and reporting: Monitor project results, track result framework indicators, and co-financing where relevant. Monitor risks in Atlas and prepare annual APR/PIR report where</li> </ul>	<ul style="list-style-type: none"> <li>Advisory services as required.</li> <li>Quality assurance.</li> <li>Project visits – at least one technical support visit per year.</li> </ul>

Stage	Country Office <sup>74</sup>	UNDP/GEF
	required by donor and/or UNDP/GEF. <ul style="list-style-type: none"> <li>• Annual site visits – at least one site visit per year, report to be circulated no later than 2 weeks after visit completion.</li> </ul>	
	<i>Evaluation:</i> <ul style="list-style-type: none"> <li>• Integrate project evaluations into CO evaluation plan. Identify synergies with country outcome evaluations.</li> <li>• Arrange mid-term, final, and other evaluations: prepare TOR, hire personnel, plan and facilitate mission / meetings / debriefing, circulate draft and final reports.</li> <li>• Participate as necessary in other evaluations.</li> <li>• Ensure tracking of committed and actual co financing as part of mid-term and final evaluations.</li> <li>• Prepare management response to project evaluations and post in UNDP ERC.</li> </ul>	<ul style="list-style-type: none"> <li>• Technical support and analysis.</li> <li>• Quality assurance.</li> <li>• Compilation of lessons and consolidation of learning.</li> <li>• Dissemination of technical findings.</li> <li>• Participate as necessary in other SOF evaluations.</li> </ul>
	<i>Project Closure:</i> <ul style="list-style-type: none"> <li>• Final budget revision and financial closure (within 12 months after operational completion).</li> <li>• Final reports as required by donor and/or UNDP/GEF.</li> </ul>	<ul style="list-style-type: none"> <li>• Advisory services as required.</li> <li>• Technical input.</li> <li>• Quality assurance.</li> </ul>

*Key UNDP GEF management performance indicators/targets for Project Oversight:*

1. Each project aligned with country outcomes and UNDP Strategic Plan Environment and Sustainable Development key results, and included in Country Office Integrated Work Plan in the ERBM:
  - Target = 100%
2. Quality rating of annual APR/PIRs: Once completed and submitted, the quality of each project APR/PIR is rated by an external reviewer
  - Target = Rating of Satisfactory or above
3. Quality rating of Terminal Evaluations: Once completed, the quality of each terminal evaluation is rated by an external reviewer
  - Target = Rating of Satisfactory or above
4. Quality of results achieved by project as noted in terminal evaluation: the independent evaluator assigns an overall rating to the project.
  - Target = Satisfactory or above

**PART X. Letter of Agreement**

STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND THE GOVERNMENT OF HONDURAS  
FOR THE PROVISION OF SUPPORT SERVICES

Dear Mr./Ms. XXXXXXXXXXXX

Position - Ministry of XXXXXX

1. Reference is made to consultations between officials of the Government of *Honduras* (hereinafter referred to as “the Government”) and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant programme support document or project document, as described below.
2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.
3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme/project:
  - (a) Identification and/or recruitment of project and programme personnel;
  - (b) Identification and facilitation of training activities;
  - (c) Procurement of goods and services;
4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document or project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a programme or project, the annex to the programme support document or project document is revised with the mutual agreement of the UNDP resident representative and the designated institution.
5. The relevant provisions of the Special Standard Agreement between the Government of Honduras and the United Nations Development Programme in Honduras signed in Tegucigalpa, in XXXXX[DATE] (the “SSA”), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its designated institution. The responsibility of the UNDP country office for the provision of the support services



described herein shall be limited to the provision of such support services detailed in the annex to the programme support document or project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SSA and the project document.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the programme support document or project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office three signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,

---

Signed on behalf of UNDP

[RR name]

*Resident Representative*

---

For the Government

[name],

[position]

Ministry of XXXXXX

[Date]

Attachment

**DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES**

1. Reference is made to consultations between the Ministry of Natural Resources and Environment, the institution designated by the Government of Honduras and representatives of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed programme or project 00085892 **Delivering multiple global environmental benefits through sustainable management of production landscapes** (award 00072885) “the Project”.

2. In accordance with the provisions of the letter of agreement signed on *Date of signature (LOA)* and the project document, the UNDP country office shall provide support services for the Project as described below.

3. Support services to be provided:

<b>Support services* (insert description)</b>	<b>Schedule for the provision of the support services</b>	<b>Cost to UNDP of providing such support services (where appropriate)</b>	<b>Amount and method of reimbursement of UNDP (where appropriate)</b>
1. Payments, disbursements and other financial transactions	During project implementation	Universal Price List	Support Services
2. Recruitment of staff, project personnel, and consultants	During project implementation	Universal Price List	Support Services
3. Procurement of services and equipment, and disposal/sale of equipment	During project implementation	Universal Price List	Support Services
4. Organization of training activities, conferences, and workshops, including fellowships	During project implementation	Universal Price List	Support Services
5. Travel authorizations, visa requests, ticketing, and travel arrangements	During project implementation	Universal Price List	Support Services
6. Shipment, custom clearance, vehicle registration, and accreditation	During project implementation	Universal Price List	Support Services

\* UNDP direct project support services will be defined yearly, and for those executed during the period, direct project costs will be charged at the end of each year based on the UNDP Universal Pricelist (UPL) or the actual corresponding service cost

#### 4. Description of functions and responsibilities of the parties involved:

The project will be conducted through the National Implementation modality of UNDP (NIM). The Ministry of Natural Resources and Environment (hereinafter SERNA), will act as the National Implementing Partner<sup>75</sup>, and with the support of UNDP as a GEF Implementing Agency. The project will be under the overall leadership of a *National Project Director* (NPD), who will be a representative of SERNA to be designated by the Minister of SERNA.

Project implementation will be the responsibility in practice of a *Project Implementation Unit* (PIU), led by a *National Project Coordinator* (NPC), who will be contracted directly by UNDP (through a selection process in which Government representatives will also participate). The NPC will:

- Be the signing authority of requests to UNDP for disbursements of project funds.
- Ensure the logistical, administrative and financial effectiveness of the IP in fulfilling its roles set out above
- To this end, provide monitoring, supervision and guidance to the technical teams based in the project areas
- Promote incidence in and coordination with the SERNA, SAG and the donor agencies that are supporting them.

The NPC will also have specific responsibility for Outputs 1.3 and 1.4 of the project (national programme for promoting the certification of cattle farms, and financing plans from public and private financial institutions). The NPC will be supported by a Monitoring and Evaluation Specialist and a Technical/Administrative Assistant.

The NPD will be responsible for orienting and advising the National Project Coordinator on Government policy and priorities. The NPD will also be responsible for maintaining regular communication with the lead institutions in the agriculture and livestock sectors and ensuring that their interests are communicated effectively to the National Project Coordinator.

Two Responsible Parties will be involved in project execution:

- 1) *The Ministry of Agriculture and Livestock (SAG)*, with the support of a National Dialogue Coordinator for the Sustainable Ranching Platform, who will be responsible for Output 1.1 (strengthened National Platform for Sustainable Ranching) and Output 1.2 (commitments by national supermarket chains and exporters).
- 2) *CATIE*, which through its Ranching and Environmental Management (GAMMA) team with headquarters in Costa Rica, will be responsible for all Outputs under Component 2, under direct contract with UNDP. The team, to be appointed by CATIE will consist of the following members (experts from CATIE's headquarters will also provide technical backstopping to the project):
  - Field Coordinator (based in one of the target areas)
  - Lead field technician (one in each target area)
  - Support field technician (one in each target area)
  - Local dialogue facilitator (based in one of the target areas).

To ensure an effective assimilation of the Project in permanent institutional structures, the PMU will convene a *Steering Committee (Project Board)*. The composition, responsibilities and rules of operation of the Board will be confirmed during its first meeting. Subject to the decision of this meeting, it is proposed that the Board will be responsible for approving the operational plans and annual reports of the project as well as the terms of reference and appointments of key members of staff, and will be composed of representatives of SERNA (chair/executive), UNDP (secretary/Senior Supplier), the Ministry of Agriculture and Livestock (SAG), the Institute of Forest Conservation and Development (ICF) and

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<sup>75</sup> National Execution partner under new harmonized definition.

private sector representatives. The Board will meet at least two times per year and in addition could be convened extraordinarily by the Chair, on the request of individual members.

The Project Board will be responsible for making executive decisions for the project, in particular when guidance is required by the Project Coordinator. The Project Board will play a critical role in facilitating inter-ministerial coordination, project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It will ensure that required resources are committed and will arbitrate on any conflicts within the project or negotiate a solution to any problems with external bodies. In addition, it will approve the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the Project Board will also consider and approve the quarterly plans and will also approve any essential deviations from the original plans.

UNDP will provide technical and operational support necessary for the implementation of activities and the results of this project, with constant support from the PEU. The UNDP office will ensure that all consultant contracts, purchase orders and contracts for company services are in compliance with UNDP standards and procedures. In those cases in which the UNDP Resident Representative has to sign the contracts mentioned above, UNDP will participate in the processes for selection and recruitment. UNDP will also provide advances payments to the project to make direct payments and maintain accounting and financial control of the project.

The project authorities will carry out the procurement and contracts for all purchases less than USD\$ 2,500. These minor operations shall comply with rules and procedures contained in the National Implementation Manual. The Manual can be viewed at the website of UNDP Honduras: [www.pnud.hn](http://www.pnud.hn). According to the above, ownership of equipment, supplies and other property financed with project funds will be conferred to UNDP. Transfer of ownership rights shall be determined in accordance with the policies and procedures of UNDP. All goods will be considered UNDP property for the following five years since purchased.

UNDP will assist in the administration of funds provided by GEF and UNDP itself. UNDP will be able to assist in the management of any other additional fund for co-financing this project. These arrangements will be included in the relevant Memorandum of Understanding. Contributions will be subject to internal and external audits established in UNDP rules and financial regulations.

## **PART XI.           The Legal Context**

### General responsibilities of the Government, UNDP and the executing agency

1. All phases and aspects of UNDP assistance to this project shall be governed by and carried out in accordance with the relevant and applicable resolutions and decisions of the competent United Nations organs and in accordance with UNDP's policies and procedures for such projects, and subject to the requirements of the UNDP Monitoring, Evaluation and Reporting System.
2. The Government shall remain responsible for this UNDP-assisted development project and the realization of its objectives as described in this Project Document.
3. Assistance under this Project Document being provided for the benefit of the Government and the people of Honduras, the Government shall bear all risks of operations in respect of this project.
4. The Government shall provide to the project the national counterpart personnel, training facilities, land, buildings, equipment and other required services and facilities. It shall designate the Government Co-operating Agency named in the cover page of this document (hereinafter referred to as the "Co-operating Agency"), which shall be directly responsible for the implementation of the Government contribution to the project.
5. The UNDP undertakes to complement and supplement the Government participation and will provide through the Executing Agency the required expert services, training, equipment and other services within the funds available to the project.
6. Upon commencement of the project the Executing Agency shall assume primary responsibility for project execution and shall have the status of an independent contractor for this purpose. However, that primary responsibility shall be exercised in consultation with UNDP and in agreement with the Co-operating Agency. Arrangements to this effect shall be stipulated in the Project Document as well as for the transfer of this responsibility to the Government or to an entity designated by the Government during the execution of the project.
7. Part of the Government's participation may take the form of a cash contribution to UNDP. In such cases, the Executing Agency will provide the related services and facilities and will account annually to the UNDP and to the Government for the expenditure incurred.

#### (a) Participation of the Government

1. The Government shall provide to the project the services, equipment and facilities in the quantities and at the time specified in the Project Document. Budgetary provision, either in kind or in cash, for the Government's participation so specified shall be set forth in the Project Budgets.
2. The Co-operating Agency shall, as appropriate and in consultation with the Executing Agency, assign a director for the project on a full-time basis. He shall carry out such responsibilities in the project as are assigned to him by the Co-operating Agency.
3. The estimated cost of items included in the Government contribution, as detailed in the Project Budget, shall be based on the best information available at the time of drafting the project proposal. It is understood that price fluctuations during the period of execution of the project may necessitate an

adjustment of said contribution in monetary terms; the latter shall at all times be determined by the value of the services, equipment and facilities required for the proper execution of the project.

4. Within the given number of man-months of personnel services described in the Project Document, minor adjustments of individual assignments of project personnel provided by the Government may be made by the Government in consultation with the Executing Agency, if this is found to be in the best interest of the project. UNDP shall be so informed in all instances where such minor adjustments involve financial implications.

5. The Government shall continue to pay the local salaries and appropriate allowances of national counterpart personnel during the period of their absence from the project while on UNDP fellowships.

6. The Government shall defray any customs duties and other charges related to the clearance of project equipment, its transportation, handling, storage and related expenses within the country. It shall be responsible for its installation and maintenance, insurance, and replacement, if necessary, after delivery to the project site.

7. The Government shall make available to the project - subject to existing security provisions - any published and unpublished reports, maps, records and other data which are considered necessary to the implementation of the project.

8. Patent rights, copyright rights and other similar rights to any discoveries or work resulting from UNDP assistance in respect of this project shall belong to the UNDP. Unless otherwise agreed by the Parties in each case, however, the Government shall have the right to use any such discoveries or work within the country free of royalty and any charge of similar nature.

9. The Government shall assist all project personnel in finding suitable housing accommodation at reasonable rents.

10. The services and facilities specified in the Project Document which are to be provided to the project by the Government by means of a contribution in cash shall be set forth in the Project Budget. Payment of this amount shall be made to the UNDP in accordance with the Schedule of Payments by the Government.

11. Payment of the above-mentioned contribution to the UNDP on or before the dates specified in the Schedule of Payments by the Government is a prerequisite to commencement or continuation of project operations.

(b) Participation of the UNDP and the executing agency

1. The UNDP shall provide to the project through the Executing Agency the services, equipment and facilities described in the Project Document. Budgetary provision for the UNDP contribution as specified shall be set forth in the Project Budget.

2. The Executing Agency shall consult with the Government and UNDP on the candidature of the Project Manager a/ who, under the direction of the Executing Agency, will be responsible in the country for the Executing Agency's participation in the project. The Project Manager shall supervise the experts and other agency personnel assigned to the project, and the on-the-job training of national counterpart personnel. He shall be responsible for the management and efficient utilization of all UNDP-financed inputs, including equipment provided to the project.

3. The Executing Agency, in consultation with the Government and UNDP, shall assign international staff and other personnel to the project as specified in the Project Document, select candidates for fellowships and determine standards for the training of national counterpart personnel.

4. Fellowships shall be administered in accordance with the fellowships regulations of the Executing Agency.

a/ May also be designated Project Co-ordinator or Chief Technical Adviser, as appropriate.

5. The Executing Agency may, in agreement with the Government and UNDP, execute part or all of the project by subcontract. The selection of subcontractors shall be made, after consultation with the Government and UNDP, in accordance with the Executing Agency's procedures.

6. All material, equipment and supplies which are purchased from UNDP resources will be used exclusively for the execution of the project, and will remain the property of the UNDP in whose name it will be held by the Executing Agency. Equipment supplied by the UNDP shall be marked with the insignia of the UNDP and of the Executing Agency.

7. Arrangements may be made, if necessary, for a temporary transfer of custody of equipment to local authorities during the life of the project, without prejudice to the final transfer.

8. Prior to completion of UNDP assistance to the project, the Government, the UNDP and the Executing Agency shall consult as to the disposition of all project equipment provided by the UNDP. Title to such equipment shall normally be transferred to the Government, or to an entity nominated by the Government, when it is required for continued operation of the project or for activities following directly therefrom. The UNDP may, however, at its discretion, retain title to part or all of such equipment.

9. At an agreed time after the completion of UNDP assistance to the project, the Government and the UNDP, and if necessary the Executing Agency, shall review the activities continuing from or consequent upon the project with a view to evaluating its results.

10. UNDP may release information relating to any investment oriented project to potential investors, unless and until the Government has requested the UNDP in writing to restrict the release of information relating to such project.

#### Rights, Facilities, Privileges and Immunities

1. In accordance with the Agreement concluded by the United Nations (UNDP) and the Government concerning the provision of assistance by UNDP, the personnel of UNDP and other United Nations organizations associated with the project shall be accorded rights, facilities, privileges and immunities specified in said Agreement.

2. The Government shall grant UN volunteers, if such services are requested by the Government, the same rights, facilities, privileges and immunities as are granted to the personnel of UNDP.

3. The Executing Agency's contractors and their personnel (except nationals of the host country employed locally) shall:

(a) Be immune from legal process in respect of all acts performed by them in their official

capacity in the execution of the project;

(b) Be immune from national service obligations;

(c) Be immune together with their spouses and relatives dependent on them from immigration restrictions;

(d) Be accorded the privileges of bringing into the country reasonable amounts of foreign currency for the purposes of the project or for personal use of such personnel, and of withdrawing any such amounts brought into the country, or in accordance with the relevant foreign exchange regulations, such amounts as may be earned therein by such personnel in the execution of the project;

(e) Be accorded together with their spouses and relatives dependent on them the same repatriation facilities in the event of international crisis as diplomatic envoys.

4. All personnel of the Executing Agency's contractors shall enjoy inviolability for all papers and documents relating to the project.

5. The Government shall either exempt from or bear the cost of any taxes, duties, fees or levies which it may impose on any firm or organization which may be retained by the Executing Agency and on the personnel of any such firm or organization, except for nationals of the host country employed locally, in respect of:

(a) The salaries or wages earned by such personnel in the execution of the project;

(b) Any equipment, materials and supplies brought into the country for the purposes of the project or which, after having been brought into the country, may be subsequently withdrawn therefrom;

(c) Any substantial quantities of equipment, materials and supplies obtained locally for the execution of the project, such as, for example, petrol and spare parts for the operation and maintenance of equipment mentioned under (b), above, with the provision that the types and approximate quantities to be exempted and relevant procedures to be followed shall be agreed upon with the Government and, as appropriate, recorded in the Project Document; and

(d) As in the case of concessions currently granted to UNDP and Executing Agency's personnel, any property brought, including one privately owned automobile per employee, by the firm or organization or its personnel for their personal use or consumption or which after having been brought into the country, may subsequently be withdrawn therefrom upon departure of such personnel.

6. The Government shall ensure:

(a) prompt clearance of experts and other persons performing services in respect of this project;

and

(b) the prompt release from customs of:

(i) equipment, materials and supplies required in connection with this project; and

(ii) property belonging to and intended for the personal use or consumption of the personnel of the UNDP, its Executing Agencies, or other persons performing services on their behalf in respect of this project, except for locally recruited personnel.



7. The privileges and immunities referred to in the paragraphs above, to which such firm or organization and its personnel may be entitled, may be waived by the Executing Agency where, in its opinion or in the opinion of the UNDP, the immunity would impede the course of justice and can be waived without prejudice to the successful completion of the project or to the interest of the UNDP or the Executing Agency.

8. The Executing Agency shall provide the Government through the resident representative with the list of personnel to whom the privileges and immunities enumerated above shall apply.

9. Nothing in this Project Document or Annex shall be construed to limit the rights, facilities, privileges or immunities conferred in any other instrument upon any person, natural or juridical, referred to hereunder.

#### Suspension or termination of assistance

1. The UNDP may by written notice to the Government and to the Executing Agency concerned suspend its assistance to any project if in the judgement of the UNDP any circumstance arises which interferes with or threatens to interfere with the successful completion of the project or the accomplishment of its purposes. The UNDP may, in the same or a subsequent written notice, indicate the conditions under which it is prepared to resume its assistance to the project. Any such suspension shall continue until such time as such conditions are accepted by the Government and as the UNDP shall give written notice to the Government and the Executing Agency that it is prepared to resume its assistance.

2. If any situation referred to in paragraph 1, above, shall continue for a period of fourteen days after notice thereof and of suspension shall have been given by the UNDP to the Government and the Executing Agency, then at any time thereafter during the continuance thereof, the UNDP may by written notice to the Government and the Executing Agency terminate the project.

3. The provisions of this paragraph shall be without prejudice to any other rights or remedies the UNDP may have in the circumstances, whether under general principles of law or otherwise.

## **Part XII. Environmental and Social Screening**

The document for the Environmental and Social Screening for the Sustainable Forest Management and Multiple Global Environmental Benefits project is included in a separate file attached to this ProDoc.