# Carbon Farming



## LOCATION SNAPSHOT

# Location & description

The proposed Project will have national focus to establish country-wide systems to accommodate carbon sequestration and the sale of carbon credits. The operational focus will be on selected tree-growing communities on the south coast.



## 1. PROJECT CONTEXT AND RATIONALE

#### Sector: Forestry Sector

1.1. Sector & Sub-sector(s)	Timor-Leste's commitment to accelerating decarbonization and meeting the U.N. net zero target by 2050 means that carbon trading and carbon credits markets can become an integral part of the nation's future economy, and particularly the rural sector. A pilot, private sector, project at Baguia (WithOneSeed) has demonstrated that markets can be found for enhanced terrestrial carbon stocks created by increasing national tree cover through focussed carbon farming. This means that the proposed project would complement other initiatives of the Government of Timor Leste (GoTL), and the private sector, to invest in a Carbon Capture and Storage (CCS) ventures. Forest losses across all of Timor Leste have been the result of clearing for subsistence agriculture. Regenerative changes in land use and remedial tree plantings have been restricted because of poor rural access, and acceptance of improved agricultural production practices by poor rural communities. Rural access roads remain an ongoing priority for GOTL development strategies, and a key to sectoral development. The activity is classified broadly under the following NACE codes: A2.1.0 - Silviculture and other forestry activities F42.1 - Construction of roads and railways
1.2. Rationale for PPIP intervention and IFI loan	Timor-Leste's commitment to accelerating decarbonization and meeting the U.N. net zero target by 2050 will require focussed action to rapidly scale-up carbon sequestration and greenhouse gas emission reduction activities in the forestry sector. Carbon farming represents a nature-based-solution to climate change, while enhancing biodiversity and regenerating degraded landscapes. The PPIP intervention will partner with communities and individual landowners, companies and other organisations, and development partners across the country. Tree planting will focus on lands less favourable for agriculture, on steep lands and lands distant to the community, and will include a rich mix of biodiverse native and exotic species. The intervention will support activities to monitor, measure and verify carbon sequestration results, and share successes enjoyed by projects (and the challenges experienced) in a transparent fashion. Through identifying and unblocking barriers and bottlenecks within the carbon farming supply chain, carbon farmers (communities and landowners) will be empowered to take carbon-friendly decisions, and foster farm and community-level emission reductions. The intervention will develop partnership-based carbon farming projects that complement productive agricultural land uses, providing new financial and other incentives for landowners.

	Bottlenecks in the carbon farming supply chain will be removed by investing in, and developing solutions based on new technologies, such as Radio Frequency Identification (RFID) which will be tested and refined. The need to increase tree cover to provide sustainably the suite of benefits forests can offer is both				
	obvious and urgent, noting that increasing terrestrial carbon stocks will require modifications to existing land-use practices and the products grown.				
	The Government of Timor-Leste, in its <b>Strategic Development Plan (2011-2030)</b> , and the <b>National Plan to Combat Climate Change</b> has aligned national development with SDG 13: <i>Take urgent action to combat climate change and its impacts</i> .				
	The country's <b>National Adaptation Programme of Action on Climate Change</b> (NAPA, 2010) and <b>First Initial National Communication to UNFCCC</b> (NC-UNFCCC, 2014) gave priority to building the resilience of rural livelihoods to ensure national food security.				
	Other related policies include: the <b>Environment Basic Law (Decree-Law no. 26/2012</b> ) indicating the need for the State to adopt country-wide environmental plans and, the <b>National Action Program to Combat Land Degradation (2008),</b> emphasizing Community-Based Natural Resource Management (CBNRM) as an effective, preventive and mitigative program for sustainable land management throughout the country.				
1.3. Relevance to Strategic Development Plan & overall planning framework	The <b>Revised National Forest Policy (2017)</b> recognises that that most actions enhancing the sustainability of forest use and management contribute to mitigation of climate change effects. It re-commits the GOTL to the goal of forestry development " <i>the sustainable management of forest resources and watersheds to provide environmental, social and economic benefits to the people of Timor-Leste</i> ".				
	The <b>National Forest Policy</b> recognises that reforestation can " <i>play a critical role in sustaining the</i> <i>health of the environment by conserving biological diversity, providing low cost, renewable energy</i> <i>(fuelwood) and helping to mitigate climate change</i> ". Among the primary policy objectives adopted in the Policy is a commitment to the " <i>promotion of participation by local communities and other</i> <i>stakeholders from the private sector in forest management and development</i> ", noting that key in the actions to achieve these objectives is the " <i>active participation from local communities and other</i> <i>stakeholders</i> ". The Policy notes that the <b>Paris Agreement</b> and the <b>Intended Nationally</b> <b>Determined Contribution of Timor-Leste (INDC)</b> will guide government actions on how to address climate change, and that the need for climate change adaptation in vulnerable areas, vulnerability assessment, and monitoring, will be incorporated in the planning of forestry development activities.				
	The <b>Economic Recovery Plan (2020)</b> recognises that good management of forests is crucial to protecting the environment, biodiversity, and water resources, and that the sale of carbon credits can offer much-needed rural incomes. The 7th Constitutional Government proposed to the National Parliament, which approved it, legislation aimed at boosting <b>forest production</b> (Law No. 14/2017, of 2 August) in steep and mountainous areas of the country.				
	The sequestration and sale of carbon assets contributes to the following three Sustainable Development Goals:				
1.4. Relevance to Sustainable Development Goals	<ul> <li>Goal 1. No Poverty: Access to basic human needs of health, education, sanitation</li> <li>Goal 13. Climate Action: Regulating and reducing emissions and promoting renewable energy</li> <li>Goal 15. Life on Land: Reversing man-made deforestation and desertification to sustain all life</li> </ul>				
	on earth				
1.5. Project promoter(s)	(See 4.5 below for a more detailed description of contributions to achievement of SDGs The project promoter is the Ministry of Agriculture and Fisheries (MAF), Directorate General of Forestry, Coffee and Industrial Plants (DGFCPI) and its National Directorate for Community Forestry Development. which is the Government agency with prime responsibility for community forestry development and carbon farming. Links with the Secretary of State for Environment (SSE), which is the government entity in charge of the environment and officially represents Timor-Leste at the international fora on Climate Change, will be important, as will links with the increasingly active commercial private sector. For example, with the Timor-Leste regulator Autoridade Nacionaldo Petróleo e Minerais (ANPM) and their proposals for Carbon Capture and Storage (CCS) with the private oil and gas sector (possibly Santos from Australia – to be confirmed and the pre-feasibility stage)				

	Financing: EIB and other partner (s) – to be determined (GoTL/EUD/JICA?) EU's Green Land Foundation ( <i>Rai Matak</i> ) and/or the JICA/GCF project
1.6. General institutional set- up	MAF is the Government agency with prime responsibility for forestry development. DGFCPI is one of four directorates general within the Ministry; and has broad responsibilities for community forestry, watershed management, forest protection, plantation forestry, protected natural areas development and other aspects of forestry development. National Directorate for Community Forestry Development has prime responsibility for community forestry development and <u>carbon farming</u> . The roles and responsibilities of the DGFCIP, its three national directorates, and its municipal offices, are defined in the Ministerial Diploma No.10/2016.
	As mentioned above (1.5), it will be important for the project to form strong operational links with the SSE, and possibly with ANPM, noting that technical skills in these agencies may need considerable strengthening. In addition, as rural roads will be essential for the project to access areas which are targeted for tree and associated carbon farming, it will be important to work closely with GOTL's Directorate of Roads, Bridges and Flood Control (DRBFC). This organization is responsible for the construction and maintenance of rural roads. Rural road development in Timor Leste is supported by two major Development Partners (EU and DFAT with support from ILO). Therefore, liaison and cooperation with these agencies will also be important if road access to areas of carbon farming is to be assured.
	Finally (and depending on the detailed design of the project) it may be necessary to form operational links with the Ministry of Finance (MoF). This is because payment for carbon credits by international carbon credit buyers, may have to be channelled through this ministry.

## 2. INVESTMENT PROJECT INFORMATION

The general concept for the project is to engage with local communities to encourage tree planting and improved land management practices (additionality) within (to be) selected Districts to sequester atmospheric carbon and develop a national system to effectively enable the sale of these carbon credits into international carbon markets.

There are currently various initiatives in Timor-Leste that have targeted the international carbon market. Initial success suggests that there is merit in pursuing projects which focus on the sequestration of carbon. One particular, and notable, success has been WithOneSeed (*Ho Musan Ida* – HMI) which is a community participation programme established in 2009. HMI supports over 880 subsistence farmers to reforest their land. WithOneSeed financially supports over 25% of the Baguia community through annual payments per live tree and has stored 50,000 tons of CO<sub>2</sub> in the 150,000 trees under the carbon management programme. The initial 100,000 carbon "credits" initially created have grown to a community-owned asset worth currently in excess of US\$3.5 million.

The "carbon credit sector" is relatively small but there is growing interest from many Development Partners (the EU and JICA in particular) and there is a call from the Government for effective coordination amongst partners with interest in this emerging sector. For example, the auditing procedures and rules should be unified, and market prices for carbon credit should not vary from one initiative to another. The requirements for Monitoring, Reporting and Verification (MRV) should be consistent with those of global certification systems, such as the Gold Standard.

Commencing in late 2020, the EU financed a program called *Rai Matak* (Green Lands) that, among other expected results, aims to establish the National Carbon Foundation.

Pilot projects, particularly those adopting a community-based approach supported by JICA and HMI, have demonstrated the effectiveness of various types of support to smallholders and community groups to improve land-use and expand areas of commercial trees, regenerate degraded natural forest, and manage forests and plantations sustainably – with some of these activities also focussing on carbon credits.

2.1. Scope of proposed project and type of investment measures to be implemented

	Success with the HMI program, and the adoption of an CBNRM approach - which commits to effective engagement with affected households and communities, suggests an EIB funded project with the following objectives:			
	> Reforestation on steep and remote sites			
	Establishment of commercial trees crops which can provide multiple products, including wo and sequestered carbon			
	Protecting remnant forests and enhancing vegetative cover, including the reduction of the incidence of fires			
	> Upgrading rural road access in target communities			
	Developing a national system to enable the sale of generated carbon credits into internation carbon markets, and			
	Enhancing capacity through appropriate institutional development, capacity building (te and managerial), and public awareness/education.			
	These objectives will be achieved by investments in: (i) tree seedling nurseries; (ii) financial and other incentives for farmers to adopt improved land management practices and increase tree cov and (iii) new equipment related to a wide range of tree crop products. These investments will be supplemented by investments in institutional development, capacity building, and public awareness/education.			
2.2. Level of maturity		peen based on the success enjoyed (since 2009) by <i>Ho Musan Ida</i> , recent J to <i>Rai Matak</i> , and JICA through their program with GCF.		
	The proposed Institutiona	I set-up for project implementation is as follows:		
	PMU (Project Management Unit)	Implementing Agency: Within the DGFCIP, comprising representatives from SSE and Municipalities, and supported by a Technical Assistance (TA) Consultant (and in partnership with the organizations mentioned in 1.6) to oversee, monitor, and manage project implementation		
2.3. Approach chosen for project implementation	TA Consultant:	Institutional development; including assistance with the development of national forest production and recording systems (including carbon sequestration) which are supported by improved technical knowledge; technical and progress monitoring; capacity building for GOTL staff and target farmers; and public education. The TA provider will maintain strong links with HMI, <i>Rai Matak</i> and JICA/GCF		
	Private Contractors	<ul> <li>Nurseries and seedling distribution to farmers</li> <li>Roads improvement</li> <li>Carbon credit international auditing</li> <li>Works contracts: Via contracts with PMU</li> </ul>		
	Details of alternative strategies for carbon sequestration and engagement with carbon markets be provided in the pre-feasibility study, as will consideration of the strategies to be adopted will engaging with communities to achieve effective sequestration of CO <sub>2</sub> through tree planting. The are limited alternatives for the approach to be adopted to engage communities to achieve the objectives of increasing sequestered carbon, noting that JICA's and HMI's approaches have been tested and proven over many years.			
	The options analysis will comprise elements such as:			
2.4. Identification of preliminary	Delineation and characterisation of suitable sites for reforestation – degraded areas or deforested areas without tree cover for at least 10 years, using field surveys, GIS and satellite imagery to demonstrate their suitability			
alternatives for the works	Identification and characterisation of affected stakeholders and communities through livelihoods analysis and willingness to participate			
	Description of current land use and opportunities to make long-term changes which will result in additional carbon being sequestered.			
	Identification of major contributing factors (and locations) for loss of tree cover – clearing for agriculture, demand for firewood, and demand for wood products.			
	Capacity building within Government and the target communities			
	Based upon the prelimina which is likely to include:	ry analysis, a project with effective operational activities will be developed,		

	> Tree planting on steep and inaccessible lands, which will result in increased carbon stocks.				
	> Tree planting of species with wood of commercial value, in addition to s	equestered carbon			
	<ul> <li>Protecting remnant forests and enhancing vegetative cover. particular incidence of fires</li> </ul>	ly through reducing the			
	> Upgrading, repair and possible relocation of rural roads in target Distric	ts			
	<ul> <li>Development of a national system to enable cost-efficient sale of gener international carbon markets, and</li> </ul>	ated carbon credits into			
	> Enhancing capacity through appropriate institutional development, capacity building, technical and managerial training, and public awareness/education.				
	The creation of a tree resource and engagement with carbon markets is a lor commitment from all stakeholders for an extended period. A <b>first order</b> indi investment costs (est. $\in$ 7.0 mill) over 10 years (2 x 5-year stages suggested	cation of the			
	Output	Approx. cost (EUR ,000)			
2.5. Total estimated project investment costs	Preliminary delineation and characterisation of the affected areas, and identification and characterisation of affected stakeholders and communities.	400			
	Establishment of new nurseries, maintenance of existing facilities, and distribution of seedlings	1,600			
	Rural access roads	2,000			
	Equipment, vehicles, and materials	1,000			
	TA project: Institutional development and coordination, development of a national carbon credit recording and sale system with supporting training and capacity building, public education/information, and training and technical support	2,000			
	Total	7,000			
	Considering that the EIB's contribution to a project's cost is limited to 50% of the following possibilities for co-financing have been identified:	the overall investment,			
	> JICA, through additional resources for its JICA/GCF project (technical assistance)				
2.6. Approach	> EU through an expanded interest in <i>Rai Matak</i> project (technical assistance)				
to finance the	<ul> <li>Links with Ho Musan Ida – HMI</li> </ul>				
project	> GoTL via normal government allocations				
	Private Sector – possible links with the Bayu-Undan consortium (south coast) and their Carbon Capture and Storage (CCS) project with the GoTL.				
	> These options will be further assessed during the Pre-Feasibility Study (PPIP).				

# 3. IMPLEMENTATION ARRANGEMENTS

3.1. Provisional schedule for project implementation	The provisional schedule for project implementation is about 120 months, including 30 months for pre-feasibility/feasibility, and 90 months for implementation of project activities.			
3.2. Estimated time and resources for PFS and FS	The estimated time and resound Phase	urces required are Time (months)	as follows: Level of Effort (person days – KE and Backstopping)	Level of Effort (person days – NKEs)
	Pre-Feasibility study	10-12	70	250
	Feasibility study	18	200	800
	Total	28-30	270	1,050

	The main barriers to develop and implement the project identified at this stage are:					
3.3. Main barriers to	Engagement and agreement with GoTL at all levels, particularly agreement on spheres of responsibility between DGFCIP, SSE and ANPM, and co-financing agencies; and agreement on a unified national approach to global carbon markets.					
develop the project	> Coordination of	project activities with	hose c	f <i>Ho Musan Ida</i> (HMI), <i>Rai Matak</i> and	d JICA/GCF.	
project	<ul> <li>Institutional arr between GOTL</li> </ul>		tional	and municipal authorities, the private	e sector and	
3.4. Estimation of required TA activities to implement the planned investment	The TA activities required to support implementation of the investment include: (i) assistance with the division of responsibilities between national, regional, and municipal entities; (ii) development of a national system for auditing and selling carbon credits; (iii) addressing the constraint of uncertain land tenure; (iv) support for institutional development within the cooperating agencies and partners; (v) tendering and contracting of road and local infrastructure repairs; (vi) marketing of commercial tree crop products; and (vii) capacity building and public education.					
4. SAFE	GUARDS AND	) ELIGIBILITY				
				ill be performed at the pre-feasibility ome relevant are listed below:	stage. The	
4.1. Environmental	Assessment and ma environmental and risks		N	Involuntary resettlement	N	
and Social issues,	Pollution prevention	and abatement	N	Rights and interests of vulnerable groups	N	
recommended ESIA needs	Biodiversity and eco	osystems	Y	Labour standards	N	
ESIA needs	Climate-related sta	ndards	Y	Occupational and public health, safety and security	N	
	Cultural heritage		N	Stakeholder engagement	Y	
4.2. Eligibility: Alignment with Paris Agreement	<ul> <li>The proposed investment falls within the following sector(s) supported by the EIB Group under the Paris alignment framework:</li> <li>Investment in nature and biodiversity conservation and restoration.</li> <li>Investment in subsectors such as sustainable forestry and sustainable, resilient agricultural land management, and erosion control (LULUCF).</li> <li>Article 6 of the Paris Agreement relating to International Transfer of Mitigation Outcomes (ITMOs) provides a market mechanism which can offer opportunities for GoTL to potentially sell some or all of the emissions reductions resulting from reforestation, forest protection and improved forest management. Equally, the voluntary carbon market is a mechanism that can deliver revenues to support economic, social and environmental development in the rural areas of Timor-Leste.</li> <li>Government support is required to develop a national framework to access such mechanisms. This concept addresses these issues through creating a positive carbon balance through tree planting, forest management and enhanced vegetative cover, and brings socio-economic benefits to participating communities.</li> </ul>					
4.3. Eligibility: Alignment with EU Taxonomy	A summary of the technical screening criteria for "substantial contribution" and "do-no-significant-harm" (DNSH) in relation to the six environmental objectives of the EU Taxonomy is shown below.         The following project activities can be aligned with the EU Taxonomy:         Environmental       Afforestation: Activity NACE A02.10 Silviculture and other					
	objective         forestry activities           Climate change mitigation         Substantial Contribution: 1. Afforestation plan and subsequent forest management plan or equivalent instrument; 2. Climate benefit analysis 3. Guarantee of permanence 4. Audit					

5. Group assessment

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		<i>Note: Meeting the requirements will be administratively burdensome and time consuming, especially for smaller forest holdings.</i>
	Climate change	DNSH: Climate risk and vulnerability assessment performed. The PPIP
	adaptation	anticipates this for the PFS and FS stages.
	Water and marine	DNSH: Environmental degradation risks related to preserving water
	resources	quality and avoiding water stress are identified and addressed with the
		aim of achieving good water status and good ecological potential (EU
		Water Framework Directive), and a water use and protection
		management plan is developed for the potentially affected water bodies
		in consultation with relevant stakeholders. However, no assessment is
		needed if such risks are considered in an EIA in accordance with the EU
	Cincular	EIA Directive and Water Framework Directive.
	Circular economy	NA
	Pollution	DNSH: The use of pesticides is reduced and alternative approaches or
	prevention &	techniques; the activity minimises the use of fertilisers and does not use
	control	manure. Well documented and verifiable measures are taken to avoid
		the use of active ingredients that are listed in Annex I, part A, of
		Regulation (EU) 2019/1021. Pollution of water and soil is prevented and
	Diadivaraity and	cleaning up measures are undertaken when pollution occurs.
	Biodiversity and ecosystems	DNSH: In areas designated by the national competent authority for conservation or in habitats that are protected, the activity is in
	ecosystems	accordance with the conservation objectives for those areas.
		There is no conversion of habitats specifically sensitive to biodiversity
		loss or with high conservation value, or of areas set aside for the
		restoration of such habitats in accordance with national law.
4.4. Eligibility: Clean Oceans Initiative	N/A	

### 4.5 Relevant Sustainable Development Goals (SDGs) and indicators

Goals and targets	Indicators		
Goal 1. No Poverty: Access to basic human needs of health, education, sanitation			
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day.	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)		
<ul> <li>The project will provide:</li> <li>Enhanced opportunity for livelihoods improvement through growing and marketing commercial trees crops.</li> <li>Provide reliable, regular, direct and additional household incomes through sale of carbon credits</li> <li>Facilitate cooperation between international stakeholders</li> <li>Opportunities for both men and women to improve their livelihoods</li> </ul>			
Goal 13. Climate Action: Regulating and reducing emissions and promoting renewable energy			
13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities13.b.1 Number of least developed countries island developing States that are receiving s support, and amount of support, including for 			
The project will provide:			

<ul> <li>A national system for creating, measuring and monitoring reliable carbon "credits"</li> </ul>				
Align this system with global carbon markets.				
<ul> <li>An opportunity for communities to play a meaningful role in national climate commitments</li> </ul>				
Ensure that sequestration of terrestrial carbon remains	a part of national planning and priorities.			
Goal 15. Life on Land: Reversing man-made deforestation	and desertification to sustain all life on earth			
1 5.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.15.2.1 Progress towards sustainable forest management				
15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation	15.b.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems			
The project will:				
<ul> <li>provide expanded tree cover</li> <li>contribute to the restoration of remnant native forests</li> <li>enhance environmental and biodiversity benefits</li> <li>assist alleviate poverty in affected communities</li> </ul>				