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Accelerating Inclusive Economic Growth in Timor-Leste

Assessment of Opportunities for Inclusive Economic Growth in Timor-Leste

Final Report

April 2013

ACCELERATING INCLUSIVE ECONOMIC GROWTH IN TIMOR-LESTE

ASSESSMENT OF OPPORTUNITIES FOR INCLUSIVE ECONOMIC GROWTH IN TIMOR-LESTE

FINAL REPORT

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government. The team would like to acknowledge USAID/Timor-Leste staff contributions, especially Melissa Francis for her strategic vision for the assessment, additionally Kimberly Bostwick, Trinitas Endo, Cristovao Guterres and Ana De Araujo.

CONTENTS

ACRONYMS

ADB	Asian Development Bank
AMEG	Asia and the Middle East Economic Growth Best Practices
AusAID	Australian Agency for International Development
BNCTL	Banco Nacional de Comercio de Timor-Leste
BOSS	Business Opportunities Support Services
CA	Conservation Agriculture
CBD	Convention on Biological Diversity
CBA	Cost-Benefit Analysis
CBO	Community-Based Organization
CBRM	Community-Based Resource Management
CC	Climate Change
CCA	Climate Change Adaptation
CCT	Cooperativa Café Timor
CDCS	Country Development Cooperation Strategy
CI	Conservation International
COCAR	Consolidating Cooperative and Agribusiness Recovery
CRS	Catholic Relief Services
CSR	Corporate Social Responsibility
CTI	Coral Triangle Initiative
CTSP	Coral Triangle Support Program
DAC	Dezenvolve Agricultura Comunitária
DAI	Development Alternatives International
DHS	Demographic And Health Survey
DO	Development Objective
DOI	Department of Interior
DRR	Disaster Risk Reduction
EG	Economic Growth
EU	European Union
FAO	Food and Agriculture Organization
GCC	Global Climate Change
GEF	Global Environment Facility
GIZ	German Society for International Cooperation
GOTL	Government of Timor-Leste
HADIAK	Haforsa Distritu iha Implementasaun Atividade Kuidadus Saude Primaria
IADE	Instituto de Apoio ao Desenvolvimento Emprezarial
IFAD	International Fund for Agriculture Development
IFC	International Finance Corporation
ILO	International Labor Organization
IR	Intermediate Result
IT	Information Technology

ITAP	International Technical Assistance Program
IUU	Illegal, Unreported, Unregulated
JICA	Japanese International Cooperation Agency
LMMA	Locally Managed Marine Area
MAF	Ministry of Agriculture and Fisheries
MCC	Millennium Challenge Corporation
MDG	Millennium Development Goal
MOE	Ministry of Education
MOH	Ministry of Health
MOI	Ministry of Infrastructure
MOT	Ministry of Tourism
MNE	Ministry of Foreign Affairs
MPA	Marine Protected Area
MSME	Micro, Small, and Medium Enterprises
MT	metric tons
NAP	National Action Programme to Combat Land Degradation
NBSAP	National Biodiversity Strategy and Action Plan
NCBA	National Cooperative and Business Association
NGO	Nongovernmental Organization
NKSNP	Nino Konis Santana National Park
NOAA	National Oceanic and Atmospheric Agency
NRM	Natural Resource Management
NTFP	Non-Timber Forest Products
NZAID	New Zealand Agency for International Development
ODC	Office of Defense Cooperation
OFDA	Office of Foreign Disaster Assistance
PAPA	Participating Agency Program Agreement
PNTL	National Police of Timor-Leste
PROBETO	Programa Bolsa Estudu ba Timor Oan
RDMA	Regional Development Mission Asia
RDP IV	Rural Development Program IV
SDP	Strategic Development Plan
SISCa	Integrated Community Health Services
SoL	Seeds of Life
TBD	To Be Determined
TOT	Training of Trainers
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children’s Fund
UNMIT	United Nations Integrated Mission in Timor-Leste
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WB	World Bank
WFP	World Food Programme
ZOI	Zone of Influence

EXECUTIVE SUMMARY

A. ASSESSMENT PURPOSE

USAID/Timor-Leste is in the process of developing its five-year Country Development Cooperation Strategy (CDCS) and is using this opportunity to consolidate and focus current activities in the Economic Growth (EG) Portfolio into a more integrated project that is solidly linked with the Mission's results framework. This assessment aims to document the current status of economic growth, agriculture, natural resources management and climate related activities and initiatives in Timor-Leste; identify priorities, gaps, and opportunities in the specified sectors; and provide a comprehensive summary of recommendations as to where USAID could most effectively place its resources.

The USAID/Timor-Leste EG portfolio currently is divided between value chain agriculture activities in the western uplands and marine-based conservation activities in the coastal regions of the most eastern district. Moving forward, USAID/Timor-Leste would like to take a more focused and concentrated approach that seeks to build the capacity of the people and institutions responsible for the country's development.

The assessment focused on a future integrated project design that will serve as the principal contribution towards the Mission's intermediate result (IR) 1: Inclusive economic growth accelerated in selected sectors. The EG-focused IR 1 has two sub-IRs: increased ability of individual citizens to engage in the private sector, and increased productivity of selected value chains with integrated global climate change adaptation and nutrition considerations. Additionally, the recommendations in this report take into account USAID's corporate priorities as articulated in the USAID Policy Framework 2011-2015 and in the USAID/Forward reform agenda, as well as sector-specific and crosscutting policies that guide implementation.

B. BACKGROUND

The Government of Timor-Leste's (GOTL) economic growth priorities are detailed in the Timor-Leste Strategic Development Plan (SDP) 2011-2030. This document encompasses the GOTL's strategic vision to transition to an upper-middle-income country with a healthy, well-educated and safe population by 2030. This assessment focused on the economic development component of the SDP. There are three pillars to the GOTL's economic development plan: agriculture, tourism, and petroleum.

Timor-Leste's prospects for increased economic growth are built upon a number of important opportunities in the economy. An important factor is the petroleum revenue that the GOTL is investing in infrastructure and human capital development. The country also has strong agricultural potential with a diversity of agro-climatic areas and unmet demand for a number of agricultural products within the country. Tourism provides another opportunity to stimulate economic activity with Timor-Leste's environmental wonders including beaches and shallow unbleached reefs, as well as its cultural and historical sites.

At the same time opportunities exist, there are still significant constraints facing the Timor-Leste economy. The most critical weakness is the overall low level of human resource capacity in the country. The majority of economic activities in the country occur around the capital, Dili, with limited local markets for productive inputs and outputs. Poor infrastructure (roads, electrification, and water) prevents effective development of the economy. The bulk of the population lives within a subsistence system and tends to be highly risk-averse. Finally, while a relatively small country, Timor-Leste has a multitude of languages and linguistic cultures that complicate communication and developmental efficiency.

USAID/Timor-Leste's five-year CDCS aligns with the GOTL's priorities and highlights capacity development as an integrated theme across all portfolios, including the three Presidential Initiatives: Global Health, Feed the Future, and Global Climate Change. The Mission has detailed in the CDCS how its programs can strategically impact human and institutional capacity in the country.

C. ANALYSIS

In developing its recommendations, the assessment team looked at the three main sectors within the economic growth realm: agriculture, environment and natural resources management, and tourism. The intersection of these sectors is where the Mission may want to concentrate its resources to support economic growth while also meeting the requirements of funding streams that may change over time.

The assessment team performed its analysis through the lens of a set of programming principles and considerations that would also serve the program's implementation. These principles include: 1) the need to achieve concrete results in five years; 2) building on what works; 3) engaging women; 4) supporting appropriate technologies; 5) focusing on USAID comparative advantages; 6) strengthening systems that lead to capacity building, sustainability, and impact; and 7) leveraging resources. Additionally, the team considered geographic prioritization and focus. This included choosing contiguous districts or corridors for project implementation, ensuring a broad watershed approach is used for environmental resilience and access to resources, looking to co-locate with other donor or USAID programs, and considering issues related to poverty and vulnerability measures in the selection of zones of influence (ZOIs) of the project. Finally, the team considered recommendations for implementation mechanisms to streamline and maximize impact of USAID resources. These indicate limiting management units; seeking flexibility in use of

resources; expanding capacity building and use of local partners; and integrating of USAID, other U.S. government activities, and other donor programs to the extent possible.

D. FINDINGS

Agriculture. Within the agricultural sector, the assessment team looked at a selection of commodity value chains. These included horticulture, coffee, non-timber forest products (NTFP), cattle fattening, and inland aquaculture.

In the horticulture sector, the assessment looked principally at fresh vegetables. The current Dezenvolve Agricultura Comunitaria (DAC) project has had considerable success in linking small-scale vegetable growers with private sector supermarkets. In addition, DAC has introduced appropriate technologies (plastic high tunnels) that have been widely adopted by farmers. The team also found that there is considerable unmet demand for fresh vegetables within the market. There are no significant enabling environment constraints at this time in the horticulture sector, although this could change over time.

Preliminary review of the horticulture value chain indicates several potential options for USAID/Timor-Leste's support. The private sector is already engaged in the DAC program and this engagement could be built upon and expanded to include new partners. For example, the Mission could assist the private sector in adding needed technical assistance/extension experts to improve agricultural production and in providing nutritional education and training to farmers. Other programming possibilities include the development of district and sub-district level assembly points, packing houses, or wholesale markets for the collection of economically viable quantities of fresh vegetables; the establishment of a private sector-based input system; formation of community users groups for water and forests; household gardens; and school demonstration projects.

In looking at other commodity sectors, the team found that USAID's work in the coffee sector with Cooperativa Café Timor (CCT) is now sustainable and needs no further support of direct coffee operations. A recent mid-term evaluation of the Consolidating Cooperative Agribusiness Recovery (COCAR) project confirmed that CCT is a profitable, well-managed business that has the resources to ensure its sustainability in the absence of donor funding. A number of NGOs and donor funded activities focused on value added processing, marketing and rehabilitation efforts in the coffee sector, including Rural Development Program IV, a European Union funded activity focused on strengthening the public extension service's ability to support coffee production and rehabilitation.

Candlenut, a non-timber forest product (NTFP), has shown an interesting dynamic in which prices and demand have significantly increased from neighboring Indonesia. The primary constraints to the expansion and growth of candlenut, include limited market and price information and significant institutional complications involved in over the border trade.

Cattle fattening could potential have a high payoff, but significant market constraints limit its desirability for future support.

Inland fisheries also have major investment and support information needs before sector investment could have a high probability for being sustainable and profitable. The assessment team, however, felt there was some merit to working with inland fisheries as a possible secondary-level activity because of their potential impact on nutrition (animal protein), local employment, and income.

The assessment team found significant capacity among key actors to support a five-year integrated project. Farmers of horticulture crops and other crops have demonstrated a willingness to become engaged in commercial activities and have ability to meet quality standards. While they tend to be cautious about trying new methods and need additional skills and resources, a project focusing on these constraints could help further develop their economic growth potential. Likewise, the private sector has shown itself to be capable and willing to invest time, money, and management support to project activities where those activities have a direct impact on the supply of goods for their own operations. There are also a number of nongovernmental organizations (NGOs) and donors working in the agriculture sector; however, none are focused on market development or developing value chains. The Ministry of Agriculture and Fisheries (MAF) supports horticultural efforts but currently lacks resources for direct support of the sector.

Coastal Marine Resources. In the coastal and marine resources sector, the team found the environment of Timor-Leste supports populations of marine biota that are valuable for both commercial harvest and biodiversity uses. Long-term fisheries' productivity in Timor-Leste hinges on the ecosystem integrity and health of marine habitats to allow regeneration of fish stocks. Potential programming possibilities to conserve these resources include expanding marine protected areas and community-based management, improving value chains of targeted marine capture fisheries, and continuing to support the National Oceanic and Atmospheric Agency (NOAA) and MAF partnership on ocean acidification and coastal resource inventory and monitoring in Timor-Leste's coastal areas.

Major constraints exist in undertaking these efforts, including an antiquated local fishing fleet, poor management of existing resources, limited access to inputs and equipment, limited infrastructure supporting marine fisheries, unacceptable fishing methods, and the lack of proper processing and storage facilities. Opportunities to rationalize fishing efforts are also underway such as instituting a program to combat illegal unreported and unregulated (IUU) fishing by foreign vessels and the promotion of locally-managed marine protected areas (LMMAs) starting in the Nino Konis Santana National Park and other coastal-marine biodiversity areas around Timor-Leste seas. Key actors that could help support these activities include MAF, district and Suco governments, multinational and national donor programs, NGOs, local private commercial fishing companies, diving and sport fishing operators, and other U.S. government agencies such as NOAA.

Tourism. In the tourism sector, the team found that Timor-Leste has a significant diversity of tourism assets. The team discussed a number of potential programming options for USAID/Timor-Leste to consider in the tourism sector. The most important of these would be support to the Ministry of Tourism (MOT) and local governments to develop management plans in the use and maintenance of these touristic assets. This would include a visitor management plan for Valu and Jaco Island, creation of additional no-take marine zones through community co-management in Nino Konis Santana National Park, establishment of additional protected areas in upland habitats, and promotion of ecotourism. There are constraints in undertaking these activities. Among these are the limitations faced by the GOTL Ministries to plan and enforce regulations protecting fragile resources and the lack of information and information sharing. In addition, the tourism market in Timor-Leste is small and currently does not contribute significant income or employment for the country or local communities. The poor state of basic infrastructure compounds most of these constraints. Key actors in the tourism sector include MOT, other GOTL ministries, NGOs such as the Alola Foundation and Haburas, other donors — German Society for International Cooperation (GIZ), NZAID, JICA — and local Suco governments.

Natural resource management (NRM). Because of the Mission's emphasis on climate change adaptation (CCA) and disaster risk reduction (DRR), the assessment team believes that the approach to designing and implementing any project should use an ecosystem-based approach, such as a watershed or landscape modality. Decisions on actions that should be taken and the placement of project interventions should reflect the impacts of those actions within a given watershed. The team found that these decisions could be made within a community decision framework, and might also utilize new information resources that are increasingly available to GOTL. Local communities should be engaged in mapping risk and the potential for environmental degradation in project activities. Formation of community user groups for the sound management of land and water would protect these resources and contribute to an integrated watershed management strategy.

Regional Focus: Coastal Regions. In coastal areas, tourism has the most potential, but would require long-term investments before significant economic growth could be achieved. The sustainability of a tourism based economy is highly dependent on the unique, and in many cases fragile, environmental characteristics of the region. Tourism is still nascent in Timor-Leste with many missing vital components that would need to be established. The national park and established protected areas are under the jurisdiction of multiple ministries that lack the coordination and resources needed to manage, plan, regulate and protect these areas. Significant work would need to be done prior to developing a tourism value chain to ensure sustainability. Given the amount of ground work that must be done at national, district and community levels, it would be difficult to get results in the tourism sector within a five-year time frame.

Potential to increase agriculture productivity is much more limited in the coastal areas. Wild catch fisheries would have the largest growth potential from USAID/Timor-Leste's activities in the coastal regions, given a five-year time frame in which to achieve results.

This would require the filling of major infrastructure gaps (roads, transportation systems, cold chains, and ports), and control and enforcement measures would have to be put in place to address illegal fishing and to manage the demand for marine fisheries. In the absence of government capacity to enforce and regulate fishing, networks of LMMAs would need to be established while baseline data on Timor-Leste's coastal-marine resources characteristics are gathered.

Regional Focus: Inland/Upland Areas. When looking at the same analysis for inland/upland areas, agricultural potential is high and there are synergies for deriving mutual benefits with natural resources management. These two sectors are inextricably linked, implying a watershed/landscape approach to economic land use planning will achieve dual outcomes in economic growth and natural resources management. Tourism has a smaller potential in the inland areas. When comparing the two geographic areas, the integrated programming possibilities appear greater in the inland areas.

E. CONCLUSIONS & RECOMMENDATIONS

The assessment team performed its analysis through the lens of a set of programming principles and considerations that would also serve the project's implementation. Given investments made to date with indications of early success, in-land/upland horticulture has the greatest potential to achieve simultaneous results in economic growth, food security, and environment within the five-year timeframe. This approach will consider a watershed framework to ensure sustainability through proper zoning, land use, and irrigation for agriculture.

Horticulture is seen as a promising option for achieving near-term inclusive economic growth and to serve as the core programming option for a future project design. This choice meets team programming principles and fits into available funding sources. There is high-unmet local demand and future export potential for vegetables, supporting the possibility of significant results in the near term. Additionally, horticulture activities provide opportunities to leverage other investments by MAF and donor projects, allowing USAID programming to fill gaps. The private sector is already engaged in USAID/Timor-Leste's horticulture program and this engagement could be built upon and expanded to include new partners.

Complementary components will be needed to achieve simultaneous robust results in food security and nutrition, such as instruction in financial literacy and behavior change information related to food preparation, nutrition, hand washing, hygiene, and water storage.. These components could be integral parts of the core program or may be linked activities undertaken by other USAID projects (health, education, democracy and governance), or U.S. government programs such as those though the Office of Defense Cooperation (ODC), U.S. Department of Agriculture (USDA), and the State Department. These activities could also be handled by the private sector, local or international NGOs, or through collaboration with other donors and government programs.

Support services are critical to facilitate and lubricate value chain activities. The assessment team noted three important support services that directly impact horticulture

and other value chains: 1) transport, 2) technical support, and 3) access to finance. Two of these, technical support and access to finance, are essential to consider in the project design.

The team also factored in the crosscutting issues and the potential for sustainability. Horticulture has strong possibilities of sustainable economic growth, supports engagement and empowerment of women, provides opportunities for integration of humanitarian (OFDA) activities into longer-term development, and has positive impacts on nutrition.

F. LEVERAGING OPPORTUNITIES

None of the key actors in Timor-Leste are focused on market development and value chains, which many described as a clear comparative advantage of USAID. However, there are many organizations working in agriculture or in complementary sectors, providing ample leveraging opportunities.

There are leveraging opportunities from USAID activities such as OFDA, health, and democracy and governance as well as other U.S. government programs, including the Department of the Interior International Technical Assistance Program (DOI-ITAP), USDA, ODC, Millennium Challenge Corporation (MCC), and the State Department. For example, OFDA has a conservation agriculture program focusing on staple crops that will be starting around April 2013, as well as ongoing programs in seed storage and community-based disaster risk management. USAID/Timor-Leste has health activities that could aid in achieving nutrition outcomes and democracy and governance work that can strengthen Sucos and engage youth. ODC could assist in the construction of small-scale infrastructure for agriculture, and DOI-ITAP could help in developing watershed management or biodiversity conservation strategies.

Other donors' activities represent an important opportunity for leveraging. These include linking to road construction and rehabilitation efforts, irrigation and water systems work, extension, aquaculture projects, and various nutritional efforts. Staple crops are an emphasis of many donors allowing USAID to focus on more high-value and high-nutrition crops through horticulture.

A host of NGOs are also providing assistance in areas supportive of USAID's efforts. This assistance ranges from women's empowerment, financial literacy, handicrafts, nutrition and home gardens, and inland fisheries. In addition, many NGOs are taking a watershed approach to implementation that complements the work proposed in these recommendations.

The private sector already provides resources and leveraging for USAID/Timor-Leste's projects. It is likely that this will continue and expand. The corporate social responsibility (CSR) funds of the large international petroleum groups working in Timor-Leste could be an important source of additional resources for the program, particularly for complementary activities.

The GOTL support through MAF and other ministries for USAID's project is likely to continue, particularly for complementary activities and the development of support services.

CHAPTER ONE

INTRODUCTION

A. HISTORY

One of the newest nations in the world, Timor-Leste is located on Timor Island, the largest and easternmost island of the Lesser Sunda Islands chain (Figure 1). For more than four centuries, Timor-Leste was the most far-flung of Portugal's colonies. The Portuguese utilized the island nation as mainly a trading post until late in the 19th century, investing little in health and infrastructure. Portugal's 1974 revolution was the catalyst for a hasty de-colonization that culminated in a brief civil war between rival political factions from which a pro-independence party emerged victorious. The victory was short-lived, however, as Indonesia invaded in December 1975, annexing the country as its 27th province. Indonesia's 24-year occupation of Timor-Leste was marked by constant violence and is estimated to have caused more than 200,000 deaths. An overwhelming vote for Timor-Leste's independence in August 1999 was followed by large-scale violence by the Indonesian Army and militia and included massacres and wide-scale destruction of property. Sixty to 80 percent of public and private property was destroyed, including the electrical grid, water supply systems, schools and health clinics. There was a displacement of people into mountainous areas (U.N. Human Rights Council, 2000) and violence destroyed the socioeconomic base for the country's development. From 1999 to 2002, the U.N., through the U.N. Transitional Administration in East Timor, took over the administration of Timor-Leste, and helped to support the development of this new sovereign state. In May 2002, Timor-Leste became independent.

Underdeveloped political institutions and unresolved divisions within the national political leadership undermined the fragile nation, leading to the collapse of state security in 2006. International peacekeepers were again mobilized to stabilize the situation, and as many as 150,000 internally displaced people found shelter in camps around Dili. In an effort to move beyond the damaging effects of the crisis, Timor-Leste held presidential and parliamentary elections in 2007 that saw more than 80 percent of registered voters turn out for three rounds of generally peaceful balloting. While the overall results were accepted quickly, no single party obtained an absolute majority in the parliamentary elections, and the ensuing disagreement over the right to assume leadership triggered a new wave of violence in Dili and the country's east. Following the February 2008 attacks, the government successfully negotiated an agreement and reintegrated many internally displaced persons.

Since 2006 when the peacekeeping forces returned to the country, the reconstruction of a professional, disciplined, and responsive police force that can ensure public safety, preserve the integrity of democracy, and uphold the rule of law has been a national priority. In March 2011, the United Nations Mission in Timor-Leste handed policing responsibility back over to Timor-Leste's national police (PNTL). Additionally, the

country held parliamentary and presidential elections in 2012 that were heralded internationally as free and fair. Stability has prevailed and crime rates have remained low, leading the U.N. Mission to withdraw in December 2012.

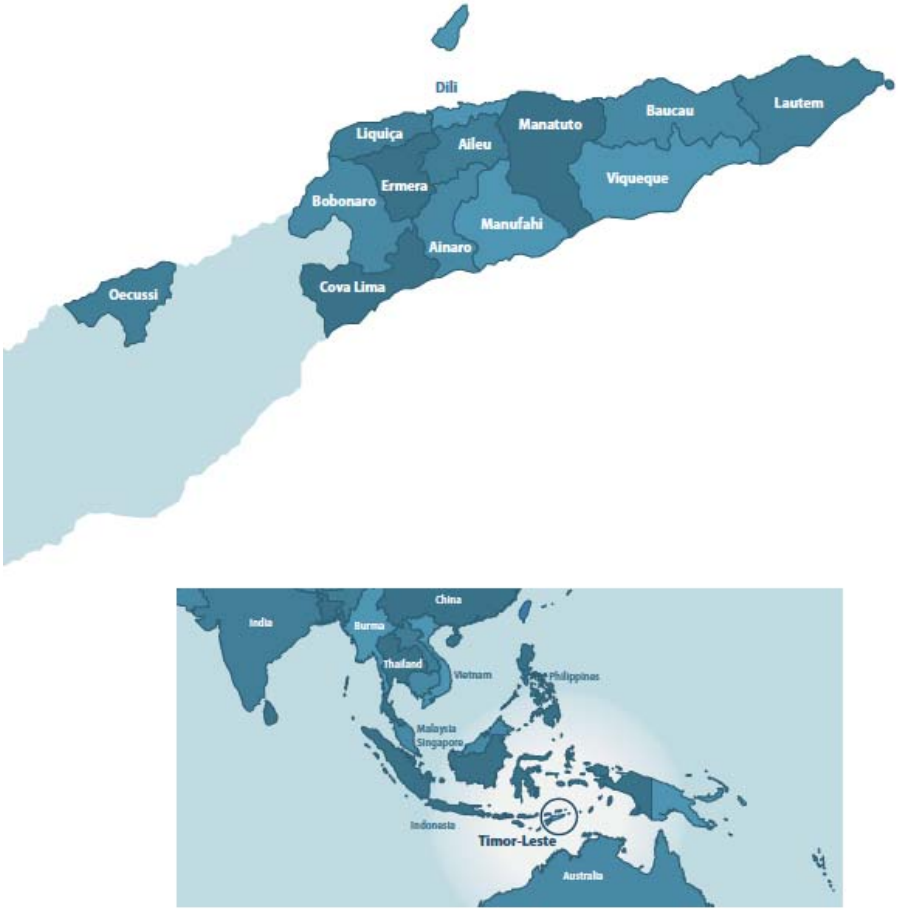

Figure 1. Location of Timor-Leste
(Timor-Leste Human Development Report, 2011)

B. CONTEXT AND TRENDS

Despite its small size, Timor-Leste is very diverse in terms of languages, peoples, and geography. It has more than 20 languages, which include Portuguese and Tetum (the official languages), Indonesian and English (the working languages), and 15 indigenous languages. The terrain is mountainous, with highlands in the central part of the island, and a more fertile but sparsely populated southern coast. There are two seasons: the rainy season, which has very harsh, powerful downpours, and a dry season when droughts can occur.

The total population of Timor-Leste is currently estimated at more than 1.2 million people (World Fact Book, 2012). Timor-Leste has a high fertility rate with six children per woman and a population growth rate of 2.9 percent per year. The under-five mortality rate is 64 per 1,000 live births (Demographic Health Survey, 2009-10). Major killers of

children under five are pneumonia, diarrhea, and malaria. There is a high prevalence of underweight children, reaching 45 percent (UN MDG Report, 2011), and 58 percent of children are stunted (DHS, 2010). Poor nutrition and food insecurity are major concerns in Timor-Leste.

Timor-Leste Key Statistics

Population:	1.2 million
Fertility rate:	6 children/female
Population growth rate:	2.9 percent
Life expectancy (years):	62.9 years
Literacy rate:	58 percent
Underweight, under 5:	45 percent
Stunted, under 5:	58 percent
Urban population:	28 percent
2013 Human Development Index:	134 of 186

About 72 percent of the population is rural (World Fact Book, 2012), yet only 8.2 percent of the land is considered arable. A rural family holds on average about 1.2 ha of land and the rural population is poorer than urban populations (MAF *et al*., 2003). Agriculture provides at least 64 percent of the country's employment (World Fact Book, 2010), and coffee is the country's main export, with the exception of petroleum. Candlenut, spices, and coconut are also grown commercially in lesser quantities. Subsistence farmers often practice swidden cultivation and produce rice, maize, tubers, and some livestock. Close to 80 percent of the population rely on the crops they produce themselves for food and income and the poor can experience food shortages for at least two months out of the year (UNHR, 2008); www.wfp.org/countries/timor-leste/overview). Additionally, Timor-Leste depends on imports to meet its food needs, and it is estimated that 74 percent of rice is imported (Timor-Leste Survey of Living Standards, 2007).

Given that the majority of the population resides in rural areas, they are heavily dependent upon natural resources for their survival. Deforestation and soil erosion are major problems in Timor-Leste (Westerberg, 2000). Forest cover in Timor-Leste has decreased by almost 30 percent from 1972 to 1999, (Sandlund *et al*., 2001) and declined at a rate of 1.3 percent per year from 2000 to 2010 (CBD, 2011). It is believed that only one to six percent of the remaining cover is primary forest, and native species regeneration rates are low. Valuable timber species, such as sandalwood, teak, and rosewood, have been nearly logged out due to cutting during the colonial and occupation periods. During the Indonesian occupation, troops frequently burned forests to flush out guerilla fighters and many people who fled from cities cleared forested land for agriculture. Additionally, forests are under pressure due to the practice of swidden agriculture and the collection of fuelwood, as 90 to 98 percent of the country uses fuelwood for cooking (World Bank, 2007; Mercy Corps, 2011). Fifty percent of the land is degraded (NAP, 2008) and this degradation is due, in part, to unsustainable agricultural practices. Population movements, sometimes forced, and lack of agricultural assistance under Indonesian rule affected the sustainability of agriculture. Despite relatively low population density in Timor-Leste, the amount of suitable agricultural land available per person is insufficient. Farmers regularly cultivate areas with slopes of more than 40 degrees. Almost half of the land of Timor-Leste is this steep or more (Democratic Republic of Timor-Leste, 2003) and landslides and flash floods are common. Climate variability will increase the degradation of forested areas and soil erosion, as well as the possibility of landslides and flooding. Due to climate change, the country will likely

experience higher temperatures, greater variability in precipitation from more intense rains, lengthened periods of drought, variations in monsoon winds, and increased intensity of cyclones.

The population of youth aged 15 to 24 is growing quickly and it is estimated that 34 percent of Timor-Leste's inhabitants are under age 14 (World Fact Book, 2010). When combined with a lack of opportunities for employment, a large proportion of youth in a country's population can and has contributed to civil conflict. Currently unemployment is almost 20 percent in rural areas and up to 40 percent in urban areas, and youth unemployment is approximately 40 percent in Dili. The ratio of employment to the population between ages 15 and 24 (youth) has steadily increased from 50.5 percent in 2000 to 59.7 percent in 2009 (World Bank). Since the majority of the population is less than age 25 (IFC and ADB, 2007), unemployment is expected to rise if growth does not occur in the non-oil sector, where most Timorese work. Non-oil per capita income is estimated at $748 (UN MDG Report, 2011).

Offshore petroleum production supports the government's revenue through a petroleum fund that was valued at $11.775 billion at the end of 2012. Amounts for government expenditure from this fund were to equal its "sustainable income" of $756 million, which is roughly the amount earned from interest on the fund each year; however, in 2012, planned government expenditure totaling $764.5 million will exceed the sustainable income by $8.5 million. The challenge for Timor-Leste is to use its petroleum resources effectively and efficiently, with a clear goal of addressing the critical development constraints of the country to foster sustainable growth. The benefits of rising state spending are not seen as being widely shared in an equitable manner, at least partly due to limited state capacity to reach a largely rural citizenry. Despite the revenue generated by petroleum, statistics demonstrate a trend of increasing poverty from about 36 percent in 2001 to 49.9 percent in 2012 (Human Development Report, 2013). In 2012, Timor-Leste's rank on the Human Development Index was 134 of 186 countries, indicating that 28 percent of the world's countries were worse off than Timor-Leste. In comparison, it ranked lower than Tajikistan, Vietnam, and Indonesia (Human Development Report, 2013).

Timor-Leste faces other considerable challenges. Fifty-eight percent of the population is illiterate and the primary school dropout rate is 33.4 percent (Human Development Report, 2013). The health system has struggled to provide the basic services needed in rural and mountainous areas, including maternal and child health services, family planning, immunization coverage, and emergency care. Timor-Leste's poverty is correlated with enormous gaps in social infrastructure, distinguished by a poor national road network; inadequate telecommunications (less than one percent of households have a landline telephone or access to the Internet and approximately 50 percent have access to a mobile phone); a single, increasingly congested seaport; and an electricity grid that supplies power to only a third of the country's households, mostly only for short segments of the day. Although there is substantial will to address these challenges, many government ministries, as well as district and local governments, lack the systems,

structures, personnel, and processes needed to efficiently and effectively provide public services to their constituencies.

CHAPTER TWO

GOTL ECONOMIC GROWTH PRIORITIES[1]

A. OVERARCHING PLAN

Timor-Leste's SDP 2011-2030 encompasses the GOTL's strategic vision to transition from a low-income to upper-middle-income country with a healthy, well-educated, and safe population by 2030. The plan lays out the framework for development investment in the priority areas of social capital, infrastructure development, economic development, and institutional capacity.

Vision for Economic Growth

Timor-Leste will build a modern, diversified economy based on the agriculture, tourism, and petroleum industries, with a flourishing private sector and new opportunities for all.

This assessment focused on the economic development component of the SDP. There are three pillars to the GOTL's economic development plan: agriculture, tourism, and petroleum (Figure 2). With approximately 75 percent of the population in rural areas and urban infrastructure already strained, the thrust of the economic development strategy is to create local jobs and to encourage economic activity in regional centers and rural areas.

Figure 2. Timor-Leste Strategic Development Plan Goals

Cutting across the sector programs are a number of GOTL initiatives: the Millennium Development Goal (MDG) Suco Program, Private Sector Development Plan, and a

[1] Information for this chapter of the report came from the Timor-Leste Strategic Development Plan (2011- 2030) and the Ministry of Agriculture and Fisheries Strategic Plan (2014 - 2020), with some parts taken verbatim from these documents.

National Planning Framework. The MDG Suco Program provides $65 million to build capacity across sectors and encourage community participation in national development. This program commenced in 2011 and will operate at least until 2015. This program promotes awareness of the MDGs at the village level and promotes community participation to achieve targets. The GOTL will encourage private sector development by establishing programs to encourage private sector growth in rural areas, developing a cooperative sector development program, supporting business development centers, promoting vocational training in rural areas, addressing land tenure issues, supporting decentralization, and fostering agribusiness. National Strategic Zones will be the engines of EG based on their advantages and specialization. Consideration will be given to establishing a new set of business laws and regulations in special economic zones to make it attractive for foreign companies to invest in or establish a business in these zones. Agriculture production zones and conservation zones will be determined according to factors such as land suitability (soils, slope, altitude, and aspect), climate (rainfall and temperatures), current land use, the financial viability of production options, supporting policies, and the availability of organic or inorganic fertilizers and pesticides.

B. AGRICULTURE

The goals for the agriculture sector are to improve national food security; reduce rural poverty; support the transition from subsistence farming to commercial farming of crops, livestock, and fisheries; and promote environmental sustainability and the conservation of natural resources. The GOTL will focus in the following areas:

GOTL Goals for Agriculture by 2020

- The food supply will have exceeded demand
- The area of irrigated rice will have increased by 40 percent from 50,000 to 70,000 ha
- Average maize yields will have increased to 2.5 t/ha
- At least 50 percent of fruit and vegetables will be grown locally
- Livestock numbers will have increased by 20 percent
- Coffee production will have doubled following the rehabilitation of 40,000 ha of coffee plantations
- There will be at least three types of aquaculture activities supporting coastal communities
- The fisheries sector will be export-based and will have expanded to include ocean fishing

Agriculture-related training and extension. Improve the skill of extension workers and develop quality courses for pre-service training at agricultural secondary schools, colleges, and universities.

Food security. Achieve food security by 2020 by creating an additional 70,000 ha of irrigated rice fields, using high-yield varieties, using new crop production systems, and establishing on-farm grain storage.

Rehabilitating and extending irrigation systems. Enlarging current irrigation systems and building new schemes that can survive the dry seasons and drought, in particular those that focus on capturing and storing rainwater.

Basic food crops. Increase yields.

Fruit and high-value vegetables. Substitute at least 50 percent of imported fruit and vegetables by 2020 by encouraging supply of high-value fruit through backyard production and by supporting large-scale vegetable production close to urban centers with supply agreements to large buyers.

Cash crops. Creation of value-added agribusiness (like on-farm processing) through financial and marketing assistance, and improve farming processes to improve yield through technical assistance.

Livestock and animal farming. Double cattle exports to 5,000 head per year and substitute the import of 200 tons of beef per year by 2020. These actions will be taken to improve livestock management: develop special pig and poultry production systems for smallholders using surplus maize, establish a demonstration plot of livestock waste processing for organic fertilizer, expand the processing of livestock products, provide more access to financial institutions and through cooperation with capital owners, develop a mini-laboratory and animal medical center, and establish a demonstration plot for fodder processing.

Fisheries (marine and terrestrial). Create a diverse sustainable fishing industry that will create jobs and contribute to Timor-Leste's food security and improved nutrition by creating demonstration centers on the use of fisheries electronic control systems and the cutting, processing, transport and storage of seafood products; conducting research into prawn, abalone, crab, and oyster farming; establishing market links and transportation systems; facilitating the empowerment of fishers and the fish-farming community; providing quality control and supervision of fisheries resources; developing fishing ports and infrastructure such as piers and landing sites; and developing a fish export market.

Forestry Management. Planned actions will improve sustainable land management and develop a sustainable forestry/wood products sector. Plans include introducing special forestry legislation backed by improved land tenure arrangements; providing technical and management training for forestry workers; introducing programs to reduce forest or grass burning practices during the dry season; reforestation of all degraded areas, especially the steep areas around Dili; replacing firewood use with other energy sources; enforcing environmental and forest laws to control forest-degrading activities.

Also outlined in the SDP is the goal of MAF: "to improve national food security, reduce rural poverty, support the transition from subsistence farming to commercial farming of crops, livestock, and fisheries, and promote environmental sustainability and conservation of Timor-Leste natural resources." This led to the development of MAF Strategic Plan (2014-2020) to improve food security and agriculture productivity. This plan focuses on five strategic objectives:

1. *Sustainable increase in production and productivity of selected crops, livestock species, fisheries and forestry products*. To ensure MAF's vision, mission, goals, and objectives, first and foremost the production and productivity of the key enterprises (crops, livestock species, fisheries, and forestry products) will be

raised substantially in a sustainable manner. Six sub-programs will be pursued with the following objectives: 1) improve agricultural research and technology development; 2) better delivery of advisory services, knowledge, and technologies to primary producers; 3) reduce production and post-production losses; 4) enhance productivity through improved water management and water-use efficiency; 5) promote labor productivity enhancing technologies; and 6) promote selected strategic enterprises.

2. *Enhance and improve market access and value addition*. Enhancing production and productivity must be accompanied by significant improvements in marketing and market performance. Otherwise the primary producers will not reap the benefit of the surplus production. Six sub-programs will be implemented to enhance the market access and value addition with the following objectives: 1) improve capacity for regulation and enforcement especially safety standards and quality assurance; 2) improve access to high-quality inputs, planting, and stocking materials; 3) value chain analysis and increased participation in value addition activities; 4) expand network of rural market infrastructure; 5) strengthen farmer groups and farmer organizations for collective marketing; and 6) improve private sector engagement in input and product marketing and service provision.

3. *Improve the enabling environment (legislations, policies, institutions, and infrastructure)*. This program includes a whole body of structures, policies, regulations, and standards, as well as mechanisms in place for effective operation of the key stakeholders. Five sub-programs will be implemented to improve the enabling environment with the following objectives: 1) establish a clear framework and capacity for policy analysis and implementation; 2) undertake planning and responsibilities for improving the implementation and management of sector policies and programs; 3) strengthen agricultural statistics systems to provide timely and accurate information to sector stakeholders; 4) provide accurate and up-to-date climate information for improved planning and decision-making; and 5) develop necessary early warning systems to help mitigate the impact of and adapt to climate variability.

4. *Ensure MAF and related agencies are strengthened and appropriately configured and equipped to deliver on this Strategic Plan and the overall SDP*. One of the key ingredients of success of the agricultural sector is the capacity of MAF and related agencies to deliver the necessary support services for its client based on its mission and mandate. In the recent past, MAF was confronted by a number of constraints that to a large extent affected its service-delivery capacity and performance. The constraints are many but the key areas are: inadequate operational funds; low skill levels of staff; weak planning and priority setting; weak co-ordination mechanisms; and weak monitoring, evaluation, and communications. To strengthen the capacity and performance of MAF, seven sub-programs will be implemented with the following objectives: 1) review the organizational structure, governance mechanisms, and modalities of operation; 2) develop and implement a manpower-development and capacity-strengthening

strategy and program; 3) develop and implement a knowledge-management and communication strategy and program; 4) develop and implement a monitoring and evaluation strategy; 5) review and revise the human-resource management policy and practices; 6) develop and implement a partnership strategy; and 7) develop and implement a resource-mobilization strategy.

5. *Enhance sustainable resource conservation, management, and utilization*. The objective of this program is to enhance the capacity of the primary producer to use resources in a sustainable manner and to ensure the wise use and management of natural resources. This issue is also implicitly addressed in the other program areas. Four sub-programs will be implemented with the following objectives to ensure natural resources conservation and management: 1) foster sustainable natural resources management and utilization; 2) increase the knowledge, protection, and utilization of GOTL's biodiversity; 3) development and dissemination of environmentally friendly agricultural industry practices; and 4) promote conservation of national and cultural heritage.

C. TOURISM

Timor-Leste will position itself to provide a range of tourism experiences that take advantage of its natural beauty, culture, and heritage. This will allow Timor-Leste to differentiate itself from mass market tourist offerings and appeal to the growing market segment seeking boutique and unique experiences and locations by targeting the following markets: eco and marine tourism, historic and cultural tourism, adventure and sports tourism, religious and pilgrimage tourism, conference and convention tourism.

GOTL Tourism Goals by 2015

- Critical tourist infrastructure will have been built or rehabilitated, including Dili and regional airports and telecommunication
- Roads on key tourist routes will have been rehabilitated and signposted
- A tourism and hospitality training center will have been established in Dili
- Comprehensive tourist packages will have been developed
- A tourist promotion marketing strategy will have been operational for several years
- Government will have been engaged with the private sector on key tourist infrastructure
- Tourism centers will have been established in Dili, Lospalos, and Baucau

The GOTL breaks up the country into three zones: the eastern zone, central zone, and western zone. The eastern zone starts at Jaco Island just off the eastern tip of the country and ends in Hera. This zone includes parts of the districts of Lautem, Baucau, and Manatuto, and contains pristine beaches and Nino Konis, Timor-Leste's first national park, covering much of Lautem district. Ecotourism activities include diving, fishing and boating, hiking, and cultural tours.

The central zone includes the capital of Dili, Atauro Island (just north of Dili) and the Maubisse region in the mountains south of Dili (in Aileu and Ainaro districts). Tourist attractions would involve historic, religious, and cultural attractions, particularly in Dili, as well as beach and marine activity. Maubisse would be the base for adventure tourism, including treks to the highest peak of Mount Ramelau.

The western zone encompasses a loop from Dili along the Great Northern Coast Road to Balibo, across to Maliana, and the other mountainous areas of Bobonaro district, and back to Dili through the coffee plantations of Ermera. This zone would focus on mountain views, local organic coffee production, and historical sites.

D. PETROLEUM

Timor-Leste plans to make the most of its oil and gas wealth by establishing a National Petroleum Company, developing the Tasi Mane Project on the south coast, and giving its people the skills and experience they need to lead and manage the development of the petroleum industry.

CHAPTER THREE

USAID INTERESTS AND U.S. GOVERNMENT PRIORITIES

A. DEVELOPMENT INTERESTS FOR USAID

As USAID/Timor-Leste considers programming options, it is important to keep in mind the overarching priorities of the Agency that guide USAID engagement worldwide. These priorities are encapsulated in Agency policies, USAID/Forward objectives, the programmatic focus of the Presidential Initiatives, and the operating principles as laid out in the USAID Policy Framework 2011 – 2015.

In the last couple of years, USAID has released several new policies governing development programming. Many of these policies are crosscutting in nature and are pertinent for this assessment. As such, the team factored these policy principles into program recommendations.

The Gender Policy requires analysis of how women and men engage in and are impacted by programming and provides guidance on how to integrate gender equality and women's empowerment into USAID's work.

Given the demographics of Timor-Leste, with more than 50 percent of the population less than 21 years old, the requirement of the Youth Policy to engage young people and address their needs in programs is important for sustainability and future success of Timor-Leste.

As a post-conflict country, monitoring possible flashpoints in Timor-Leste is critical, particularly with the large and growing unemployed youth population, as suggested in USAID's Conflict Assessment Framework.

The Resilience Policy aims to improve the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth. The policy requires the integration of humanitarian activities with longer-term development activities in chronically vulnerable countries. With OFDA's disaster risk reduction programs in Timor-Leste, there is an opportunity to design seamless programs along the relief-to-development continuum, by ensuring that activities are sequenced appropriately and target the same beneficiaries to allow them to better withstand shocks and recover more quickly when they are directly affected.

The adaptation portion of the Climate Change Policy is directly linked to the Resilience Policy, and aims to increase resilience of people, places, and livelihoods through investments in adaptation. It is important for USAID to incorporate possible climate change impacts into all problem analyses and project designs.

Many of the USAID/Forward principles will impact how projects should be designed and implemented, ensuring that local partners are engaged (including government, civil society, and the private sector), with a clear focus on capacity building for sustainability. Leveraging resources through partnerships with the private sector is a fundamental component of the programming recommendations of this assessment with opportunities to engage the private sector as a key driver of economic growth, as well as engaging the CSR arms of petroleum companies in Timor-Leste. The inclusion of science, technology, and innovation will mean using "appropriate" technology in Timor-Leste that can easily be adopted and maintained over time. This may mean that low-tech methods may be chosen over high-tech options because they may be more productive in the Timor-Leste context. The new Agency standards in monitoring, evaluation, and learning provide an excellent opportunity to learn more about the intractable problems in Timor-Leste. For example if food security increases, do the indicators for stunting continue to increase? Clear articulation of project objectives by the USAID Mission and GOTL will be important at the onset to ensure the proper monitoring and data collection throughout implementation.

USAID/Timor-Leste receives funding to support all three Presidential Initiative programming priorities: GCC, FTF, and the Global Health Initiative (GHI). Resources dedicated to this project will need to further the parameters of the Presidential Initiatives, as well as any specific earmarks. For more information on USAID/Timor-Leste's resources that are available for programming, see Section D below.

The USAID Policy Framework 2011-2015 lays out several operating principles[2] that guide implementation on the ground. "Apply selectivity and focus" requires the Mission to make tough choices and not try to meet all needs, but rather to choose the most strategic interventions that have the most potential for scaling-up and for meaningful impact. "Build in sustainability from the start" means that the focus is on human and institutional capacity building that takes a systems approach, rather than just providing services or support to the end users. Programs must factor in political will and environmental and financial aspects when integrating sustainability. Directly related to the concept of sustainability is the importance of applying integrated approaches to address the complex and multidimensional nature of the development challenges. "Strategic leveraging and partnering" is necessary to address large development challenges and maximize results, particularly in this environment of strained resources. Lastly, "applying new and existing science, technology, and innovation methods" can help accelerate development outcomes.

[2] There are additional operating principles laid out in the USAID Policy Framework 2011-2015; however, they are not all repeated here if they were covered by one of the new policies in the above section (for example "Promote Gender Equality and Female Empowerment" is an operating principle as well as a policy).

When making decisions on how to design this integrated EG project, USAID/Timor-Leste will need to be able to demonstrate how these policy priorities factor into their choices. As the Mission articulates its plans, it will be important to state what will not be done and why. For example, from the onset the Mission has been clear that it does not intend to engage directly in infrastructure projects nor in end-user service delivery.

B. COUNTRY DEVELOPMENT COOPERATION STRATEGY[3]

Timor-Leste is a resource-rich country with a nascent democracy and reform-minded leaders. Human and institutional capacity needs in the country have influenced the way USAID/Timor-Leste has approached its five-year strategy. USAID investments in Timor-Leste include the three Presidential Initiatives: Global Health, FTF, and GCC.

USAID will explore the potential for expanding technical, financial, marketing, and management training provided to households and communities through activities designed to support participation in competitive value chains. Increasing engagement will entail identifying barriers and constraints to participation at the individual and household level and addressing those constraints through culturally appropriate and relevant means. Improving the ability of individual citizens to engage in the private sector will require greater skills, knowledge, and abilities of individuals to make informed decisions; increasing access to productive assets and eliminating barriers to private sector engagement; and raising nutritional and health status to produce a healthy population will enhance citizens' abilities to engage with and gain benefits from the private sector.

Gains in agricultural productivity can be driven by a number of factors. Interventions will seek to increase access to agricultural inputs and knowledge, support more efficient use of land, improve management of natural resources, and develop inputs and technologies that are adapted to local conditions.

Increasing competitiveness of value chains entails not only increasing the quantity of outputs at the producer level, but also the value of those outputs at various points along the chain. By looking at value chains it is possible to identify constraints to production and productivity and identify opportunities to strengthen and build the organizations, systems, and institutions needed to address those constraints, increase production, meet market demands, and maximize value.

C. USAID RESOURCES AND CONSIDERATIONS

Current funding levels for the EG portfolio in the fiscal year 2013 Congressional Budget Justification are $2

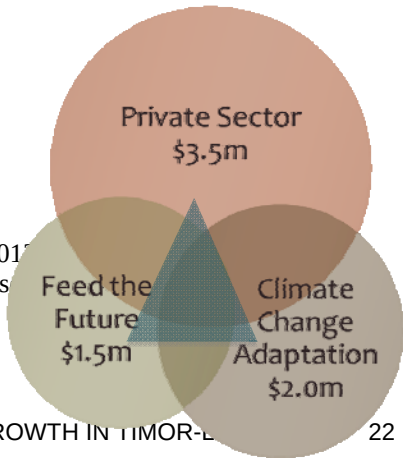

Figure 4. Mission Funding Streams

[3] USAID/Timor/Leste's Country Development Cooperation Strategy 201
made publically available since completion of this assessment. Please s
information.

million in GCC adaptation, $1.5 million FTF, and $3.3 million in private sector competitiveness (Figure 4). Funding is expected to continue at approximately the same levels in fiscal years 2014 and 2015. In addition to development assistance, OFDA supports a number of interventions aimed at DRR that are related to GCC adaptation and agriculture.

In considering programming options, the Mission recognized the importance of utilizing funding sources to achieve a common objective. Within these three sectors there are significant areas of overlap. An integrated programming approach would maximize the impact of these funding sources, address key sustainability concerns and act as a buffer should funding levels fluctuate in any of the three key areas (see the blue triangle in Figure 4 for core focus area).

The types of funding and levels guided the direction and scope of what sectors were considered. Activities such as large-scale infrastructure, including roads and water systems, were determined to be outside of the Mission's manageable interests. While infrastructure is considered to be a primary constraint to the EG program's goals in Timor-Leste, there are sufficient opportunities to coordinate with other donors and the GOTL, as infrastructure remains their short-term priority.

This assessment identifies programming options that would fall within the intersection of the three lines of resources and then systematically examines other key considerations for the selection of programming options. Additionally, the assessment lays out criteria based on best practices and lessons learned to strengthen the efficiency and effectiveness of applying resources.

Key considerations for programming options:

1. Look for sustainable development gains that can be achieved in a five-year time frame. Proposed interventions should not be contingent upon support that does not yet exist or institutions, laws, regulations, or entities that do not yet exist or can't be implemented currently.
2. Build on what works by utilizing best practices and successes.
3. Engage and empower women.
4. Support appropriate and relevant technologies.
5. Focus on USAID comparative advantages

6. Provide system strengthening and capacity building. Avoid direct service delivery, but instead focus on strengthening the institutions, organizations, and individuals, in public or private sectors, best suited to provide sustained service delivery.
7. Leverage resources. Complement, leverage, and coordinate with other donors and provide opportunities for partnership with country level implementers, host government (local, district, and/or national level), communities, private sector, and local NGOs.

CHAPTER FOUR

PROGRAMMING OPTIONS AND ANALYSIS

A. INTRODUCTION

Despite revenues for petroleum coming online, statistics demonstrate a trend of increasing poverty, rising from about 36 percent in 2001 to 49.9 percent in 2012 (Human Development Report, 2013). Unemployment is high, 18.4 percent (World Fact Book, 2012), and this figure does not capture underemployment. This is especially a concern among the rapidly growing youth population. The economy of Timor-Leste is growing, but this growth is largely due to oil revenues and related public sector investment, as the private sector contribution is quite minor. Oil revenue-based economic growth and public sector investment has been centrally focused in the nation's capital, and the rural areas have seen little to no benefit. Annually, only 400 jobs are created for 15,000 new job market entrants (Timor-Leste Human Development Report, 2011). As a result, youth are migrating to Dili in search of employment and putting further pressure on overstrained infrastructure. Expansion of the private sector is needed to promote new employment opportunities in rural areas and regional centers and to diversify the economy.

This section will discuss the primary program options considered by the assessment team, and includes recommendations for USAID/Timor-Leste investments in EG, food security, and climate change adaptation. First, there will be a discussion of Timor-Leste's overarching strengths and weaknesses. Then, Section C will lay out EG programming options in agriculture/agribusiness and economic activity directly related to natural resources (including coastal and marine), tourism, and an overarching watershed management/landscape approach. Recommendations will be given in Section D that encompass two Presidential Initiatives, FTF (focusing on food security) and GCC (focusing on adaptation), as well as Mission programming in private sector competitiveness, microenterprise development, and DRR (OFDA resources).

B. OVERARCHING STRENGTHS AND WEAKNESSES IN TIMOR-LESTE

B1. STRENGTHS

Timor-Leste's prospects for increased EG are based upon a number of important opportunities. Key among these is access to petroleum revenue developed in the coastal regions of the country. The sovereign fund established to use these resources (the Petroleum Fund) is being directed by the GOTL to improve basic infrastructure in the country, primarily roads and electrification. The fund also supports the MDG Suco

Program, the Programa Dezenvolvimentu Lokal, and the Pakote Dezenvolvimentu Desentrilizadu. These programs seek to build capacity across sectors, promote decentralization, and encourage community participation in national development and infrastructure activities.

The country is blessed with strong agricultural and food security potential. Driving this is a labor force capable of engaging in the agricultural sector and capitalizing on an adequate natural resource base, including water, arable land, a diversity of flora, and suitable agro-climatic areas that foster a variety of crops. Many agricultural commodities ranging from beans to bok choy have a net demand, and the GOTL currently has few restrictions on the production and sale of these crops. The country has already seen the remarkable success of the coffee sector, where Timorese coffee is sold competitively on the world market. Also, the GOTL has shown a commitment to food security in both the SDP and the current MAF Strategic Plan, and the new president has an interest in nutrition and the Scaling Up Nutrition movement. Vegetables and fruits are common in most Timorese diets, but consumption of protein is low.

Timor-Leste has unique resources to support eco- and adventure tourism, including shallow unbleached reefs for snorkeling and diving, lush tropical forests, mountains for hiking, and cultural and historical sites to learn about the unique history of the country. The sizeable expatriate community living in the country provides an initial market for tourism activities in Timor-Leste.

The GOTL is committed to a program of decentralization, encouraging community participation in governance and law enforcement, and putting control of natural and other resources in the hands of the people. The closeness of communities and the familial ties in Timor-Leste enable such initiatives in the country. Traditional systems, such as *tara bandu* (traditional tribal law), provide a model of community-based protection and regulation of natural resources and biodiversity. Activities such as CTSP's community-enforced no-take zones and the work of community health volunteers or groups have demonstrated the potential of community mobilization and resource management. These types of activities could be expanded in support of the GOTL's Forestry Management Plan to include community management of forests and the establishment of tree nurseries, or to support food security objectives by promoting nutrition and hygiene messaging at the local level.

While women face many challenges in Timor-Leste, such as lower incomes and fewer employment opportunities than men, reduced participation in community-planning processes, gender-based violence, a high birth rate, and a lack of access to education, they are significant contributors in decision-making at the household level. Women are active participants in community groups, including savings clubs, health groups, and cooperatives for handicrafts and agriculture. They tend to influence or even control household financial management, and there are possibilities for women within the emerging marketplaces. In addition, many of the microenterprises are women-run.
It is worth noting that key stakeholders within the country are willing to cooperate and to partner on gender equality initiatives. This includes the GOTL, donors, private sector,

NGOs, and the people of the country, and therefore provides a ripe environment to leverage U.S. government resources.

B2. WEAKNESSES

At the same time opportunities exist, there are still significant constraints facing Timor-Leste. The most critical weakness is the overall low level of human resource capacity in the country. Ministries often lack the most basic resources and are missing needed data for effective project planning. A top-down approach leads to a disconnect between local and national governments, and this is observed in the difficulties of enforcing policies and laws, and in the ability of local governments to receive resources to conduct their work. At the community level, there are low levels of education, literacy, and critical thinking skills; poor knowledge of nutrition and environmental issues; and limited training opportunities and access to advisory services. This general lack of human resource capacity means that there is a limited workforce available to rapidly scale-up development activities and create sustainability without a long-term investment.

Another constraint is that there are no major productive sectors in the country other than agriculture and petroleum. There are limited local markets for productive inputs and outputs, and the bulk of economic impact activities are focused around the capital, Dili. Buyers frequently have difficulty securing a consistent supply of needed goods and most agricultural producers are not concentrated enough to generate the viable quantities of goods required to meet demand. Producers tend to lack basic knowledge of pricing schemes (e.g., selling goods in piles versus kg or selling fish based on price per fish versus price per kg depending on the type of fish), complicating communication and relationships between buyers and producers when selling goods.

Timor-Leste is burdened by a high cost structure for labor, services, and goods. This is partly due to the dollar-based economy and the high minimum wage ($3.00 USD per day) relative to other countries in the region. Fuel costs are high, further hampering transportation and mobility throughout the country on an inadequate road network.

Access to finance and saving opportunities in Timor-Leste is limited and generally there is low financial literacy among the population. Land tenure is complicated with multiple claims on the land, confusing records, and a lack of an effective conflict resolution mechanism to settle claims. Without titles to property, farmers have reduced collateral to access loans and inhabitants have little incentive to invest in and protect the land or conserve natural resources. Even when farmers have title to the land, banks are reluctant to lend funds unless a government worker co-signs the loan. Thus, land titling is necessary, but not sufficient, to get access to credit. Land tenure issues also limit private sector investment in the country as investors are reluctant to invest when claims are not secure.

Dilapidated or nonexistent infrastructure limits effective development of the economy. The road network is in poor shape, increasing transaction costs. Other infrastructure such

as access to clean water, communication systems, and electrification is also limiting, although roads and electrification are a principal focus of the government's Petroleum Fund.

With multiple donor and GOTL activities throughout the country, inefficiencies and differing approaches to development occur. Donor crowding has been reported in some areas and coordination could be improved. Barriers include the need for a standard policy on paying per diems to government employees, ensuring adequate GOTL participation and leadership during donor planning of projects, differing views on subsidizing inputs, and a lack of communication or partnership among the various GOTL ministries. Free or subsidized agricultural inputs have raised many concerns as the program participants are not invested in the activity and have no incentives to invest. This creates a lack of sustainability in projects, competition between donors for program participants (i.e., farmers tend to work with programs offering free inputs over those that expect them to pay a fee), and farmer dependency on free handouts.

Cultural aspects within the country make economic growth challenging. The bulk of the population lives within a subsistence system and tends to be highly risk-averse. This requires most programs to have a prolonged engagement with stakeholders to establish trust, a prerequisite for successful programs. Another cultural constraint is the strong tendency within the countryside towards social investment (e.g., support of extended family, significant spending on cultural events, weddings and funerals) over economic investment, limiting the growth and development of micro, small, and medium enterprises (MSMEs). Cultural issues and taboos can also cause problems with inappropriate supplemental feeding of infants, early cessation of breastfeeding, and poor nutrition. Diets are not diverse and Timorese generally only eat animal protein at celebrations and festivals. Stunting is rampant in the country. The high birth rate and the desire of Timorese to have large families, combined with falling infant and child mortality rates, has led to rapid population growth and a strain on financial and natural resources. Finally, while a relatively small country, Timor-Leste has a multitude of languages and cultures that complicate communication and developmental efficiency.

C. PROGRAMMING POSSIBILITIES

C1. AGRICULTURE/AGRIBUSINESS

High food insecurity and low agricultural productivity plague Timor-Leste. About 72 percent of the population is rural (World Fact Book, 2012), and agriculture provides at least 64 percent of employment (World Fact Book, 2010). The poor frequently experience food shortages and farmers tend to be subsistence-focused. Close to 80 percent of the population rely on the crops they produce themselves for food and income.

Timor-Leste has six identified agro-climatic zones (Sanyu Consults, 2009) allowing it to grow a wide range of agricultural commodities. In food crops, the country produces rice, corn (maize), root crops, legumes, and horticultural goods. Industrial crops produced are coffee, coconut, candlenut, and other products in smaller quantities, including bitternut,

vanilla, cocoa, and black pepper. Livestock production includes large animals such as cattle and water buffalo, fowl, pigs, and small ruminants. The country also has inland and marine fishery activities. Increasing climate variability may shift the viability of agriculture and other livelihood options in specific geographic locations. Therefore, climate change adaptation and resilience should be factored into all assistance programs.

The GOTL has made agricultural development and food security priorities for the country. The goals for the agriculture sector are to improve national food security; reduce rural poverty; support the transition from subsistence farming to commercial farming of crops, livestock, and fisheries; and promote environmental sustainability and the conservation of natural resources.

C1A. PROGRAMMING POSSIBILITIES

Horticulture. Horticulture, principally fresh vegetables, but also some fruits and legumes (beans, an excellent protein source), is the value chain recommended for core programming. This choice meets programming principles laid out by the assessment team, including building on successful programs, fitting into available funding sources, likelihood to improve nutrition, high engagement of women (involved in production and marketing of horticultural goods), and ability to achieve results in a five-year time frame (see Section F1). The USAID/Timor-Leste's DAC[4] project has successfully operated in the fresh vegetable market for several years. While production and level of involvement are still relatively small, the project represents a positive pilot experience of what can be done in the sector. Several estimates indicate that there is a large unmet demand for additional vegetables within the local market, particularly in Dili and potentially in Baucau and other smaller markets. This supports the possibility for positive outcomes in the near term if USAID/Timor-Leste expands its horticulture efforts. According to reports from the Ministry of Finance Custom Data (2010 – 2011), fresh vegetable imports were more than five million metric tons, while MAF estimated domestic production was found to be approximately 15 thousand tons. With such a disparity between imports and local production, there appears to be significant import replacement opportunities.

Horticulture activities provide opportunities to leverage other investments by MAF and donors, allowing USAID programming to fill gaps. The private sector (supermarkets) is already engaged in the DAC program and this engagement could be built upon and expanded to include new partners. For example, the Mission could assist the private sector in adding needed technical assistance/extension experts to improve agricultural production and provide nutritional education and training to farmers (a potential "nutrition smart agriculture" approach). Other programming possibilities include the

[4] This project has been able to effectively link private sector supermarket chains with the project's vegetable growers. The supermarket chains supply inputs and extension services to farmers, a fantastic initial opportunity for the farmers, but the setup may not be ideal in the long run as it takes these businesses away from their core competencies and creates farmer dependency on the supermarkets. DAC has successfully introduced appropriate innovative technologies to support vegetable production though the use of plastic tunnels. This technology, coupled with local nurseries and high-quality seeds, has enabled some 300 small-scale vegetable growers to produce a high-quality crop that is collected, transported in refrigerated trucks, and sold in local supermarkets in Dili.

development of assembly points, packing houses, or wholesale markets; the establishment of a private sector-based agricultural supply input system; water supply and climate resilience activities; and household gardens. These options are described in more detail below.

Staple crops. Rice and maize production were not selected because of constraints in the rice sector related to government subsidies for imported rice, as well as the large number of donors now working in the rice and maize sectors. Also, investments in staple crops are unlikely to greatly raise incomes or improve nutrition outcomes.

Root crops. The assessment team did not recommend root crops because they represent a small local market (with the exception of limited work on cassava flour exported by CCT) or are used primarily for home consumption. The major exception among root crops is potatoes, which could be considered as part of the vegetable value chain.

Coffee. The assessment team met with many farmers, male and female, that produce horticulture crops and coffee. USAID/Timor-Leste has funded the coffee sector through CCT/National Cooperative and Business Association (NCBA) activities for nearly 20 years, and this support is now coming to an end. The coffee sector and the work of CCT/NCBA can now be considered a sustainable success. CCT, with the support of NCBA, is able to compete effectively in the world coffee market, and they are able to produce wet processed and dry processed high-quality coffee. This activity can now serve as a potential model for development of other value chains within the country. It is anticipated that even if farmers expand their operations to include horticulture, they will continue to work in coffee as well to diversify their revenue streams and earn income.

Non-timber Forest Products (NTFP). Candlenut is one of a limited number of sources of cash income for households in rural areas. The highest concentrations of candlenuts can be found in the districts of Baucau, Viqueque and Covalima. The Mission has supported small-scale activities associated with candlenut production in association with CRS, but these activities had mixed results. However, over the past couple of years the price of candlenut has risen significantly and incentivized farmers to collect more nuts and has resulted in the emergence of new traders. Candlenut has been identified as having potential as an export crop as the principal market for candlenut in West Timor. Candlenut is already being bought and sold over the border by traders, where it is mainly used as a food additive. . The primary constraints to the expansion and growth of candlenut, include limited market and price information and significant institutional complications involved in over the border trade (Braun, 2012).

Cattle fattening. Cattle have been identified by the WB as one of the three potential agricultural exports in the near term (WB, 2010). CCT has recent experience with cattle fattening in Oecussi as part of its diversification effort encouraged by USAID. This experience indicates there are significant market constraints that make achievement of major results from this activity difficult (NCBA, 2013). In mid-2012, the Government of Indonesia placed severe limits on the importation of beef and cattle to encourage domestic production. These curbs, combined with increasing demand due to rising

income levels, have led to shortages and skyrocketing prices for cattle and beef throughout Indonesia. The high prices have had the unintended effect of prompting Indonesian farmers to sell their breeding stock and calves to earn quick income. This trend will greatly reduce beef production over the medium to long term and has led to a severe shortage of suitable bull calves for fattening. (NCBA, 2013)

Inland fisheries. USAID/Timor-Leste has not directly worked with the inland fisheries sector. A national policy framework on sustainable aquaculture has been developed by MAF with support from WorldFish and CTSP. The New Zealand Government also recently launched a new pilot program with WorldFish Center to implement sustainable aquaculture in Timor-Leste. The sector is attractive because of its potential to help fill the protein gap in the standard Timorese diet. Thus, this potential demand for fish and an availability of freshwater resources and donor interest make inland fisheries a possible EG sector for USAID/Timor-Leste. The sector, however, suffers from uncertainty and constraints that make it unlikely to produce significant results in the near term. These constraints include lack of a cold chain or availability of ice for local marketing of fresh fish; no processing operations; insufficient breeding stock; limited knowledge in the use of smoking, salting, drying, or other preservation techniques; and scarce marketing facilities (Sanyu Consult, 2009). Basic knowledge of fishpond operations by local smallholders also appears to be inadequate.

Marine fisheries. Marine fisheries share a broad range of infrastructure needs similar to the inland fisheries (above). At present, many fishers use unsustainable fishing practices due to lack of education and proper equipment. Control and enforcement measures are being put in place to address illegal fishing and to manage the demand for marine fisheries through a network of LMMAs while baseline data on Timor Leste's coastal-marine resources characteristics are being built up. Marine fisheries are also related to the coastal tourism and natural resource protection issues and are discussed in more detail in Section C2.

Development of assembly points, packing houses, or wholesale markets. The development of assembly points, packing houses or wholesale markets at the district and potentially sub-district levels would enable the collection of economically viable quantities of fresh vegetables for pickup by supermarkets, catering companies, hospitals, hotels, schools, and the military. Such operations could potentially lower transaction costs, introduce sorting and quality control of fresh vegetables, and eventually provide refrigerated units (three- to seven-year time frame) to increase the quality of the vegetables for the market. District and potentially sub-district assembly points would increase the market power of the small producer and the efficiency of the market. The assembly points could create greater economies of scale of the vegetable operations, and they could reinforce linkages within the value chain. Potentially, once the assembly points are established and functional, it might be possible to add additional services such as technical assistance for farmers, input supply, microfinance, and nutritional messaging and education. These supply chain activities will not only improve efficiency and expand markets, they will also create jobs and help diversify livelihoods.

Establishment of a private sector-based input system. The establishment of an effective private sector-based input supply system could benefit not only horticulture but an assortment of associated value chains, including fisheries, livestock, and cereal crops other than rice, where the government is the major input supplier. The development of this activity would involve sourcing, transporting, distribution, and sale of inputs to small-scale input marketers (village level), farmers, and producers. Potentially, input marketers at the village level could provide technical assistance on the products they sell to farmers or become "farmer champions" to demonstrate and market their improved inputs. Given the possibility of an input system to support multiple value chains, leverage of and collaboration with other NGO and donor programs — for example, AusAID's Seeds of Life (SoL) project's informal and formal seed production and improved seed varieties — would be likely prospects. There could also be opportunities to expand farmer access to inputs (beyond obtaining them from the supermarkets) by linking to the work of an Australian company planning to market inputs in Timor-Leste, Smallholder Agriculture International, or encouraging importers/exporters located in Dili to include agricultural inputs as part of their inventories.

Enabling environment. Presently, there are no significant enabling environment constraints in horticultural sector. Prices are set through market mechanisms and goods can travel freely within the country. As the value chain becomes better organized and matures, however, it is likely that this situation will change. Potential future areas of attention in the enabling environment include contract enforcement, claims mediation (particularly in the land market), land tenure issues, sanitary and phytosanitary regulations and testing (mainly for exports although aflatoxin is an issue in Timor-Leste), potential market distorting decisions taken by government (e.g., subsidies, free inputs, and import restrictions), and the general procedure of policy formation and implementation.

Support services. Future USAID/Timor-Leste agricultural projects should ensure that support services such as general technical support, access to finance, and research and market information systems are considered in the geographic focus area of the new work. Support services must be taken into account at the project development stage to ensure that the actions of the GOTL and other donors are in place to support them; otherwise USAID/Timor-Leste may want to consider investing in these services as needed.

Watershed Approach. Because of the Mission's emphasis on climate change adaptation and DRR, the assessment team believes that the approach to designing and implementing horticulture activities should use a watershed or landscape approach.

Climate resilience. Climate resilient horticulture activities could include: rooftop rainwater harvesting and small-scale irrigation to enable cultivation during the dry season; composting, legume production, and crop rotations/intercropping to improve soil quality; terracing; selection of drought and flood tolerant or adapted seed varieties; cultivation of trees; and the establishment of tree nurseries. Such activities would diversify production as well as diets, increase yields, and conserve resources, in addition to promoting resilience.

C1B. KEY ACTORS' ROLES AND LEVERAGING

GOTL and local government. MAF leads technology and extension efforts in agriculture and fisheries and establishes the basic policy structure for the agriculture sector. An important element in many commodity activities is the work of the SoL initiative within the MAF in developing improved seed stock.

Other ministries that would be important for project implementation would include the Ministries of Transport; Public Works; Health; Education; Commerce, Industry, and Environment; and Justice in their roles supporting complementary activities related to the agriculture value chains. These activities include nutrition, natural resource management, land rights, infrastructure, and cooperative development.

The Instituto de Apoio ao Desenvolvimento Emprezarial (IADE) is a GOTL agency responsible for promoting entrepreneurship and improved business skills. They provide trainings to farmers and producers and assist in linking them to markets.

District and Suco governments are also important actors in support of local activities. They are responsible for local laws and regulations and for allocating funds from the GOTL for Suco infrastructure development.

Donors. There are a significant number of donors working in the agricultural sector, including NZAID, AusAid, GIZ, European Union (EU), Portugal, WB, FAO, and JICA. GIZ and Portugal's work with extension agents could greatly assist USAID programming. AusAID is currently planning a SoL follow-on activity that may emphasize nutrition smart agriculture and promote home gardens, legume cultivation, small-scale irrigation, and diversified production systems. SoL has partnered with MAF to develop a nutrition smart agriculture strategy and is building the capacity of MAF at the district level to deliver quality services.

International NGOs. A number of international NGOs are working to support agriculture in rural communities. Among these are World Vision, Conservation International, Mercy Corps, CARE, Oxfam, CRS, and Save the Children.

In addition, there are local NGOs that are working in more specific areas and concerns. Where mutual interests exist they could be important actors for the project. Local community-based organizations (CBOs) are more limited in numbers but could play critical roles in project development. An example of such a CBO would be the Hatutan microfinance cooperative visited in Ainaro District. Farmers groups, cooperatives, and church groups are also potential partners in food-security programming.

Private sector. The private sector is core to value chain work and the current engagement in fresh vegetables by retailers/wholesalers. There is potential for collaboration with other importers/exporters operating in Dili to assist in the supply of quality inputs for agriculture. Additionally, the roads and villages in Timor-Leste are dotted with small vendors selling a variety of goods ranging from vegetables and fruits to batteries and light

bulbs. With proper training and access (perhaps through the establishment of wholesale markets), it is possible that these small vendors could also sell agricultural inputs and provide specialized technical assistance to farmers. International petro-chemical companies now exploring and developing oil and gas fields off Timor-Leste's coast have been and could continue to also be good partners with USAID/Timor-Leste's projects. Private donor funds could come from the CSR funds of ConocoPhillips and Sunrise Joint Venture (Woodside).

C1C. STAKEHOLDER CAPACITY

Farmers. Producers of horticulture crops have demonstrated a willingness to become engaged in commercial activities and have demonstrated the discipline necessary to be able to meet quality standards. This is evidenced in the coffee industry and by the fresh vegetable farmers the assessment team visited. At the same time, there are a number of constraints at the farmer level. These constraints relate principally to skills and resources that have to be provided to farmers to develop a sustainable system. Skills required include not only technical proficiency in crop production and handling, but also general life skills, including awareness of nutrition, managing household accounts and cash flow, and basic hygiene, as well as knowledge of environmental issues and conservation.

Given Timor-Leste's turbulent history, it is not surprising that many farmers exhibit very high risk avoidance. The development of trust and confidence in an agroeconomic system, however, is an essential element to almost any successful project undertaking. Therefore, there is a need for more intensive and long-term engagement with the rural and farming community to build trust. Once developed, however, Timor-Leste farmers show themselves as capable as any in the region.

Private sector. The private sector has demonstrated the potential to invest time, money, and management support to project activities where these activities have a direct impact in terms of supply of goods for their own operation. At the same time, private sector actors in Timor-Leste, as their compatriots throughout the world, generally seek to create monopolistic or oligopolistic structures that allow them greatest control over the economic activities in which they are engaged. It is uncertain at this point whether private sector actors would engage in more collective or cooperative actions within the sector.

Another uncertainty is the extent to which new private sector actors will undertake the risks entailed in starting ventures outside their present operations (e.g., adding the import of agriculture inputs to the portfolio of an existing importer/exporter or diversifying the products sold by and the responsibilities of a small village vendor). A reasonable assumption would be that if viable financial plans are presented to them with some guarantee against risk by the project, the more innovative and progressive private firms would be willing to undertake a limited amount of their own risk if the possible gains are high enough. This would be a consideration in the potential development of activities such as a private sector-based input supply system.

NGOs. There are a large number of international and local NGOs working in Timor-Leste. In general these are all potential partners in project engagement. Most of the

international NGOs, however, bring with them their own particular approaches and world views. Awareness of these differing approaches and their alignment with project goals would be important to the successful integration of NGOs into project activities.

MAF. The major focus of MAF is on food security and agricultural productivity. Although MAF's priorities are rice and maize, they are also very interested in expanding horticulture and vegetable production. They list horticulture as a priority over fisheries given the difficulties of dealing with illegal fishing, establishing sustainable fisheries, and other fundamental problems in the fishing sector. Working relations of present USAID/Timor-Leste projects with MAF have been good and it would be anticipated that this would continue with any future project.

As is widely noted (WB, 2010), MAF would benefit from assistance on project implementation. They are presently building and expanding their extension staff with donor support, but the staff has limited effectiveness and capability. One area for work with MAF would be realigning is its basic orientation towards the government leading the agriculture sector and engaging in areas that would broaden economic opportunity if left to the private sector. Examples include free or subsidized inputs, gifts of farm equipment, and a tendency towards top-down planning. The top-down approach leads to poor planning for the districts, little local control, and a lack of financial resources at the local level. MAF coordination with other ministries is currently limited and this leads to difficulty in addressing food security, nutrition, and environmental degradation issues.

C1D. TRADE-OFFS/VALUE FOR MONEY/OPPORTUNITY COSTS

The programming principles developed by the assessment team (see Section F1 and Table 3) were largely established based on "value for money." These criteria seek to build upon existing activities, leverage complementary activities and the work of other donors, minimize management cost, and maximize focus on impact. The examination of agricultural value chains followed these criteria.

The options provided in this assessment seek to create a cost-effective approach to EG that decreases poverty and increases household wellbeing. To make choices among these or other options, the Mission will need to understand the costs of these options (time, funds, and management requirements) versus their potential benefits to make the necessary trade-offs. Trade-offs may be required due to the limited resources available to the Mission. These trade-offs may include, for example, choosing between the formation of an effective private sector input supply system versus the development of a system for post-harvest collection and packing of fresh vegetables (not including smaller household level storage and processing efforts — these could be an additional area of work for the Mission) or the establishment of sanitary and phytosanitary regulations and testing needed for produce export.

C2. NRM/COASTAL AND MARINE RESOURCE

Widespread poverty, food insecurity, and malnutrition are the main impediments to recovery and EG in Timor-Leste. The Timor-Leste SDP (2011 – 2030) emphasizes the

need for the development of sustainable fisheries and aquaculture as pathways to increase per capita consumption of fish from 6.1 kg to 15 kg by 2020 (2.8 kg short of the global annual average fish consumption) and to improve nutrition for men, women, and children in poor and vulnerable households (MAF, 2012). While an increase in fishing capacity poses the high risk of overfishing and resource degradation, the GOTL has adopted and developed national plans of action to institute terrestrial and marine resource conservation measures such as protected areas, the ecosystem approach to fisheries management, and community-based resource management (CBRM). Some good examples of CBRM sites are being implemented in the Nino Konis Santana Park coastal communities through support from the CTSP program.

The coastal-marine environment of Timor-Leste supports valuable fish populations, including reef, pelagic, and demersal fishes. Long-term fisheries productivity in Timor-Leste hinges on the ecosystem integrity and healthy marine habitats to allow regeneration of fish stocks. Mangroves found in the southern and northern coasts of Timor-Leste provide nursery grounds; produce commercially important fish, shellfish, and crustaceans; and act as a renewable source of wood, traditional foods, and medicines (Charles Darwin University, 2009). Coral reefs and sea grasses are important habitats due to their species diversity and economic importance (National Ecological Gap Assessment, 2010). These economically important coastal-marine resources will continue to remain at risk if the following factors are not addressed in the immediate term: lack of community awareness of ecological value, poorly planned coastal development, massive soil erosion and sedimentation, climate impacts, illegal and destructive fishing methods by foreign and domestic vessels, and overfishing.

C2A. PROGRAMMING POSSIBILITIES

Expand marine protected areas and community-based management. The establishment, strengthening and replication of locally managed marine protected areas (MPAs) or no-take zones in the coastal-marine areas of Timor-Leste is one option for support. The benefits of locally managed marine areas (LMMAs) include food security through fisheries harvest and alternative livelihoods from tourism activities. Protecting the marine systems will allow for sustainable tourism activities (see C3). The establishment and maintenance of these LMMAs will require support for local capacity development of community organizations (e.g., Sucos, cooperatives) involved in the management of the MPA. The zoning of MPAs should be a core component of an integrated watershed management program, as well as the promotion of GOTL protected area network peer learning opportunities (e.g., study tours/cross visits/learning exchanges, peer learning among fishers, women and youth from Sucos) within Timor-Leste on marine conservation for food security. Any plans to expand and replicate LMMAs in Timor-Leste should consider the recommendations for the establishment of a protected area network in coastal-marine zones proposed in the 2010 National Ecological Gap Assessment (NEGA) for Timor-Leste. NEGA has tentatively mapped/demarcated marine protected boundaries covering 3,200 km^2. This study provides a platform for replication of LMMA successes of CTSP. Linkages of the LMMAs to terrestrial watershed activities should also be considered in the planning and design for the LMMAs.

Improve value chain of targeted marine capture fisheries and other commercially important fish species with domestic market potentials (see Table 3). Many pelagic and reef fishes are sold around Dili under poor post-harvest and improper handling conditions, and vendors lack access to a centralized wet market, iced storage, and fish-processing centers. The inefficiencies in the supply chain result in losses and wastage due to spoiled fisheries products. For example, the assessment team observed a variety of boat types used for fishing and marine fish for sale throughout the many sites of our visit. Fish are offered for sale by individual sellers and by sellers in markets (Dili, Baucau). The selling of fish that we observed was mostly of fresh whole unprocessed fish that were presented without any cold storage capacity. In Dili, we observed fish sold from tables along the beach road and at other markets or street vendors who carry the fish, chiefly hanging from sticks, into the city. Supermarkets and restaurants may purchase fish directly from fishers or from middlemen but we did not investigate the prevalence of wholesale marketing.

Continue to support NOAA and MAF partnership on coastal resource inventory and monitoring and ocean acidification in Timor-Leste's coastal areas. NOAA recently conducted orientation training for government executives on an ecosystem approach to fisheries management involving executives from MAF, Coast Guard, Navy, and other relevant agencies. NOAA has also conducted a capacity assessment of Timor-Leste's Monitoring Control and Surveillance efforts. MAF recently launched the National Plan of Action for Combating Illegal, Unregulated, and Unreported (IUU) Fishing in Timor-Leste that focuses on IUU threats at the artisanal and offshore fisheries areas. NOAA's partnership with MAF in supporting the coastal resource inventory as well as an ocean acidification study will help the GOTL establish a valuable baseline for future sustainable fisheries and food security programs. Australia also recently conducted a training to the GOTL on improving maritime and fisheries law enforcement programs at the national level. NOAA is well positioned to work with their Australian counterpart in providing training assistance to MAF's IUU/MCS staff to implement their IUU/NPOA. This activity can be linked to regional/trans-boundary IUU work under the Arafura-Timor Seas Program and the Regional Plan of Action for Combatting IUU.

C2B. KEY ACTORS' ROLES AND LEVERAGING

GOTL and local government. MAF is the lead national agency for sustainable fisheries resources management in Timor-Leste, and the regulatory agency on forestry management. District governments are responsible for regional implementation and coordination of national agriculture and environment programs. Sucos are responsible for community-level management of natural resources and can issue regulations on their use.

Donors. Partnerships in Environmental Management for the Seas of East Asia is responsible for building capacity of MAF personnel on environment and integrated coastal management. ADB is the partner implementer of the CTI project site in Atauro and the FAO/Regional Fisheries Livelihoods Program is responsible for providing support to MAF on the near shore. The United Nations Development Programme

(UNDP)/Arafura and Timor Seas Ecosystem Action Program supports sub-regional cooperation among Australia, Timor-Leste, and Indonesia for Arafura Sea marine conservation and fisheries management. NOAA is the lead U.S. government agency for fisheries and marine conservation and currently cooperating with MAF to conduct a study on ocean acidification and reef biodiversity in Timor-Leste. The Global Environment Facility (GEF) is planning an activity to protect sea grasses and conserve dugong habitats. With these and other donors, it might be possible to coordinate and leverage funds to promote LMMAs and marine conservation and enforcement capacity building for coastal communities.

International NGOs. Mercy Corps has conducted studies on feasibility and fisheries programming support in Timor-Leste. Conservation International recently established a country office in Timor-Leste and is the USAID partner implementing CTSP activities, including the establishment of LMMAs in Nino Konis Santana National Park (NKSNP).

Private sector. Dive shops and sport fishing tour operators are the end-users of MPA dive sites, and it might be possible to derive additional revenues for LMMAs from divers' fees and entrance fees from snorkelers.

C2C. STAKEHOLDER CAPACITY

GOTL. Planning agencies need to coordinate and synchronize operations of programs supported by different donor agencies. GOTL extension workers are hardly visible at the village level, and there are only a few poorly equipped and trained field personnel with very minimal budgetary support from their agencies. A major Timor-Leste marine resource, NKSNP, remains a "paper park;" national park management plans and regulations are in place but not enforced. NKSNP has no regulatory or fee management system for visitors, no zoning inside the national park, and no method to disseminate information about the existence of the park and its regulations.

Communities and Sucos. The communities at the Suco level are supporting conservation actions in Timor-Leste villages. Funding support to implement these programs is very limited both from within government and from other donors. Women and youth play varying support and leadership roles in CBRM as educators and resource managers in LMMA activities. Mainstreaming conservation awareness in the formal education sector offers some promise, but will require additional support in training and providing educators with the tools and materials.

C2D. TRADE-OFFS/VALUE FOR MONEY/OPPORTUNITY COSTS

Fishing vessels are small and many fishers do not have access to outboard motors. This limits them to fishing almost exclusively the near shore reefs. Because of this, reef fish may be readily overfished without proper management. Fishing methods that the assessment team observed (e.g., gill nets) are considered environmentally unacceptable and have been banned in international waters (National Marine Fisheries Service Fact

Sheet, High Seas Drift Net Fishing). There are few markets to purchase fishing equipment, boat engine parts or repair. Additional markets would need to be established as part of a longer term development strategy for this sector.

There are limited no-take zones in the east that are locally managed, and this form of management seems to be successful. Expanding the no-take zones is a necessary precautionary measure before fisheries production and coastal development intensifies.

There are limited wharves/piers where fishers may land their catch (the assessment team observed only a pier in Com, but it had no facilities such as ice or fuel). Fish need to be handled numerous times to get them to shore. Most fish are landed on beaches where there are no facilities to keep fish fresh or safe. These conditions result in the deterioration and loss in value of harvested fish. Fish are sold in areas that are often dirty and dusty without supply of clean fresh water, and there are no or inadequate facilities for disposal of wastes. Fish are displayed on tables without ice and with no protection from sun, dust, or flies. A cold chain for fish is needed and is a potentially positive long-term investment (five- to 10-year time frame). Other post-harvest handling techniques, such as simple drying or smoking, might be possible cost-effective investments for fishers and provide more immediately accessible methods for processing fish in the five-year time frame.

C3. TOURISM

Timor-Leste has a significant diversity of tourism "assets" that could be translated into three positive development impacts: 1) economic gain through the creation of employment and development of services; 2) other livelihood benefits such as improved roads, access to potable water, and creation of markets; and 3) support for local decision-making that protects important natural resources and cultural heritage.

Edyvane *et al*. (2009) identified more than 150 coastal marine ecosystem sites, values, and infrastructure along the north coast of Timor-Leste. These included sites with religious significance and ceremonies, traditional or indigenous significance, customary harvest and indigenous festivals, colonial architecture, political significance/resistance history, high biodiversity and natural significance, and scenic or aesthetic significance. Additional tourism "assets" are also found in the highlands and central part of the country, such as mountain trekking and cycling, plant and wildlife observation (e.g., bird watching), coffee and agricultural tourism, local markets, and handicrafts.

C3A. PROGRAMMING POSSIBILITIES

There are a number of opportunities to provide assistance to MOT. Currently, no master plan for tourism exists in the country and USAID could help with strategic planning at the national level. Part of planning for tourism should involve identification of potential visitor destinations and activities and determining the appropriate locations for where tourism is appropriate. USAID could assist the MOT with developing a zoning scheme

for tourism in the country. In addition, there is a need to create local tourism management plans (such as at Jaco Island and Valu) to ensure that important biodiversity and other values are protected from the impacts of increased future visitor use. Study tours to the U.S. could also be coordinated to observe hands-on management of natural resource and cultural heritage tourism at national parks and other important visitor destinations. Assistance could also include helping MOT to develop content about tourist activities, resident flora and fauna, and cultural heritage to be used in outreach and education materials (books, pamphlets, websites) for visitors.

The creation of additional marine no-take zones and terrestrial reserves could additionally help curtail inappropriate tree cutting, wildlife hunting, and quarrying. The model of the marine no-take zones that are implemented by the local communities should be utilized. Community co-management of these areas is imperative and must involve men, women, and youth. Establishment of additional protected areas in upland habitats beyond the one national park could protect biodiversity in other parts of the country per the recommendations contained in the recently completed National Ecological Gap Assessment report (2010).

Given the diversity of tourism "assets", there is a great opportunity to develop more formal nature-based ecotourism and adventure tourism programs and activities at cultural heritage sites (see Table 3). While the number of expatriates in Timor-Leste has decreased, marketing tourism for the remaining expat community could be beneficial to local residents and communities and the tourists themselves. Compiling and promoting tourist information would be an important first step. Once a more formal tourism network and strategy has developed, there is the potential to expand marketing to a regional context (e.g., tapping into the tourism market in Bali, Singapore, and Indonesia). Diving, snorkeling, whale watching, sport fishing, hiking, mountain biking, and agricultural, religious, and handicraft tours are some examples of activities that could be effectively packaged and marketed. This could be accomplished by strengthening the capacity of MOT to lead master planning and facilitating tours of other nature-based tourism destinations.

USAID could assist in developing a visitor management plan for the coastal sites of Valu and Jaco Island. Access to these areas is now very difficult and thus there are relatively few visitors reaching the area. Once the road is improved, visitor use will greatly increase, however this may potentially threaten the integrity of these special places. The natural resources of the area are pristine and are extraordinarily sensitive to disturbance. A plan for how visitors will be managed is critically needed to ensure the long-term protection and conservation of this iconic tourist destination.

In the highlands, the existing rural agricultural economy could be enhanced by fostering ecotourism opportunities, such as visits to markets, small organic farms, and local handicraft outlets. Ecotourism could provide an excellent opening for women to engage in and lead MSME development, as they are already involved in several of the needed components for the sector (e.g., handicraft production, horticulture, marketing goods).

There is also the possibility of promoting volunteer tourism in Timor-Leste. Earth Watch and other organizations (such as church groups) recruit paying volunteers to participate in research studies, conservation efforts, and agricultural development activities.

Increasing the country's human resource capabilities and expertise could be enhanced through support of training and study for Timorese in tourism, environmental management, forestry, watershed management, and conservation biology.

In addition to money spent directly on lodging, food, and gifts, further revenue could be generated by requiring permits to enter the national park and fees to access other tourism "assets" (e.g., fees for diving, snorkeling, entrance fees). Work with the national government and local communities to develop a fee for visitor (not local resident) entry into the national park (marine and terrestrial habitats) is needed. The income from these finance schemes could then be returned to local communities and help support the long-term management and protection of the resources being visited by tourists. For example, it is a privilege to visit Jaco Island and tourists could be required to contribute financially to help sustain this very special and pristine natural and sacred environment.

Using the model of co-management of marine areas by local communities within the CTSP, there is also the opportunity to create a similar community-based management system of nature and cultural heritage tourism and protected areas. Local communities have expressed the desire to be actively involved in the planning for tourism and protecting important natural and cultural resources. Creating a co-management framework where communities help shape and manage these tourism "assets" will help ensure that sensitive resources and important traditions are protected in the future. MOT should work with the MAF, districts, and Sucos to improve the effectiveness of protected area management, develop a management plan for the national park, provide training to forest rangers and park staff, and offer study tours of other protected areas. Community responsibility for planning for and managing eco-tourism should be integrated, and the national government should focus their efforts on infrastructure and security. It is important for the tourism roles and responsibilities of the national, district, and Suco levels of government to be clarified and documented. Any community co-management must be inclusive, with the ideas and concerns of men, women, and youth considered during the planning process.

Local communities could also establish tourism specific cooperatives that provide capital for new or existing businesses contributing to creating a diversified tourism economy. There is also an opportunity for lodging and dining purveyors, local handicraft producers, agricultural suppliers, and fishers acting as tour guides to serve the larger tourism market. These groups and tourism operators could work together to form a Timor-Leste Tourism Association (like a chamber of commerce for tourism) to help market and promote tourism in the country. Tourism and natural resource management could further provide a valuable source of employment for youth and help promote gender equality in the country.

C3B. KEY ACTORS

GOTL and local government. The Secretary of State for Arts and Culture in MOT is the key government institution with responsibility for tourism planning, marketing, and implementation, as well as preserving cultural heritage. The Secretary of State for Forestry and Nature Conservation and the Secretary of State for Fisheries (both within MAF) have protected area and natural resource management responsibilities. The Secretary of State of Environment in the Ministry of Commerce, Industry, and Environment is responsible for the development and execution of policies regarding the environment. The Ministry of Public Works designs and implements plans for infrastructure development. There are major road rehabilitation projects planned for the entire country and many of these could negatively impact the national park and other important tourism "assets" if not properly designed.

Sucos and local communities need to be active players in tourism development and management to ensure that 1) new activities don't compromise their traditions or cultural sensitivities, 2) the community benefits (economically and through improved water, roads, etc.) from tourism, and 3) natural resources are protected by local people. Co-management requires active involvement and participation by the Sucos.

Donors. Donors such as UNDP, ADB, WB, and JICA are planning major infrastructure projects in the country. These activities should also be coordinated with tourism initiatives to ensure adequate linkages and that the planned public works projects do not degrade important tourism "assets." NZAID and GIZ are planning activities involving ecotourism and agro-tourism.

Local NGOs. The Alola Foundation (a local Timorese NGO) works with women's cooperatives that could be linked to hospitality, handicraft, and other tourism services. Haburas, Empreza Diak, Hafoti, and other local NGOs are also supporting handicraft production and small-scale ecotourism endeavors. Local NGOs are also providing micro-grants for tourism activities (community savings groups, cooperatives).

Private sector. CCT and similar private sector groups could perhaps add tourism to their portfolios to complement their primary endeavors.

C3C. STAKEHOLDER CAPACITY

GOTL. MOT is a relatively new ministry and is operating without a master plan. At present it is functioning on an annual plan. The Ministry also has very limited staff expertise in tourism management and planning and cultural heritage preservation.

As in many fledgling governments, the ministries in Timor-Leste have limited capacity to coordinate activities. There are major public road rehabilitation and construction projects that are traversing important tourism "assets" possibly leading to improved access, but potentially causing direct damage and destruction of valuable resources. Gravel and rock are currently being mined within the national park for the road reconstruction between

Lospalos and Tutuala. Communications between the national government and local Sucos are also poor.

The number of staff working at the national park is inadequate to protect its important biodiversity and habitats. Law enforcement is absent and illegal tree cutting and wildlife harvesting is very common. There is no tourist information for people visiting the park: rules, regulations, or even a map of the area do not exist in or adjacent to the park.

Communities and Sucos. Many community groups and cooperatives continue to have issues with sustainability and require routine technical assistance from donors and NGOs. Involvement in tourism will require additional support.

In general, knowledge about conservation, the environment and best practices to protect watersheds, biodiversity, and habitats is limited in the country. This hampers the long-term protection of important tourism "assets". Tourism development can also result in potential conflicts over land tenure and access to beaches and fish-landing sites, and cultural conflicts with respect to traditional local *tara bandu* customs and values.

C3D. TRADE-OFFS/VALUE FOR MONEY/OPPORTUNITY COSTS

The tourism market in Timor-Leste is currently small and may not contribute a significant source of income to either the country or local communities. The expatriate community in the country is limited and likely to shrink over time, due to the withdrawal of UNMIT. It is unknown how successful recruiting efforts for tourists from other tourist centers in the region (e.g., Bali, Singapore, Australia, etc.) will be. Further study may be necessary to better understand the potential market for tourism in the country and how much income could be generated from this sector.

Another constraint that could hamper a successful tourism industry in the country at this time is the lack of adequate infrastructure, tourism services, and emergency facilities. Major roads need reconstruction, many accommodations are below most tourists' standards, transport is difficult, there is a lack of coastal wharves and piers to support marine-based tourism (sport fishing, whale watching, diving), and there is a complete absence of emergency medical care available outside of Dili.

While many tourism "assets" already exist in the country and do not need to be developed, they are scattered and disconnected from each other. Other than the more iconic destinations (Jaco Island, Cristo Rei statue), there is limited information about other lesser-known sites and activities. There are no tourism exhibits or kiosks in district towns, Sucos, or even the national park.

Despite these challenges, Timor-Leste does have interesting and potentially valuable tourist "assets," such as spectacular mountain and sea landscapes; globally significant marine life; accessible, healthy, and diverse coral reefs; a rich indigenous culture; community-based agriculture; and a compelling political history and narrative to accompany historic cultural sites. Ecotourism based on these themes has the potential to

generate local incomes and long-term employment for many communities in the country, particularly if the tourism sector adopts community-based approaches to development and the industry is developed in an ecologically sustainable manner (Sandlund *et al*., 2001; Weaver, 2008).

C4. LANDSCAPES AND CONNECTIVITY: A WATERSHED APPROACH

A watershed perspective should be an overarching theme in any USAID/Timor-Leste EG programming. Proper watershed management can provide resilience to climate change, increase agricultural productivity, and protect and conserve natural resources. This section provides recommendations and opportunities for a holistic approach to watershed management.

C4A. PROGRAMMING POSSIBILITIES

Consideration of the landscape setting for future EG activities will likely improve resilience and reduce vulnerability to environmental and economic risk. As water is a common resource underpinning Timor-Leste EG projects, a suitable method of landscape planning is to consider the entire area of a watershed, from small headwaters drainages to major river channels to ocean outflows that may affect EG activities in agriculture, tourism, and natural resource management.

Integrating landscape analysis into program planning would add value in considerations of risk to ecosystems by including human components and information on how their activities affect the environment. For example, understanding how upstream farming activities impact downstream communities' water supply, both quantity and quality, can alter project inputs and activities. A landscape perspective based on watersheds is also useful for understanding important drivers in seascapes related to sediment loads, coastal abrasion, and other factors affecting marine protected areas and fisheries.

A range of options exists for characterizing the physical and hydrologic properties of watersheds, such as soil, land use, elevation, climate, vegetation, and stream flow. Options to measure these characteristics include relatively sophisticated sampling technologies or very simple techniques that would add value in USAID project planning. Furthermore, there are possibilities for incorporating human manipulations of landscape features (soils, vegetation, roads) that would enhance resilience in USAID project design and implementation.

The effects of climate change on the Earth's systems are strongly tied to the hydrological cycle. A watershed approach considering variability in precipitation amounts, frequency and intensity, along with effects on runoff and groundwater quantity and quality, is highly applicable in consideration of climate variation. Water availability and quality will be the principal pressures on societies and the environment under climate change (U.N.-Water, 2010) and should be an important consideration in climate vulnerability and resilience program elements in Timor-Leste (see also Kirono, 2010).

Incorporation of information about hydrography, stream location and seasonal discharge, aquifers and their variation, water quality, and the interface between physical and biotic systems is particularly important for USAID project decisions involving elements of flood or erosion protection, water resource exploitation, agriculture, and forest protection or reforestation. The highlands evaluation team received input on information needs related to surface and ground water supply for potential horticultural project expansion, competition for water that might arise from alternate cropping practices in rice production areas, shifting seasonal climate cycles that could prolong dry seasons, and the need to pay greater attention to slope failure and stream bank erosion that make USAID projects vulnerable.

Contextual knowledge about the large-scale setting within which projects are sited is important to evaluating environmental vulnerabilities associated with the location of interventions. Abundant guidance and data resources are available to support a watershed-based approach to EG programming (Lal and Russell, 1981; Kang, 2010; SDP, 2012; NBSAP, 2011). Based on the topography of the island and suitable project areas determined through our field visits, USAID project alternatives will most directly affect and be affected by smaller streams and catchments at the "lower" levels of watersheds.

The health of a watershed has a direct correlation to achieving EG program objectives. Thus, it is important to include activities that enhance the long-term viability of watersheds, such as developing alternatives to deforestation (from slash and burn agriculture and wood gathering for fuel), reforestation, stabilization of stream banks, and other best management practices related to infrastructure and land use. The list (not exhaustive) of program possibilities discussed during the in-country assessment includes undertaking:

- Alternatives to slash and burn agriculture
- Alternatives to wood gathering for fuel
- Coppice trees for fuel wood production and forest canopy development
- Tree nurseries to supply seedlings as a component of silvicultural development
- Reforestation (under planting) with economically viable woody species (e.g., teak) and native species with economic (e.g., sandalwood) or biodiversity value
- Protection of stream banks with vegetation planting (i.e., live) or plant material placement
- Floodplain development as riparian habitat, possibly in conjunction with appropriate cropping systems
- Water harvesting utilizing stream retention structures, tin roof runoff and cisterns, etc.
- Soil moisture improvements through improved agro-forestry practices to reduce evapotranspiration
- Bank stabilization through terracing or planting to reduce erosion
- Incorporation of stability/erosion and flood hazard as evaluation factors of project developments
- Assessment of surface and ground water resources to support development for crops and livestock

- Evaluation of the potential for stream flow retention, diversion and canal development for irrigation or aquaculture
- Consideration of the U.S. Department of Defense as a force to develop watershed enhancements or facilitate project infrastructure construction
- Use of best management practices to construct roads and associated drainage facilities
- Utilization of fencing to protect water sources or agro-forestry developments from livestock
- Incorporation of watershed concepts into educational curricula and demo projects
- Monitoring and evaluation, which is in some ways the most important element and one where mechanisms for assessment of the effectiveness of watershed management measures should be integrated with cost and community effectiveness metrics

C4B. KEY ACTORS

In addition to fundamental rural community involvement, a wide array of GOTL, donor, consultant, NGO, and academic institutions can facilitate watershed based approaches to improve landscape management.

GOTL and local government. MAF is involved with critical components of information development and vegetation management affecting watersheds. The SDP outlines a reforestation plan for Timor-Leste with the goal of planting one million trees per year and establishing tree nurseries in communities across the country.

Donors. Road construction efforts of JICA, EU, ADB, and WB may have spin-offs in terms of positive or negative watershed effects. The UNDP environmental assessment of roads built by ADB and WB is likely to be a key information resource. UNDP is also a key agency in the development and implementation of the National Biodiversity Strategy and Action Plan (NBSAP, 2011). The United Nations Educational, Scientific and Cultural Organization (UNESCO) has a project to conserve tropical forests and manage biosphere reserves in association with climate change mitigation and adaptation. AusAID has projects associated with rural water supply and sanitation that could be integrated with watershed management. JICA is doing work on land cover, forest planning, and (possibly) hydrography data and analyses key to watershed planning at broad scales. CTI/NOAA is interested in partnerships for developing information about landscape-seascape drivers for reef condition and biodiversity. GIZ, Portugal, and EU are planning work in agro-forestry that could be linked into an integrated watershed management strategy.

International NGOs. Mercy Corps' work to alleviate energy poverty and to stabilize floodplains is complementary with potential USAID watershed-oriented work, and its microfinance efforts may have financing potential for watershed enhancements. World Vision is exploring an approach to coppice tree management for reforestation. Save the Children is implementing community-/youth-based approaches for environmental hazard analysis. Birdlife International/Charles Darwin University is conducting an avian

biodiversity inventory and birds are not only an indicator of watershed integrity, but may also be a key element in an ecotourism strategy.

Private sector. CCT's rehabilitation of coffee shade trees could improve watershed integrity provided that provisions are made for selection of species and vegetation community structure.

C4C. STAKEHOLDER CAPACITY

GOTL. There are many resources available to inform landscape and watershed planning at larger scales in Timor-Leste. Because an understanding of land cover and land use is critical to characterizing watersheds, the recently-developed products from JICA and the Northern Development Foundation (2013) appear to have high potential for enhancing resilience. Focusing on forests, these products help to evaluate vegetation cover, water and soil conservation potential, and biodiversity conservation at national, district, and (to a lesser extent) Suco levels. Through cooperation with Indonesia, MAF has plans to obtain aerial imagery that could support higher-resolution analyses covering smaller areas. There may also be opportunities for higher-resolution analyses scaled to match USAID community-based projects using the same Landsat imagery used by JICA or from newer scenes from Landsat-8 (e.g., http://eros.usgs.gov/).

JICA has also been active in the development of hydrographic data in Timor-Leste (http://unstats.un.org/unsd/geoinfo/RCC/docs/rccap18/CRP/18th_UNRCCAP_econf.100_crp3.pdf) that might also support DRR and climate change objectives of USAID project planning. As with land cover analysis, there is tremendous capacity for evaluations of Timor-Leste's water resources and their climatic drivers by USG (e.g, DOI, USDA), academic, and NGO sectors.

The development of these technical capabilities within Timor-Leste institutions is still nascent. Where knowledge and skills exist within the central GOTL, they tend not to have been effectively disseminated to district officials and extension agents. Although the capacity for top-down technical assistance is presently marginal at best, opportunities should be sought to enhance the technical capabilities of Timor-Leste district representatives to understand and transfer information about geological, hydrological, and ecological processes to improve the design and implementation of resilience plans at the community level.

Communities and Sucos. In all likelihood, watershed management for USAID projects will require a substantial, yet simple, community-based component. There are a number of examples of successful community-based watershed management approaches from the developed (http://www.oregon.gov/OWEB/pages/policy_main.aspx) and developing (Shackleton and Campbell, 2000) world. JICA has a project addressing community-based integrated watershed management in Timor-Leste that may provide appropriately-scaled expertise for USAID. Many measures with strong upside potential in Timor-Leste would not require highly specialized technical expertise. Most extensionists, agriculturalists,

foresters, and environmental scientists share skill sets that would enable them to facilitate planning and implementation of the possibilities listed in this section.

C4D. TRADE-OFFS/VALUE FOR MONEY/OPPORTUNITY COSTS

Many best management practices for watersheds could be perceived as conflicting with habitual land use practices in the rural areas of Timor-Leste. A tendency toward avoiding financial risk is also a factor likely to inhibit change. A strong educational component will be required to help communities understand how consideration of landscapes and watersheds, even at locally observable scales, is in rural residents' best interests. Because some geological and ecological processes operate on decadal to millennial time scales, the benefits of conservation-oriented approaches may not be immediately detected. Some benefits may accrue in different locales, as in the case of sediment from highland streams affecting main-stem rivers or the coastal zone. Seeking opportunities to integrate wise watershed use into Suco behavioral norms (*tara bandu*) would be one mechanism for an efficient use of existing sociopolitical systems. An understanding that the landscape yields resources in relation to how it is treated will be key to progress, and this may require generational change. Integrating this form of understanding into projects with short-term goals will help assure their sustainability in the face of environmental risk.

D. RECOMMENDATIONS

D1. DESCRIPTION OF OVERALL PROGRAM RECOMMENDATION WITH OPTIONS

D1A. SUMMARY OF PROGRAM ANALYSIS

The assessment team looked at three main sectors within the economic growth realm – agriculture, environment and natural resources, and tourism (see Table 3). Agriculture and other ecosystem services derived from Timor-Leste's natural resources are the backbone of the non-oil economic activity of Timor-Leste. Between 65 and 70 percent of the population are engaged in agriculture, and these agricultural activities depend on rich environmental

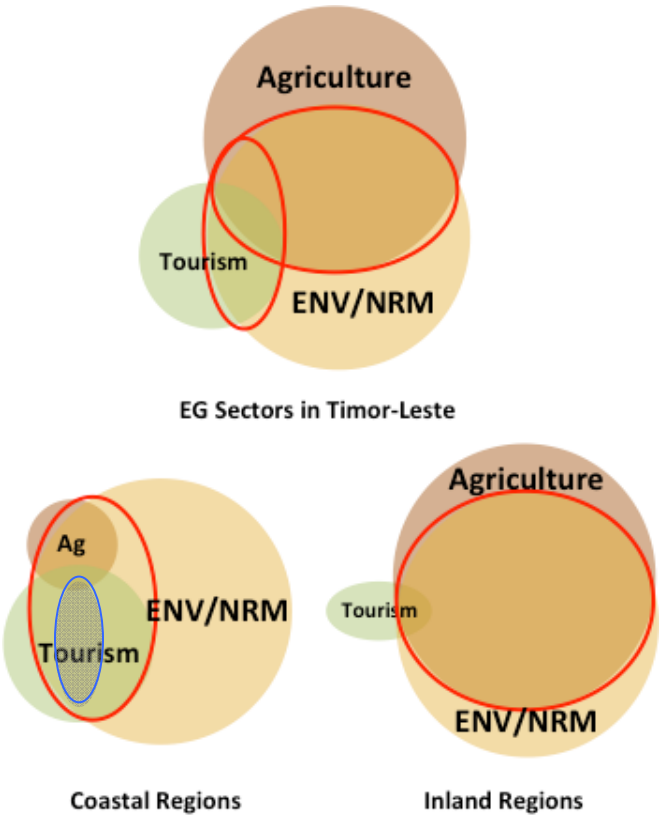

Figure 5. Programming Comparisons in Different Sectors and Regions

resources. Tourism also takes advantage of and supports the environmental and natural resource base.
As there is much overlap in these three sectors, they can be considered collectively as in Figure 5. The red circles in Figure 5 indicate areas where the Mission may want to concentrate its resources to support economic growth and be in a position to adjust to potentially changing future funding streams.

However, when one looks at specific programming options, a general geographic focus is often implied, and the relationship of these three sectors changes by geographic location. Taking this into account, the team went through an analytical process to begin to understand where the potential was greatest for impact and to narrow down programming options (see bottom of Figure 5).

Tourism possibilities and environment/natural resources activities are the predominant sectors in coastal regions. Timor-Leste has unique environmental characteristics and valuable resources, particularly related to marine life. The coastal tourism sector is still nascent with many missing linkages that would need to be established for viable and sustainable markets. This includes transportation (international and domestic), infrastructure (ports and roads), hospitality services (restaurants and hotels), marketing, and the lack of a management plan for sustainable use of natural resources. A program focused on coastal tourism would need to encourage co-management of protected areas (terrestrial and marine). This would include no-take zones and ensuring integrated watershed management activities. In addition, an effort would need to be made to support better park use planning, a permit and park fee system (communities to benefit from fees), and local control and management. A series of national management plans would also need to be developed. Coupled with these planning and regulatory efforts, livelihood diversification could be undertaken to prevent unsustainable resource use (e.g., cottage industries, including snorkeling, guides, other tourist services, marketing aspects of tourism; NTFP, including candlenut, honey, coconut, palm wine; agriculture; handicrafts). The team decided that the time and resources required to achieve significant results from these activities are likely beyond Mission resources and planning horizons (15- to 20-year time frame). Nevertheless, it is possible that elements of these activities could be supported by the Mission with complementary or leveraged funding (see Sections E1 and F3).

Increasing agricultural production and food security has limited potential in the coastal areas. The Mission wants to avoid work in staple foods such as rice and corn, and horticulture would have limited growth potential in coastal zones, meaning that marine agriculture (e.g., seaweed, fish) would be the primary focus of USAID/Timor-Leste's activities. Despite the potential for marine fisheries to improve access to nutrition-rich foods, when one looks at the details, a number of constraints become evident. Presently, many of the marine fisheries activities in Timor-Leste are unsustainable, and in some cases, internationally illegal methods are being utilized. To establish a marine fisheries value chain, the Mission would first need to lay the foundation for protecting these natural resources (the main drivers of economic growth potential in the region) through the development of sustainable use plans and community-based resource management.

Without sustainable use plans in place, creating markets to increase the demand for marine fish could lead to overfishing, illegal fishing, loss of biodiversity, and conflict. Once use plans are established, there are major infrastructure gaps to complete the value chain that will have to be filled such as roads, transportation systems, cold chains, ice production, and ports. These investments would extend well beyond the Mission's five-year strategy and could take at least 10 to 15 years to complete, as well as cost significant amounts of funding. Given the above mentioned constraints, the space for productive integrated programming is much smaller within the five-year time horizon, as depicted by the blue circle on the left in Figure 5. Perhaps USAID/Timor-Leste could invest in tourism planning and regulatory efforts for coastal areas, but the assessment team did not believe it should be a major component of any new programming

When looking at the same analysis for inland areas, agricultural potential is high and there is a positive overlap with natural resource management. These two sectors are inextricably linked, implying a watershed/landscape approach to economic land use planning that will achieve dual outcomes in economic growth and NRM. Expansion of USAID's inland horticulture value chain work would capitalize on this overlap, enable the Mission to take a watershed approach, and meet the objectives outlined in the CDCS, FTF, and the GCC Initiative (see more detail in D1b).

Tourism has a smaller potential in the inland areas. Much of the tourist activities are domestic attractions such as hiking, cultural events and displays, and eco-tourism. While there are many pleasant places to visit in the more mountainous regions of the country, there are few unique resources to attract international travelers. In addition, the generally weak infrastructure to support tourist activities in inland areas would represent a major constraint for travelers. There is potential for CCT to begin work on agro-tourism in the highlands, though on a limited scale.

Even with the removal of tourism potential from the diagram in Figure 5 detailing the sectoral relationships inland, there is a much larger area for successful integrated EG programming in the inland regions than compared to coastal areas.

D1B. SUMMARY OF PROGRAM RECOMMENDATION: FOCUS CORE PROGRAM ON HORTICULTURE VALUE CHAINS

The horticulture value chain far exceeded the other options considered by the Mission in its potential of not only achieving near-term inclusive EG, but also in serving as a solid platform to integrate and link with other key sectors. A project focusing on the horticulture value chain would permit an integrated approach and could be designed to achieve EG, climate change adaptation, food security, sustainable natural resource management, and resilience outcomes. Work in horticulture would build on successful USAID programs, diversify incomes, fit into available funding sources, improve nutrition (when combined with proper education), engage women (involved in both production and marketing of horticultural goods), and is likely to achieve results in a five-year time frame (see Table 3). Several estimates indicate that there is a large unmet demand for additional vegetables within the local market, particularly in Dili and potentially in

Baucau. This supports the possibility of significant results in the near term if USAID/Timor-Leste expands their horticulture efforts.

Horticulture activities provide opportunities to leverage other investments by MAF, donors (AusAID, WB, ADB, GIZ), and USAID and U.S. government programs (health, democracy and governance, education), allowing this new economic growth project to fill openings (see Section E). The private sector is already engaged in the DAC program and this engagement could be built upon and expanded to include new activities and partners. For example, the Mission could assist the private sector in adding needed technical assistance/extension experts to improve agricultural production and in providing nutritional education and training to farmers. Other programming possibilities include the development of assembly points, packing houses, or wholesale markets; the establishment of a private sector-based input system for the collection of economically viable quantities of fresh vegetables; formation of community users groups for water and forests[5]; and household gardens. These options are described in more detail in Section C1a. Due to limited resources, the Mission may have to conduct cost-benefit analyses (CBAs) to weigh the potential benefits of these options and select priority investment areas.

Programming in horticulture would allow USAID/Timor-Leste to overcome the gaps in nutrition programming left by support for coffee production and NTFP and enable the Mission to adopt a nutrition oriented agriculture approach. Linking an increase in agricultural productivity, especially of horticulture crops (including legumes), with nutrition education and behavior change tools (preparing and handling food and the important role of clean water, sanitation, and hygiene) can lead to increased consumption of healthy foods, promote dietary diversity, and reduce food-related illnesses. Even with the promotion of horticultural crops by USAID, farmers are unlikely to abandon the production of coffee and NTFP, which will continue to provide consistent sources of income. The addition of these new crops should boost and diversify farmer income streams, an excellent resilience strategy.

D1C. COMPLEMENTARY COMPONENTS

As noted earlier, USAID/Timor-Leste's overall EG programming objectives relate not only to economic growth but also take into account issues such as gender, nutrition, climate change adaptation (CCA), natural resource management (NRM), and disaster risk reduction (DRR). Complementary components within the traditional value chain work will be needed to address these issues. Some of these components should be integral parts of the core EG program and some may be linked activities undertaken by other USAID programs such as health or governance, or additional U.S. government programs through ODC, USDA, DOJ, DOC, and the State Department. These activities could also be

[5] Potentially, there are valuable lessons and best practices on the establishment of local input supply systems that could be learned from the Nepal Agrovet system example. USAID/Nepal and USAID/Cambodia have excellent programs integrating community-based management of forests with agriculture. These examples could be analyzed by USAID/Timor-Leste during project design.

handled by the private sector, local or international NGOs, or through collaboration with other donors and government programs.

Life skills training. Life skills training is one of the important complementary components that must be considered. This includes instruction in financial literacy and behavior change information related to food preparation, nutrition, hand washing, hygiene, and water storage. These activities could be done in a number of ways. One possibility could be through school demonstration projects such as vegetable gardens or fishponds. Another possibility is to target women's groups since the spillover effects are likely to be greater given the traditional role of women as caregivers; they are also more likely to tend household gardens and run microenterprises.

School demonstration projects. Important components of the school demonstration projects would be the experiential learning that would help support career development and positive behavior change by socializing the youth to multiple inter-related ideas. Some of the ideas would include: nutritional awareness; instilling an environmental sustainability mindset; and educating youth on agriculture techniques, job opportunities, inclusiveness into value chains, and entrepreneurship. A demonstration project might involve: fishponds, school gardens, rain-water harvesting, and life-skills training (nutrition, financial literacy, food preparation, hygiene), and could be done after school as part of a youth club or if desired by the administrators, as part of the curriculum. Any nutrition messaging should be done in collaboration with other donors, such as AusAID and U.N. Children's Fund, the USAID Haforsa Distritu iha Implementasaun Atividade Kuidadus Saude Primaria (HADIAK) project, as well as the Ministry of Health. These groups have developed and approved many nutrition messaging materials and have trained community health volunteers on nutrition issues. Such valuable resources could be utilized by the new USAID EG program.

Household gardens. The development of keyhole or household gardens could complement horticulture value chain activities. If the program is working with fresh vegetables and legumes, the addition of household related vegetable production could be a natural spinoff of the project. Limited quantities of seeds, extension services, and other resources of the project could be directed toward the household level. Important elements of the program could include nutritional awareness, education of extension workers to provide nutrition information through a possible training of trainers (TOT) approach,(a possible TOT approach), and women's engagement.

Inland fisheries. The assessment team feels the Mission should consider engaging in inland fisheries on a small-scale as a complementary activity related to horticulture. However, given the constraints in the sector such as: lack of a cold chain or availability of ice for local marketing of fresh fish; no processing operations; insufficient breeding stock; limited knowledge in the use of smoking, salting, drying or other preservation techniques; and scarce marketing facilities, there is also a need for further research and planning to develop viable USAID projects. Besides being a potential source of employment and income, fishponds could support food security through the addition of protein-based food into the local diet. Inland fishery production on a small-scale could

also possibly be integrated into the operations of potential packing houses and cold storage facilities that could be established in the future for fresh vegetables. The development of an emerging private sector-based input supply system could also support fishpond productivity through access to nets, fingerlings, feed, and other fishpond equipment. NZAID's approach to improving aquaculture planning in Timor-Leste may provide an opportunity for USAID collaboration.

Conservation and sustainable farming techniques. To promote resilience, CCA, and the environmental sustainability of the program, a variety of activities could be undertaken in relation to the horticulture value chain projects. These include rooftop rainwater harvesting and small-scale irrigation to enable cultivation during the dry season, composting to generate organic fertilizer, legume production and crop rotations/inter-cropping to improve soil quality, selection of drought and flood tolerant or adapted seed varieties, terracing, and integrated pest management and live fencing. The Mission should also consider scale-up and integration of OFDA's conservation agriculture program implemented by FAO (see Sections E1, E2a, and F1).

Post-harvest handling. The new project could also include education on low-tech post-harvest handling and processing for household food storage. Such technologies include parboiling, curing, and drying of fresh vegetables, fruits, and fish. Proper use of these technologies can maintain the nutritional benefits of these foods and enable households to safely store goods for later consumption or sale at harvest time.

Land tenure. Land tenure is complicated in Timor-Leste. There are often multiple claims to land and a lack of an effective conflict resolution mechanism to settle those claims. Without titles to property, farmers have reduced collateral to access loans and inhabitants have little incentive to invest in and protect the land. The lack of clarity of rights and responsibilities has implications for sound environmental management. Security of tenure to agricultural and forestlands can be an incentive for community conservation of these resources. Rural poor would be more likely to invest in their land, including reforestation and sustainable agricultural practices that have downstream benefits in reducing soil erosion and rehabilitating degraded habitats. USAID could partner with the WB and ADB on their work in rural land titling.

D1D. SUPPORT SERVICES

Support services are critical to facilitate and lubricate value chain activities. Work with support services represents activities where government, NGOs, and donors often have the most impact in the development of value chains. Private sector actors generally focus their management skills and investments on the core market activities of moving goods from production to consumption. Support services often have both public and private sector elements. The assessment team noted three important support services that directly impact horticulture and other value chains – transport, technical support, and access to finance. Two of these, technical support and access to finance, are critically needed in Timor-Leste. Much of the work in the transport support services are being undertaken by GOTL and multilateral donors.

Transport. It is universally accepted that transportation is one of the most critical bottlenecks within the Timor-Leste economy. The GOTL, WB, ADB, JICA, AusAID, EU, and UNDP are all putting considerable resources towards improving and expanding the country's road network. As these critical activities begin to show results and new and better roads open up throughout the country, there are important options that could be considered relating to support of transportation services to maximize the benefits of the new road network. These services include truck rentals, delivery services, and transportation information. In a five- to 10-year time frame, transportation support services may open useful opportunities for the development of Global Development Alliances.

Technical support. There are three operational extension systems in the country: MAF agents, project-related agents, and local community agents (WB, 2009). In most cases, the number of agents is insufficient and the quality, particularly of MAF agents, is poor. One option that is being undertaken by GIZ, EU, and Portugal is to work with universities, MAF, and technical institutes in developing a TOT model for creating technology, knowledge management systems, and extension services. Several NGOs are taking a slightly different approach and working at the village level to strengthen local community agents to provide technical assistance to their communities. USAID/Timor-Leste could try to leverage this work, but there are possibilities for private sector engagement as well. As part of the input supply system development, USAID could train input marketers to provide extension services on their products to their customers. This type of training would expand USAID's network of project-related agents. Specific tasks that need to be taken include: extension training, development of research and market information systems, and establishment of sustainability in the system. An extension or advisory services system is central to the advancement of the value chain. Extension technical support could also be structured to provide simple, implementable, community-based elements addressing landscape/watershed assessment and water supply, which would help to achieve key CCA and DRR objectives.

Access to finance. Access to finance is another essential support service for a value chain. Finance can come from a multitude of sources. In Timor-Leste, there are two active microfinance institutions that provide small-scale commercial loans to local entrepreneurs. In addition, a number of NGOs also focus on microfinance. These activities are usually location-specific but are often critical for local value chain and business activities. Finally, community-based savings and loan societies and local businesses also play important roles in providing small sums of money to support and expand small-scale community enterprises.

D2. JUSTIFICATION FOR RECOMMENDATIONS (CROSSCUTTING/SUSTAINABILITY ANALYSIS)

D2A. ECONOMIC GROWTH

The horticulture value chain recommendation presented in this assessment has a strong orientation towards economic growth and generating jobs at all levels of engagement.

This approach will help set the stage for future growth and the spinoff of other enterprises and micro-businesses.

Horticulture builds on the success of the present USAID activities in EG. From a diverse set of information sources, the assessment team found that there is strong unmet demand for fresh vegetables in the Timorese market. Some evidence supports the possibility of export for fresh vegetables within the next three to five years if the value chain is properly upgraded. Export of produce would require the establishment of sanitary and phytosanitary regulations and testing. This may be outside of USAID/Timor-Leste's manageable interests, but perhaps could be done in collaboration with MAF and AusAID.

In addition to the expansion of economic growth, the team also analyzed how growth would reduce poverty. All the activities chosen have the potential for strong poverty reduction with a scalable engagement of small vegetable farmers or MSME operators, many of which are women.

Another consideration was the potential of any USAID activities to address critical bottlenecks not only in one specific value chain, but in the general market development of other commodities (e.g., staple crops, fish, NTFP). The development of a cost-effective input supply system for horticulture, for example, would have such spillover impacts.

D2B. GENDER

Both men and women play prominent roles in the horticulture value chain. Production, packing, sorting and marketing of horticultural commodities is generally done by women. The development of small enterprises, such as local input supply structures, provides opportunities for women, particularly those from female-headed households. There are also possibilities for development of complementary microenterprises, such as handicraft production or small-scale food processing. These types of enterprises are often run by women and provide livelihood diversification possibilities that can raise incomes and improve food security. The assessment team was able to identify female-focused organizations such as microfinance savings and loan societies, handicraft cooperatives for the marketing and sale of products, and mothers' groups that support and promote the health and wellbeing of mothers and children.

D2C. RESILIENCE/DRR/CCA

The options presented here in the horticulture value chain are all directed to promoting economic growth resulting in wealth generation and employment in the project area. The availability of additional household income increases the ability of the household to develop appropriate coping mechanisms to deal with environmental and economic shocks.

The team envisions a seamless integration of humanitarian (OFDA) activities and longer-term development activities. DRR measures could be established throughout the project.

This would include incorporation of better farming techniques including CA supported by OFDA, as well as terracing, drought and flood tolerant seed varieties, improved seed and crop storage, diversified production systems, crop rotations, and expanded access to inputs. Working within the watershed concept, local communities should be engaged in mapping risk and the potential for environmental degradation in project activities. This could include the proper locating of fishponds, plastic tunnels, tree planting, and waterways. Activities of the project should be focused on enhancing food security and increasing knowledge to mitigate risk and develop coping strategies. These efforts could be supported by effective behavior change approaches dealing with, among other things, improved nutrition, hand washing, and other hygienic practices.

With successful project interventions, greater horticultural productivity could open up possibilities for more productive land use such as expanded fallow, forestry, or other land conservation activities. Increased productivity combined with enhanced knowledge of environmental issues could also help reduce the pressure to acquire additional land through slash and burn. Training on environmental issues, natural resources management, and biodiversity conservation is a necessary project component. Without it, there is the potential for more land being cleared for cultivation to support increased agricultural productivity.

D2D. NUTRITION

The suggested horticulture value chain activities recommended by the assessment cover the four pillars of food security. Expanded vegetable production should raise incomes providing access within the household to purchase needed food. In addition, greater production of vegetables will increase the availability of nutritious foodstuffs. Life skills training in food preparation, hand washing, and proper food and water storage and purification supports better health and food utilization. A focus on “resilience” promotes stability.

Horticulture programs can be easily adjusted to include multiple nutrition activities including school gardens, health and nutrition training, fisheries, etc. Empowering women to control the money they earn through the horticulture project or other MSME opportunities will have a strong positive impact on food security, education, and family health. Evidence suggests that women are more likely to use financial resources to invest in their families and children.

An activity to expand the private sector-based input supply system is likely to promote the productivity of a diverse range of food crops, which when combined with nutrition education, should have a positive nutritional impact.

D3. RISK ANALYSIS

The fundamental risk factor for the options presented here or any of USAID/Timor-Leste’s other program options is the increased uncertainty over funding availability. Funding sources and amounts are likely to change given anticipated federal budget cuts.

The options given provide some flexibility to deal with this uncertainty (see Section F3 below).

An important initial action in all value chain activities is to undertake a risk assessment and begin to develop mitigation plans to deal with those risks. One principal risk of value chain work is the market's exposure to large disasters that can cause disruptions. These disasters could relate to infrastructure (landslides), production ability (drought and floods), and political instability.

As an increasing number of unemployed youth seek a better life, conflict could erupt if they cannot find productive employment. Such instability could have a very negative impact on all programs.

A perpetual risk in all markets is the importation of cheaper products that can flood the market and stifle competition. Likewise, changes in policies related to commodity and input subsidies, or the fixing of prices of market products can have a devastating effect on the development of new and effective markets. However, there is little indication that the GOTL would implement distortionary policies, particularly across all horticulture products. Even in the unlikely situation in which cheap imports do kill the market for one or more commodities, it would be relatively easy for farmers to shift to other horticulture crops.

E. NEXT STEPS FOR IMPLEMENTATION

E1. PROGRAMMING PRINCIPLES (SEE TABLE 3)

Throughout this report, there are descriptions of the multitude of "requirements" that USAID/Timor-Leste will need to keep in mind when making final programming decisions (in particular, see Chapter 3A). Based on USAID requirements and from the information gathered from field trips and meetings, these are the programming principles that the assessment team feels are of paramount importance.

Achieve concrete results in five years. Despite the fact that extensive time and effort are required for initiatives to become self-sustaining in Timor-Leste, it is critical for the Mission's EG program to show concrete results within five years for one fundamental reason: There is no guarantee that U.S. government resources will be available after five years for development purposes. If the EG program closes, the U.S. government needs tangible results that will contribute to Timor-Leste's development success. Certainly, Timor-Leste will need assistance over a longer time horizon, but the Mission needs to look at the five-year period as an independent phase in a larger development vision. This also reinforces the notion that the Mission needs to focus and concentrate to ensure its limited financial and human resources can be channeled to achieve maximum results. Moreover, the Mission's CDCS covers five years and results need to be achieved within that time frame. If concrete results cannot be achieved in five years, then activities should not be supported by USAID.

This imperative to achieve some level of success in five years drives the other principles, as they will help to assure success within the specified time frame.

Build on what works. This principle applies to the choices the Mission makes among sectors, and the implementation methods that are used at the local level. Because initiatives tend to be slow to develop in Timor-Leste, when possible, the Mission should support activities that build on established social and economic successes. It's important to have a nuanced understanding of what works at the community level so activities are rooted in formal and informal "systems." In addition, activities should not be contingent upon support, institutions, or regulations and laws that do not yet exist.

Support appropriate interventions for Timor-Leste. Experience has shown that streamlined interventions often work the best in Timor-Leste – ones that don't require a multitude of inputs or maintenance. Since markets are simple, the fewer external components required the better. Despite being a middle-income country from its oil resources, Timor-Leste has a low level of development and interventions must be suited to that context.

Focus core activity(ies) on areas in which USAID has a comparative advantage. From our discussions with the GOTL, donors, NGOs, and other stakeholders, it was clear that partners felt USAID's strength lies in working with the private sector in promoting value chains and in supporting markets as a driver of development. This is also a "gap" where few other donors are focusing their time and resources.

Build systems (through capacity enhancement) for sustainability and impact. Funds and time devoted do automatically lead to "retail-level" capacity building (e.g., training the end user). However, support for systems is possible in the five-year time frame. While building systemic capacity is often more difficult, the potential impact is much greater as more people should benefit over time (after USAID support ceases) making the cost per beneficiary lower compared to direct support.

Engage women. Areas for programming must provide possibilities to reduce gender disparities in access to, control over, and benefit from resources, wealth, opportunities, and services – economic, social, political, and cultural. Programs should also increase the capability of women and girls to realize their rights, determine their life outcomes, and influence decision-making in households, communities, and societies. USAID/Timor-Leste's previous and current work in value chains has furthered many of these goals and any new projects should continue to be inclusive of women and promote their empowerment.

Leverage resources. Resources should be channeled to complement the work of the GOTL, donors, private sector, and civil society organizations; focus on areas in which there are gaps; and support interventions that have the potential for scale-up (by the United States or other actors). Leveraging the GOTL and other donor programs is critical for success, in particular because many of these other actors are much bigger players in Timor-Leste than USAID. With limited resources, USAID/Timor-Leste needs to integrate with other programs especially other U.S. government programs (OFDA in

particular). OFDA has a conservation agriculture program focusing on staple crops that will be starting around April 2013, as well as ongoing programs in seed storage and community-based disaster risk management. OFDA will likely continue to invest resources in Timor-Leste. Therefore, it is prudent to design the project with this in mind. Likewise, to the extent that the Mission can co-locate its governance and health programs with the EG project, this will result in a greater cumulative impact, as these sectors are directly related to one another. USAID also has a unique opportunity with the private sector, and with ConocoPhillips in particular whom it has partnered with in the past on agricultural projects. ConocoPhillips has indicated a desire to continue to partner with USAID on development activities of mutual interest. Given this established relationship, future agreements are likely to be more efficient.

E2. GEOGRAPHIC PRIORITIZATION

USAID/Timor-Leste's EG program should consider selecting an area of geographic focus to concentrate activities and increase impacts. Choosing contiguous districts or electing to take a corridor-type approach would enable goods and service providers to more readily move to and from markets during the production and consumption phases of the agricultural value chain. The Mission should ensure all areas for agricultural development have adequate and sustainable access to water and could considering selecting an entire watershed (or watersheds) as the ZOI to adopt an integrated watershed management strategy and/or "ridge to reef" framework. Co-localization with other donors or USAID programs would allow the Mission to leverage interventions in maternal and child health, nutrition, NRM, democracy and governance, education, and DRR to maximize program outcomes and more effectively improve the lives of target beneficiaries. The Mission should also consider population density, levels of stunting, and other poverty and vulnerability measures when selecting a ZOI to impact the greatest number of vulnerable people. Any selected geographic area must align with priorities outlined by the GOTL, such as highland horticulture production, marine fisheries, or coastal tourism.

Table 3. Potential Value Chains and Selection Criteria

Criteria	Horticulture	Inland Fisheries	Marine Fisheries	Coffee	NTFP	Cattle Fattening	Tourism
Programming Principles							
Results in a five-year time frame	Results likely in five years	Improved planning or capacity possible, but sustainable projects less feasible	Result likely only at planning and regulatory level, LMMA strengthening	Results achieved, no need for additional support	Small-scale of activity means only limited results	Major market issues make 5 year results unlikely	Results likely only at planning and regulatory level
Build on what works	Successful DAC project	Little work done to date, although successful models in other counties	Limited work to date (mud crabs); community "no take" involvement	Use CCT/NBCA as model for other sectors	Small project ended early by Mission. Some success by CRS	CCT efforts indicated difficulty in achieving results in sector	No significant work in sector by USAID
USAID comparative advantage	Market development and linkages	Limited comparative advantage	Limited comparative advantage	Successful work in LAC and Africa	Limited comparative advantage	Limited comparative advantage	Limited comparative advantage
Systems for capacity building	Embedded capacity building in private sector partners	Limited availability	Limited availability	Strong system within CCT	Limited availability	Limited availability	Limited availability
Use of appropriate interventions	Use of high tunnels widely accepted and replicated	Fishponds appropriate but limited models for process and marketing	Improvements on present unsustainable approaches needed; Conservation areas established. Artisanal and subsistence fishing	Established technology	Limited technology	Limited technology	Planning and enforcement needed
Private sector partnership	Private supermarket chains within DAC and others possible	Could potentially be similar to horticulture	Potential but will require significant effort	Established	Limited	Limited at the moment	Significant potential once a number of basic structures are in

Criteria	Horticulture	Inland Fisheries	Marine Fisheries	Coffee	NTFP	Cattle Fattening	Tourism
							place
Co-financing possibilities	AusAID, NZAID	NZAID, FAO	ADB, Australian Govt., UNDP, FAO	Established with Starbucks and possibly IFC	Unknown	Unknown	Good possibilities with NZAID, GIZ, and EU after significant work is done
Geographic Prioritization							
Contiguous districts	Yes, following value chain	Possible, could be integrated with horticulture	Coastal zones connecting "ridge to reef" landscape	Yes	Likely	Near border with West Timor	Possible site specific opportunites
Include whole watersheds	Yes	No	yes	Yes	Yes	Possible	Possible
Co-locate with other USAID programs	Yes, with nutrition, education, NRM, CC, and DG	Yes, with nutrition, NRM, CC, and marketing efforts	Possible with NRM, EG, CC, nutrition, DG, and tourism	Possible with NRM, CC, tourism, and nutrition	Possible with NRM, tourism, nutrition, DG, and CC	Possible with nutrition	Possible with NRM, CC, DG, and education
Pop. density, poverty, and vulnerability	Areas of high poverty, population and malnutrition; high engagement of women	Nutrition and income impact; some engagement of women	Nutrition and income impact; High engagement of women	Income impact; high engagement of women	Modest income impact; high engagement of women	Selected income impact and nutrition potential; some engagement of women	Modest income impact; potentially high engagement of women
Implementation							
Minimize management units	Single project with multiple elements likely	Integrated into other ongoing project	Integrated geographically or sectorally	N/A	Difficult	Difficult	Possible
Accommodate flexible funding	Possible due to overlap of funding indicators	More difficult	Possible from cross-sectoral views	N/A	More difficult	More difficult	More difficult
Multiple implementation mechanisms	Likely and desirable	Less clear	Less clear	N/A	Less clear	Less clear	Less clear

Criteria	Horticulture	Inland Fisheries	Marine Fisheries	Coffee	NTFP	Cattle Fattening	Tourism
Ability to support new activities	Highly possible within value chain structure	More difficult	Subsistence & local market level value chain	N/A	More difficult	More difficult	Possible

ANNEX A

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ANNEX B

BIOGRAPHICAL SKETCHES OF TEAM MEMBERS

Renerio Acosta has served with USAID since 2008 and is currently the Regional Environment Program Specialist with USAID's regional office in Bangkok, Thailand. Before joining USAID/Asia's team, Mr. Acosta served for six years with USAID/Philippines where he administered several innovative and pioneering fisheries and coastal conservation programs. He is a social development professional with a wide range of work experience on environmental governance, project development and management, and community-based resources management with various nongovernmental organizations and donor agencies.

Donald Brown is an independent consultant for agricultural market and policy reform and analysis with more than 35 years of experience in Africa and South Asia in agricultural policy, economics, marketing, and agricultural sector project design, implementation, and evaluation. In 20 years as an agricultural economist with USDA and USAID, Mr. Brown managed agricultural programs and development of agricultural and economic country plans in long-term assignments in Rwanda, Senegal, Zaire, and Bangladesh. As an independent consultant, he has undertaken a wide range of evaluations, project designs, and program strategies in more than 15 countries in Africa and South Asia. He joined Chemonics International full time in 2003 and has been a Director in both the Middle East and Africa Region working with programs in Egypt, Malawi and Nigeria.

David E. Busch, Ph. D. is based at the U.S. Geological Survey's Pacific Regional Office in Sacramento, California where he serves as Science Program Officer. Dr. Busch was the USGS scientific liaison to the Regional Ecosystem Office in Portland, Oregon where he helped develop the interagency research and monitoring program in support of the Northwest Forest Plan. During the mid-1990s, he led the U.S. National Park Service Inventory and Monitoring program in the Florida Everglades, and previous to that held leadership positions with federal agencies responsible for research and monitoring of the lower Colorado River from the Grand Canyon to Mexico. Dr. Busch maintains a scientific interest in the functional ecology of riparian and wetland plant communities, and has been active in research and monitoring issues associated with invasive species in these and other systems. He has undergraduate and graduate degrees from the University of Nebraska, and completed his Ph.D. at the University of Nevada, Las Vegas.

Candido da Conceicao is from the only enclave of the country – Oecussi. Mr. da Conceicao worked for 17 years in the Indonesian Administration as a teacher of senior secondary school, head of the education department at the district level, development officer, and head of the animal husbandry department at the district level. During the

U.N. Transitional Administration in Timor-Leste and after the country's independence, he focused on economic development. Mr. Conceicao has served with USAID since 2004 focused on enterprise development.

Flavia da Silva is an Environment and Infrastructure Specialist at USAID/Timor-Leste. Upon the completion of her undergraduate degree, she worked with the World Food Program as the National Program Officer for Vulnerability Analysis and Mapping for three and a half years. In that post, she provided analytical support in food security, information management and outreach. Ms. da Silva holds a B.S. in Natural Resources and Environmental Management from the University of Hawai'i at Manoa and an M.S. in Rural Sociology from the University of Missouri, Columbia.

Stewart Fefer is a fish and wildlife biologist with the Department of Interior, U.S, Fish and Wildlife Service. He has served as a wildlife biologist and Refuge Manager in the Pacific Region with responsibilities for management of the Hawaiian and Pacific Islands National Wildlife Refuge, a Regional Supervisor of Wildlife Refuge Management in the Northeast Region of the U.S., and, most recently as a Fish and Wildlife Administrator of the Gulf of Maine Coastal Program which works with government and non-government partners on priority conservation projects to protect and restore habitats for fish and wildlife. Mr. Fefer has 34 years of experience as a conservation biologist focusing on coastal systems. He holds an M.S. degree in Wildlife Management/Marine Biology.

Harlan Hale serves as a Regional Advisor on USAID/OFDA's East Asia/Pacific Team, and is based in Jakarta, Indonesia. As a Regional Advisor, Mr. Hale represents USAID/OFDA in matters concerning humanitarian assistance, including disaster response and recovery; risk reduction and capacity-building; and coordination and support to technical assistance provided by other U.S. government agencies and by other donors. Mr. Hale served as USAID/OFDA's Principal Regional Advisor for Southern Africa, based in Pretoria, South Africa from 2003-2012 and prior to that served as Senior Program Officer for USAID/OFDA in Indonesia from late 2000 until 2003. Prior to working for USAID/OFDA, Mr. Hale worked with CARE from 1986-2000, serving in complex emergency and natural disaster responses in Somalia, Mozambique, Zimbabwe, Rwanda/Zaire/Tanzania, Georgia, and Macedonia, among others, in a variety of capacities. Mr. Hale has a B. A. in History and Political Science from the University of Georgia and an M.B.A. from the University of Tennessee. Mr. Hale served as a Peace Corps volunteer in Zaire from 1980-1983.

David Manski has 33 years of protected area management experience with the U.S. National Park Service in a diversity of coastal, wilderness, and urban settings. He has worked as a research wildlife biologist and also as a biologist managing wildlife, vegetation, air and water resources and other natural resources in several national parks. For the last 19 years, Mr. Manski has been a senior manager at Acadia National Park (Maine, USA) where he directs resource management operations, including research, monitoring, restoration, and cultural heritage programs. He is actively involved in the planning, implementation and supervision of programs to protect sensitive resources and foster sustainable recreation opportunities to millions of annual visitors. For the last 20 years, he has also worked as a protected area management and ecotourism consultant for the U.S. Department of the Interior in Africa, the Middle East, China, and Europe. Mr.

Manski holds an undergraduate and a graduate degree in wildlife ecology from the University of Arizona and Texas A&M University respectively.

Ryder Rogers serves as the Director of USAID's Economic Growth Office in Timor-Leste. He oversees programs related to private sector development, agriculture, environment and education. He holds an M.B.A. from Angelo State University. Mr. Rogers' previously served with USAID/Ukraine's Office of Economic Growth where he worked on issues including agriculture, land-tenure and improving the business enabling environment. Prior to joining USAID, Mr. Rogers coordinated corporate partnerships with the Meals on Wheels Association of America and also served as a Peace Corps Volunteer doing NGO development in Kazakhstan.

Sheila Roquitte is a Foreign Service Officer with USAID, serving as USAID/Asia's Regional Advisor for Disaster Risk Reduction based in Bangkok. Ms. Roquitte assists USAID to mitigate the potential negative impact of natural and manmade hazards on development outcomes in Asia, by integrating risk reduction and resilience measures into development investments. Prior to her current position, Ms. Roquitte served as the Director of the Disaster Risk Reduction Office in Nepal. Ms. Roquitte has worked with USAID since 1999 in Washington and overseas. Before joing USAID, Ms. Roquitte worked for the executive and legislative branches of the U.S. Government, in the private sector, and ran a small NGO. She holds a B.A. in Mathematics and Economics from Northwestern University, and an M.A. Degree in Economic Development from Princeton University.

Jessie Snaza is an Agriculture Office at USAID/Timor-Leste and has a background in international agriculture and agricultural extension. Before joining USAID, she spent two years working on projects aimed at income generation and livelihood opportunities for people living with HIV and AIDS in Mozambique. Prior to that, she worked as a Graduate Research Assistant for the Purdue Cooperative Extension Service. Ms. Snaza holds a B.S. in International Agronomy and a M.S. in Agricultural and Extension Education from Purdue University.

Sarah Tully, Ph.D. is a USDA science advisor in the USAID Asia and Middle East Bureaus, Office of Technical Support. Prior to this, she was an American Association for the Advancement of Science Policy Fellow in the same office. Dr. Tully works to use science and technology to advance development and searches for opportunities to integrate food security programming with gender, nutrition, global climate change and natural resources management. Before joining USAID's Office of Technical Support, she was a Damon Runyon Postdoctoral Scholar at The Scripps Research Institute. Her research involved developing chemical tools to understand neurobiological processes, discover new drug targets and elucidate key biological interactions. Her Ph.D. research focused on using chemical biology techniques to understand the importance of a class of carbohydrates in the brain. Dr. Tully graduated from Barnard College, Columbia University with an A.B. in Biochemistry and was raised on a farm in the foothills of the Appalachian Mountains in southern Ohio.

ANNEX C

METHODOLOGY

The assessment team conducted the assessment using the following methodology:

1. Reviewed the challenge outlined in the CDCS results framework: institutional and human development capacity strengthened to improve the lives of Timor-Leste citizens
2. Identified priorities, opportunities, and gaps in technical areas related to EG, GCC, and food security
3. Consulted with key stakeholders: GOTL, donors, NGOs, local leaders, implementing partners, farmers, community groups
    a. Had approximately 41 meetings with 226 people (detailed in Annex A and Annex G)
    b. Traveled to the highlands in Aileu, Manufahi, and Ainaro
    c. Traveled to the coastal regions in Baucau and Lautem
4. Reviewed available knowledge
5. Defined strategic partners
6. Determined relationship with Agency policies and strategies
7. Provided programming recommendations and options