SECTOR ASSESSMENT (SUMMARY): AGRICULTURE, NATURAL RESOURCES, AND RURAL DEVELOPMENT

A. Sector Performance, Problems, and Opportunities

1. Agriculture production systems in Timor-Leste are among the least developed in the world. Subsistence systems dominate all subsectors, and most farming households are highly risk averse. Annual and perennial crop yields are extremely low when compared to neighboring countries. The livestock sector also has low productivity, and the fisheries sector remains undeveloped. Land degradation is exacerbated by unsustainable production systems and rainfall variability related to climate change, but Timor-Leste has a range of ecosystems that can support productive agriculture. The main proximate causes of low productivity are poor and inappropriate production systems and an almost total lack of the agricultural technologies that are taken for granted in similar countries.

2. Agricultural development is crucial for sustainable growth and poverty reduction. Low agricultural productivity is a key cause of food insecurity among rural households and contributes to high rates of childhood malnutrition. Sector performance since independence in 2002 has been disappointing, with national accounts data showing a decline in the mean value of agricultural production per capita from 2000 to 2013. As a result, agriculture’s share in non-oil gross domestic product declined from 27.8% in 2002 to 17.0% in 2013 (footnote 2). Despite this decline, agricultural development still offers the clearest pathway to poverty reduction.

   i. Staple Crops

3. Crop productivity in Timor-Leste is very low by any standards, and the objectives of food self-sufficiency and poverty reduction will not be achieved without substantial increases in productivity. Rice, maize, cassava, and sweet potato are the main staple crops. In 2007 Timor-Leste’s rural population produced 223 kilograms (kg) of staple food per person (footnote 1). The comparable figures were 734 kg for Cambodia, 586 kg for the People's Republic of China, 807 kg for Viet Nam, 793 kg for Indonesia, and 858 kg for the Lao People’s Democratic Republic (footnote 1). The per household figures showed a similar trend: in 2007, Timor-Leste’s rural population produced 1,786 kg of staple food per household while the comparable figures were 4,405 kg for Cambodia, 3,514 kg for the People’s Republic of China, 4,845 kg for Viet Nam, 4,757 kg for Indonesia, and 5,149 kg for the Lao People's Democratic Republic (footnote 1).

4. Rice cultivation expanded significantly following the introduction of improved varieties in the 1960s and the large increase in river-fed irrigation systems following the Indonesian invasion in 1975. Maize has historically been the main staple crop, but there is now a clear cultural preference for rice. As they wait for the new harvest of rice and/or maize, most farm households experience a “hungry season,” during which they often rely on consumption of cassava, sweet potato, and other root crops. Households in upland areas that are not well suited to maize or rice cultivation have a higher reliance on root crops and a higher incidence of poverty. Timor-Leste is unlikely to become an international grain exporter, but sector modeling suggests that it should be

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1 This summary is based on P. Young. 2015. A Situational Analysis of the Agriculture Sector in Timor-Leste. Dili. and draws on analysis by the Asian Development Bank (ADB) of the coffee sector in Timor-Leste. Both are available on request.

able to achieve a surplus in staple foods by 2020. This is based on a pattern of production in which there are net imports of rice while surplus maize is fed to livestock.3

5. Since 2005 the government has invested $85 million in rehabilitating large-scale irrigation projects for rice production. These systems are expensive, with an upfront cost of approximately $10,000 per hectare of irrigated land and a future annual maintenance cost of $250 per hectare. Despite this investment, total rice production stagnated between 2005 and 2015 and the planted area declined. Reduced rice planting is attributed to public policies that have undermined the incentives to produce rice. Generous social transfer schemes may have raised reservation wages for rural households, while government-sponsored buying programs have been undermined by poor organization.4 Development of a value chain for local rice production has also been undermined by government subsidies for imported rice. Up to 25% of grain harvests are lost due to poor post-harvest management and storage. Maize planting is thought to have declined during 2012-2014 but yields have improved on the back of sustained efforts to develop and introduce improved varieties (footnote 1).

6. There is scope for further rapid increases in yields through improved use of inputs such as fertilizer. Seeds of Life, a development project that is funded by the Government of Australia, has made substantial progress in developing a seed production system that can ensure supply of high-quality seeds for staple crops. This system is now able to meet domestic seed requirements for maize, and may be extended to cover vegetative planting material for roots and tubers.

ii. Cash Crops

7. Coffee, which has been grown in Timor-Leste for 200 years, accounted for 98% of non-oil merchandise exports in 2013 (footnote 1). The industry is far below its potential in terms of production volume and quality. Coffee is grown on small family plots and provides the principal source of cash income for approximately one-quarter of Timorese households. Most of these households live in poverty because average yields are extremely low. Replanting, pruning, and improving farm management, can triple the yield per unit area for a typical household. There is also great potential to raise the value of production through improved quality management.

8. Progress since independence in 2002 has been limited. Several studies have analyzed the coffee sector and identified simple measures to increase production and improve quality. However, government capacity for direct provision of important public goods such as extension services, disease control, national branding, and quality assurance is very limited. Development partners have tried to address this limitation by working with the government and selected private partners, but this approach has not fully leveraged private sector knowledge.

9. There is potential to develop other niche and high-value agricultural exports. Studies supported by development partners and private firms have identified a range of export opportunities, including mung beans, black pepper, cloves, vanilla, honey, chili, cocoa, coconut oil, candlenut oil, and off-season fruits and vegetables. Since 2012 there has been some progress in developing cocoa production and increasing exports of organic pepper and cloves. Development partners have supported detailed studies of current and potential value chains, but there is no clear consensus on the policy interventions that are needed to accelerate development of these export commodities or the rates of growth that could be achieved with appropriate policies and investments.

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4 The reservation wage is the lowest wage rate at which a worker would be willing to accept a particular type of job.
iii. Forestry, Fisheries, and Livestock

10. Timor-Leste’s forests have been decimated by unsustainable harvesting of high-value species such as sandalwood and teak and by land conversion due to slash-and-burn farming. There is potential to develop a sustainable forestry industry through selective replanting of high-value hardwood species, which would also help to prevent further land degradation. Uncertain land tenure constrains the development of forestry plantations, and there is a clear role for government in helping to address related risks and create a framework in which long-term investments to develop plantations will be feasible.

11. In 2009 the total harvest of fish from Timor-Leste’s marine fisheries was estimated at 5,500 tons. Timor-Leste does not have a deepwater fishing fleet and does not collect license fees from foreign fishing vessels that operate in its waters. Coastal fisheries operate close to subsistence levels, and there is virtually no cold chain for storage and supply to the local market. There are ongoing efforts to develop inland aquaculture with support from the Food and Agriculture Organization of the United Nations and the WorldFish Center.

12. The productivity of livestock in Timor-Leste is very low. For example, beef production per head of cattle is about 6.4 kg compared with an average of nearly 32.0 kg for comparable countries. Data from the Food and Agriculture Organization of the United Nations suggest that livestock production and livestock productivity grew modestly between 2010 and 2012 (footnote 1). Livestock numbers per household are very low when compared to neighboring countries, and production systems are based on uncontrolled grazing and scavenging, with very little supplementary feeding except for pigs and poultry, which are sometimes fed low-quality grain products and by-products.

iv. Key Constraints to Sector Development

13. Weak capacity and inadequate financing. From 2011-2015 the budget allocations of the Ministry of Agriculture and Fisheries (MAF) were substantially below the levels needed to deliver on its mandate and operational goals. However, in the short term it is not clear that the MAF has the capacity to successfully implement a larger budget, since while its staff numbers have increased, its employees are generally young and relatively inexperienced. As a result, limited public sector capacity constrains development of each of the main agriculture subsectors including grains, tree-crops, horticulture products, livestock, and fisheries.

14. Inconsistent policy frameworks. Agricultural development has been hindered by a series of conflicting public policies. For example, the MAF has a stated goal of encouraging the development of private markets for agricultural inputs but has also distributed fertilizers, seeds, and equipment to farmers free of charge. In the rice sector, the success of MAF-sponsored investments in large irrigation projects has been undermined by the failure of government buying programs that have been led by the Ministry of Commerce, Industry and Environment, and by a policy of subsidizing the sale of imported rice in local markets (para. 5).

15. Gaps in data and statistics. The information base for agricultural policy is weak. The MAF has no reliable system for measuring the planting areas and production volumes of key crops or tracking the impacts of new technologies and extension programs. The National Directorate of Policy and Planning has a Statistics Division (with two staff members) but does not

As a result, the MAF’s statistics on production are often implausible or inconsistent. Information sharing between the government and development partners is weak.

16. **Extension services and transport links.** There are many small-scale technical innovations that are proven to work in Timor-Leste, but there has been limited progress in disseminating these technologies to farmers. Public extension services have suffered from operational inefficiencies and from a tendency to misunderstand the concerns and priorities of poor rural farmers. Poor road conditions and limited shipping options raise transport costs and constrain rural producers’ participation in domestic and international markets. Government and development partner supported programs to repair and upgrade national roads and rural roads are progressing well but greater coordination of transport investments and agricultural interventions is needed.

**B. Government’s Sector Strategy**

17. Timor-Leste’s Strategic Development Plan, 2011–2030 identifies agriculture as a priority sector and outlines a broad strategy to (i) achieve self-sufficiency in rice and grains; (ii) expand production of high-value fruits and vegetables for the local market; (iii) increase coffee production and develop other cash crop exports; and (iv) develop forestry, fisheries, and livestock. To implement the goals of the Strategic Development Plan, 2011–2030, the MAF developed a strategic plan, midterm operations plan, and investment plan with the support of the World Bank and the Government of Australia.7

18. There is substantial development partner support for agricultural development. During 2012-2015 annual grant disbursements accounted for approximately half of total expenditures in the agriculture sector. However, the MAF’s involvement in implementation of development partner-financed projects is often very limited, and relatively few resources are allocated to institutional development and capacity building. An independent review of development partner support identified the following areas where additional support is needed to support achievement of the government’s strategic goals (footnote 1): (i) agricultural statistics, monitoring, and evaluation; (ii) farming practices for upland and rain-fed agriculture systems; (iii) clarification of the policy framework for organic crop production; (iv) irrigation and the use of water resources; (v) community-led natural resource planning and management; (vi) development of new export opportunities; (vii) support to the coffee sector; (viii) development of policy and regulatory frameworks for marine fisheries; (ix) development of sustainable forestry; and (x) long-term capacity development at the MAF.

**C. Asian Development Bank Sector Experience and Assistance Program**

19. The Asian Development Bank (ADB) has limited direct experience supporting the agriculture sector in Timor-Leste. ADB has supported analysis of the coffee sector and stakeholder consultation to identify practical measures to accelerate development of Timor-Leste’s main export industry.8 This may be followed by other technical assistance and investment financing to address some of the other opportunities listed above.

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8 ADB. 2016. *Timor-Leste Coffee Industry Association Analysis, First Stakeholder Draft.* Dili
Problem Tree for Agriculture, Natural Resources, and Rural Development

Effects

- Low cash incomes for farming households
- High rates of food insecurity among farming households

Core problem

- Farming households are not adopting appropriate technologies for production, processing, and land management

Causes

- Gaps in institutions and knowledge
  - Weak data and statistics
  - Limited stakeholder coordination
  - Poor coordination among private sector
  - Need for further research on agronomy
- Incomplete and missing markets
  - Underdeveloped financial sector
  - Uncertain land tenure
  - Gaps in supply chains
- Weak extension services
  - Lack of specialized services
  - Limited use of private expertise
  - Inadequate resourcing
  - Limited understanding of farmers' priorities
- Inconsistent and conflicting policies
  - Low levels of public investment
  - Subsidized rice imports
  - Distribution of free inputs

Poor quality infrastructure
  - High cost of domestic freight
  - High cost, limited access to international transport
  - Missing soft infrastructure for international trade