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Developing Timor-Leste's Non-Oil Economy
Challenges and Prospects

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Timor-Leste, which regained its independence on 20 May 2002, is one of the most oil- dependent countries in the world. Its total Petroleum Fund savings are in excess of US$12 billion and are a primary source of government revenue. Given the volatility of oil prices, the Timor-Leste government has been placing greater emphasis on developing its non-oil economy. Together with its development partners, it has laid out various plans to improve non-oil sectors. In July 2011, Prime Minister Xanana Gusmão launched the Strategic Development Plan (2011–30), which sets out the nation's long-term goals for economic growth and poverty reduction. According to a 2007 Timor-Leste Survey of Living Standards, about half of the population lived below the national poverty line; estimated at US$0.88 per capita per day. More than 80 per cent of the people in Timor-Leste depend on subsistence agriculture using very simple and traditional methods; they are therefore highly exposed to food insecurity. This article argues for an integrated and ambitious rural development strategy (with infrastructure) to promote sustainable economic development in Timor-Leste. Public investment should be linked to the rural farm economy as well as to the rural non-farm economy in order to reduce poverty. The combination of both farm and non-farm economies will reduce the risk of failure in promoting rural development.

Keywords: Oil and non-oil economy, rural development, poverty, Timor-Leste.

I. Introduction

I.1 Timor-Leste at a Glance

According to a 2007 Timor-Leste Survey of Living Standards (TLSLS), this newly independent country is the poorest in the Southeast Asian region.[1] Poverty remains a major problem: 41 per cent of the population live in poverty and have access neither to quality education nor healthcare. Table 1 lists select economic and demographic indicators of the country.

The government banks on vast offshore oil and gas fields in the Timor Sea to build up the economy. Given the presence of significant oil windfalls, the economy remains undiversified and the country relies heavily on oil revenues to fund domestic

TABLE 1
Economic and Demographic Indicators

Income (2012)	*Education and health*
GNI per capita (in US$): 5,446	Adult Literacy rate (percentages between 15 and older) 50.6
Non-oil GDP per capita (in US$PPP): 936	Under-5 mortality rate (per 1000 live births) 56
Population characteristics (2012)	*Poverty and access to services (2009)*
Total population (in millions): 1.1	Population below national poverty line (in percent) 41.0 (est. 37.5 per cent in 2011)
Population growth (in percent): 2.4	Access to clean water (in percent) 35.7
Life expectancy at birth (years): 62.9	Access to electricity (in percent) 36.1

SOURCES: National Healthcare Disparities Report 2011; GNI per capita and life expectancy taken from "The Rise of the South: Human Progress in a Diverse World".

expenditure. Income from petroleum accounted for about 95 per cent of total government revenue and almost 80 per cent of GNI in 2010. Per capita gross national income in 2010 was estimated to be US$2,772 (US$PPP), of which US$1,847 (67 per cent) was from the oil sector and US$925 (33 per cent) from the non-oil sector. These figures are far below the GNI per capita of US$5,446 reported in 2012. The private sector remains extremely weak and makes only a meagre contribution to GDP. Timor-Leste is therefore the most oil-dependent country in the world (IMF Article IV Report 2010).

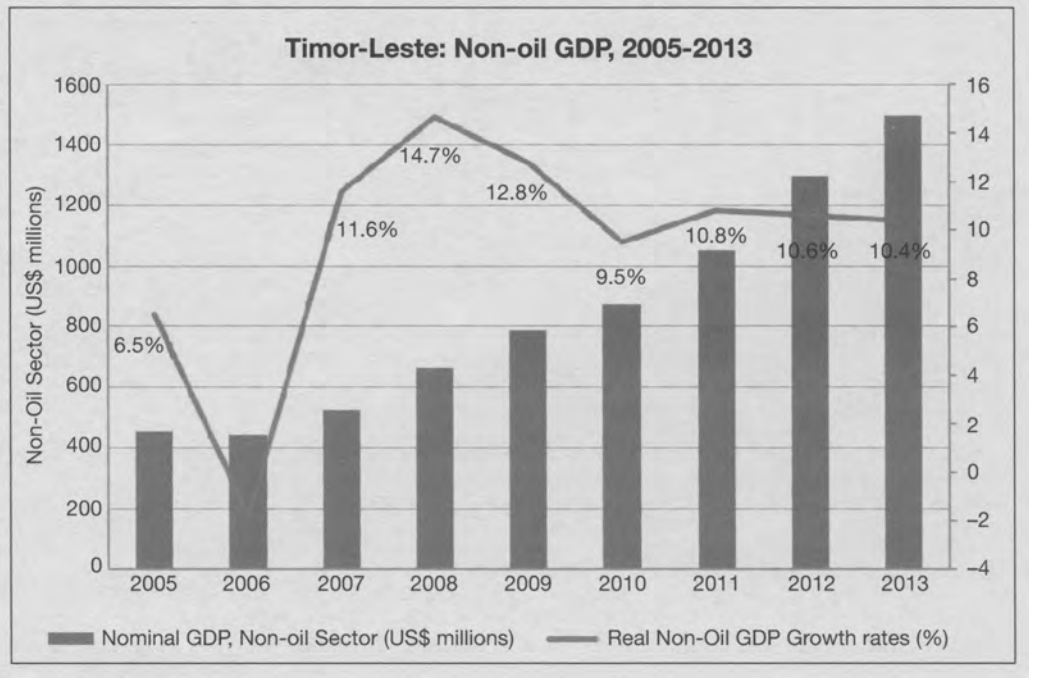
I.2 The Non-Oil Economy

Timor-Leste has witnessed phenomenal growth rates since 2007 which peaked at 14.7 per cent in 2008. This phenomenal growth has been driven mainly by its expansionary fiscal policy which, in turn, has been fuelled by withdrawals from the Petroleum Fund. The funds total assets have recently surpassed US$12 billion. (See Figure 1.)

Due the economy's lack of capacity to supply basic inputs, Timor-Leste has become increasingly reliant on imports of goods and services over the last four years. These include intermediate inputs such as cement, fuel, steel and other building materials as well as capital goods and consumer goods that directly enter the public domain. Timor-Leste's almost total dependency on imported goods has drained approximately US$2.3 billion of its Petroleum Fund between 2005 and 2012. The aforementioned figure does not include the cost of intermediate goods to build infrastructure and boost economic growth. Imports of intermediate goods have raised the marginal propensity to import to 0.49 per dollar rise of GDP. This value is significantly high and has to be taken into consideration despite the lack of a foreign exchange gap in the economy (explained by the country's accumulated foreign reserves). The marginal propensity to import would increase further if we take service imports into account.[2] (See Figure 2.)

It would be prudent to contain imports, given the government's pursuit of an expansionary fiscal policy at a time when unemployment levels are high and productivity is low. However, this may decelerate total demand in the economy and slow major construction work. As a large chunk of imports go into capital development, forward-looking macroeconomic policies are required to translate the phenomenal growth rates achieved over the last five years into public spending in high quality capital goods (whilst maintaining a balance

FIGURE 1
Non-Oil GDP 2005–13 (US$ millions) and Non-Oil GDP Growth Rates (%)



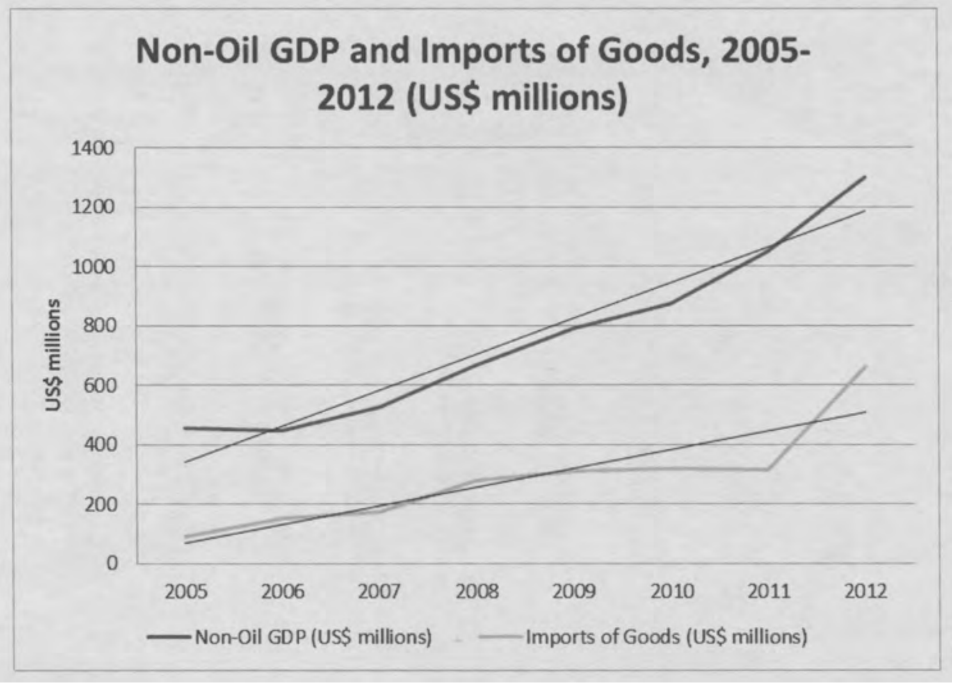
SOURCES: 2004–10: Timor-Leste's National Accounts 2004–2010, National Directorate of Statistics, 2012. Estimates for 2011 and beyond are from the General State Budget 2013.

between capital intensive infrastructure and human capital). The non-oil economy contributes to only a fifth of total GDP and makes up a very limited share of exports, which are generally dominated by oil and gas. This scenario may be inverted through import substitution, particularly in the food sector, which will not only reduce the reliance on imports but may also generate employment in important economic activities.[3]

There is a direct correlation (of close to 1) between the growth rates of the non-oil GDP and the fiscal sector. This indicates that fiscal expenditure plays a major, if not principal, role in the overall growth of the non-oil GDP without which the non-oil GDP will remain stagnant. Additionally, GDP growth is led by the contributions of the public sector. The private sector, on the other hand, supplements public sector driven growth, fulfilling demand — led by the increased incomes of the population, principally those of a minority elite — for better goods and services. This phenomenon has to be observed closely because it may trigger a process of "high income-led growth" for the consumption of imported, high-value articles that may be beneficial in the short term but will result in serious limitations in the medium term due to the high marginal propensity to import induced by higher income groups.

Not surprisingly, capital development has the largest share of the General State Budget due to its strong impact on the domestic economy and its multiplying effects. The capital development category presently constitutes 49 per cent of the total budget of US$1.6 billion. Notwithstanding

FIGURE 2
Non-Oil GDP and Imports of Goods (US$ million), 2005–12



SOURCE: Timor-Leste's National Accounts 2004–2010 Volume 1, Directorate of National Statistics.

this, the links between money devoted to current expenditure, mainly salaries and wages, and GDP growth are also positively correlated. This is because state employees consume all their incomes domestically and that has some multiplying effects.

Managing its hydrocarbon resources is one of the most important challenges Timor-Leste faces. As mentioned above, Timor-Leste has accumulated more than US$12 billion in the Petroleum Fund since the promulgation of the 2005 Petroleum Fund Law. Total income, as measured by GNI, rocketed to over $5,000 per capita in 2012 — almost eighteen times its level in 2002, the year the country regained independence. That was the fastest growth rate in the world. The challenge of administering a large natural resource revenue in the face of underdeveloped human resources and weak institutional capacity was well understood at the time of independence and the country was determined to avoid problems experienced elsewhere. At this stage, the bulk of capital formation and the development of the productive capacity of Timor-Leste depend largely on infrastructure financed by withdrawals from the Petroleum Fund.

Two intertwined Fund-related issues need to be considered in the course of initiating forward-looking macroeconomic policy decisions: (1) the sustainability of the Fund and (2) the contribution of its investment to GDP growth. The Fund's establishment was preceded by intensive deliberation and consultation. It was decided that the Fund would be based on the Norwegian model. The final agreement stipulates that the Fund will: (i) receive all petroleum revenue;

(ii) invest the proceeds abroad; and (iii) release funds through the government budget with the objective of maintaining the real value of the petroleum wealth. The country has thus far managed the Fund wisely through withdrawals that are guided by the real rate of return on total petroleum wealth, or "estimated sustainable income", with the aim of preserving it for future generations. The issue of sustainability is not so urgent at this point in time as total savings continue to grow exponentially due to the high international prices of petroleum. What has to be taken into consideration is its role against the overall growth of the *non-oil* economy. In other words, the country should aim to perform as if such a Fund does not exist. Of course, this may not be the case in the short to medium term when public spending will have to increase rapidly in order to meet important development needs.

However, the extent to which the Petroleum Fund can be used to develop the necessary infrastructure that may promote the country's socio-economic development will depend on whether or not the phenomenal growth rates are sufficiently inclusive. Inclusiveness entails: (1) an emphasis on agriculture,[4] which is the main source of income for about 80 per cent of the population; (2) the strengthening of social protection mechanisms and the enhancement of productivity capacities; (3) employment generation,[5] particularly for women and the young; and (4) the promotion of financial inclusiveness. If these continue to be neglected, economic progress and the attainment of the Millennium Development Goals (MDGs), particularly the off-track ones, will be greatly hindered. It is important to invest in activities that will provide a high rate of return in the medium term and that are superior to and more sustainable than a rate of return achieved by Fund's participation in financial markets.

The government and the democratic institutions of Timor-Leste made a decision to devote the largest share of public expenditure to capital development, including the creation of the Human Capital and Infrastructure Funds. These are very basic destinations for investment and fall under the institutional coverage of the country's Strategic Development Plan (2011–2030).

Some studies suggest that high growth rates may be sustained over long periods of time depending on the quality of public investment and a country's productivity. The effectiveness of investments is measured as the elasticity of investment growth, i.e., the change in the rate of GDP growth to the rate of investment as share of GDP. This indicator can be translated into an Incremental Capital Output Ratio (ICOR) which measures the capacity of capital to generate growth. In this respect, a high ICOR is a measure of very low efficiency due to the lack of complementary investments that systematically help to generate "value-add". It can also mean deficiency with regard to other productive factors linked to the growth process.

It can be argued that, based on a conservatively estimated ICOR of six, Timor-Leste's non-oil GDP may double in the next five years. This would imply that rates of investment, as a share of the non-oil GDP, are reasonably high. However, the abovementioned target is presently too ambitious due to the structural bottlenecks in the country. It is important to bear in mind, however, that not every investment contributes to economic growth in the same way. Research needs to be conducted to weigh the contribution of each initiative to overall growth, employment generation, multiplying effects, GDP growth, and foreign exchange requirements. This task requires the development and maintenance of good data sources as well as competent research teams. All of these appear to be in the making.

Against this backdrop, Timor-Leste is evidently powered by two main economic sectors operating alongside each other. The first is a rapidly expanding petroleum-based sector, and the second is a traditional non-oil rural sector with low productivity. The agricultural sector is the primary non-oil rural sector in Timor-Leste. It employs approximately 70.4 per cent of the rural population (Population Census 2010) most of whom rely on subsistence farming. The sector contributed as much as 27 per cent to GDP and accounted for 85 per cent of employment in the pre-independence period. In 2010, the agricultural sector accounted for 28 per cent of real non-oil GDP while the industrial and service sectors contributed 33 per cent to real non-oil GDP.

The share of industry to non-oil GDP in Timor-Leste has significantly increased. On the other hand, the contribution of agriculture to GDP recently decreased to almost 27 per cent of non-oil GDP in 2011. Despite its declining contribution, the agricultural sector remains extremely important as it is a subsistence source for an estimated 80 per cent of the total population (Ministry of Agriculture of East Timor 2012).

II. Development Challenges of a Non-Oil Economy

As a young, "post-conflict" country embarking on its development trajectory, Timor-Leste faces major challenges addressing several key issues, such as improving its human development indicators, attaining sustainable economic growth and, most importantly, alleviating poverty. According to World Bank estimates, rural poverty accounted for 52 per cent of total poverty while urban poverty accounted for 45 per cent. The higher poverty rate in the rural areas is mainly due to low agricultural productivity and limited access to roads (The World Bank and National Directorate of Statistics 2008). It is important to emphasize poverty alleviation efforts in rural areas where a majority of the population live.

Sustainable rural development can only be achieved through combining the development of the rural farm economy and the rural non-farm economy. As shown in Table 2 and Figure 3, 67 per cent of the total population worked in the agricultural sector as farmers or farm labourers in 2010. Of these, about 83.5 per cent of *rural* Timorese — 66.7 per cent male and 33.2 per cent female — worked as farmers or farm labourers. Jobs in the urban areas are more diversified than jobs in the rural areas; for example, only 22 per cent of urban Timorese were engaged in the agricultural sector. Therefore, although the agricultural sector absorbs the bulk of the labour force at the national level, it is the rural Timorese who most rely on a farm economy.

The importance of the agricultural sector is also highlighted in Table 3. The agricultural sector, including forestry and fishery, contributed as much as 20.5 per cent to the non-oil GDP in 2010 while the public sector contributed the second largest share at 19.5 per cent. Going by the large composition of the agricultural sector's labour force (54 per cent men and 50 per cent women) and its limited contribution to GDP, it is evident that the agricultural sector is not as productive as the other sectors. This picture is completely altered when the extractive industry is taken into account.

As shown in Figure 4, although the agricultural sector accounted for 83.4 per cent of total employment in 2006, it contributed to only 32.2 per cent of non-oil GDP. In contrast, the services sector accounted for only 12.2 per cent of total employment but contributed to 55 per cent of non-oil GDP. The agricultural sector's productivity is mainly determined by the quality and quantity of its inputs. Low-quality seeds and a poor irrigation system can result in low productivity. Limited access to markets due to poor rural infrastructure and an underdeveloped road network also affects productivity. Furthermore, most of the rural farm economy is in fact subsistence based. It is therefore important to make the shift from subsistence farming to market-oriented farming. Increasing the productivity of the agricultural sector can lead to poverty alleviation.

III. The Informal Economy

In many developing countries, informal sector activities account for a significant portion of total employment and income generation. Persons can be defined as working in the informal sector regardless of whether they take up informal work as a primary or secondary form of employment. Owing to the difficulty in defining informal sector activities within the agricultural sector, we define the informal sector in this article only with respect to non-agricultural activities. According to the 2010 Timor-Leste Labour Force Survey, work in the informal sector is characterized as follows:

1. When less than five persons are employed at the place of work;

TABLE 2
Employed Population Aged 15–64 by Industry, Sex and Residence, 2010

Employed Population Aged 15–64 by Industry, Sex and Residence, 2010									
Industry	*Total*			*Urban*			*Rural*		
	Total	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*
Agriculture	185,137	123,879	61,258	16,580	11,425	5,155	168,557	112,454	56,103
Mining & quarrying	1,107	942	165	738	635	103	369	307	62
Manufacturing	5,191	2,831	2,360	2,262	1,698	564	2,929	1,133	1,796
Public Administration	25,065	18,467	6,598	15,537	11,078	4,459	9,528	7,389	2,139
Health	4,412	2,631	1,781	2,796	1,558	1,238	1,616	1,073	543
Education	9,359	5,893	3,466	4,220	2,419	1,801	5,139	3,474	1,665
Wholesale trade, retail, restaurants, hotels	15,219	8,507	6,712	11,189	6,406	4,783	4,030	2,101	1,929
Construction	7,505	6,746	759	4,834	4,305	529	2,671	2,441	230
Utilities	456	408	48	317	280	37	131	120	11
Other community, social and personal services	23,718	16,686	7,032	16,990	12,636	4,354	6,728	4,050	2,678
Other	863	586	277	709	487	222	154	99	55
Total	278,032	187,576	90,456	76,172	52,927	23,245	201,852	134,641	67,211

SOURCE: Directorate of National Statistics, Census 2010.

FIGURE 3
Employed Population Aged 15–64 by Industry, 2010

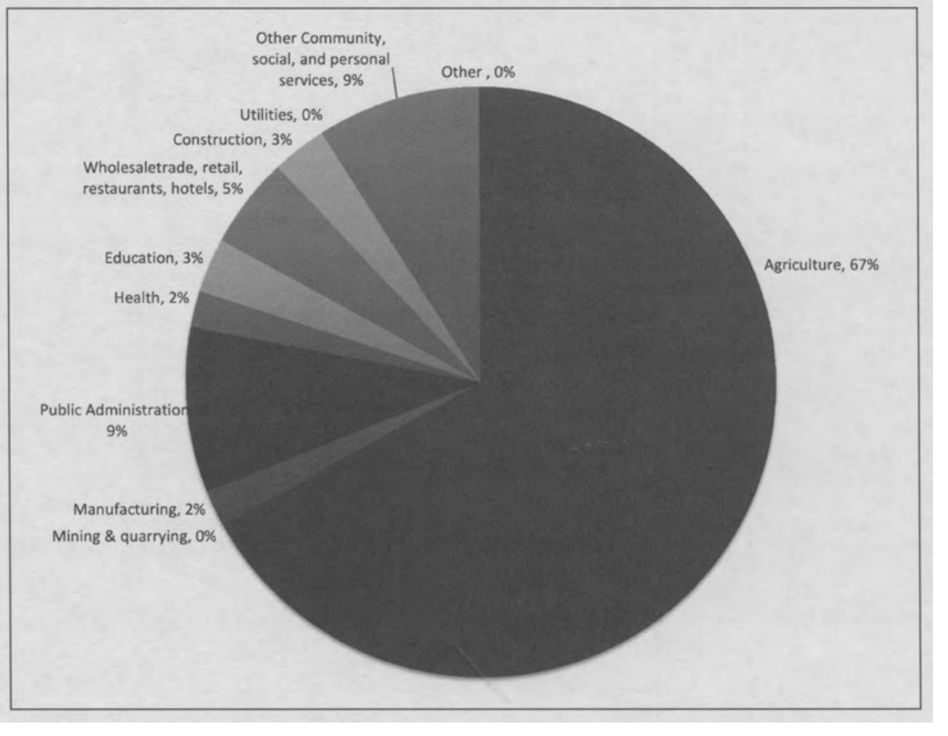
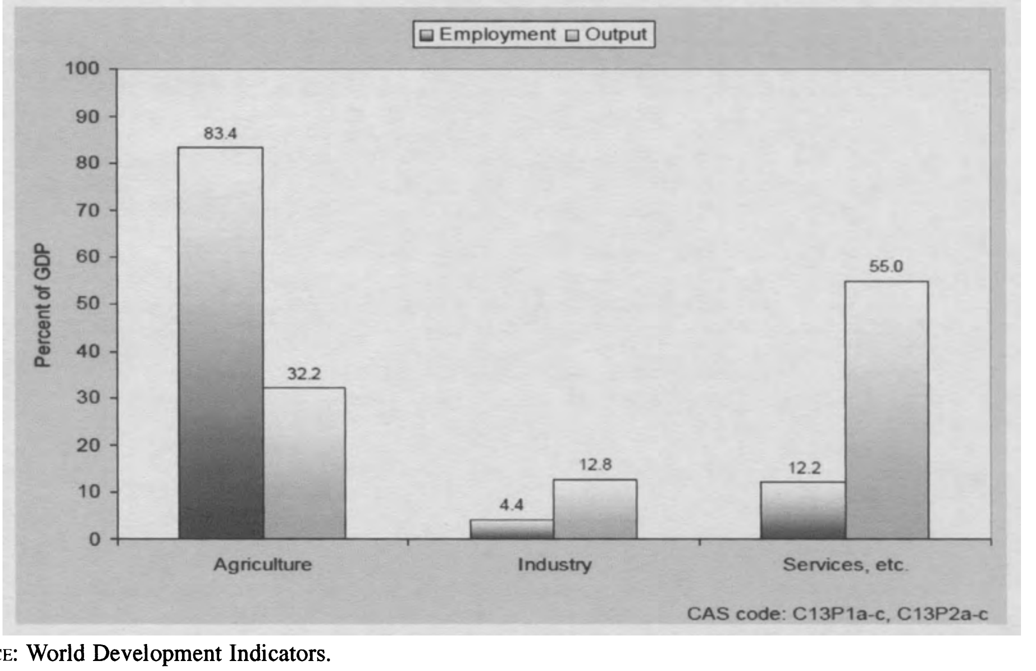


TABLE 3
Men and Women in the Timorese Economy, 2010

Sector	*Share of GDP*		*Main Job*	
	US$ million	*%*	*Men (%)*	*Women (%)*
Agriculture	187.5	20.5	54.0	50.0
Mining	36.8	4.0	0.6	0.0
Manufacturing	27.0	3.0	1.8	6.3
Electricity, gas, and water	8.0	0.9	0.0	0.0
Construction	64.1	7.0	8.0	1.3
Trade	172.9	18.9	14.7	25.0
Transport and communications	82.7	9.1	0.6	1.3
Finance	15.0	1.6	0.0	0.0
Public administration	177.8	19.5	11.0	10.0
Others	142.2	15.6	9.2	6.3
Total	913.9	100	100	100

SOURCES: Timor-Leste's National Accounts 2004–10 Volume I, Directorate of National Statistics; Timor-Leste Labour Force Survey 2010.

FIGURE 4
Structure of Timor-Leste's Output and Employment for Non-Oil GDP, 2006 (USAID, 2008)



SOURCE: World Development Indicators.

2. When either the employment status is "contributing family worker" or when the place of work is not registered with the Ministry of Justice or the Ministry of Tourism, Commerce and Industry.

The survey also notes that there are 45,000 persons in informal employment, of which 23,000 are males and 22,000 are females. Of the 45,000 persons, 31,000 live in rural areas and 14,000 live in urban areas. The informal sector in rural areas mainly comprises wholesale or retail trade and manufacturing. The results would differ significantly if the informal agriculture sector were included in the estimates. (See Table 4.)

According to the 2011 Timor-Leste Human Development Report, women play a major role in informal micro-enterprises. Approximately 43 per cent of such enterprises are owned by women. The survey also notes that these women-driven enterprises concentrate on tailoring, salt-making, baking and handicraft production. About 72 per cent of formal enterprises employ less than ten workers and only 2 per cent employ between 110 and 200 workers. Finally, approximately 45 per cent of formal and nearly 90 per cent of informal enterprises have an annual turnover of less than US$5,000.

IV. Developing the Rural Economy

Based on the concept of poverty elasticity (Kakwani 2007), we can determine the investments required to reduce rural poverty. We assumed that: (i) the incremental capital output ratio stood at a weighted average of 3.7; (ii) the poverty headcount ratio in 2008 stood at 50 per cent (optimistic scenario); (iii) about 51.5 per cent of the total population were poor people living in rural areas with an annual urbanization rate of 0.76 per cent; and

TABLE 4

Persons in Informal Employment in Their Main Activity, by Sex, Locality and Sector of Activity

	Urban			*Rural*			*Total*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
Mining & quarrying	*	*	*	*	*	1,000	1,000	*	1,000
Manufacturing	*	1,000	1,000	1,000	3,000	4,000	1,000	4,000	5,000
Electricity etc.	—	*	*	—	—	—	—	*	*
Construction	1,000	—	1,000	1,000	*	1,000	2,000	*	2,000
Wholesale & retail trade	5,000	6,000	11,000	13,000	10,000	23,000	18,000	16,000	34,000
Transportation & storage	1,000	*	1,000	1,000	*	1,000	1,000	*	1,000
Accommodation & food	—	*	*	—	—	—	—	*	*
Information & communication	—	—	—	*	*	*	*	*	*
Professional & scientific	*	—	*	—	—	—	*	—	*
Administrative & support	*	—	*	—	—	—	*	—	*
Public administration	—	—	—	*	—	*	*	—	*
Education	—	—	—	*	—	*	*	—	*
Health & social work	*	—	*	*	—	*	*	—	*
Arts & entertainment	*	—	*	*	*	*	*	*	*
Other service activities	*	—	*	—	—	—	*	—	*
Households as employers	*	*	*	—	*	*	*	1,000	1,000
Total	7,000	7,000	14,000	16,000	15,000	31,000	23,000	22,000	45,000

SOURCE: Timor-Leste Labour Force Survey 2010.

(iv) the total oil GDP at current market price stood at US$708 million (based on a 2011 estimate). We then used these figures to calculate the ratio of investments to GDP. In order to meet the poverty headcount ratio target, poverty must reduce at an annual rate of 7.97 per cent from 2012 to 2015. The elasticity displayed in Table 5 provides the percentage reduction in poverty when there is a growth rate of 1 per cent. This means that we can calculate the per capita growth rates required to meet the poverty headcount ratio target by dividing the poverty elasticity by 7.97 per cent (Table 6). The investment requirements for rural areas over different years are presented in Table 7.

Using the neutral growth assumption of poverty elasticity, we can estimate that investments of at least US$80 million a year are required to meet the targeted reduction in the poverty headcount ratio in rural areas.

IV.2 The Way Forward

Timor-Leste is endowed with a variety of natural resources, including oil and gas, which contribute significantly to its GDP. Timor-Leste is experiencing a considerable build-up of financial resources, approximately US$100 million per month, from the exploitation of its oil and gas

TABLE 5
Elasticity of Poverty Reduction with Respect to Growth, Alternative Growth Scenario (Headcount Ratio)

Year	*Anti-poor growth*	*Neutral growth*	*Pro-poor growth*
2012	1.32	1.82	2.71
2013	1.26	1.90	2.70
2014	1.19	1.94	2.74
2015	1.22	1.94	2.77

SOURCE: International Poverty Centre Working Paper.

TABLE 7
Yearly Investment in U.S. dollars (million) Required Meet Poverty Headcount Ratio Target in Rural Areas

Year	*Anti-poor growth*	*Neutral growth*	*Pro-poor growth*
2012	111.13	88.76	69.36
2013	114.07	85.33	68.56
2014	118.14	83.21	67.03
2015	115.11	82.40	65.80

SOURCE: Authors' calculation.

TABLE 6
Per Capita Growth Rates Required to Meet the Poverty Headcount Ratio Target

Year	*Anti-poor growth*	*Neutral growth*	*Pro-poor growth*	*Population Growth Rate*
2012	6.04	4.38	2.94	2.20
2013	6.33	4.19	2.95	2.13
2014	6.70	4.11	2.91	2.06
2015	6.53	4.11	2.88	2.00

SOURCE: Authors' calculation.

resources in the Timor Sea. In turn, oil and gas revenues continue to be a major source of income for the public sector. The public sector continues to dominate the Timorese economy as a result of low private investment. Reliance on revenues from this non-renewable resource is not a prudent option in the long term. Timor-Leste will have to opt for a more sustainable long-term strategy through the development of its non-oil economy.

The public sector currently dominates the non-oil economy but it is time the country diversifies. Only then will incomes improve and lift approximately 500,000 people out of poverty. Moreover, it is important for the government to create sufficient conditions to facilitate the accumulation of human capital.

Sustainable rural development can only be achieved by developing both the rural farm economy and the rural non-farm economy. This will reduce the risk of failure in promoting rural development and will simultaneously improve people's incomes and welfare. The income sources of farming households have to be diversified as the rural farm economy presents high risks. Finally, improved income levels allow for greater investment capacity including human resource investment.

NOTES

1. The Democratic Republic of Timor-Leste is a parliamentary democracy with a unicameral legislature. It is divided into thirteen districts, each headed by an administrator, and five regions. Its official languages are Tetum and Portuguese and its working languages are English and Indonesian. Its total population reached approximately 1.1 million in 2010 and is growing at an annual rate of 2.4 per cent.
2. These indicators do not account for changes in relative prices. Using the traditional methodology of logarithm to calculate the import to growth elasticity, we arrived at a value of 0.551. The coefficient can be interpreted as the percentage of change.
3. This does not suggest that the country will have to opt for the old import substitution *a la Prebisch* of the 1950s; rather it should find opportunities to help the installment of non-farm activities in the country side, providing alternative employment to the population at large.
4. Until the recent food crisis in 2008, agriculture as a sector has been losing ground in terms of the attention it has been getting from development partners, the government and academia. The declining attention to the agricultural sector is particularly visible in the General State Budgets, including for the year 2011. In fact, agriculture has been getting a smaller share from the budget (less than 5 per cent of the total) in a country where some 80 per cent of the population make a living from subsistence agriculture. Similarly, agriculture has been receiving less and less attention from international donors.
5. The 2010 Labour Force Survey notes that 80 per cent of the rural labour force falls under the category of "vulnerable employed". In contrast, 42 per cent of the urban labour force falls under that category. The Survey also shows that 24 per cent of households derive their income from wage employment whilst 23 per cent depend on government pensions and subsidies.

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