



# Draft Timor-Leste Transport Sector Master Plan

June 2015

**TA 8257 REG: Timor-Leste Transport Sector Master Plan  
[DRAFT Timor-Leste Transport Sector Master Plan]**

# Forward by Minister

To be provided at Final stage



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Forward by Minister

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# Abbreviations

AACTL	Civil Aviation Authority of Timor-Leste (or Autoridade da Aviação Civil de Timor-Leste)
ADN	National Development Agency (Agência Nacional de Desenvolvimento or AND)
ADS-B	Automatic dependent surveillance broadcasting
ADT	Average daily traffic
AFAFGIT	ASEAN Framework Agreement on the Facilitation of Goods in Transit
AFAFIST	ASEAN Framework Agreement on the Facilitation of Inter-State Transport
AFAMT	ASEAN Framework Agreement
ANATL	Air Navigation of Timor-Leste E.P. (Administração de Aeroportos e Navegação Aérea de Timor-Leste)
APORTIL	Autoridade Portuária de Timor-Leste (the Port Authority of Timor-Leste)
ATC	Air traffic control
ATS	Air traffic services
CAFI	Council of the Infrastructure Fund (Conselho de Administração do Fundo de Infraestruturas)
CAGR	Compound Annual Growth
CCTV	closed circuit television
CFTL	Consolidated Fund of Timor-Leste
DLCPS	National Directorate of Land, Property and Cadastre Services
DME	Distance measuring equipment
DNTM	Direcção Nacional de Transport Maritima, DNTM (or National Maritime Transport Authority)
DNTT	Direcção Nacional Transporte Terrestres (or National Directorate of Land Transport)
DRBFC	National Directorate of Roads, Bridges and Floods Control Services (or Direcção Nacional de Estradas, Pontes e Controlo de Cheias, sometimes referred to as DEPCC)
DVOR	Doppler VHF omnidirectional range radio broadcast
dwt	deadweight tonnage
EDTL	Electricidade de Timor-Leste
ERA	Enhancing Rural Access
ESI	Estimated Sustainable Income
FT	Freight Tons
GDP	gross domestic product
GT	Gross Tons
ICAO	International Civil Aviation Organization
IF	Infrastructure Fund
IFC	International Finance Corporation
IFMIS	Integrated Financial Management Information System
IGE	Institute of Equipment Management (or Instituto Público de Gestão de Equipamentos)
ILO	International Labor Organization
IMO	International Maritime Organization

IRI	International Roughness Index
kl	kiloliter
km/h	kilometer per hour
lm	lineal meters
LNG	liquified natural gas
MAE	Ministry of State Administration (or Ministério da Administração Estatal, often referred to simply as "ESTATAL")
MAAS	2009 Multilateral Agreement on Air Services
MAFLAFS	Multilateral Agreement on the Full Liberalization of Air Freight Services
MAFLPAS	Multilateral Agreement on the Full Liberalization of Passenger Air Services
MCA	Multi-criteria analysis
MTPA	million tons per annum (a measure of liquefied natural gas)
MPRM	Ministry of Petroleum and Mineral Resources (or Ministério do Petrólio e Recursos Minerais)
MPS	Major Projects Secretariat (or Secretaria dos Grandes Projetos and referred to elsewhere as SGP)
MPIE	Ministry of Planning and Strategic Investment (or Ministério do Planeamento e Investimento Estratégico)
MPW	Ministry of Public Works (or Ministério das Obras Públicas, sometimes referred to as MOP); now amalgamated within MOPTC
MOPTC	Ministry of Public Works, Transport and Communications (or Ministério das Obras Públicas, Transportes e Comunicações)
MTC	Ministry of Transport and Communications (Ministério dos Transportes e Comunicações); now amalgamated within MOPTC
NDB	Non-directional beacon
NDE	National Directorate of Environment
NGO	Non-governmental organization
PAPI	Precision approach path indicators
PBN	Performance based navigation
PDID	Planeamentu Dezenvolvimentu Integradu Distritál (or Integrated District Development Plan)
PNDS	Programa Nacional Desenvolvimento Sucos (or National Program for Village Development)
PNG	Papua New Guinea
PNLIA	Presidente Nicola Lobato International Airport
PNTL	Polísia Nasionál Timor-Leste
PPP	Private Public Partnership
R4D	Roads for Development
RESA	Runway end safety area
RRMP	Rural Road Master Plan
SAR	Search and Rescue
SCADA	system control and data acquisition
SDP	Timor-Leste Strategic Development Plan, 2011-2030
SEPFOPE	Secretaria de Estado para a Política de Formação Profissional e Emprego (or Secretary of State for Professional Training and Employment Policy)
SNI	National Intelligence Service
TSMF	Transport Sector Master Plan

WAN Wide Area Network

ZEESM Special Zones of Social Market Economy (i.e. Oe-cusse Ambeno)

# Terminology

Term	Explanation
agency	Any government body (used interchangeably with the term “institution.”)
aldeia	Hamlets, within sucos. There are 2,283 recognized aldeias
autonomous agency	Any government body that generates revenues, owns property, is designed to be self-funding, and have greater discretion in its decision-making than other, non-autonomous, agencies. (The principal autonomous agencies in the transport sector are APORTIL, ANATL, and AACTL.)
district	<p>The largest unit of government administration below the state of Timor-Leste. There are 13 districts, including the national capital, Dili.</p> <p>Note: current efforts to decentralize the government include plans to replace district governments with stronger administrative units known as “<i>municipios</i>.” (For consistency’s sake, the text will continue to use the term “district” to refer to today’s districts / tomorrow’s <i>municipios</i>, except where necessary to refer to the new initiative.</p> <p>The administrative center in each district is referred to as the “district capital.”</p> <p>See also “sub-district”</p>
implementing agency	Any government body responsible for providing services, including the provision of infrastructure.
institution	Any government body (used interchangeably with the term “agency.”)
land transport	<p>“land transport” refers to the regulatory functions such as driver licenses and vehicle registration, traffic management, public transport permitting and terminal management, safety, vehicle overloading, and also road sector planning. Such land transport functions are currently the responsibility of National Directorate of Land Transport (DNLT, for Direcção Nacional Transporte Terrestres).</p> <p>See also “land transport” and “roads and bridges”</p>
regulatory agency	Any government body responsible for planning and implementing regulations.
roads and bridges	<p>“Roads and bridges and land transport” refers to the physical infrastructure.</p> <p>See also “roads, bridges and land transport,” and “land transport.”</p>

Term	Explanation
roads, bridges and land transport	<p>“Roads, bridges and land transport” refers to the physical infrastructure, the movement of people and goods on that infrastructure, and all associated issues.</p> <p>The terminology is a function of Timor-Leste’s situation in which the government’s role in such activities is institutionally separated between two agencies. Maintenance of “Roads and bridges” infrastructure is the responsibility of the National Directorate of Roads, Bridges and Floods Control Services (DRBFC, or Direcção Nacional de Estradas, Pontes e Controlo de Cheias, sometimes referred to as DRBFC.) “Land transport” refers to traffic, including public transport, and its regulation is the responsibility of the National Directorate of Land Transport (DNLT, for Direcção Nacional Transporte Terrestres). “Roads, bridges and land transport” refers to both sets of responsibilities.</p> <p>The terms “road,” “road and bridges,” or “land transport” in a different nation’s context might refer to all of these functions together, but many Timor-Leste transport sector stakeholders insisted that the discussion should separate the ideas along institutional lines.</p> <p>See also “land transport” and “roads and bridges”</p>
sector	<p>The transport sector in general.</p> <p>See also “sub-sector.”</p>
sub-district	<p>The next lowest level of government beneath the district. Timor-Leste has 65 sub-districts.</p> <p>See also “district.”</p>
sub-sector	<p>Refers to either (i) roads, bridges and land transport, (ii) maritime transport, or (iii) civil aviation</p> <p>See also “sector.”</p>
sucos	<p>A village. Timor-Leste has 442 recognized sucos, with limited services and government functions.</p>

# Executive Summary

To be completed after discussions on the Draft





# 1. Introduction

## 1.1 Purpose of this plan

The Strategic Development Plan 2011–2030, published by the Government of Timor-Leste sets out measures considered necessary for Timor-Leste to achieve the status of a middle-income country by 2030. In support of this objective, it describes an investment plan for infrastructure considered necessary to support economic and social development. Infrastructure is in generally poor condition, due to historic reasons and a lack of financial and technical capacity.

Since 2005 Timor-Leste has derived substantial income from offshore oil and gas. In addition, government spending has stimulated strong economic momentum in non-oil gross domestic product.

Timor-Leste has been well placed financially to invest in development, including infrastructure projects. Detailed policies, strategies, and plans are required to optimize infrastructure investments and to improve institutional arrangements in the road, maritime, and transport sub-sectors to ensure that the national development goals are supported.

This Transport Sector Master Plan (TSMP) for Timor-Leste will guide policy, strategy, institutional and investment planning for the land transport, maritime transport, and civil aviation sub-sectors, including inter-modal links, for the next 15 years.

## 1.2 Methodology

This draft master plan presents facts concerning the transport sector, along with some general background information about the country's socio-economic basis, in Appendices B to E. This forms the basis for more in depth analysis of issues and challenges that the transport sector faces in Appendix F. The analysis considers road, bridge and land transport, maritime and civil aviation physical infrastructure and services, development and maintenance, as well as planning, asset management, financial management, institutional capacity, and financial parameters framing the financial plan.

The analysis forms the basis for the strategic statement of vision and goals appearing in Chapter 3. That in turn supports the policy statements appearing in Chapter 4, and a prioritized set of investments in Chapter 5. The prioritized investments are then presented within a schedule of two 5-year investment plans in Chapter 6.

The analysis, strategy, policy and investment plan have important implications for transport sector management set out in Chapter 7, Transport Sector Management addresses asset management, financial management, institutions, and human capacity development. The last chapter (8) summarizes a monitoring and evaluation framework.

The chapters in the main text are supported by appendices.

## 1.3 Planning Framework

The Timor-Leste TSMP is formulated within the structure of the Strategic Development Plan 2011-2030 (SDP 2011-2030). As such, the TSMP responds to the need to prepare a plan that "People will no longer be isolated, because there will be good roads, transport... in the towns and villages in all regions of the country." More specifically, the TSMP concentrates largely on the roads and bridges, sea ports and airports projects and programs proposed in the SDP 2011-2030, and proposes timely project implementation and the supporting maintenance necessary for these infrastructure assets.

This Plan reviews projects found in the SDP 2011-2030, and proposes new projects proposed by transport sector stakeholders. The SDP 2011-2030's introduction clearly states that it "...provides a framework for identifying and assessing priorities..." and emphasizes that it provides no prioritization or budget allocation process. The TSMP process follows from the SDP's instruction that prioritization of its recommended projects occurs within subsequent plans.

The SDP 2011-2030 states specific priorities, such as "... rehabilitate and repair existing roads to maintainable standards..." but these are broad national programs. It leaves the precise identification and timing of projects open. Nor does the SDP 2011-2030 address the costs and the cost-effectiveness of specific projects.

Further detailed planning is essential to the implementation of the broader 20-year SDP. SDP 2011-30 specifically calls for a Rural Roads Master Plan for rehabilitating rural roads and the preparation of a District Aviation Plan in advance of commencing work on any of the eight regional airports. When referring to the Suai to Beaço Highway, SDP 2011-2030 emphasizes the need to stage projects according to the development of the petroleum industry and economic growth in general.

This plan follows these directives, continuing the process begun in the SDP 2011-2030. The Timor-Leste TSMP provides a more complete analysis of projects and programs for the transport sector, with particular attention to demand and cost-effectiveness, and where appropriate, an evaluation between alternative projects.

Furthermore, the SDP 2011-2030 provides a broad vision, with no analysis that would provide guidance on the design of projects. For example, it states Tibar Port development is a priority, but the SDP provides only a brief description of the port's features.

All long-term plans require review on a periodic basis. New and unanticipated developments such as Special Zones of Social Market Economy (ZEESM, in Oe-cusse Ambeno), or a large cement factory, may require re-prioritization of existing projects, consideration of additional projects or even deletion of projects.

The TSMP takes into account other transport and related plans, such as:

- Ministry of Public Works National Action Plan over 5 Years 2013-2017 (Roads and Bridges Sections)
- 5-Year Strategic Planning Matrix For APORTIL, 2013 – 2017
- ANATL/AACTL 5-Year Strategic Plan [2013-17]
- Rural Roads Master Plan (RRMP, under preparation);
- Dili Urban Master Plan;
- National Spatial Plan of Timor-Leste
- The government's decentralization initiatives

The work also included reference to many other studies and project preparation papers in progress.

## 1.4 Assumptions

The Timor-Leste TSMP works within the framework of the Strategic Development Plan 2011-2030 and the Program of the Fifth Constitutional Government 2012-2017 Legislature. Transport sector investments envisioned under the TSMP must fit within the nation's economic and financial constraints, and must be sustainable.

The current public expenditures have required excess withdrawals from the Petroleum Fund, beyond the Estimated Sustainable Income (ESI) necessary to retain the fund's assets. Chapter 6 of the SDP 2011-2030 explains that such high withdrawals in the medium-term "frontload"

investment and are necessary to encourage private sector investment, stimulate the non-petroleum economy, and raise non-oil revenue for continued public investment. The 2015 State Budget (Book 1, pp.4-6, 33-35) states that the government will continue to frontload in the near-term, with excess withdrawals from the Petroleum Fund rising from \$0.69 billion in 2015 to \$1.05 billion in 2017, but then start to decline, and fall back to \$0.81 billion in 2018 as SDP projects near completion that year. The Infrastructure Fund will peak at \$0.66 billion in 2016, and fall to \$0.18 billion in by 2019. Therefore, the likelihood of continued large investments in the transport sector will fall.

Moreover, recent events suggest that the Petroleum Fund will be smaller than originally envisioned. As explained in the 2015 State Budget (Book 1, pp.42 and following), oil production supporting the Petroleum Fund will not continue for as many years as originally anticipated, ending in 2020, rather than 2024 (see 2013 State Budget, Book 1, p.59). The 2015 State Budget forecast a benchmark price for its oil sales based on the Brent crude price falling from \$108 per barrel in 2014 to \$87 in 2017 before recovering to \$94 in 2020. Unfortunately, the average daily price of a Brent crude barrel in 2014 was \$99 due to a sharp fall in the second half of the year, and the consensus forecast suggests prices will be much lower than the budget's forecast for 2015-2017. In short, the generous frontloaded funding program envisioned in the SDP 2011-2030 may need to be curtailed prematurely. The logic of this is provided in Appendix F.

The government of Timor-Leste has never invested all of the Infrastructure Fund allocations each year. No more than \$474 million of allocations were spent annually, despite Infrastructure Fund allocations ranging from \$599 million to \$875 million over the period 2011-2013.

## 2. The Context of Timor-Leste's Transport Sector<sup>1</sup>

### 2.1 The Transport Sector As a Whole

#### 2.1.1 Geo-physical Characteristics

An estimated 1.178 million people lived in Timor-Leste in 2013<sup>2</sup> and this is expected to rise to 1.7 to 1.8 million by 2030. In 2010 70% of the population, lived in rural areas. In addition the bulk of the population lives in the western half of the country, in particular in Dili's hinterlands.

Timor-Leste is 275 kilometers long at its maximum length, and 100 kilometers wide at its maximum width. In addition to its "mainland," Timor-Leste includes the exclave district of Oecusse Ambeno separated by Indonesian territory, and two islands, Atauro and Jaco.<sup>3</sup>

Figure 2.1: Natural and Political Geographic Context of Timor-Leste



The western part of the country is very mountainous. The tectonic movements that created the mountains have produced a complexity of folded, faulted and uplifted sedimentary rocks. Moving from west to east, the center of the country has less dramatic elevations. The eastern third of the country is a product of coral formations, and much lower elevations than the west.<sup>4</sup> The southern coast has a coastal plain with alluvial soils.<sup>5</sup>

Timor-Leste is at risk to a number of natural hazards. The hazards with the highest impact on infrastructure are landslides, earthquakes, coastal and river flooding and coastal erosion. Climate change will most likely exacerbate the intensity of precipitation events and introduce sea level rise to the shores of Timor-Leste.

According to the 2010 census, there are 15 urbanized centers in Timor-Leste. The largest by far is the national capital, Dili, with an urban population of 192,700. The other 14 urbanized areas have populations ranging from 20,900 (Baucau) to 3,600 (Aileu). The total urban population outside Dili is 123,450.

<sup>1</sup> This chapter summarises the detailed profiles provided in Appendices B to E.

<sup>2</sup> World Bank. World Development Indicators.

<http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=world-development-indicators> (Accessed 21 September, 2014)

<sup>3</sup> UN ESCAP. 2003. *Geology and Mineral Resources of Timor-Leste*. New York. pp.4-6.

<sup>4</sup> UN ESCAP. 2003. *Geology and Mineral Resources of Timor-Leste*. New York. pp.4-6.

<sup>5</sup> British Geological Survey. 2007. *Groundwater Quality: East Timor*. London: NERC.

Dili is the largest city, and where the greatest urban growth will occur. It is the seat of government, the center of commerce and higher education, the seat to the only international port and international airport, the nexus of the road network, and the end destination for most public transport routes. The combination of different factors indicates that the greatest social and economic growth will occur in Dili. The Dili Urban Master Plan (currently in progress) forecasts the district will grow to between 450,000 and 550,000 by year 2030.

### 2.1.2 Economic Development

Total GDP in 2013 was \$5.3 billion, which includes a large amount of oil revenue that does not enter the economy. Non-oil GDP was \$1.25 billion, or \$1,043 per capita, in 2013. Non-oil GDP grew 9 to 15% per year between 2008 and 2011, and 8% 2012-13. Initial forecasts to 2016 (and beyond) are 8.0 to 8.5% per year.

Large economic development projects underway or in the pipeline include the Tasi Mane project to create a petrochemical complex on the south coast, the recent creation of ZEESM, and a potential cement plant with capacity of 1.5 million ton per annum.

Timor-Leste imported \$529 million worth of merchandise imports in 2013, down from \$670 million in 2012. The largest imports were fuel, followed by vehicles, electrical machinery, machinery, textiles and cereals. Approximately 95 percent of trade passes through Dili Port.

Exports in 2013 were \$53 million, down from \$77 million the previous year. More than two thirds of exports were re-exports. Coffee accounted for almost all domestically produced exports.<sup>6</sup>

Approximately 80 percent of the population lives in households where agriculture is the main livelihood, and underemployment is common.<sup>7</sup>

Timor-Leste has a high poverty level. Approximately 41 percent of people lived in poverty in 2010, a decrease from 49.9% in 2007. Poverty is higher in the center and the west, than in the east of Timor-Leste.<sup>8</sup>

The SDP 2011–2030 places great emphasis on providing access to education and health services, markets and employment. While the majority of households have access to primary schools within one kilometer of their homes, the average rural household is 70 minutes away from a secondary school.

### 2.1.3 Transport Sub-Sectors

Timor-Leste has physical infrastructure and services in the three principle transport sub-sectors: land, maritime, and civil aviation. Traffic is growing in all three modes, most notably road transport.

Road traffic growth is highest near Dili and on the northern corridor, where growth approaches 20% per year. More remote areas nonetheless demonstrate traffic growth of 4-5% per year. The vehicle fleet is growing at 28% percent per year, 2011-2014. Most people rely on privately-provided public transport to travel by road, although motorcycles and private vehicle ownership is growing rapidly.

Maritime traffic is growing rapidly. Although international cargo passing through Dili is prone to sudden fluctuations, container traffic is growing 8.9% per year on a compound annual growth rate (CAGR) basis, and general cargo is rising 12.2% per year, 2010-2014. There are a number of small vessels providing lightering, passenger and freight ferry service, in addition to the international freight services that call into Dili Port.

<sup>6</sup> Government of Timor-Leste, Direcção Geral de Estatística. 2014. *External Trade Statistics Annual Reports 2013*. Dili

<sup>7</sup> ADB. 2011. *Country Partnership Strategy Timor-Leste 2011-2015: Poverty Assessment*. Manila.

<sup>8</sup> ADB. 2011. *Country Partnership Strategy Timor-Leste 2011-2015: Poverty Assessment*. Manila

International air traffic CAGR was 7.2%, 2010-2014. Domestic air travel is less than a thousand charter and emergency flights per year, and growing roughly 10% per year. Most air traffic is international traffic to Dili. Foreign carriers provide all international traffic. Private and NGO charter airplane and helicopter services provide links to domestic locations.

#### 2.1.4 Transport Sector Institutions

The Ministry of Public Works, Transport and Communications (MOPTC, for Ministério das Obras Públicas, Transportes e Comunicações) is responsible for the transport sector and was created in February 2015, as an amalgamation of the former Ministry of Transport and Communications (MTC), and Ministry of Public Works (MPW).

MOPTC is responsible for maintaining and improving roads through its DRBFC directorate, managing ports through the Port Authority of Timor-Leste (APORTIL), and civil aviation operations by the Air Navigation of Timor-Leste E.P. (ANATL). This plan often refers to these three branches of MOPTC as “implementing agencies.”

MOPTC is also responsible for regulation in all three sub-sectors. The relevant land transport regulatory agency is DNTT. The maritime regulator is the National Maritime Transport Authority (DNTM). The air transport regulator is Civil Aviation Authority of Timor-Leste (AACTL).

Other stakeholder institutions include ADN, the National Development Agency (Agência Nacional de Desenvolvimento); the National Procurement Commission (Comissão Nacional De Aprovisionamento); CAFI, Council of the Infrastructure Fund (Conselho de Administração do Fundo de Infraestruturas); IGE, Institute of Equipment Management (Instituto Público De Gestão De Equipamentos); MPS, the Major Projects Secretariat supporting CAFI; PNTL, the national police force (Polícia Nacional Timor-Leste), Directorate of Housing and Urban Planning in the Ministry of Planning and Strategic Investment (MPIE or Ministério do Planeamento e Investimento Estratégico).

Two large non-transport agencies have large initiatives to develop transport infrastructure associated with their larger economic development goals. The Tasi Mane Project is responsible for developing the petroleum industry on the island’s south coast and plans to build 3 ports, a modern highway, and is involved in the rehabilitation of a large airport. ZEESM (Special Zones of Social Market) has a broad economic development program for Oe-cusse Ambeno and seeks to greatly upgrade the port and airport.

## 2.2 Profile of the Road, Bridge and Land Transport Sub-Sector

### 2.2.1 Land Transport Infrastructure

Timor-Leste has an estimated 8,701 km of roads. However, this includes 4,100 km of non-core rural road network: some are working roads, many are effectively tracks unsuitable for motorized vehicles. Table 2.1 presents an estimate of the current road hierarchy in Timor-Leste.

Table 2.1: Road Hierarchy

Classification	Kilometers	Note
National	1,440	(1)
District	745	(1)
Urban	716	(1)
Core Rural Roads (est.)	1,700	(2)
Total of above	4,601	

Non-Core Rural Roads	4,100	(2)
<b>Total</b>	<b>8,701</b>	

(1) Government of Timor-Leste, Ministry of Infrastructure. 2009.  
National Road Network Master Plan. Dili. p.vii

(2) Rural Road Master Plan. February 2015. *Draft Final Report*

Most roads are in poor to bad condition. This includes 57% of national roads, 76% of district roads and 60% of core rural roads. Traffic volumes are generally quite low. The majority of Timor-Leste population lives in rural areas, and the road system is essential for them to access health services, education, markets and employment. National roads link the large cities and provide essential links from the capital, international airport and international port to the hinterland.

There are 450 bridges nationwide, with a combined length of 8,488 lineal meters. In 2010, 44 bridges were identified as requiring urgent attention and at the end of 2014, 26 of these still require attention.

Timor-Leste's asset value, and annual recurrent maintenance requirements in the land transport sub-sector (recurrent, plus the annual equivalent of periodic and rehabilitation) at the end of the current DRBFC 5-year action plan (2013-2017) is estimated to be \$2.2 billion (in 2014 dollars).

### 2.2.2 Land Transport Services

The private sector provides all commercial transport, as well as public transport, on Timor-Leste's roads. Long-distance buses and urban microlets are operated by the private sector, under route licenses issued by the National Directorate of Land Transport (or Direcção Nacional Transporte Terrestres, DNTT).

The vehicle fleet is growing rapidly. First-time registrations show 28% compound average annual growth between 2010 and 2013. Three fourths of all vehicles are motorcycles and the growth in number of motorcycles was 31%, even higher than the growth in total vehicles. At the end of 2014, there were 9,518 personal automobiles and 60,579 motorcycles.

The average daily traffic (ADT) is highest on the section west of Dili, where volumes are approximately 6,000 vehicles per day. The northern corridor from Batugade in the west to Los Palos in the east has the highest traffic. The ADT on the sections between Liquiçá and Batugade in the west is approximately 2,000. The section from Manatuto to Hera, east of Dili has an ADT of 1,480 to 1,750. Fewer than 20 kilometers have an ADT of more than 3,000 ADT.

Traffic growth estimates indicate Dili area with a 10 % compound annual growth; areas along the northern corridor to have 3 to 5%; many other areas have only 1 percent. It is natural to expect congestion in Dili to rise considerably

### 2.2.3 Road, Bridge and Land Transport Institutions

MOPTC is responsible for the management and upkeep of all roads and bridges. Stewardship of the roads and bridges network is under the National Directorate of Roads, Bridges and Flood Control Services (DRBFC, or Direcção Nacional de Estradas, Pontes e Controlo de Cheias).

The National Directorate of Land Transport (or Direcção Nacional Transporte Terrestres DNTT) provides direction for land transport in the area of traffic management and public transport.

### 2.2.4 Planning Framework for Roads and Bridge Transport

The SDP 2011-2030 recommends large improvements in repairing, rehabilitating, upgrading and developing existing roads, and limits the development of new roads only to special cases to

support the transport of goods, deliver government services, and promote particular agriculture, industry, trade, tourism and private sector initiatives. The SDP includes the development of a comprehensive maintenance program, rehabilitation of all national and district roads to national standards and widening them to 7 meters plus shoulders, rehabilitation of all rural roads to a minimum standard, and the construction of new bridges. It prioritizes 6 national / district road alignments mostly in the western half of the country. The SDP 2011-2030 aspires to develop a National Highway Ring Road by 2030 that will eventually have two lanes in each direction.<sup>9</sup>

Government investment plans are detailed in *the Program for the Fifth Constitutional Government 2012-2017* ("Fifth Government 5-Year Program"). The stated vision of this Fifth Government 5-Year Program follows from the SDP 2011–2030.

The MPW National Action Plan 2013-2017 detailed the design and construction of roads and bridges for all classes of roads and bridges in addition to routine and periodic maintenance.

The Directorate of Housing and Urban Planning in the MPIE is responsible for planning Dili and other urban roads.

### 2.2.5 Road and Bridge Design Standards

Timor-Leste has two draft road and bridge design standards. DRBFC has a draft geometric design standard covering national, district and rural roads. There is also a Rural Road Rehabilitation Standard that is used on a number of associated programs. There are no local bridge design, drainage design, slope stability design and traffic management codes.

### 2.2.6 Road Safety

In 2011 there were 10.29 fatalities or injuries per 100,000 people. This ranks Timor-Leste 135<sup>th</sup> – worst – out of 182 countries.

There are a number of government agencies with a legislated role in improving road safety. These include DNTT, which is responsible for regulations and drafting legislation, technical safety standards, vehicle registration, and approving private driving schools. The Transit Police have responsibility for enforcement and road safety education. DNTT and the police collaborate in the design and management of traffic management systems.

### 2.2.7 Summary of Public Road, Bridge and Land Transport Finance

DRBFC's budget has substantially decreased in the period 2012 to 2014 (\$166.6m to \$75.8m) to be more in line with actual expenditure levels. The major source of funds has also changed from CFTL to the Infrastructure Fund over recent years. DRBFC currently has no scope for collecting revenues.

DNTT is not an autonomous agency, but it does collect revenue. Its operating revenue is two to three times greater than its operating expenses. Greater vehicle registration fees, rental income from properties, and other revenue sources are also possible from within DNTT's immediate responsibilities. DNTT could then apply those increased revenues towards a fund for roads and bridges maintenance, or to support public transport improvements.

## 2.3 Profile of the Maritime Transport Sub-Sector

The maritime sub-sector transports 95% of Timor-Leste's imports and exports. It is important for national unity in that it links the exclave of Oe-cusse Ambeno, and the island of Atauro, to Dili and the rest of the nation.

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<sup>9</sup> Government of Timor-Leste. 2011. Timor-Leste Strategic Development Plan, 2011–2030. pp.72-76.



### 2.3.1 Maritime Transport Infrastructure

Dili Port is currently the only major port in Timor-Leste. It has the disadvantages of being in the center of Dili and increasingly creating traffic congestion, frequently requiring dredging and having limited capacity. In addition the port quay, pavement and passenger terminal are in need of repair.

A petroleum handling facility owned by Pertamina has a jetty at Pantai Kelapa, also in Dili

Small wharfs, jetties and ramps exist in the exclave of Oe-Cusse Ambeno, the island of Atauro, Hera, Tibar, Com, and Kairabela, all on the north coast.

Construction of a cement import terminal is underway several kilometers west of Tibar, en route to Liquiçã, and will be completed in mid-2015.

Plans are underway for construction of a cement production and export plant in Caisido, seven to eight kilometers west of Baucau, including a dedicated cargo jetty, to export the bulk of its production.

Lighters serve those container ships that are too large to berth alongside the Dili Port quay. Private tugs assist larger vessels' passage into port. Loaders and stackers in Dili Port are owned, operated and maintained by the private stevedore companies.

### 2.3.2 Maritime Services and Freight Traffic

Foreign vessels bring all freight in and out of Dili Harbor. Lighters and barges transfer containers and general cargo to Dili Port.

The estimated maritime traffic demand through Dili for 2015 is 49,626 TEUs, increasing to 62,276, 75,100 and 88,060 TEUs in 2020, 2025 and 2030 respectively. This assumes future trends on the basis of past trends, with varying assumptions about macroeconomic growth. However, the presence of a cement bagging plant, or the potential new cement-exporting factory could greatly alter, and even remove, half the volume of general cargo passing through Dili (or Tibar) port.

The port operator, APORTIL, provides ferry services to passengers in two classes, with vehicles below deck. The APORTIL ship is the "Berlin Nakroma." The Government will receive a second ferry from Portugal in 2015 and expects to acquire a third from Germany in 2018.

In 2014 44,284 passengers travelled between Oe-cusse Ambeno and Dili on the ferry and 19,923 passengers travelled between Dili and Atauro. The Berlin Nakroma ferry receives a large subsidy to provide fares that are affordable to users.

Additional services to Atauro are provided by the local community ferry "Maun Alin" and other small-scale operators.

### 2.3.3 Maritime Sub-Sector Institutions

APORTIL is the port authority of Timor-Leste and responsible for the development, operations and maintenance of publicly-owned ports. Private contractors provide cargo handling functions inside Dili Port. While classified as an autonomous agency, APORTIL lacks autonomy.

DNTM is the regulatory agency. It has a small staff and lacks the capacity to perform any regulatory functions concerning ships and ports, safety, security, the environment, or enforce Timor-Leste's maritime law.

The country has almost no maritime law, with the single exception being a signatory of the United Nations Convention on the Law of the Sea (UNCLOS),

Overlapping responsibilities exist between APORTIL, DNTM and the Berlin Nakroma.

#### 2.3.4 Planning Framework for Maritime Transport

The SDP 2011-2030 places importance on sea ports to support the import of goods and equipment, especially inputs needed for the construction of major infrastructure projects such as Tasi Mane. These ports include Tibar near Dili, the Suai Supply Base, Betano and Beaço on the south coast, plus Com, Kairabela, and Manatuto on the north coast. They also include further expansion of Oe-Cusse Ambeno's recently upgraded port to support the development of ZEESM.

Following the SDP 2011-2030, and the Fifth Government 5-Year Program, APORTIL / DNTM prepared a maritime sub-sector 5-year action plan. The 5-Year "Strategic Planning Matrix for APORTIL" states the vision ("To serve the clients with an adequate system") and breaks the mission into three over-arching tasks: infrastructure development, a legal framework supporting the sub-sector, and human resource improvements. The infrastructure section largely repeats the SDP 2011-2030, maintenance and rehabilitation of Dili Port and studies and development of Tibar Port. The 5-year action plan's legal section includes greater capacity of DNTM to register, survey and certify ships, and improved safety on its ferry vessel. The human capacity section of the 5-year action plan includes recruitment, training, and technical cooperation.

##### **Key developments**

The SDP 2011-2030 proposes the establishment of a new multi-purpose sea port at Tibar Bay, a short distance west of Dili. The International Finance Corporation (IFC) is providing support to the Government of Timor-Leste to structure and implement a Public Private Partnership (PPP) project for the proposed Tibar Bay port.

The SDP 2011-2030 proposes improvements to regional ports on the north coast. This includes different facilities in Kairabela, Com, Manatuto, Oe-Cusse Ambeno, and Atauro.

The Suai Supply Base, Betano marine terminal and Beaço LNG terminal are components of the Tasi Mane Project, along with Suai airport, Beaço LNG plant, Betano refinery and petrochemical production facilities, and the highway from Suai to Beaço. The national oil company, Timor Gap, is responsible for executing the projects, using Infrastructure Funds the State Budget has allocated to the Ministry of Petroleum and Mineral Resources (MPRM).

A second ferry is already under construction financed from government resources, and a third is expected to be provided in 2018. At present there is clearly a need for a second ferry to support the Berlin Nakroma operations, but this demand may disappear with Timor-Leste's accession to ASEAN and easy overland travel. There is no clear rationale for a third ferry.

A major cement manufacturing complex is planned for the area around Baucau Airport. The project will likely include a dedicated port facility capable of handling bulk carriers.

#### 2.3.5 Summary of Public Maritime Transport Finance

APORTIL's recurrent (salaries and wages, goods and services) and capital expenditure are funded through CFTL, while most capital expenditures greater than \$1 million are funded through the Infrastructure Fund (IF).

APORTIL receives revenues from port services in Dili: navigation, docking, wharf time, cargo movements at wharves, storage, passenger fees, piloting, as well as water and fuel supply, and other services. If APORTIL retained its revenues, it would achieve full cost recovery of its recurrent costs which, however, do not include any significant maintenance cost. If APORTIL's maintenance requirements for Dili Port are factored in, the cost recovery falls to 52-67%.

APORTIL is subsidizing the operation of the Berlin-Nakroma from state budget allocations, its navigation and storage revenues, and not recovering its recurrent costs.

DNTM has no operating revenue, and only a small budget of \$140,000. DNTM's budgets are approximately half salary and half goods and services, and it expends about 80% of its allocation.

## 2.4 Profile of the Civil Aviation Sub-Sector

### 2.4.1 Civil Aviation Infrastructure

Presidente Nicolau Lobato International (PNLIA) is the country's only international airport in operation today. It supports 737 (all series) and Airbus 319/320 aircraft, with restricted aircraft maximum take-off weight. The maximum range of Airbus 320 fully loaded is approximately 6,000 km.

There are 8 district aerodromes, and all are in poor condition. Most remain in operation, but host only occasional domestic charter flights and medical evacuations.

Baucau / Cakung airport is sited on a military basis southwest of Baucau town. The airport was the principal international gateway before 1975, and the runway remains the largest - 2,500 m x 56 m – in the nation.

An airport in Oe-cusse Ambeno has been approved, and construction should begin in 2015 to expand the existing airport.

An expansion project at Suai airport began in 2014 and should be complete by 2017.

The estimated value of assets in 2018 is \$220m and the annualized maintenance costs are estimated at \$17.4m.

### 2.4.2 Civil Aviation Services

Timor-Leste cannot register an aircraft, and therefore has no national carrier. Four international airlines provide passenger services to PNLIA from different destinations: Silk Air (Singapore), Garuda (Bali), Sriwijaya (Bali) and Airnorth (Darwin). There are 54 regularly-scheduled movements each week employing mid-size craft.

There were 197,959 passenger movements in 2014 and it is estimate that this will increase to 407,000 passenger movements in 2030. This does not include any estimates for special growth in tourism if a tourism promotion strategy is put in place.

Two small aviation operators provide domestic charter flights and medical evacuations.

The absence of X-ray scanners suitable for air freight security procedures prevents any substantial air cargo traffic operations developing.

### 2.4.3 Aviation Sub-Sector Institutions

ANATL is a public entity responsible for providing airport and air traffic services. It has limited capacity for preparing or implementing projects. ANATL is designated an autonomous agency that is designed to be self-funding.

AACTL is the regulatory / inspection body responsible for overseeing the safety of the air transport system. However it only has two individuals on its staff capable of performing inspections. AACTL is also an autonomous agency, but does not currently charge any fees.

One person is the director for both ANATL and AACTL.

### 2.4.4 Planning Framework for Civil Aviation

The SDP 2011-2030 commits investment in aviation transport. Key targets are upgrading the PNLIA runway, rebuilding terminal facilities, and ensuring the PNLIA is managed by a commercially oriented airport authority by 2015. The SDP 2011-2030 also sought the

rehabilitation of district airports (Baucau, Maliana and Oe-cusse Ambeno) for 2015. The associated objectives for 2020 include a network of district airports, and making Baucau an alternative airport to PNLIA.

ANATL / AACTL produced a strategic 5-year plan (2013-2017), including a 5-year action plan, activities and objectives.

Consultants prepare the aerodrome master plans on ANATL's behalf.

#### **2.4.5 Summary of Public Civil Aviation Finance**

ANATL currently collects revenue from landing fees, airport taxes and rental fees. Revenues were \$1.3 - 2.1 million per year from 2011 to 2014, covering recurrent costs, but only about one-third of its combined operating expenses and maintenance requirements. Other potential sources not yet realized include air navigation, security fees, fuel throughput charges, and a concession to private companies to provide the ground handling services. ANATL has not been able to spend any of its infrastructure funds, for two years in a row.

AACTL is an autonomous agency, but collects no revenue. It could collect fees for inspection, licenses, certificates, approvals and other services provided. Its operating expenditure is approximately equivalent to its allocations.

## 3. Vision and Goals

### 3.1 Formulation

Based upon the SDP 2011-2030, stakeholder input in TSMP workshops, and the above analysis, this chapter presents Timor-Leste's Transport Sector Master Plan vision and goals:

### 3.2 Transport Sector Vision

Timor-Leste's transport sector vision is as follows:

"Improve the Transport Sector's capacity to develop and maintain an integrated road, maritime and aviation transport system that expands the Timorese people's access to health services, education, markets and employment."

### 3.3 Goals

Timor-Leste's transport sector's goals:

- Improve Timorese people's accessibility;
- Develop the capacity of Timor-Leste institutions to deliver an accessible, sustainable and safe transport system;
- Develop and maintain transport infrastructure assets in a timely, sustainable, and cost-effective manner;
- Develop an effective regulatory environment; and
- Ensure the financial sustainability of the sector.

### 3.4 Context

The Timor-Leste transport sector vision and goals derive from the SDP 2011-2030 and stakeholder consultations.

#### 3.4.1 SDP 2011-2030

The SDP 2011-2030's has many vision statements. Of the five most important, the statements most relevant to transport is:

"People will no longer be isolated, because there will be good roads, transport, electricity and communications in the towns and villages in all regions of the country."

The sense of "not being isolated" in the above statement is equivalent to "improve the Timorese people's accessibility" in the goals above.

#### 3.4.2 Stakeholder Input

The Transport Sector Master Plan development included a series of workshops in which stakeholders voiced their opinions and desires. A synthesis of the different comments expressed in the workshop is presented in the next seven points:

1. Improve and maintain road, maritime and aviation infrastructure, both domestic and international;
2. Expand the capacity and services of existing infrastructure;
3. Improve access to rural areas and public transport;

4. Improve national regulations;
5. Human capacity building is necessary for delivering transport services;
6. Financial sustainability and support for a healthy economy; and
7. Increased enforcement and monitoring.

All of these stakeholder ideas are found in the goals statement.

### **3.4.3 Analysis of Issues and Challenges**

The TSMP analysis of issues and challenges is in Appendix F and these can be synthesized into the most common themes:

- Accessibility;
- Maintenance;
- Institutional Capacity;
- Financial Management; and
- Sustainability.

Sustainability is a common and important theme that cuts across the three last challenges. Timely maintenance, and the funding necessary for maintenance, are important to sustaining the condition of assets, and hence their values. Institutional capacity is necessary to be able to manage, maintain and improve transport infrastructure and services over the longer term. Financial management is necessary to ensure the sustained funding for all these activities.

## 4. Transport Sector Policy

### 4.1 Accessibility Policies

- 4.1.1 Timor-Leste's transport sector must seek to provide the most appropriate form of transport to all residents to increase their access to health centers, education, markets and employment;
- 4.1.2 The development of an affordable, safe, convenient, and comfortable public transport system is a priority. Many persons are dependent on, or under-served by, public transport;
- 4.1.3 Regional public transport will improve rural areas connectivity to district capitals and other market centers, and to the national capital. Links to Dili will include bus terminals providing access to other modes in an efficient manner. Bus terminals will provide advance ticketing and consistent schedule information;
- 4.1.4 Intermodal links should be developed to provide improved connectivity for travelers and shippers using all modes. These include public transit centers and intermodal bus terminals<sup>10</sup> in Dili supporting pedestrianism, cycling, parking, and access between different forms of public transport. They also include a bypass road and logistics centers supporting freight movement between Tibar, Dili and Hera;
- 4.1.5 Pedestrian improvements to national, district and urban roads will improve the convenience and safety of those who travel on foot or by bicycle. Design of public transit centers, intermodal bus terminals, ports and airports must also include measures for pedestrian accessibility and safety, with special measures for the elderly and persons with disabilities;
- 4.1.6 Timor-Leste will strive to obtain visa exemptions and improved transit of cargo through Indonesia between Oe-cusse Ambeno and the Timor-Leste "mainland";
- 4.1.7 Large-scale subsidized ferries will be unnecessary on this route once Timor-Leste accedes to ASEAN and negotiates visa-exempt travel through Indonesia, except when an emergency might close the border crossings, and except perhaps for moving construction equipment. The existing and smaller ferry can continue to serve Atauro, and serve as a back-up during any event that closes Timor-Leste's land borders; and
- 4.1.8 The approach to urban transport requires not only pedestrianism, cycling, public transport and intermodal connectivity. It also requires measures to manage demand, such as staggered hours ("peak cutting") and parking facilities that support public transport use. Preservation of road space requires restrictions on on-street parking and requirements for buildings to provide on-site parking and offloading facilities.

### 4.2 Planning Policies

- 4.2.1 The transport planning framework occurs within the context of SDP 2011-2030, the Constitutional Government's five year plans, and other relevant national plans. The transport planning process must however exercise flexibility in interpreting the larger goals and objectives arising in terms of demand, appropriate design, cost-

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<sup>10</sup> Public transit centers refer to all locations providing superior connectivity between different bus routes. They will have pedestrian, cycling and parking amenities, and commercial activity, to increase accessibility and encourage public transport use. Intermodal bus terminals are larger forms of public transit centers, providing connectivity to / from regional bus routes, and having large-scale commercial developments. Intermodal bus terminals are often mentioned along with public transit centers, even though they are really just larger forms of the same, to highlight these important ideas.

- effectiveness, economic sustainability, new developments, and logical phasing of subsequent projects;
- 4.2.2 All plans must provide demand forecasts and capacity estimates, project evaluation, economic and financial appraisal, priorities, likely timing, and budget constraints. Planners must consider environmental and social safeguards;
- 4.2.3 The roads and bridges sub-sector planning will prioritize projects according to their cost-effectiveness and international best practice. Recurrent maintenance programs will receive top priority, followed by periodic maintenance programs, upgrades to address safety risks, upgrades to resolve capacity constraints, rehabilitation, upgrades to improve intermodal connectivity, other upgrades, and then new roads;
- 4.2.4 The expansion of new infrastructure must be restrained to those projects that clearly and directly address capacity constraints. The burden of maintenance requires that the road system not expand further. Furthermore, the rural roads that the government is responsible for maintaining must be limited to the core rural road network of 1,700 km;
- 4.2.5 Planning in all three sub-sectors' implementing agencies will include: (i) levels of service, (ii) routine and periodic maintenance tasks and indicative schedules, and (iii) emphasis on maintenance rather than network expansion;
- 4.2.6 In Dili interventions are necessary for right-of-way acquisition for public transit centers and intermodal bus terminals providing improved transfer between microlet and urban and regional buses, so as to support future high-capacity public transport systems;
- 4.2.7 Urban public transport planning must take an integrated approach to mobility that preserves road space, and encourages non-motorized and public transport. This includes pedestrian amenities and bicycle facilities, parking controls to increase available road space, and parking / drop-off amenities (for bicycles and for motor vehicles) supporting transfer to public transport, ride sharing, government and business van pooling integrated with public transport facilities, and staggered hours to reduce peak flows;
- 4.2.8 A National Transport Planning Agency will be created within the MOPTC to prepare long-term national transport plans integrating all modes, 5-year sector plans including maintenance programs, special studies, and promote dialog across the sector. It should collect, consolidate and share transport sector information with other planners and stakeholders; and
- 4.2.9 Timor-Leste will create a monitoring process to review progress in plan implementation and transport system performance. The process will monitor the inputs, outputs and outcomes of the Transport Sector Master Plan.

### 4.3 Asset Management Policies

- 4.3.1 Each sub-sector implementing agency must have an asset management system, providing information on the condition of infrastructure assets. The system will support planning, maintenance programming, maintenance procedures and project preparation; and
- 4.3.2 Each sub-sector agency must have the capacity to conduct asset condition surveys on a timely basis. Each implementing agency will have a staff member to manage asset condition surveys, either directly or through contractors.



#### 4.4 Maintenance Policies and Programming

- 4.4.1 Implementing agencies will shift their focus from asset building to asset maintenance;
- 4.4.2 Each sub-sector implementing agency will have a maintenance policy outlining its levels of service, standards, and workmanship specifications, and a program for scheduling routine and periodic maintenance and rehabilitation;
- 4.4.3 The maintenance programming process will rely on the asset management systems for reliable current information on infrastructure conditions;
- 4.4.4 Using the road condition and traffic information, the asset manager will project future conditions, prepare development and preservation strategies, and estimate funding requirements;
- 4.4.5 APORTIL will develop performance standards for all its facilities. In addition to managing port operations, the harbormaster will be responsible for monitoring operations, traffic and asset condition;
- 4.4.6 ANATL will develop a maintenance policy for PNLIA and all other airport runways, terminals and other facilities, in accordance with ICAO procedures. It will also develop a policy of responsibilities to collect information on runways and fence conditions at district airports; and
- 4.4.7 The National Transport Planning Agency will work closely with technical staff of each implementing agency to produce long-term maintenance programs, and incorporate the program into 5-year plans, within financial constraints, for each sub-sector.

#### 4.5 Project Preparation Policies

- 4.5.1 The government's project preparation system will include a clear staged process of project preparation whereby one stage needs to be approved before funding becomes available for the next stage. The budgeting process will allocate funds on this staged basis;
- 4.5.2 Transport sector project preparation and design work must adhere to well understood standards. Therefore, each sub-sector agency must prepare a manual containing design standards and guidelines for minimum construction specifications;
- 4.5.3 The complete road sub-sector design manual will include a geometric design code, bridge design code (incorporating seismic design), drainage design code, slope stability design code, workmanship and material specifications, and road traffic management design code. The road design manual must include standards for providing pedestrian space, especially under road-widening projects, and standards for providing space for public transport. The sub-sector design manuals must address the risks of disaster and climate change; and
- 4.5.4 The project preparation process requires consideration of all opportunities to use labor-based methods.

#### 4.6 Project Management Policies

- 4.6.1 Transport sector implementing agencies require greater capacity to manage contracts in terms of contract administration, documentation, supervision, and financial management;
- 4.6.2 The practice of classifying projects as emergency works must cease, except in those cases that truly represent damage from disasters that seriously slow or stop traffic.

- DRBFC will introduce a strict procedure for identifying and approving emergency works;
- 4.6.3 Funding for specific projects must be dedicated to those projects. Exceptions will require the approval of the Minister;
- 4.6.4 Implementing agencies must improve their financial management practices so as to authorize payment to contractors promptly, once supervisors have reliably approved scope of works completion;
- 4.6.5 The implementing agencies will have greater ownership and responsibility for project development and implementation. MPS, ADN and the National Procurement Commission will continue in the processes of funding and oversight, but the implementing agencies will take greater responsibility for planning, project design, development and implementation and for supervision. Construction sector capacity building measures are also necessary for improved implementation. Contractors and suppliers will receive training in technical, management and financial skills necessary to prepare reliable bids and manage projects effectively;
- 4.6.6 Project management will also include safeguards to protect against undue hardship to nearby communities in terms of environmental impacts and land acquisition;
- 4.6.7 When necessary to acquire private land holdings and relocate families and businesses, the project will follow established procedures from the draft law and international best practices. This will require DRBFC to implement a set of land acquisition and resettlement guidelines, and provide training to mid-level and senior staff in the process or evaluation, decisions and implementation in this sensitive area; and
- 4.6.8 The project management process must include monitoring and evaluation. Monitoring and evaluation information on specific projects and the larger network will inform the preparation of later plans and projects.

## 4.7 Institutional Policies

- 4.7.1 Transport sector institutions need to develop capacity in policy development, asset management, planning, maintenance programming, project preparation, project and financial management. Financial management is particularly important, especially in autonomous agencies;
- 4.7.2 All transport sector implementing institutions will increase their capacity to manage assets, plan and program maintenance and develop projects in accordance with their mandate. Where necessary, institutions will retain qualified contractors, selected on a competitive basis. The contractors can provide on-the-job training to agency staff under many outsourcing contracts;
- 4.7.3 Outsourcing arrangements will cover the maintenance and construction of infrastructure, and public services (e.g. provision of public transport), but will also include more typical in-house government practices such as policy development, planning, project preparation, procurement, project management, supervision, and monitoring. Outsourcing also includes contracted services (e.g. vehicle registration, ferry operations, and fees for services);
- 4.7.4 The regulatory agencies will increase their capacity to enforce safety and security regulations. They must ratify and enforce many international agreements, including international road, maritime and civil aviation standards, recommended practices, protocols, frameworks, and conventions. Regulations with international scope include

road regulations concerning signs and signals, as well as vehicle registration, and cross-border, customs procedures, including the transport of both perishable and dangerous goods. Compliance with international agreements also requires DNTM to assume Flag State responsibilities and enforce regulations, assuring safety and security in the maritime sector. International practices further imply expanding AACTL's legislated mandate and capacity to inspect airplanes and airports to ensure the safety and security of the country's civil aviation system. The Government must ratify the six international aviation security conventions and protocols;<sup>11</sup>

- 4.7.5 Transport sector agencies will develop their capacity to prepare and process documentation for environmental assessments, land acquisition, and relocation plans. The NDE and the National Directorate of Land, Property and Cadastre Services (DLCPS) will also improve their capacity to process submissions under the new legal framework. DRBFC requires a decision-making process to determine land acquisition and resettlement, and a clear assignation of responsibilities to key individuals in certain DRBFC positions responsible for making these decisions;
- 4.7.6 The Government of Timor-Leste will establish and fund an inter-ministerial Road Safety Council to finalize a strategy to create safer roads, a safer vehicle fleet, and safer road users. The Road Safety Council will coordinate the activities of DNTT, the police (i.e. Polísia Nasionál Timor-Leste, PNTL), and other agencies, including international bodies such as WHO and the Red Cross;
- 4.7.7 DNTT will outsource its driver licensing and vehicle registration functions and establish the agency as a commercially-oriented entity. Furthermore, DNTT should reorganize as an autonomous agency that can retain its revenues and apply them to other efforts to promote maintenance in the roads and bridges sector, and the development and operation of public transport;
- 4.7.8 DNTT will introduce policies, actions, investments and a tariff structure to control heavy trucks and limit overloaded vehicles traveling on Timor-Leste's roads, while recovering the costs of damages the roads incur;
- 4.7.9 The autonomous agencies will improve their institutional arrangements, staff capacity, and legal ability to retain revenues. Institutional and staff improvements will include establishing boards of directors, improving financial accounting capacity, contracting auditors, and hiring / contracting financial controllers; and
- 4.7.10 The process of increasing tariff rates will require the establishment of an independent review body that considers the economic efficiency and equity of each proposed increase, after which the Council of Ministers will decide whether to approve the review body's impartial recommendations.

## 4.8 Institutional Roles and Responsibilities

- 4.8.1 Timor-Leste's transport institutions will separate regulatory agencies from implementing agencies, with different directors and separate funding, to ensure institutions can pursue their missions with clear strategic direction, and without any conflicts of interest;

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<sup>11</sup> Specifically, the Tokyo Convention 1963, the Hague Convention 1970, the Montreal Convention of 1971, the Montreal Protocol of 1988 on acts of violence at international airports or "VIA Protocol", the Montreal Convention of 1991 on marking of plastic explosives ("MEX Convention"), and the Beijing Convention and Beijing Protocol 2010 on the Suppression of Unlawful Acts Relating to International Civil Aviation are all necessary to protect the public against unlawful interference to aircraft and aviation infrastructure

- 4.8.2 The National Transport Planning Agency will produce long-term and five-year plans, especially on maintenance planning, in coordination with all transport agencies. The transport agencies will then use the five-year plans as a basis for annual action plans and budget requests;
- 4.8.3 Transport sector implementing agencies will be responsible for all transport sector infrastructure investments. Agencies responsible for capacity building, employment, or local development (e.g. ESTATAL and SEPFOPE) may identify and implement projects related to core rural roads. However, DRBFC will be responsible for standards, and project preparation;
- 4.8.4 The management of urban and rural roads and bridges will benefit from inputs from district governments (*municipios*). The DRBFC will take a larger role in core rural road rehabilitation and maintenance than it has in the past. A new DRBFC representative in each district will provide the planning and technical expertise required at the local level to identify, prioritize and plan maintenance and rehabilitation works. Once a core rural road project has been procured, the DRBFC representative in each district will be responsible for project management and supervision, and training local contractors. Core rural road policy, standards, network planning, and budgeting are functions of the DRBFC headquarters in Dili;
- 4.8.5 PPP arrangements and performance-based contracts (i.e. outcome-specified contracts) will be considered if they demonstrate efficiency gains and the government possesses the capacity to provide agreed input, manage the contractual arrangements and monitor progress;
- 4.8.6 Private businesses may build private roads, ports or airports, but they will be expected to inform the National Transport Planning Agency, and coordinate with sub-sector agencies as is necessary. Their projects will be subject to environmental review; and
- 4.8.7 MOPTC's DRBFC will assume the traffic sign and signal responsibilities of the Equipment and Maintenance Division from DNTT.

## 4.9 New Institutions

- 4.9.1 The **National Transport Planning Agency** will be an important branch of the newly established MOPTC. It will have a director with experience and understanding of all three sub-sectors, and best practice transport planning processes. The planning agency will pool the necessary capacity to prepare long-term forecasts, plan network development and inter-modal improvements, within constrained financial budgets, and guide institutional development. The National Transport Planning Agency will work with asset managers, maintenance managers and the directors of each implementing agency to draft policies, produce a regular maintenance program, and 5-year action plans for each sub-sector;
- 4.9.2 The **National Road Safety Council** will be responsible for coordinating policy, regulations and enforcement to improve road user behavior, vehicle safety, infrastructure, and post-crash care. In particular, there is a need to raise safety awareness among decision makers, to coordinate cross-institutional efforts, and to build capacity;
- 4.9.3 The National Road Safety Council's membership will include members from DNTT, Traffic Police, DRBFC, Ministry of Health, Ministry of Education and Culture, Red Cross and WHO;
- 4.9.4 The **Road Maintenance Fund** will provide funds for the maintenance and rehabilitation of national, district, urban and rural roads, and possibly also support

public transport in Dili. The fund's revenue base will be road user charges providing a sustainable source of road and public transport finance;

4.9.5 A multi-agency **Dili Public Transport Development Committee** will coordinate investments to improve the public transport improvements, and will devise revenue sources to support inexpensive public transport services; and

4.9.6 The **National Aviation Security Committee** will communicate and coordinate security initiatives to minimize the risk of unlawful interference to aircraft and aviation infrastructure.

#### 4.10 Financial Management

4.10.1 All transport sector agencies will be able to manage their own finances. Good financial management practices will support the independence of each agency's decisions concerning their operations, maintenance, procurement and project management, and authorize payments in a timely manner;

4.10.2 Government transport agencies will improve cost recovery policies and practices. The autonomous agencies (APORTIL, ANATL, and AACTL) will establish boards and auditing arrangements that will permit them to retain earnings. The agencies will recover sufficient revenue from user charges on their operations; to at least fund their operations and management;

4.10.3 Subsidies will be avoided other than in exceptional circumstances, as they are unsustainable and drain funds away from higher-priority projects with greater returns. If subsidies are necessary, they will be sustainable, and limited to only those sources of revenue that represent cross-subsidies from related activities. For example, subsidies for ferry services should derive from port or other maritime activity revenue without imposing heavy charges unfairly on other port users;

4.10.4 DNTT will become both an autonomous agency and a commercially-oriented entity. As an autonomous agency, it will be able to retain earnings and use those funds to cross-subsidize other activities such as road maintenance, and public transport. As a commercially-oriented entity, it will take a higher-level role in driver licensing and vehicle registration policy and pricing, and assign the task of actual processing such papers, inspections and other procedures to private institutions under a fee-based franchise system;

4.10.5 The government will create a separate Road Maintenance Fund to collect additional revenue such as vehicle registration fees / import duties on cars, or fuel charges. The Road Maintenance Fund will be a separate institution with its own board, external auditor, and controller. It will have no implementing powers, but rather will provide funding to road and bridge transport sub-sector institutions; and

4.10.6 A Dili Public Transport Development Committee will provide funding for public transport amenities (e.g. bus stops, public transit centers, intermodal bus terminals) and services (e.g. subsidies for high-capacity service) on a sustainable basis. The revenue base for public transport amenities and services will derive from sustainable sources, such as rent and fees from property development near public transit centers, public transport terminals, and / or transfers from the Road Maintenance Fund.

## 5. Priority Investments

### 5.1 Introduction

There are many transport sector investment proposals derived from various plans and initiatives. This chapter prioritizes projects that will be selected in the investment plans in chapter 6. The prioritization process first screens out projects that are alternatives to other proposals, and then ranks all the projects according to the results of a multi-criteria analysis (MCA).

### 5.2 Project Identification

The projects identified and analyzed in this plan include road and bridge projects, ports and aerodrome facilities, and a third ferry. These derive largely from the SDP 2011-2030 plan, the Fifth Government 5-Year Program, and implementing agencies' 5-year action plans. Additional projects arose in early analysis of the transport sector and as planning progressed and have the consensus of many different stakeholders to study further. Descriptions of the features, demand, costs and origin of specific projects analyzed in this chapter are found in Appendix G, "Projects Identified."

A civil engineer prepared the construction and maintenance cost estimates supporting the analysis in this chapter, the information in Appendix G, and the next chapter, Investment Plans.

### 5.3 Prioritization Method: MCA

MCA is a method for prioritizing projects according to multiple attributes (or criteria), applying a weight to each criterion, to produce a combined score for each project. A projects' combined score ("MCA result") determines its ranking (priority) against other projects.

The MCA evaluated each project according to five criteria, which have equal weight. The criteria are:

- Daily traffic volumes;
- The class of works;
- Rural accessibility;
- Safety improvements; and
- Preliminary benefit-cost ratio (BCR).

The possible scores for each of these criteria range between zero and ten, with the higher number indicating a better outcome. This standardizes results, so that it is easy to combine scores for analysis.

Appendix A, Transport Planning Principles and Methodology, provides further explanation of the methods and conventions used, and provides more detail on the inputs to each criterion.

### 5.4 Screening Alternative Investment Projects

Some of the projects identified (see Appendix G) represent alternative approaches to achieving the same objective: for example, two parallel routes connecting the same cities. Before proceeding with the MCA for a larger set of 80 projects, it is best to consider the alternative proposals and "screen out" those that deserve no further consideration.

#### 5.4.1 Alternative Projects 1: South Coast Highway vs. Rehabilitation of Existing Roads

A divided highway with two lanes in each direction on the south coast, linking Suai to Beaçõ in support of the Tasi Mane project, is one proposal. The cost estimates for the Zumalai-Beaçõ portion (the Suai-Zumalai segment is already under procurement) total \$1,331 million (2014 dollars). Meanwhile, the existing Zumalai-Beaçõ roads connect the same principal destinations, and their rehabilitation costs represent \$199 million. There is no obvious advantage to building two roads that run effectively in parallel. The existing road can accommodate the expected traffic on this route.

The south coast highway represents much higher cost, much lower cost-benefit, and lower MCA results. Therefore, the prioritization process will concentrate on projects that rehabilitate segments of the existing Zumalai-Beaçõ roads.

#### 5.4.2 Alternative Projects 2: PNLIA Runway End Safety Area Option 1 vs Option 2

The analysis considered two alternative approaches to creating a Runway End Safety Area (RESA) at PNLIA's runway. Option 1 extended the runway from 1,850 to 2,050 meters in length, and requires extension of the sea wall. The second option extends the runway only to 2,000 meters length, at much less cost, because it does not require a sea wall. The first option costs \$22 million, the second option costs \$3.5 million.

Option 2 represents lower costs, a greater BCR, and has a higher MCA result. The prioritization process therefore only considers Option 2.

### 5.5 Priority Transport Projects

Table 5.1 presents the list of projects in order of priority, according to the MCA score. There are 81 projects in the list, with a combined value of \$3.9 billion (2014 dollars).

Table 5.1: Prioritized Projects (\$ millions)

Ref		Daily Traffic (standardized)	Class of Works	Rural Accessibility	Safety	BCR (standardized)	MCA Result
	Weight:	20%	20%	20%	20%	20%	
1	A02-06: 17.5 km, Cassa - Zumalai Rehabilitation	6.0	5.0	6.4	6.0	8.0	6.3
85	PNLIA RESA Option 2	5.0	8.0	0.0	8.0	10.0	6.2
22	A17-01: 28.3 km, Oecussi - Oesilo Rehabilitation	6.0	5.0	10.0	6.0	4.0	6.2
10	A11-01: 55.8 km, Jct A04-2 (Ermera) - Maliana Rehabilitation	6.0	5.0	7.1	6.0	6.0	6.0
11	A12-01: 16.4 km, Maliana - Oeleu Rehabilitation	6.0	5.0	7.1	6.0	6.0	6.0
7	A08-01: 57.5 km, Viqueque - Uatucarbau Junction Rehabilitation	6.0	5.0	10.0	6.0	3.0	6.0
51	C32: 23.0 km, Suai (Beco) - Lolotoe Junction Rehabilitation	5.0	5.0	10.0	7.0	3.0	6.0
53	Bridge Rehabilitation (Y2018-22): 390 Im.	7.0	5.0	3.6	8.0	6.0	5.9
54	Bridge Rehabilitation (Y2023-27): 390 Im.	7.0	5.0	3.6	8.0	6.0	5.9
40	C17: 30.0 km, Aipelo - Railaco Rehabilitation	5.0	5.0	6.4	7.0	6.0	5.9
57	Dili Deviation	6.0	7.0	0.0	6.0	10.0	5.8

Ref		Daily Traffic (standardized)	Class of Works	Rural Accessibility	Safety	BCR (standardized)	MCA Result
	Weight:	20%	20%	20%	20%	20%	
78	ADS/B plus PBN	5.0	8.0	0.0	8.0	8.0	5.8
25	C01: 57.7 km, Lospalos - Iliomar (Via Lore) Rehabilitation	5.0	5.0	10.0	7.0	2.0	5.8
44	C23: 26.7 km, Hatu Udo - Ainaro Rehabilitation	5.0	5.0	10.0	7.0	2.0	5.8
24	A19-01: 15.0 km, Oecussi - Sacato (Border) Rehabilitation	6.0	5.0	7.1	6.0	4.0	5.6
9	A08-03: 45.4 km, Iliomar - Lospalos Rehabilitation	5.0	5.0	10.0	6.0	2.0	5.6
18	A15-01: 12.2 km, Suai - Tilomar Rehabilitation	5.0	5.0	10.0	6.0	2.0	5.6
32	C08: 65.3 km, Laga Jct (A01-3) - Uatucarbau Junction Rehabilitation	5.0	5.0	6.4	7.0	4.0	5.5
6	A07-01: 47.0 km, Natarbora - Viqueque Rehabilitation	6.0	5.0	7.1	6.0	3.0	5.4
5	A05-03: 27.2 km, Same - Betano Rehabilitation	5.0	5.0	7.1	6.0	4.0	5.4
13	A12-03: 26.9 km, Lourba Jct - Zumalai Rehabilitation	6.0	5.0	6.4	6.0	3.0	5.3
14	A13-01: 17.0 km, Hate Udo - Aiassa (A05-3) Rehabilitation	6.0	5.0	6.4	6.0	3.0	5.3
19	A15-02: 15.0 km, Tilomar - Wemassa (Border) Rehabilitation	6.0	5.0	6.4	6.0	3.0	5.3
30	C06: 52.7 km, Laga Jct (A01-3) - Ossu Rehabilitation	5.0	5.0	6.4	7.0	3.0	5.3
38	C14: 36.0 km, Manatuto Jct - Aileu Jct Rehabilitation	5.0	5.0	6.4	7.0	3.0	5.3
23	A18-01: 40.5 km, Oecussi - Citrana Rehabilitation	6.0	5.0	7.1	6.0	2.0	5.2
55	Core Rural Road Rehabilitation, Y2018-22	6.0	5.0	10.0	3.0	2.0	5.2
56	Core Rural Road Rehabilitation, Y2023-27	6.0	5.0	10.0	3.0	2.0	5.2
31	C07: 34.0 km, Uatulari - Lassoralai Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
33	C09: 7.0 km, Atauro Vila - Makili Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
35	C11: 16.5 km, Jct A02-1 - Lequidoe Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
39	C15: 10.0 km, Laclubar Jct - Laclubar Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
41	C18: 27.0 km, A03 Jct - A11 Jct Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
42	C19: 20.0 km, Baiki - Passabe Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
43	C20: 8.0 km, Oesilo - Tumin Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
45	C26: 12.0 km, Maubisse Junction - Turiscai Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
46	C27: 38.0 km, Alas Jct - Turiscai Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
47	C28: 25.0 km, A14 Jct (Dotic) - Alas Rehabilitation	5.0	5.0	6.4	7.0	2.0	5.1
21	A16-02: 48.0 km, Fatalulik - Tilomar Rehabilitation	5.0	5.0	6.4	6.0	3.0	5.1
4	A05-02: 17.0 km, Betulala - Same Rehabilitation	5.0	5.0	7.1	6.0	2.0	5.0



Ref		Daily Traffic (standardized)	Class of Works	Rural Accessi- bility	Safety	BCR (standardized)	MCA Result
	Weight:	20%	20%	20%	20%	20%	
36	C11': 12.0 km, Lequidoe - Aileu Jct (A02-1) Rehabilitation	4.0	5.0	7.1	7.0	2.0	5.0
59	Dili Public Transport Improvements, 2018-22	8.0	7.0	0.0	0.0	10.0	5.0
37	C12: 0.4 km, A02 Jct - Laulara Rehabilitation	4.0	5.0	6.4	7.0	2.0	4.9
48	C29: 9.5 km, A09 Jct (Mane Hat) - Soibada Rehabilitation	4.0	5.0	6.4	7.0	2.0	4.9
49	C30: 13.0 km, Laclubar Jct - Soibada Rehabilitation	4.0	5.0	6.4	7.0	2.0	4.9
50	C31: 18.0 km, A14 Jct (Wedauberec) - Alas Rehabilitation	4.0	5.0	6.4	7.0	2.0	4.9
52	C33: 15.0 km, Dotic - Fatuberiu Rehabilitation	4.0	5.0	6.4	7.0	2.0	4.9
8	A08-02: 25.0 km, Uatucarbau Junction - Iliomar Rehabilitation	5.0	5.0	6.4	6.0	2.0	4.9
12	A12-02: 18.4 km, Oeleu - Lourba Jct Rehabilitation	5.0	5.0	6.4	6.0	2.0	4.9
15	A13-02: 8.0 km, Cassa - Hate Udo Rehabilitation	5.0	5.0	6.4	6.0	2.0	4.9
20	A16-01: 28.7 km, Oeleu (A12 Jct) - Fatalulik Rehabilitation	5.0	5.0	6.4	6.0	2.0	4.9
16	A14-01: 37.7 km, Natarbora - Alas Jct Rehabilitation	6.0	5.0	3.6	6.0	3.0	4.7
17	A14-02: 9.1 km, Alas Jct - Betano Rehabilitation	6.0	5.0	3.6	6.0	3.0	4.7
34	C10: 13.4 km, Aileu Jct (A02-1) - Ermera Jct (A04-1) Rehabilitation	5.0	5.0	3.6	7.0	3.0	4.7
80	Baucau District and Alternative Airport	3.0	8.0	0.0	10.0	2.0	4.6
26	C02: 32.2 km, Fuiloro - Tutuala (Jaco) Rehabilitation	5.0	5.0	3.6	7.0	2.0	4.5
27	C03: 15.2 km, Com - Trisula Rehabilitation	5.0	5.0	3.6	7.0	2.0	4.5
63	Priority Rural Road Project #1: 23.0 km, Suai - Mecato (Cova Lima)	5.0	5.0	7.1	3.0	2.0	4.4
60	Dili Public Transport Improvements, 2023-27	8.0	7.0	0.0	0.0	7.0	4.4
3	A05-01: 13.0 km, A02 Jct (Aituto) - Betulala Rehabilitation	5.0	5.0	3.6	6.0	2.0	4.3
64	Priority Rural Road Project #2: 19.0 km, Maubisse - Hatubuilico (Ainaro)	4.0	5.0	6.4	3.0	2.0	4.1
65	Priority Rural Road Project #3: 26.0 km, Tilomar - Fohorem (Cova Lima)	4.0	5.0	6.4	3.0	2.0	4.1
28	C04: 10.0 km, A08-3 Jct - Luro Rehabilitation	2.0	5.0	3.6	7.0	2.0	3.9
29	C05: 12.0 km, Raihun (A07) - Dilor Rehabilitation	2.0	5.0	3.6	7.0	2.0	3.9
76	Tibar Phase 1	6.0	7.0	0.0	3.0	3.0	3.8
77	Tibar Phase 2	6.0	7.0	0.0	3.0	3.0	3.8
70	Betano Refinery Port	6.0	2.0	0.0	3.0	7.0	3.6
82	Maliana District Airport	3.0	5.0	0.0	8.0	2.0	3.6
83	New PNLIA Terminal	5.0	7.0	3.6	0.0	2.0	3.5
58	Dili Urban Road Improvements	7.0	7.0	0.0	0.0	3.0	3.4

Ref		Daily Traffic (standardized)	Class of Works	Rural Accessi- bility	Safety	BCR (standardized)	MCA Result
	Weight:	20%	20%	20%	20%	20%	
72	Com container-handling port	4.0	7.0	0.0	3.0	3.0	3.4
81	Los Palos District Airport	2.0	5.0	0.0	8.0	2.0	3.4
87	Same District Airport	2.0	5.0	0.0	8.0	2.0	3.4
69	Atauro port expansion	4.0	4.0	2.9	3.0	3.0	3.4
73	Kairabela container-handling port	4.0	7.0	0.0	3.0	2.0	3.2
75	Suai Supply Base	5.0	2.0	3.6	3.0	2.0	3.1
71	Beaço Port	7.0	2.0	0.0	3.0	3.0	3.0
79	Atauro District Airport	2.0	5.0	0.0	4.0	2.0	2.6
68	3rd Ferry	4.0	2.0	2.9	0.0	2.0	2.2
86	Oecusse Intl Airport	5.0	2.0	0.0	0.0	2.0	1.8

### 5.5.1 Commentary on Prioritized Projects

The MCA gives considerable priority to road projects, with the exception of a couple of national / international civil aviation projects. Ports, including Tibar Port phase 2, do not rank well.

The results indicate that the future transport sector investments lie strongly in the roads and bridges sub-sector, with only a few high-ranking low-cost investments in the civil aviation sector, and almost none in the maritime sector.

## 6. Investment Plans

### 6.1 Introduction

This chapter presents the investment plans for two five-year periods: 2018-2022 and 2023-2027. Each period assumes a budget, and apportions the funds necessary for maintenance first, after which the remainder is available for capital projects. Assumptions concerning the budget appear further below.

### 6.2 2018-2022 Investment Plan

The investment plan for the five-year period, 2018-2022, assumes \$948 million dollars available to the transport sector maintenance and capital projects. It reserves money for all maintenance program requirements before allocating the remaining funds to capital development projects.

#### 6.2.1 2018-2022 Maintenance Budget

Table 6.1 demonstrates the maintenance budget for the five-year period 2018 to 2022 will be \$172 million (in 2020 dollars):

Table 6.1: Maintenance Budget, 2018-2022  
(nominal \$, year 2020, million)

Budget Item	2018-2022
Roads & Bridges	
- National	\$52.9
- District	\$7.0
- Urban	\$9.4
- Rural	\$41.8
Total Roads and Bridges	\$111.2
Maritime Maintenance	\$22.0
Airports Maintenance	\$39.0
<b>Total 5-year Maintenance Budget</b>	<b>\$172.2</b>

#### 6.2.2 2018-2022 Capital Investment Plan

Deducting the recurrent maintenance costs from available transport sector funding, the funds available for capital investments are approximately \$776 million.

Table 6.2 provides a list of projects that can be funded in 2018-2022, in order of priority they received in the multi-criteria analysis. The total value of projects that nearly fits within the funds available is \$816 million. (That is \$40 million more than the above estimate, but excluding the last, \$113 million Rural Road Rehabilitation program would have left \$73 million un-used, and adjustments can be made to the program.)

Table 6.2: 2018-2022 TSMP Capital Investment Plan  
(nominal \$, year 2020, million)

Ref	Prioritized Investment Projects	MCA Score	Cost Est. 2018-22	Annual Maintenance
1	A02-06: 17.5 km, Cassa - Zumalai Rehabilitation	6.3	\$18.9	\$0.3
85	PNLIA RESA Option 2	6.2	\$4.2	\$0.1
22	A17-01: 28.3 km, Oecussi - Oesilo Rehabilitation	6.2	\$33.0	\$0.5
10	A11-01: 55.8 km, Jct A04-2 (Ermera) - Maliana Rehabilitation	6.0	\$61.0	\$1.1
11	A12-01: 16.4 km, Maliana - Oeueu Rehabilitation	6.0	\$20.4	\$0.3
7	A08-01: 57.5 km, Viqueque - Uatucarbau Junction Rehabilitation	6.0	\$61.7	\$1.1
51	C32: 23.0 km, Suai (Beco) - Lolotoe Junction Rehabilitation	6.0	\$26.7	\$0.4
53	Bridge Rehabilitation (Y2018-22): 390 Im.	5.9	\$22.9	\$0.8
40	C17: 30.0 km, Aipelo - Railaco Rehabilitation	5.9	\$12.5	\$0.2
57	Dili Deviation	5.8	\$31.1	\$0.8
78	ADS/B plus PBN	5.8	\$0.5	\$0.0
25	C01: 57.7 km, Lospalos - Iliomar (Via Lore) Rehabilitation	5.8	\$46.8	\$0.7
44	C23: 26.7 km, Hatu Udo - Ainaro Rehabilitation	5.8	\$20.1	\$0.3
24	A19-01: 15.0 km, Oecussi - Sacato (Border) Rehabilitation	5.6	\$13.4	\$0.2
9	A08-03: 45.4 km, Iliomar - Lospalos Rehabilitation	5.6	\$51.1	\$0.9
18	A15-01: 12.2 km, Suai - Tilomar Rehabilitation	5.6	\$13.1	\$0.2
32	C08: 65.3 km, Laga Jct (A01-3) - Uatucarbau Junction Rehabilitation	5.5	\$36.0	\$0.5
6	A07-01: 47.0 km, Natarbora - Viqueque Rehabilitation	5.4	\$51.7	\$0.9
5	A05-03: 27.2 km, Same - Betano Rehabilitation	5.4	\$29.8	\$0.5
13	A12-03: 26.9 km, Lourba Jct - Zumalai Rehabilitation	5.3	\$31.2	\$0.5
14	A13-01: 17.0 km, Hate Udo - Aiassa (A05-3) Rehabilitation	5.3	\$18.9	\$0.3
19	A15-02: 15.0 km, Tilomar - Wemassa (Border) Rehabilitation	5.3	\$16.2	\$0.3
30	C06: 52.7 km, Laga Jct (A01-3) - Ossu Rehabilitation	5.3	\$15.4	\$0.2
38	C14: 36.0 km, Manatuto Jct - Aileu Jct Rehabilitation	5.3	\$27.0	\$0.5
23	A18-01: 40.5 km, Oecussi - Citrana Rehabilitation	5.2	\$43.6	\$0.8
55	Core Rural Road Rehabilitation, Y2018-22	5.2	\$112.9	\$6.3
	<b>Total Capital Investment</b>		<b>\$816.1</b>	

Note: The value of each project has been adjusted for inflation. The cost estimate and annual maintenance costs are presented in year 2020 dollars.

Almost all the projects prioritized are roads projects, none are maritime, and only two are civil aviation. The national road projects represent 411 km of national roads and 292 km district roads. The two civil aviation projects are the RESA extension of the PNLIA runway and the combined ADS/B and PBN navigation system.

### 6.3 2023-2027 Investment Plan

The investment plan assumes the transport sector will have \$638 million available for the maintenance and capital projects, in the 5-year period, 2023-2027. It reserves funds for maintenance before allocating the remainder to capital projects.

#### 6.3.1 2023-2027 Maintenance Budget

As in the previous 5-year investment plan, it is important to reserve funds for maintenance. Table 6.3 provides the 5-year transport sector maintenance budget for the years 2023-2027 (in 2025 dollars):

Table 6.3: Maintenance Budget, 2023-2027  
(nominal \$, year 2025, million)

Budget Item	2023-2027
Roads & Bridges	
- National	\$113.6
- District	\$31.2
- Urban	\$11.5
- Rural	\$54.6
Total Roads and Bridges	\$210.8
Maritime Maintenance	\$26.7
Airports Maintenance	\$47.4
<b>Total 5-year Maintenance Budget</b>	<b>\$284.9</b>

### 6.3.2 2023-2027 Capital Investment Plan

Deducting the recurrent maintenance costs from available transport sector funding, and adding in the \$6 million savings not spent in the previous 5-year period, the transport sector will have \$353 million to spend on capital investments. Adjusting for the \$40 million over-flow in the previous 5-year period, the funds available for capital development are assumed to be \$313 million in 2023-27

Table 6.4 lists projects fundable within the 2023-2027 constraints, ranked according to the prioritization they received in multi-criteria analysis. The constrained budget allows for seven projects, with a combined value of \$294 million. These include a bridge rehabilitation program and core rural roads projects, plus four district road rehabilitation projects with a total length of 68 km.

Table 6.4: 2023-2027 TSMP Investment Plan  
(nominal \$, year 2025, million)

Ref	Prioritized Investment Projects	MCA Score	Cost Est. 2023-27	Annual Maintenance
54	Bridge Rehabilitation (Y2023-27): 390 lm.	5.9	27.8	1.0
56	Core Rural Road Rehabilitation, Y2023-27	5.2	151.2	
31	C07: 34.0 km, Uatulari - Lassoralai Rehabilitation	5.1	33.5	0.5
33	C09: 7.0 km, Atauro Vila - Makili Rehabilitation	5.1	6.9	0.1
35	C11: 16.5 km, Jct A02-1 - Lequidoe Rehabilitation	5.1	15.0	0.3
39	C15: 10.0 km, Laclubar Jct - Laclubar Rehabilitation	5.1	9.1	0.2
45	C20: 8.0 km, Oesilo - Tumin Rehabilitation	5.1	7.3	0.1
	<b>Total</b>		<b>\$293.7</b>	

## 6.4 Investment vs. Maintenance

The investment plan gives highest priority to maintenance. This plan therefore allocates the estimated future 5-year routine and periodic maintenance requirements— \$172 million for the 2018-2022 period, and \$285 million for 2023-2027 – before considering capital investments.

Without maintenance, infrastructure deteriorates and requires large rehabilitation or reconstruction investments later, to bring the assets back to good condition. Under-investment in Timor-Leste's road infrastructure maintenance has contributed to landslides, erosion, culvert failures and road system failures in general. Routine and periodic maintenance costs are relatively small and cost effective. The much smaller cost of maintenance (versus rehabilitation) represents the best investment in retaining existing asset's value.

## 6.5 Funding Assumptions

### 6.5.1 Transport Sector Investment Plan Parameters

The transport sector investment plan is based upon funding parameters (sometimes referred to as a funding "envelope") for future years.

Given trends in government financing, opportunities for financing through cost-recovery mechanisms, and from development partners, this plan proposes the following long-term parameters for funding transport sector maintenance and capital projects for the five-year periods, 2018-2022 and 2023-2027.

Table 6.5: 3-Year and 5-Year Annual Transport Sector Funding Mechanisms (\$ million)

	2015-17	2018-2022	2023-2027
<b>Capital</b> (Infrastructure Fund, CFTL Major Capital, excl. loans)	\$785	\$258	\$0
<b>Loans</b>			
1. Road & Bridge	399.9	\$306	\$225
2. Maritime	\$0	\$0	\$0
3. Civil Aviation	\$0	\$0	\$0
<b>Cost-Recovery Mechanisms</b>			
1. Vehicle Registration	\$6	\$138	\$194
2. Port User Charges	\$10	\$0	\$0
3. Airport User Charges	\$6	\$10	\$24
4. Aviation Inspection and Registration Charges	\$0	\$1	\$1
<b>Public-Private Partnerships</b>	\$180	\$0	\$0
<b>Development Partners' Commitments</b>	\$146	\$236	\$193
<b>Total Funding Available</b>	<b>\$1,533</b>	<b>\$948</b>	<b>\$638</b>

The above is the result of many assumptions described below.

### 6.5.2 Current Trends

Timor-Leste allocates a considerable amount of funding to the transport sector: roughly a third to a fifth of the entire budget. The government allocated \$311 million in 2015 to transport projects in all three sectors. The corresponding allocations were \$275 in 2014, and \$332 in 2013. These values include funding to MOPTC agencies, as well as that provided to employment programs, Tasi Mane, ZEESM, which manage other transport projects. Roughly two-thirds of the road funds are for road projects, especially road rehabilitation. Maintenance has been largely neglected in funding Timor-Leste's transport sector.

The budget assumes non-oil revenue will rise from \$166 million (10.7% of the non-oil GDP) in 2014, to \$1,067 million (14.3%) in 2030. Petroleum Fund withdrawals will rise from \$903 million in 2014 to \$1,704 in 2017, and decline to \$233 million in 2030.

At present, the government makes excess withdrawals from the Petroleum Fund beyond the Estimated Sustainable Income (ESI) to finance priority investments that will provide higher long-term economic growth. The government's financial challenges are to increase the non-oil revenue, and to ensure that Petroleum Fund withdrawals fall back to the level of the ESI.

### 6.5.3 Funding Risks

Petroleum revenues are forecast to decline, and faster than were earlier anticipated. While the SDP 2011-2030 originally assumed oil production in Bayu-Undan would continue until 2025, the projected close-out has been moved to 2021. In addition, in early 2015, the world's oil prices were half what they were at their high-point in June 2014. Oil prices will likely be two-thirds of the budget's target in 2015 and 2016, and then return to the anticipated path in 2018.<sup>12</sup> The country is overdrawing funds from the PF.

Recurrent expenditures are rising faster than revenues and will eventually "crowd out" capital, and create a deficit. Budget deficits will occur some year between after 2019, and grow every year after that. It will be necessary to cut back capital expenditures, recurrent costs, and / or find alternative revenue sources.

The values in table 6.5 above assume the transport sector can use half of the total capital funding for 2018-2019 projected in the State Budget 2015. The absence of the Infrastructure Fund and other sources of capital in 2023-2027 is the result of the recurrent expenditures crowding out other spending.

### 6.5.4 Alternative Funding

The Timor-Leste transport sector must consider long-term alternative funding strategies. Options include cost-recovery mechanisms, public private partnerships, and loans from development partners.

**Cost-Recovery Mechanisms:** Timor-Leste can charge users for the services provided, through higher vehicle registration fees, fuel taxes, vehicle overloading charges, or higher port charges, ferry fares, landing fees, and airport taxes, to mention just a few of the options. The intermodal bus terminals envisioned by the Dili Urban Master Plan will include commercial development that offers a virtuous circle of concentrated transport services and high real estate values associated with the large number of customers passing through this center.

Table 6.5's estimate of vehicle registration revenue is a function of the number of vehicles new vehicle registered, and the associated tariff rates. Assuming a constant number of personal automobiles, slowing growth in trucks and motorcycles, and continued growth in public transport vehicles (both microlets and buses), the 2020 additions to Timor-Leste's vehicle fleet are estimated. Much higher first-time registration fees (e.g. \$4,025 on personal automobiles), are assumed. The resulting revenue from the registration of new-entrant vehicles in Timor-Leste's fleet will be \$18.3 million. Another \$9.3 million is available from increased charges on the renewal of vehicle registrations. (The justification for the proposed charges, their relationship to charges in neighboring countries, and the growth factors for vehicle registrations are available in Appendix N, "Road User Charges and Sustainable Transport Finance.") The total vehicle registration revenue in 2020 is estimated to be \$27.6 million. Using lower growth rates in later years, and the same charges, the 2025 vehicle registration revenue becomes \$38.8 million.

Airport user charges are also a function of PNLIA traffic and tariff rates. The estimate above assumes the growth forecasts increase passenger traffic (272,000 passengers in 2020, 331,000 passengers in 2025: see Appendix E). It also assumes a doubling of user charges by 2022. The estimated airport user charge revenue is \$ 2.0 million for 2020, and \$4.8 million in 2025.

**Borrowings:** The analysis assumes the large loan disbursements from bilateral and multilateral development partners appearing in the State Budget through 2018 (\$159.9 million) and falling in 2019 (\$50 million). The analysis also assumes that the real value of annual loan disbursements

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<sup>12</sup> The estimates for this and the next year are based on the World Bank's January, 2015 *Commodity Market's outlook*: \$53 for 2015, and \$57 in 2016. This contrasts to the State Budget's anticipated \$90 in 2015, and \$87 in 2016. Longer-term forecasts derive from the OECD / IEA.



declines 30 percent, 2020-2030. Although current loans have all been for road and bridge projects, the analysis also assumes the transport sector competes with other priority sectors and is able to avail of 85% of the estimated loan disbursements in 2018-2022, and 75% in 2023-2027. Factoring in inflation, the nominal value of transport-sector loan disbursements will be \$305.8 million over the five year-period 2018-2022, and \$225.4 million for 2023-2027.

**Development Partners' Commitments:** Development partners are already providing approximately \$200 million a year in grants to Timor-Leste for a wide variety of assistance. The transport sector has been the beneficiary of approximately \$50 million per year. The investment plan assumes that Timor-Leste in general, and the transport sector, receive progressively lower Development Partners' Commitments in the future, as priority sectors are addressed and the country moves towards middle-income status. Therefore, the \$50 million the transport sector received in 2014 will fall by 10 percent in real terms by 2018-2022, and by 30 percent in 2023-2027. The nominal value of grants available to the transport sector will be \$236.5 million for the five-year period 2018-2022, and \$193.3 million in 2023-2027.

## 7. Transport Sector Management

This chapter provides a summary of sector management recommendations. Further detail on the recommendations and background are provided in Appendix J.

### 7.1 Key Institutional Reforms

The six most important institutional reforms needed in the transport sector are:

- (1) Improve Capacity:
  - (i) All agencies require improved capacity in policy development, asset management, planning, maintenance programming, project preparation, project management, supervision and monitoring and in financial management;
  - (ii) Staff numbers will increase and require training in the fields of management, planning and budgeting, engineering and technical skills, maintenance and operations, project preparation, and financial management; and
  - (iii) Agencies will outsource functions they cannot immediately fill themselves to consultants and contractors, and continue to do so as long as the relationship remains suitable.
- (2) To Resolve Overlapping Functions:
  - (i) DRBFC will take over the signage and signals responsibilities from DNTT; and
  - (ii) A National Transport Planning Agency will be established, and be responsible for planning, and coordination (including the inactive road planning functions currently assigned to DNTT).
- (3) Separating Implementing Agencies from Regulatory Agencies: The maritime sub-sector agencies (APORTIL and DNTM) and civil aviation agencies (ANATL and AACTL) will have separate responsibilities, separate operational directors, have boards of directors, and have clear financial responsibilities so as to avoid any conflicts of interest.
- (4) Developing Autonomous Agencies and Improving Cost Recovery: APORTIL, ANATL and AACTL are designated autonomous agencies. DNTT will establish itself as a fourth autonomous agency in the transport sector. These agencies will establish boards and develop the auditing functions legally necessary before they can set rates and generate revenues. Financial guidelines will be established for operations and maintenance.
- (5) Institutional development includes the development of processes, such as a well-enforced procedures for project preparation and management, reduction in the use of emergency works clauses and the development of asset management systems.
- (6) The creation of new institutions, funding agencies and coordinating bodies, specifically the National Transport Planning Agency, National Road Safety Council, Road Maintenance Fund, Dili Public Transport Development Committee, and the National Aviation Security Committee.

All the institutional changes proposed represent significant alterations to the existing work practices, especially in the roads and bridges and land transport sub-sectors. All agencies should develop "Change Management Strategies" outlining the staffing and institutional reorganization in more detail, especially in the near-term, and provide orientation to staff members so that they understand the purpose and benefits of the changes, and can thereby contribute in a proactive manner.

## 7.2 Institutional Change

This section outlines the principle institutional changes in terms of roles, responsibilities and capacity, plus reorganization, staffing and training, and outsourcing, for each institution.

### 7.2.1 DRBFC

DRBFC will move its focus from asset-building to asset maintenance, prepare a maintenance policy, develop asset management systems and maintenance programs, while improving its project-preparation, management and monitoring systems. It will create a definitive design manual, establish offices in each district (*município*) in order to expand its role in rural roads maintenance and rehabilitation, take over the DNTT's responsibility for signs and signals, and participate in the creation and management of a financially sustainable Road Maintenance fund.

To achieve the above, the following institutional structure changes will occur:

- (i) DRBFC will establish an Asset Management Section within the Department of Projects;
- (ii) DRBFC will create a Maintenance Planning Section within the Department of Projects;
- (iii) DRBFC's Department of Projects will expand the role of the Planning Section, assuming this responsibility from DNTT;
- (iv) DRBFC will also create a Maintenance Management Section within the Department of Analysis and Evaluation, while coordinating supervision functions with the Department of Maintenance;
- (v) DRBFC will have staff / contractors in each district office responsible for collecting core rural road condition data, planning and programming rural roads, project management, and training local contractors; and
- (vi) DRBFC engineers in the Department of Projects will also assume responsibility for road markings, signs and signals.

The DRBFC will increase its professional staff, from 105 today, to 155 individuals (including contractors) in the future. Approximately 111 DRBFC staff members will receive training, principally in the areas of planning, budgeting, financial management, engineering and technical topics, maintenance and operations, and especially project preparation and project management.

### 7.2.2 DNTT - Land Transport

DNTT will contract out its main licensing and vehicle registration activities to the private sector, increase controls on heavy vehicles, move sign and signal engineering responsibilities to the DRBFC, support public transport, establish an asset management system for its public transport terminals and new public transit centers and intermodal bus terminals, and create a National Road Safety Council Secretariat within its office. Most importantly, DNTT will establish itself as an autonomous agency and apply the revenue from vehicle registration proceeds towards the Road Maintenance Fund and the Dili Public Transport Development Committee.

This requires a major reorganization of DNTT:

- (i) The exiting Licensing division and Vehicles Department within DNTT will downsize and become the Licensing and Registration Franchise Management office, with limited staff, reporting to the head of Administration and Finance;
- (ii) DNTT will create new Public Transport and Vehicle Overloading divisions, under the Public Transport and Goods division;
- (iii) The Department of Traffic and Terminals will retain its Terminal and Operations Sections, containing the Asset Management Group, and also house the National Roads Safety Council's secretariat;

- (iv) DNTT will provide National Road Safety Council Secretariat services supporting the council;
- (v) DNTT's new Public Transport division will support the Dili Public Transport Development Committee; and
- (vi) DNTT will also require a board, auditor and controller to establish its role as Autonomous Agency.

The DNTT will increase its professional staff, from 27 today, to 25 individuals (including contractors) in the future. Approximately 22 DNTT staff members will receive training, principally in the areas of management, planning and budgeting, financial management, and project management, to manage their commercially outsourced licensing and registration functions.

More important, the Licensing and Registration Franchise Management office will provide funding to the Road Maintenance Fund, and possibly the Dili Public Transport Development Committee.

### 7.2.3 APORTIL

APORTIL continues to be the nation's port authority and is responsible for the development, operations and maintenance of publicly owned ports. APORTIL will develop its responsibilities as an autonomous agency, develop a cost recovery model for its operations, stop operating ferry service, and improve its financial management, asset management, project preparation, and project management capacity. More specifically, the organization will change in the following ways:

- (i) Clearly separate APORTIL from DNTM, with different directors and with distinct accounts, so as to avoid conflicts of interest;
- (ii) Establish a board, an independent auditor, and a financial controller so as to enhance APORTIL's financial management capacity and meet the preconditions for an Autonomous Agency that can retain its revenues;
- (iii) Create an asset management system, and associated office within the existing Port Maintenance division, to monitor the condition of assets and traffic, and assign managers in each port with responsibility for collecting that information;
- (iv) Update APORTIL's tariff schedule so that it can recover its operating and maintenance expenditures;
- (v) Divest itself of ferry service operations;
- (vi) Upgrade the studies and planning department so as to improve APORTIL's maintenance capacity, and enhance dialog with the National Transport Planning Agency; and
- (vii) Meanwhile, the management of Tibar port will be a partnership between a competitively selected private partner and the Government of Timor-Leste, with APORTIL in an advisory role.

The APORTIL will increase its professional staff, from 8 today, to 32 individuals (including contractors) in the future. Approximately 21 APORTIL staff members will receive training, principally in the areas of planning and budgeting, engineering and technical topics, maintenance and operations, and project preparation.

### 7.2.4 DNTM

DNTM continues to be responsible for strengthening and enforcing maritime regulation. However it needs to expand its capacity so as to regulate safety and security in accordance with more international agreements. That is, DNTM will operate as a Flag State, a Port State, and a Coastal State, including SAR coordination. This includes compliance with IMO and other

international agreements, including the framework agreements associated with the ASEAN Master Plan for Connectivity. DNTM must also create a small asset management system to program regular maintenance and safety checks.

DNTM's organizational challenges are largely a matter of fulfilling its existing mandate and hiring staff / contractors to fill all position in terms for maritime safety, maritime protection, and maritime activities. It must also expand administration and finance positions, and hire a harbormaster. DNTM will also:

- (i) Create, staff, and train a Search and Rescue (SAR) team and acquire the necessary equipment; and
- (ii) Assign a person in the maritime activity division responsible for monitoring asset condition and informing management of maintenance requirements.

The DNTM will increase its professional staff, from 3 today, to 35 individuals (including contractors) in the future. Approximately 33 DNTM staff members will receive training, principally in the areas of planning, budgeting, and finance, and technical skills related to its regulatory and SAR roles

#### 7.2.5 ANATL

ANATL will continue to develop and operate airports and air navigation services. It will enhance its institutional structure and human capacity as an agency separate from AACTL, as an autonomous agency with a cost-recovery business model, and expanded capacity for financial management, asset management, and maintenance programming. ANATL will also improve its capacity to prepare costed annual action plans. And it will participate with other agencies in improving airport security.

In terms of organization, ANATL will:

- (i) Clearly separate from AACTL, with distinct directors, staff, boards, and accounts;
- (ii) Upgrade its functions as an autonomous agency with a cost recovery business model, including the establishment of a board of directors and appointment of independent auditors, as well as a financial controller;
- (iii) Establish a small asset management system and maintenance programming office within its Airport division;
- (iv) Create a strategic planning office within the existing Planning and Development division, with responsibility for dialog with the National Transport Planning Agency; and
- (v) Participate in the National Aviation Security Committee.

ANATL will increase its professional staff, from 69 today, to 82 individuals (including contractors) in the future. Approximately 34 ANATL staff members will receive training, principally in the areas of planning, budgeting, financial management, project preparation and project management, as well as maintenance and operations.

#### 7.2.6 AACTL

AACTL will formally separate from ANATL, and establish itself as an autonomous agency with a cost-recovery business model, complete with the institutional capacity, and a tariff schedule. Furthermore, it must improve its capacity to establish and enforce more national safety regulations and secondary regulatory documents, clarify operations (rules of the air) and equipment regulations, so as to avoid potential conflicts of interest.

The organization changes this entails for AACTL include:

- (i) Clearly separate from ANATL, with distinct directors, staff, boards, and accounts.

- (ii) Upgrade its functions as an autonomous agency with a cost recovery business model, including the establishment of a board of directors, and appointment of independent auditors, as well as a controller.

AACTL's Aviation Security Division will be the body most responsible for creating an inter-agency National Aviation Security Committee to protect the traveling public from unlawful interference of air traffic, once the government ratifies the "Aviation Security Legislation" and additional security conventions and protocols.

AACTL will increase its professional staff, from 1 today, to 11 individuals (including contractors) in the future. Approximately 9 AACTL staff members will receive training, principally in technical skills related to its regulatory and inspection roles.

#### 7.2.7 National Transport Planning Agency

The National Transport Planning Agency will be a new and important branch of the reorganized MOPTC. It will have a director with experience and understanding of all three sub-sectors, and the planning process. The aim is to pool planning capacity and provide greater direction in prioritizing transport sector development projects.

The National Transport Planning Agency will have professional staff of 6 individuals (including contractors). Approximately 6 National Transport Planning Agency staff members will receive training, principally in the areas of planning, budgeting, engineering, technical topics, maintenance and operations, and project preparation.

#### 7.2.8 National Road Safety Council

The new National Road Safety Council's membership will meet for the purpose of coordinating initiatives to improve safety on the nation's roads. Its composition will include members from DNTT, the Traffic Police, MOPTC, the Ministry of Health, Ministry of Education and Culture, the Red Cross, World Health Organization, and any other suitable organizations.

The council will have the support of a director and two staff members in the National Road Safety Council Secretariat, within in DNTT.

#### 7.2.9 Road Maintenance Fund

The new Road Maintenance Fund will provide funds for the maintenance and rehabilitation of national, district, urban and rural roads (and if agreed by government stakeholders, also support public transport in Dili). The fund will have a board with fiduciary responsibilities for the management of funds collected, and apportionment to relevant institutions. The board will contain members from DRBFC, DNTT, and the Ministry of Finance, plus members from the private sector representing road users and road construction companies.

The Road Maintenance Fund will be an independent body. It requires a small permanent staff of a director / financial officer, two accountants, and a secretary.

The Road Maintenance Fund will have a staff of four (including contractors). Staff members will receive training, principally in the areas of financial management.

#### 7.2.10 Dili Public Transport Development Committee

The Dili Public Transport Development Committee will support initiatives to develop and finance an affordable, safe, convenient, and comfortable public transport system. The committee will seek to establish right-of-ways for public transport, build public transit centers and intermodal bus terminals, and develop commercial properties nearby those centers. The committee will coordinate the activities of private and public-sector parties (including MPIE's Directorate of Housing & Urban Planning, the Dili district government, and DNTT), and representatives from civil society, including representatives of the disabled and aged persons.

The revenue derived from commercial properties will finance these public transport improvements, and provide cross-subsidies for high-capacity bus services. The Committee will be a board with fiduciary responsibilities for the management of funds and apportionment to relevant projects.

The Dili Public Transport Development Committee requires a small permanent staff of a director / financial officer, an accountant, and a secretary. The committee will oversee the director and three or four persons in a Commercial Development Group who can work with private sector real estate developers and different ministries to develop commercial and government properties. The Commercial Development Group's staff / contractors will be a team of salesmen, conversant in land and property development.

Two or three staff members on the Dili Public Transport Development Committee will receive training, principally in the areas of planning and budgeting, and perhaps commercial real estate development.

#### **7.2.11 National Aviation Security Committee**

The National Aviation Security Committee will communicate and coordinate security initiatives surrounding airports and aircraft, in accordance with ICAO Annex 17 standards. Its membership will include representatives from the ministries of Interior, Defense, and the National Intelligence Service (SNI), as well as ANATL and AACTL. The Minister of Public Works, Transport, and Communications will chair the committee

The National Aviation Security Committee will merely be a coordinating and communication body, with no staff.

## 8. Monitoring Performance

### 8.1 Introduction

This chapter provides some initial comments about the Transport Sector Master Plan's monitoring process, with some initial comments about the likely indicators it will monitor.

Monitoring provides the basis for the evaluation of projects, programs, or plans, and agency performance. Monitoring assists in decision-making to determine changes needed in plans. A monitoring framework provides managers and other stakeholders an indication of plan objectives, and later reveals the progress towards the achievement of objectives, and explains to line staff what data they should be collecting.

The monitoring processes and indicators suggested in this chapter can be utilized to inform the development of the SDP 2011-2030 monitoring framework currently being developed. Once developed and agreed upon, that framework will then be used to refine the TSMP monitoring where appropriate.

Sub-sector institutions, and the National Transport Planning Agency, will be responsible for monitoring inputs and outputs, and (to a more limited extent) outcomes, during the implementation of the TSMP.

### 8.2 Development to Date

The monitoring process has not been fully developed yet. A complete monitoring and evaluation framework for the plan will occur once the stakeholder consultations are complete, there is a consensus on the projects and policy the plan will support, agreement on the level of monitoring that can be undertaken and the responsibilities.

Appendix K provides an illustration of the many input, output, and outcome indicators that will likely appear in the final TSMP monitoring framework. Later, the list of indicators will be revised, and exact numbers will appear in the final monitoring framework, according to different years.

The monitoring framework proposed will focus on inputs (funds for specific programs, expenditures, staffing, outsourced contracts, increased staffing, and technical knowledge), outputs (the immediate results: e.g. km roads rehabilitated, institutions established, safety and security rules ratified, cargo throughput, etc.), and outcomes (the interim / long-term results in terms of improved infrastructure, such as the length of road in good / fair / poor condition, reduced travel times, traffic, ship calls and trade) .

### 8.3 Future Development to Complete the Transport Sector Monitoring Framework

The monitoring and evaluation framework requires consensus from stakeholders and preparation of the final plan. The monitoring system will not be known until the stakeholder consultation process is largely complete.

Once the plan is largely finalized, the policy and funded projects known, the final Transport Sector Master Plan will revise the list of inputs, outputs and outcomes currently appearing in Appendix K, and fill in the baseline and expected values for each indicator, for each year. The exact indicators require consideration of each indicator's clarity, reasonableness, meaningfulness, source of information, and regularity of data collection. Then the monitoring framework will be complete.

Once the monitoring framework is complete, the main work required of a monitoring system is the regular collection and analysis of information.



Monitoring and evaluation is a neglected process in Timor-Leste. Asset management, maintenance management, and other staff in implementing agencies will require training from contractors hired on outsourcing basis to move the monitoring process forward. The National Transport Planning Agency is the body that will gain the most from a working monitoring process, and will use its influence to encourage line agencies to update their monitoring frameworks in a timely manner.

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