# TRANSPORTATION OF GOODS IN EAST NUSA TENGGARA: PROBLEMS AND COSTS


The Asia Foundation

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# GLOSSARY OF TERMS AND ABBREVIATIONS

| | |
|---|---|
| ADPEL | Administrator Pelabuhan, Port Administrator/ Harbormaster |
| Bag Cargo | Term for goods not in containers, such as cement or rice |
| BBM | *Bahan Bakar Minyak*, Gasoline |
| BOR | Berth Occupancy Ratio |
| TRT | Turn-Around Time; average time needed by a ship from arrival at the port until it departs again, including waiting time and idle time |
| BMKG | *Badan Meteorologi, Klimatologi dan Geofisika*, Meteorological, Climatological and Geophysical Agency |
| BPS | *Badan Pusat Statistik*, Central Statistics Agency |
| Box | Another term for container |
| Commercial route | Ferry route operated/managed by State-Owned enterprise/private sector. |
| CPI | Consumer Price Index |
| Dishub Kab/Kota | *Dinas Perhubungan Kabupaten/Kota*, Regency/City Transportation Department |
| Ditjen Hubla | *Direktorat Jenderal Perhubungan Laut*, Directorate General of Sea Transportation, Ministry of Transportation |
| DWT | Deadweight Tonnage, a measure stating the weight of cargo that can safely be carried by a ship |
| Gantry crane | Crane used to handle containers at a port |
| General cargo | Non-container cargo |
| GDP | Gross Domestic Product |
| GRDP | Gross Regional Domestic Product |
| GT | Gross Tonnage, a non-unit index that measures the overall volume of a ship |
| LPI | Logistics Performance Index, an average weighted figure from an assessment of six dimensions of logistics in a given country. This figure is calculated by The World Bank and produces a scale of 1-5 indicating comparative performance between countries. |
| MB | Movable Bridge, which connects a ferry pier to the ferry |
| Movable Crane | A type of crane that can be moved to arrange containers in a container yard (CY) because it has rubber tyres; also called Rubber Tyre Gantry Crane |

| | |
|---|---|
| NTB | *Nusa Tenggara Barat,* West Nusa Tenggara |
| NTT | *Nusa Tenggara Timur,* East Nusa Tenggara |
| One-on-One Trading | Direct trading relationship |
| PBM | *Perusahaan Bongkar Muat,* Stevedoring company |
| Pelra | *Pelabuhan Rakyat,* port operated by local residents |
| Perda | *Peraturan Daerah*, Regional regulation |
| Pioneer route | Ferry route still operated/managed by the government and fully subsidized |
| PT ASDP | *Perseroan Terbatas Angkutan Sungai dan Penyeberangan,* PT Indonesia Ferry: state-owned ferry operator |
| PT PELINDO | *Perseroan Terbatas Pelabuhan Indonesia*, Indonesia Port Corporation: state-owned port operator |
| Pungli | Pungutan Liar; unofficial/illegal levies |
| SP3 | *Sumbangan Pihak Ketiga,* Third-Party Contribution; term for "official" levies imposed to the people |
| TEU | Twenty-Foot Equivalent Unit, a measure of container capacity |
| TKBM | *Tenaga Kerja Bongkar Muat,* stevedoring personnel |
| UPT Hubdat | *Unit Pelayanan Teknis Perhubungan Darat*, Technical Service Unit, Land Transportation |

# EXECUTIVE SUMMARY

***Improved performance of the logistics sector is essential to reduce the cost of transporting goods and increase competitiveness.*** The performance of Indonesia's logistics sector is still below that of neighboring countries in Asia. This can be seen from the Logistics Performance Index published by the World Bank (2010), which ranks Indonesia's logistics sector performance 75$^{th}$ of 155 countries – far below Singapore, Malaysia, Thailand, Vietnam and the Philippines, which has a similar geography to Indonesia.

***This study aims to identify problems in the logistics sector in the Province of East Nusa Tenggara (*Nusa Tenggara Timur*, NTT).*** This study covers land and maritime transportation (harbors and ferries) as well as regulatory aspects, for trade both within NTT (inter-island) and between NTT and other regions (inter-province), In addition to identifying general problems arising in the transportation of goods, this study also quantifies the various components of goods transportation costs, including ferry costs, truck operation costs, user fees and other "official" levies, and illegal charges.

***Generally, NTT's transportation infrastructure is limited.*** Of the five commercial seaports in NTT, only the Port of Tenau (Kupang) can accommodate large vessels of up to 10,000 dead weight tons (DWT) with container facilities, while other seaports have much smaller maximum capacities (<2,000 DWT). The condition of ferry terminals is also limited. Apart from Bolok Ferry Terminal (Kupang), which has two piers, all other terminals have only one pier. As for the road infrastructure, the national highways used by trucks and sampled in this study are in generally good condition[1] , while the coverage and quality of regency/municipal roads is still poor.

***NTT is highly dependent on other regions of Indonesia, especially Surabaya, in a centre-periphery pattern.*** Most goods, whether for basic, secondary or tertiary needs, come from outside NTT, with Surabaya as the main supplier. Most goods going to NTT are transported by ship from Surabaya to the Port of Tenau in Kupang, as reflected in the high volume of loading/unloading and the size and type of vessels docking at Tenau. Conversely, most goods going from all parts of NTT to Surabaya and other locations outside NTT go via Kupang, reflecting the importance of Kupang as a regional hub. However, some economic centres on Flores Island, especially in the western part, directly connect with Surabaya without going via Kupang.

***Use of ships dominates inter-province trade, while inter-island trade mostly uses trucks and ferries.*** Ships are preferred for inter-province trade because the Surabaya-Kupang route is relatively far, while

1 The three routes used for this study were Kupang-Rote, Kupang-Larantuka, and Bajo Port-Ruteng. All three were studied in both directions.

costs are relatively low, although the effective travel time is longer than by truck and ferry. However, trucks and ferries are used to transport a substantial amount of goods to and from the western part of Flores. Given NTT's geography as a group of islands, and the relatively low volume of goods, trucks and ferries are the preferred mode for transporting goods between islands within the province.

***There is a huge imbalance between the volume of goods entering and leaving NTT, and between Kupang and other regions of NTT.*** Loading/unloading data from several key ports indicate that the volume of general cargo taken out of NTT through the ports is no more than 10-16% of the total goods coming in/unloaded. A similar imbalance in the volume of goods being loaded and unloaded is found in inter-island trade. More goods are distributed from Kupang to other parts of NTT than are shipped to Kupang. The increased transportation cost per unit weight or volume of goods resulting from insufficient cargo leaving NTT needs to be compensated. In addition, this trade imbalance also increases the waiting time to consolidate goods being shipped out of NTT.

***Weather conditions in NTT do not support regular year-round sailing.*** NTT's geography as an archipelago makes it highly dependent on ships and ferries. Strong winds and high waves occur in January and February, reducing the frequency of crossings to between 44% and 65% of the average number of crossings in other months. This inevitably disrupts the distribution of goods, both for consumption by NTT residents and for delivery to other provinces.

***As the main trading gateway for NTT, the Port of Tenau in Kupang performs poorly.*** The speed of cargo loading/unloading is only half that of the Port of Palaran in Samarinda, and a quarter of Tanjung Priok Port in Jakarta. The performance of general cargo loading/unloading is around half that of Lembar Port in Lombok (*Nusa Tenggara Barat,* NTB). Apart from the limited port infrastructure, this is also related to Tenau's tariff system for loading/unloading, which uses a shift model. Under this system, dockworkers are paid based on time worked, rather than the volume or weight of goods loaded and unloaded, removing any incentive for dockworkers to become more productive.

***Ferry costs and waiting times contribute greatly to the overall cost of transportation in NTT.*** Based on data obtained from two field survey routes involving ferry crossings (Kupang-Rote and Kupang-Larantuka), it was identified that crossing costs (ferry ticket) account for 72-79% of overall transportation costs. In addition, the time spent waiting for and queuing for ferries can reach 76% of the entire journey time. This clearly adds to the cost of truck crews (wages and food money).

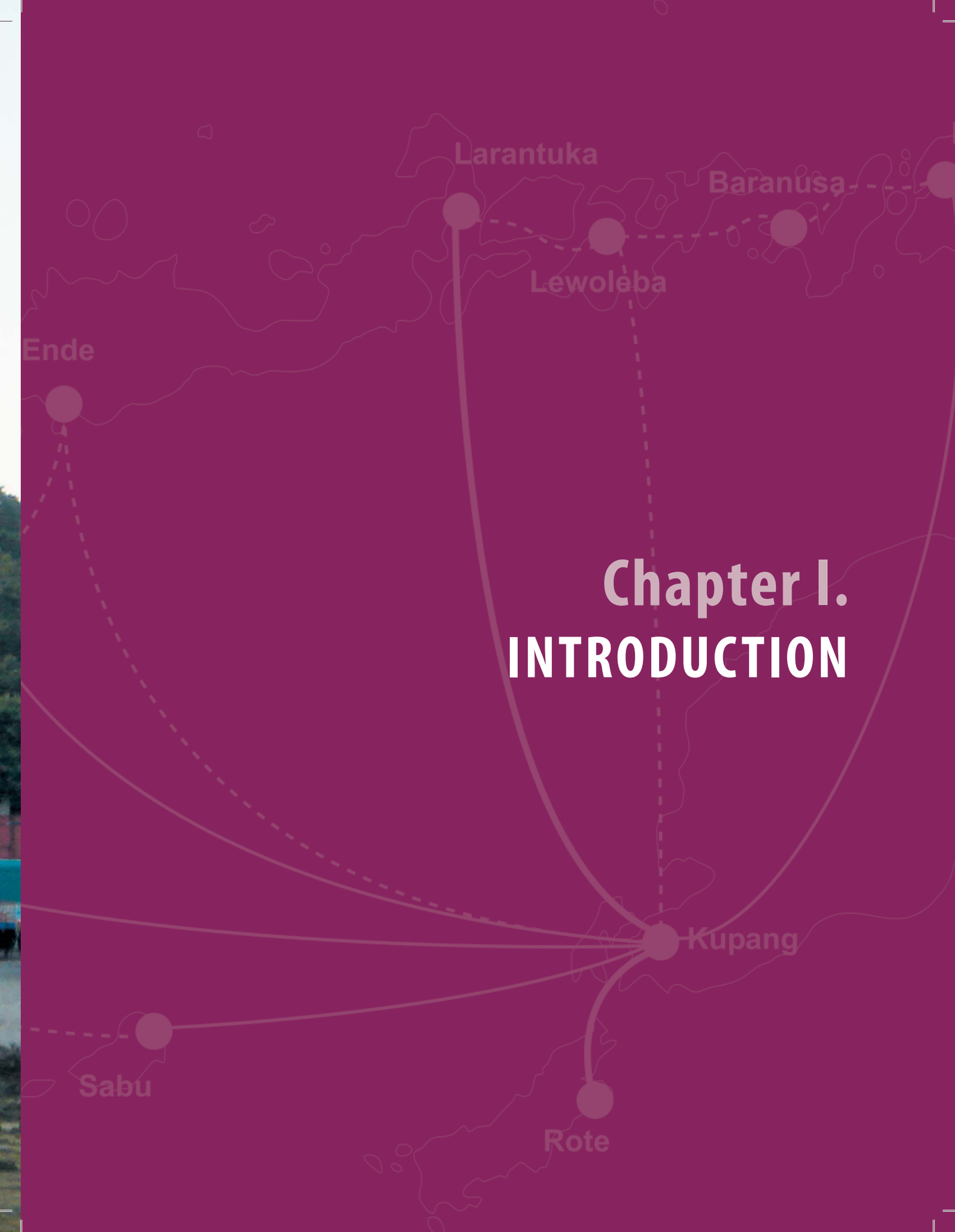
***If the costs arising from ferry crossings and waiting time are removed, the average land transportation cost in NTT is higher than in other locations in Indonesia.*** The average land transportation cost in NTT is Rp 4,910 per kilometre, which is higher than the transportation cost of Rp 4,392 per kilometre for nine routes in other parts of Indonesia (2010 prices)[2] . The highest transportation costs

2 Based on a study by LPEM-FEUI and The Asia Foundation in 2008 on six routes in Sulawesi and one route in each of North Sumatra, East Java and West Nusa Tenggara.

occur on the Bajo Port-Ruteng (both ways) and Rote-Kupang routes, while they are lower for the other three routes.

***Based on the components, costs arising from official levies in NTT are higher than in other regions of Indonesia, while unofficial charges are relatively low.*** On average, the cost of official levies – user charges, third party donations (SP3) and parking – is 12% while unofficial charges are only 5% of total land transportation costs. The total contribution of these official and unofficial levies is greater than their average cost for the nine routes in other locations, which is only 12%. Most of the official levies occur on three routes – Rote-Kupang and vice versa, and Kupang-Larantuka – and are imposed on agricultural, farming and fishing commodities. These levies are official because they are stipulated in regional regulations (*perda*) or regulations of heads of regions, although they conflict with higher regulations such as laws, and the principle of free domestic trade.

***This study recommends introducing a number of measures to reduce goods transportation costs in NTT.*** *First*, the issue of transportation in NTT cannot be resolved without increasing economic activities in the province to improve the balance of trade with other provinces, as well as between the Kupang area and other parts of NTT. This can be done by improving the quality of the port and road infrastructure as well as various aspects that contribute to a good business climate, such as regulation and improved access to capital and markets. *Second*, the main priority in the short-term is to improve the performance of ports, especially the Port of Tenau in Kupang. Besides investing in the port infrastructure, an improved tariff system that provides greater incentive for dockworkers to improve their performance also needs to be considered. *Third*, it is essential to improve terminal performance and reduce ferry costs. Various incentives – tax relief and/or credit facilities – can be introduced to encourage growth of a ferry industry that can create competition and reduce prices, in addition to government improvements to the quality of ferry infrastructure. *Fourth*, various official and unofficial levies need to be removed in order to reduce transportation costs further. *Last*, NTT's goods transportation data and reporting system needs to be improved so that various levels of government can introduce appropriate policies to resolve the problems faced by NTT's business actors and people.




# Chapter I.
# INTRODUCTION

## A. Background

***The performance of Indonesia's logistics sector remains low and needs to be enhanced to improve competitiveness.*** Good logistics sector performance implies low transportation costs for goods, in turn enhancing the competitiveness of a given economy. The World Bank's Logistics Performance Index for 2010, ranked Indonesia 75$^{th}$ out of 155 countries **(Table 1.1)**. This position is still far below that of neighboring countries such as Singapore, Malaysia, Thailand, Vietnam and the Philippines, which has similar geography to Indonesia (as an archipelago). Based on the six categories measured in the LPI, Indonesia performs worse than these five countries in all categories except timeliness, where Indonesia is slightly better than Vietnam. Customs, logistics competence and infrastructure are the three categories with the lowest scores.

**Table 1.1 Logistics Sector Performance of ASEAN Countries, 2010**

| LPI Ranking | Country | LPI | Customs | Infrastructure | International Shipping | Logistics Competence | Tracking & Tracing | Timeliness |
|---|---|---|---|---|---|---|---|---|
| 2 | Singapore | 4.09 | 4.02 | 4.22 | 3.86 | 4.12 | 4.15 | 4.23 |
| 29 | Malaysia | 3.44 | 3.11 | 3.5 | 3.5 | 3.34 | 3.32 | 3.86 |
| 35 | Thailand | 3.29 | 3.02 | 3.16 | 3.27 | 3.16 | 3.41 | 3.73 |
| 44 | Philippines | 3.14 | 2.67 | 2. 57 | 3.4 | 2.95 | 3.29 | 3.83 |
| 47 | India | 3.12 | 2.70 | 2.91 | 3.13 | 3.16 | 3.14 | 3.61 |
| 53 | Vietnam | 2.96 | 2.68 | 2.56 | 3.04 | 2.89 | 3.10 | 3.44 |
| **75** | **Indonesia** | **2.76** | **2.43** | **2.54** | **2.82** | **2.47** | **2.77** | **3.46** |
| 118 | Lao PDR | 2.46 | 2.17 | 1.95 | 2.70 | 2.14 | 2.45 | 3.23 |
| 129 | Cambodia | 2.37 | 2.28 | 2.12 | 2.19 | 2.29 | 2.5 | 2.84 |
| 133 | Myanmar | 2.33 | 1.94 | 1.92 | 2.37 | 2.01 | 2.36 | 3.29 |

**Source**: *The Logistic Performance Index and Its Indicator* (*World Bank*, 2010)

***Few studies have been done to identify the problems in Indonesia's logistics sector.*** Some studies have previously been done on the logistics sector in Indonesia, such as The Cost of Moving Goods: Road Transportation, Regulations and Charges in Indonesia (LPEM-FEUI and The Asia Foundation, 2008). But the identification of logistics problems has focused on land transportation of goods, with no attention to issues arising in sea and ferry transportation. Meanwhile, the study by David Ray (2008) focuses only on port issues. Given the geographical conditions of Indonesia, a study is urgently needed that can identify problems with goods transportation both on land and at sea, since the movement of goods from producers to consumers will most likely involve both modes of transportation. To date, there have been no studies examining the problems in flow of goods that cover both of these modes of transportation.

***Although the share of sea and ferry transportation for passengers has been declining, sea transportation is still very important for the shipment of goods.*** During the period 2003-2007, the number of passengers using sea transportation fell by 23%, while the number using ferries rose by 8%. During the same period, the number of passengers using air transportation more than doubled, taking around 10% of the share of sea transportation and 7% from ferries. Nevertheless, sea and ferry transportation still account for around 58% of all passenger traffic. Unlike for passenger traffic, the contribution of sea transportation to the transportation of goods remains highly significant, especially for transportation of international cargo. In the period 2003-2007, sea transportation accounted for 87-93% of international cargo transportation in Indonesia **(Tabel 1.2)**.

**Table 1.2 Amounts of International Cargo in Indonesia Using Air and Sea Transportation, 2003-2007**

| Year | Unit (thousand ton) | | | Share (%) | |
|---|---|---|---|---|---|
| | Air | Sea | Total | Air | Sea |
| 2003 | 46,768 | 442,920 | 489,688 | 9.55 | 90.45 |
| 2004 | 50,429 | 465,067 | 515,496 | 9.78 | 90.22 |
| 2005 | 55,307 | 492,970 | 548,277 | 10.09 | 89.91 |
| 2006 | 77,864 | 515,153 | 593,017 | 13.13 | 86.87 |
| 2007 | 42,322 | 541,000 | 583,322 | 7.26 | 92.74 |
| **Ratio/Change 2007/2003** | **0.9** | **1.2** | **1.2** | **-2.3** | **2.3** |

Source: Transportation Information, Department of Transportation (2007)

## B. Research Objectives

***This research aims to identify the problems and cost components in the distribution of goods in the Province of East Nusa Tenggara (NTT).*** The choice of NTT as the research location was based on economic and geographical considerations. Economically, NTT is disadvantaged compared with most other regions in Indonesia. Geographically, NTT's territory, comprising a chain of islands, was expected to represent the flow of goods in Indonesia utilizing both land and sea transportation modes. The specific research objectives were as follows:

- To estimate transportation costs for each route selected in terms of cost per kilometre;
- To identify the problems that occur in transportation of goods using water transport (sea transport and ferries) in NTT;
- To identify the problems that occur in land transportation in NTT; and
- To identify regulations that impede the flow of goods, both between islands and between provinces.

## C. Methodology

***This research was conducted using four approaches:***

(i) Field surveys using questionnaires, in order to obtain quantitative data on transportation costs on several selected routes from truck drivers and freight forwarding companies;

(ii) In-depth interviews with several relevant parties such as the users of land and sea transportation services, authorities in ports and ferry terminals, shipping companies, stevedoring companies, dockworker associations, truck drivers, and various relevant local government agencies, including the Transport, Trade, Agriculture, Forestry, Local Revenue, and Legal offices of NTT Provincial Government;

(iii) Analysis of secondary data to strengthen and add information to the data/information obtained from the first two approaches; and

(iv) Field observations to confirm the study findings.

Detailed information on the selection of routes, sample trucks, and field survey implementation techniques is provided in ***Appendix 1.***

# Chapter II.
# OVERVIEW OF THE PROVINCE OF EAST NUSA TENGGARA

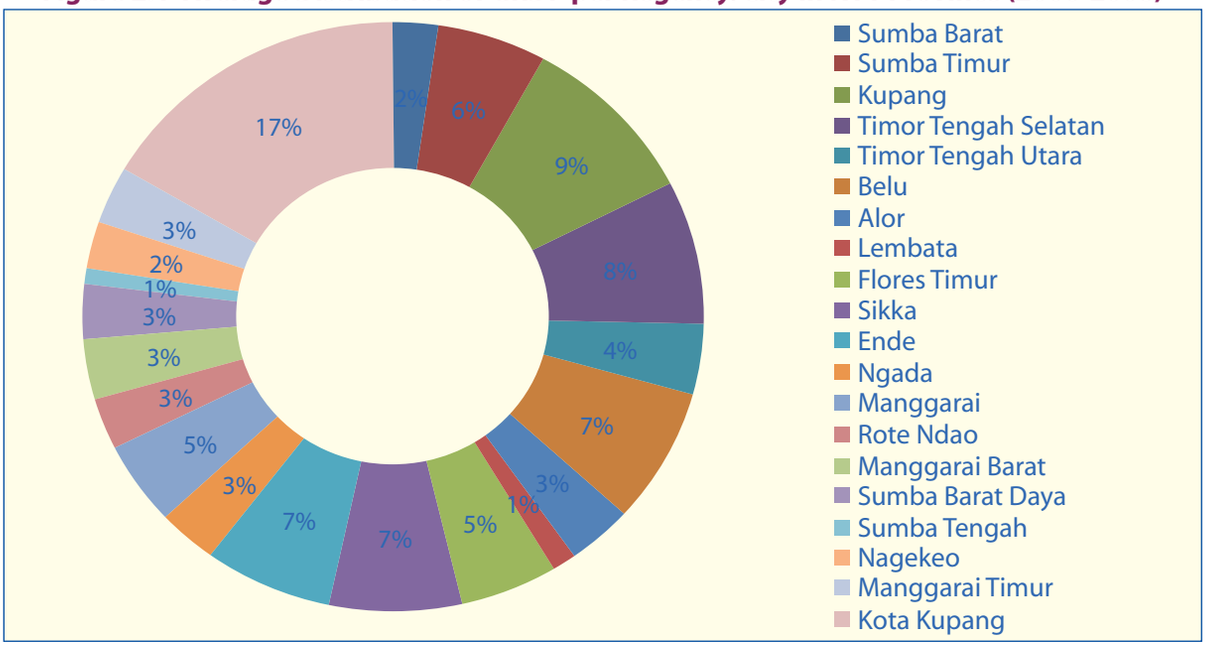
## A. Demographic Conditions and Local Economy

***Population distribution in NTT is relatively even, though some regions are growing faster.*** According to NTT in Figures (2009), the population of NTT province in 2008 was 4.5 million. Average population growth over the period 2006-2008 was 2.04% per year. The population of NTT is spread fairly evenly among all the islands (and regencies/municipalities); Manggarai Regency is the district with the largest population, while Kota Kupang has the densest population (1,826 persons/km$^2$ in 2008). In terms of population growth, Belu Regency, the main gateway to Timor Leste, has the highest rate, exceeding 5% per year during 2006-2008, followed by the island of Sumba and Kota Kupang (each growing by 2% during the same period).

***Generally, NTT's economy is experiencing moderate growth.*** NTT's Gross Regional Domestic Product (GRDP) for the period 2006-2008 grew an average of 5% per year, slightly lower than the growth in Indonesia's overall Gross Domestic Product (GDP). In 2008, NTT's GRDP growth slowed slightly to 4.8%.

***NTT's economy is concentrated in just a few regions.*** As shown in **Figure 2.1**, these regions are Kota Kupang and Regencies of Kupang, Timor Tengah Selatan and Belu on the island of Timor and several areas on the island of Flores (Sikka and Ende regencies). The highest economic growth is in Kota Kupang – the seat of government and business centre of NTT Province – and in Ende. In the past few years, new economic centers have been emerging, particularly in retail trade and banking facilities, especially in Kota Kupang.

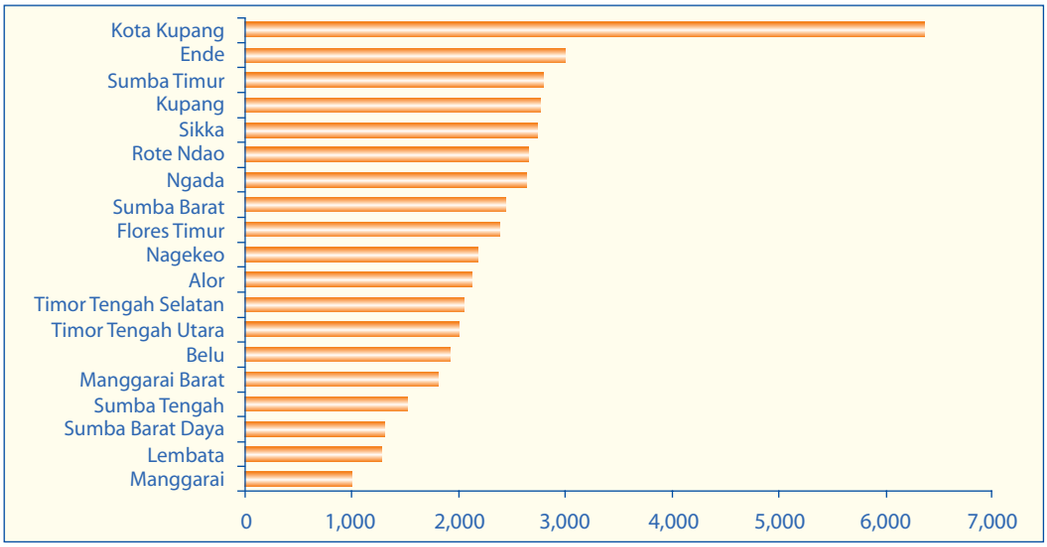
**Figure 2.1 Average Distribution of GRDP per Regency/City in NTT Province (2006-2008)**




Source: NTT in figures 2009

***Per capita income in NTT is among the lowest in Indonesia, with the City of Kupang far higher than other regions.*** With average per capita income of Rp 2.45 million in 2007, NTT ranked 29th out of 30 provinces. For comparison, per capita incomes nationwide and in the Province of DKI Jakarta (the highest in Indonesia) were Rp 8.3 million and Rp 36.7 million, respectively. As **Figure 2.2** shows, per capita income in Kota Kupang was more than twice that in Ende, which placed second. The relatively low population on the island of Sumba meant that some of its regencies had a relatively high per capita income, while their contribution to NTT's GRDP and economy was low.

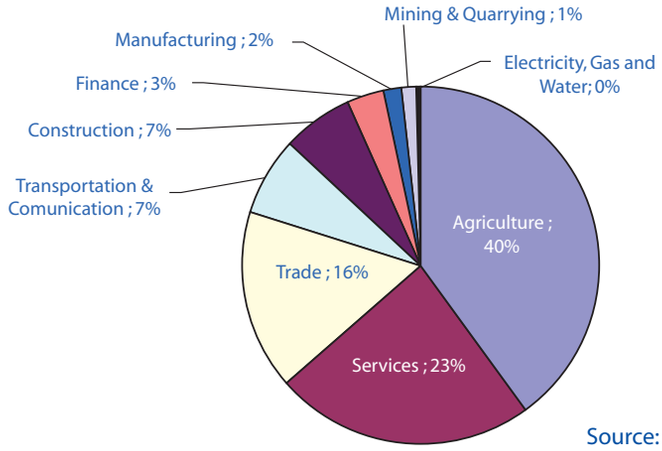
**Figure 2.2 Average GRDP Per Capita (in Rp 000's) by Regency/City in NTT Province (2006-2008)**




Source: NTT in figures, 2009

***NTT's economy still depends heavily on the agriculture sector.*** Although the contribution of the agriculture sector to NTT's GRDP has declined slightly – from 41% (2006) to 39% (2008), it is still far higher than other sectors such as services (23%, average 2006-2008) and trade (16%, average 2006-2008). The transportation sector's contribution to NTT's economy is only around 7% of total GRDP (average 2006-2008). **(See Figure 2.3.)**

**Figure 2.3 Average Contribution of Economic Sectors to GRDP in NTT Province (2006-2008)**




Source: NTT in figures, 2009

***In the transportation and communication sector, more than 70% is contributed by the highway transport sub-sector.*** Growth in the transportation and communication sector is increasing, from 8.3% in 2007 to 10.9% in 2008. On average during the period 2006-2008, the highway transport sub-sector grew 2.8%, sea transport grew 10%, ferry transport grew 6.7%, and transport support facilities grew 9%.

## B. Condition of Transportation Infrastructure

***The sea, ferry and land transportation modes in NTT complement one another.*** With an ocean area (200,000 km$^2$) roughly four times the land area (47,000 km$^2$), and 5,700 km of coastline, sea and ferry transportation play a very important role in this province. Most trade in goods – both between provinces and within the province – requires the use of more than one mode of transportation. Consequently, road and port infrastructure issues are critical in supporting transportation performance in this province.

### 1. Road Infrastructure

***Most of NTT's roads are asphalt-paved regency roads, though topographical conditions and land contours are challenging.*** Roads are an important support for distribution of goods and commodities between islands (inter-island trading) in this province. According to NTT in Figures (2009), 75% of the roads in NTT are regency roads, 10% are provincial roads, and the remainder are national roads. More than 90% of existing roads are asphalted. In terms of road condition, 66% of the national roads in NTT are in good condition, and only 15% are damaged or seriously damaged. About 30% of provincial roads are categorized as damaged. Data on the conditions of regency roads could not be identified. The topographical conditions and hilly and uneven land contours, with average slopes greater than 60% – factors that impede the distribution of goods by land.

***Based on road classifications, the national roads in NTT province have the capacity to support the vehicles typically found there.*** The national roads in NTT Province are designated as class II, IIIA, IIIB, and IIIC. With these classifications, the arterial roads in NTT can be used by motor vehicles up to 2.5 metres wide and with a maximum axle load of between 8 and 10 tons.

### 2. Port Infrastructure

***Five seaports in NTT are categorized as commercial ports.*** The commercial ports are managed by PT PELINDO (Indonesian Port Company), which has two branches in NTT. PT PELINDO III Kupang Branch manages the Ports of Tenau (Kupang), Waingapu (Sumba) and Kalabahi (Alor), while PT PELINDO III Maumere Branch manages the Ports of Maumere (Sikka) and Ende. The government, through the Port Administrator (ADPEL), acts as the regulator of these five commercial ports, specifically in matters of port safety and security. The non-commercial ports are managed directly by the central government through the Transportation Ministry's Directorate General of Sea Transportation (*Ditjen Hubla*) or by local governments.


***Most seaports in NTT have limited facilities.*** Most ports have only one pier, which means that vessels must queue to dock if they arrive at the same time. The ports with more than one pier and greater capacity (over 2,000 DWT) are generally the commercial ports managed by PT PELINDO. For example, the Port of Tenau has five piers, while Maumere and Waingapu both have three piers. Several non-commercial ports do have more than one pier, such as the ports of Atapupu (four piers) and Larantuka (four piers), but with relatively small capacity (under 2,000 DWT). Only the Port of Tenau can accommodate ships with large tonnage (up to 10,000 DWT) and has container facilities[3], though it still lacks facilities such as gantry cranes. Furthermore, facilities such as warehouses and stacking areas are still limited at most seaports.

### 3. Ferry Infrastructure

***Most ferry ports have limited capacity.*** Four relatively large ferry ports are managed by PT Angkutan Sungai Danau dan Penyeberangan (ASDP), Indonesia Ferry, while the others are managed by the Regency/Municipal Transportation Office or the Directorate General of Land Transportation (Ditjen Hubdat) of the Ministry of Transportation. Nearly all ferry ports have only one pier,

3 Aside from Tenau, the Port of Maumere has also offered container services since late 2009. However, at the time this study was conducted, only one line was conducting activities there – the Meratus Line.

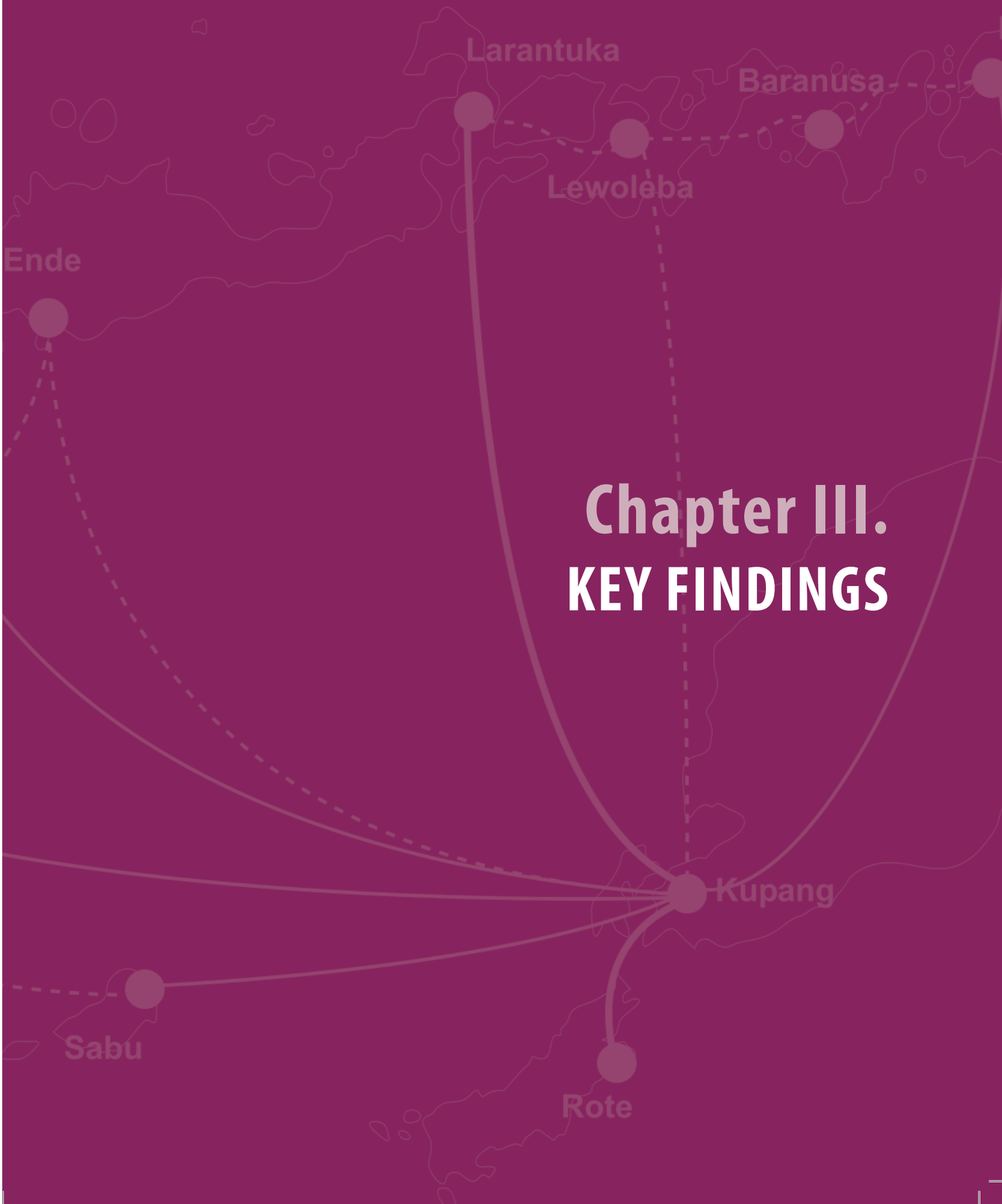
apart from Bolok port in Kupang, which has two. All ferry ports have movable bridges (MB) with a capacity of 1,000 GT.

**Table 2.1 Ferry Ports in NTT Province, by Operator**

| No | Port | Regency/City | Island | Number of Piers | Type | Type of Pier | Capacity (GT) | Operator |
|---|---|---|---|---|---|---|---|---|
| 1 | Aimere | Ngada | Flores | 1 | Dolphin | MB | 1,000 | Not yet determined |
| 2 | Bolok | Kupang | Timor | 2 | Dolphin | MB | 1,000 | PT ASDP |
| 3 | Kalabahi | Alor | Alor | 1 | Concrete | MB | 1,000 | Technical Unit of Land Transport Service |
| 4 | Labuan Bajo | Manggarai Barat | Flores | 1 | Concrete | MB | 1,000 | PT ASDP |
| 5 | Larantuka | Flores Timur | Flores | 1 | Concrete | MB | 1,000 | PT ASDP |
| 6 | Marapokot | Manggarai | Flores | 1 | Dolphin | MB | 1,000 | Regency/City Transportation Department |
| 7 | Nangakeo | Ende | Flores | 1 | Dolphin | MB | 1,000 | Not yet determined |
| 8 | Rote | Rote Ndao | Rote | 1 | Concrete | MB | 1,000 | PT ASDP |
| 9 | Teluk Gurita | Belu | Timor | 1 | Dolphin | MB | 1,000 | Not yet determined |
| 10 | Waikelo | Sumba Barat | Sumba | 1 | Dolphin | MB | 1,000 | Regency/City Transportation Department |
| 11 | Waingapu | Sumba Timur | Sumba | 1 | Dolphin | MB | 1,000 | Regency/City Transportation Department |

Source: NTT Province Transportation Office, 2007

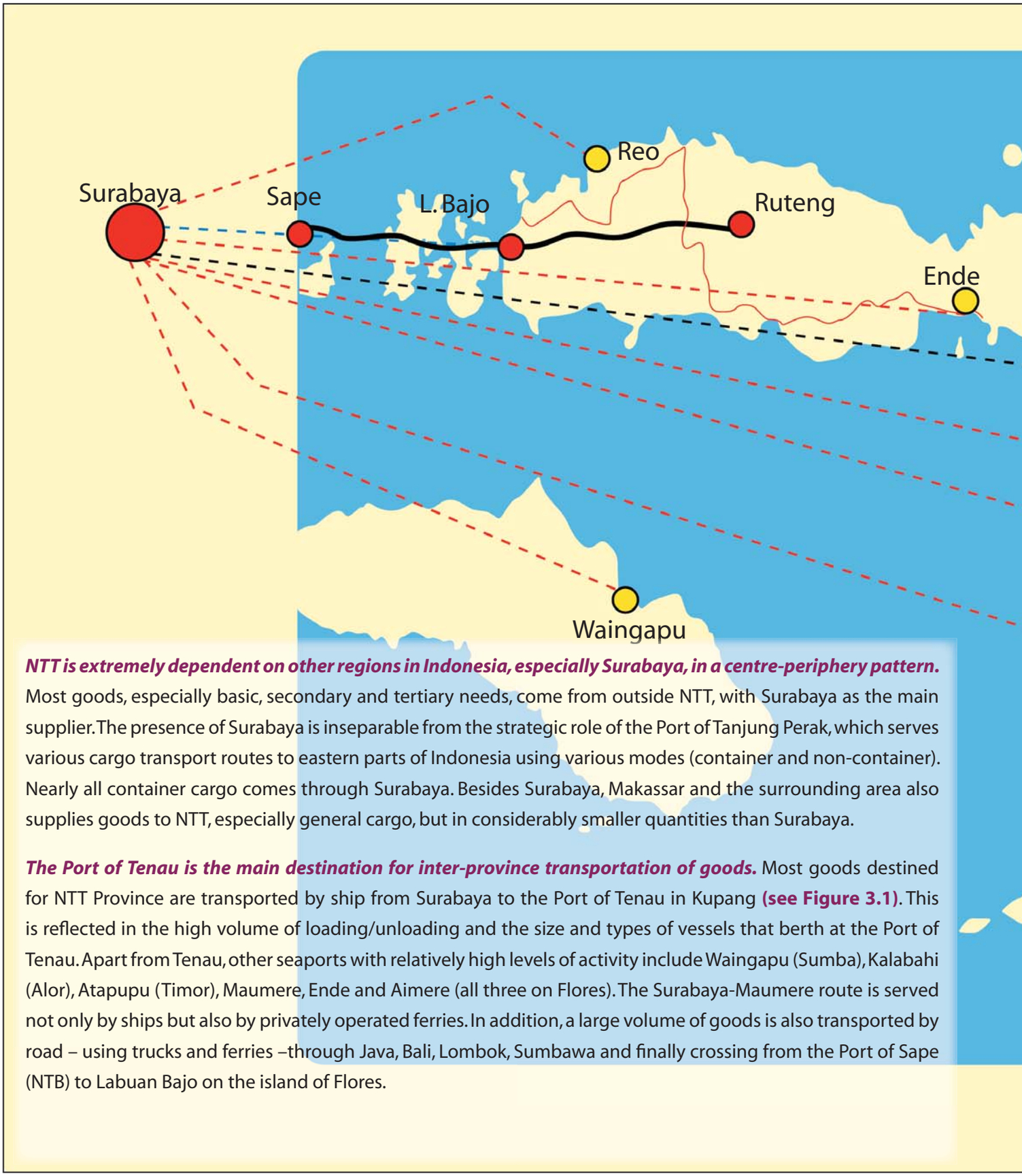
Note: MB = movable bridge




# Chapter III.
# KEY FINDINGS

# A. Patterns of Trade, Inter- and Intra-Province

**Figure 3.1 Map: Main Inter-Provi**



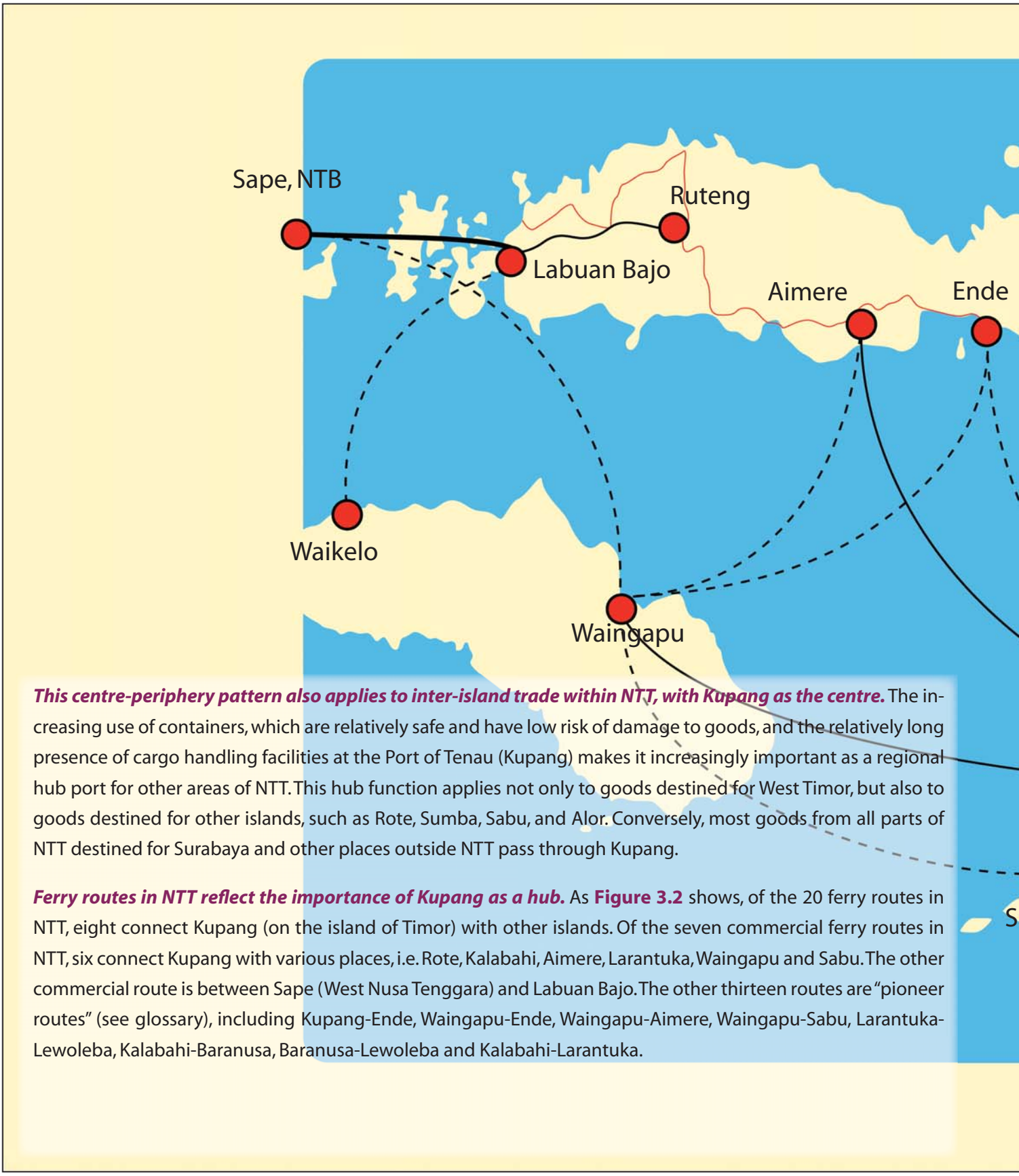

***NTT is extremely dependent on other regions in Indonesia, especially Surabaya, in a centre-periphery pattern.*** Most goods, especially basic, secondary and tertiary needs, come from outside NTT, with Surabaya as the main supplier. The presence of Surabaya is inseparable from the strategic role of the Port of Tanjung Perak, which serves various cargo transport routes to eastern parts of Indonesia using various modes (container and non-container). Nearly all container cargo comes through Surabaya. Besides Surabaya, Makassar and the surrounding area also supplies goods to NTT, especially general cargo, but in considerably smaller quantities than Surabaya.

***The Port of Tenau is the main destination for inter-province transportation of goods.*** Most goods destined for NTT Province are transported by ship from Surabaya to the Port of Tenau in Kupang **(see Figure 3.1)**. This is reflected in the high volume of loading/unloading and the size and types of vessels that berth at the Port of Tenau. Apart from Tenau, other seaports with relatively high levels of activity include Waingapu (Sumba), Kalabahi (Alor), Atapupu (Timor), Maumere, Ende and Aimere (all three on Flores). The Surabaya-Maumere route is served not only by ships but also by privately operated ferries. In addition, a large volume of goods is also transported by road – using trucks and ferries –through Java, Bali, Lombok, Sumbawa and finally crossing from the Port of Sape (NTB) to Labuan Bajo on the island of Flores.

Source: Directorate General of Sea Transportation, NTT Province Transportation Service, adapted by LPEM-FEUI

-Province Ferry and Trade Routes

**Figure 3.2 Map: Inter-island**

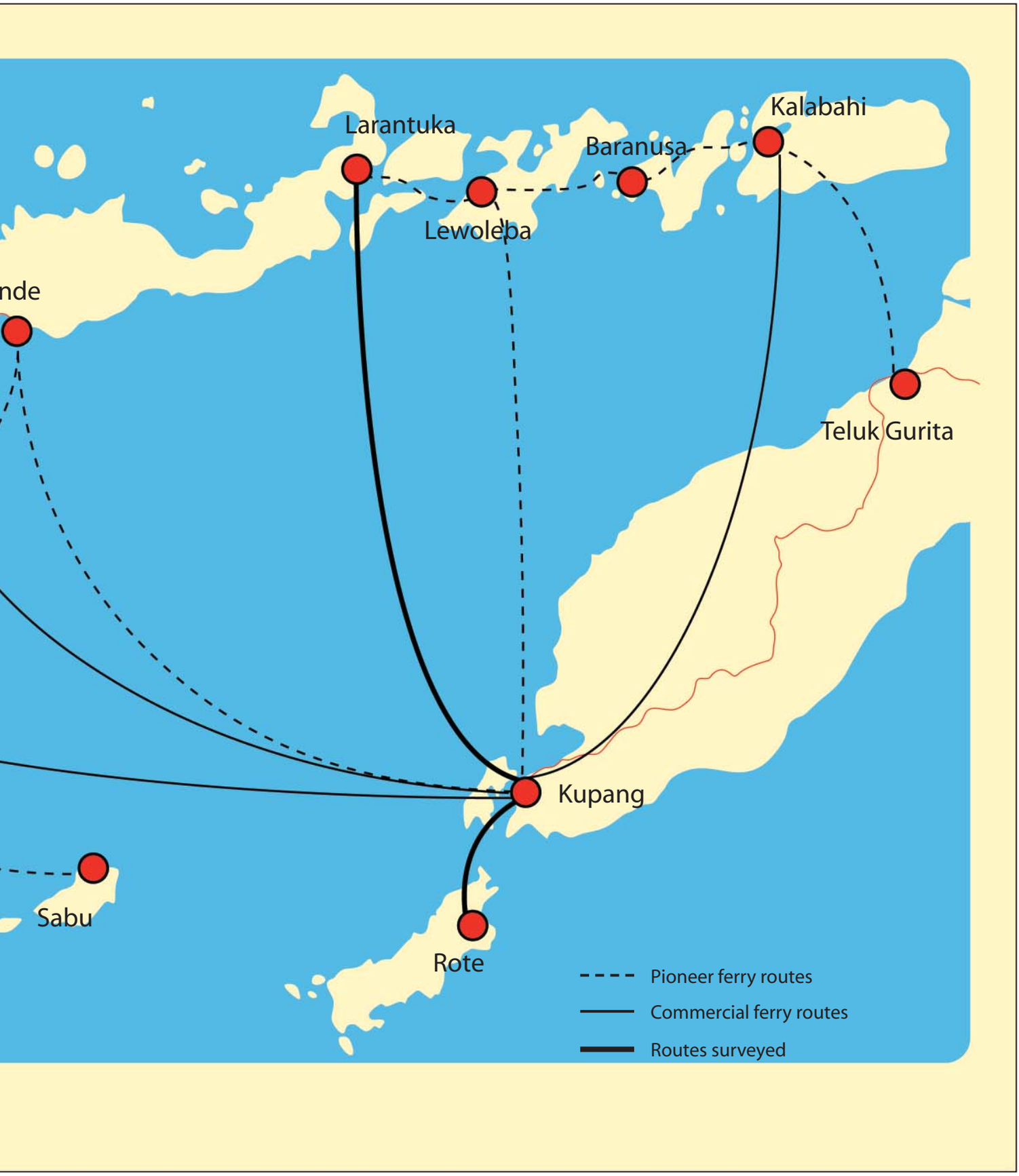



***This centre-periphery pattern also applies to inter-island trade within NTT, with Kupang as the centre.*** The increasing use of containers, which are relatively safe and have low risk of damage to goods, and the relatively long presence of cargo handling facilities at the Port of Tenau (Kupang) makes it increasingly important as a regional hub port for other areas of NTT. This hub function applies not only to goods destined for West Timor, but also to goods destined for other islands, such as Rote, Sumba, Sabu, and Alor. Conversely, most goods from all parts of NTT destined for Surabaya and other places outside NTT pass through Kupang.

***Ferry routes in NTT reflect the importance of Kupang as a hub.*** As **Figure 3.2** shows, of the 20 ferry routes in NTT, eight connect Kupang (on the island of Timor) with other islands. Of the seven commercial ferry routes in NTT, six connect Kupang with various places, i.e. Rote, Kalabahi, Aimere, Larantuka, Waingapu and Sabu. The other commercial route is between Sape (West Nusa Tenggara) and Labuan Bajo. The other thirteen routes are "pioneer routes" (see glossary), including Kupang-Ende, Waingapu-Ende, Waingapu-Aimere, Waingapu-Sabu, Larantuka-Lewoleba, Kalabahi-Baranusa, Baranusa-Lewoleba and Kalabahi-Larantuka.

Source: NTT Province Transportation Service and PT ASDP, adapted by LPEM-FEUI

**sland Ferry and Trade Routes**



## B. Choice of Mode of Transportation

***Two modes of transportation are available for transportation of goods in NTT: ships, and a combination of trucks and ferries.*** Generally, the choice between these two modes is based on several considerations: (i) location; (ii) time; (iii) expense; (iv) characteristics of the goods being transported; and (v) safety. For inter-province trade, these two modes compete, though the importance of Kupang as a hub makes ships dominant. For trade within the province, the combination of trucks and ferries is the dominant mode, due to the fairly short distances between islands within NTT.

***In terms of location, apart from some areas in the western part of the island of Flores, ships are the dominant mode of transportation for inter-province trade.*** Most goods from outside NTT, especially from Surabaya, that are destined for Timor, Sumba, Sabu and Alor are transported by ship. In contrast, goods destined for Flores, especially the western parts such as Labuan Bajo and Ruteng, mostly use a combination of trucks and ferries. Maumere (Flores) has both ships and ferries connecting it with Surabaya.

***For the island of Flores, trucks and ferries can bring goods from Surabaya far more quickly than ships.*** The effective travel time for ships from Surabaya to several locations in Flores is actually only two to three days. However, the low volume of goods transported means that ships have to wait until they are fully loaded to achieve proper economy of scale. In addition, at certain times such as major holidays, ships must prioritize basic goods over secondary goods. As a result, the actual time needed to transport goods by ship can become very long; it can take two to three weeks from Surabaya to Ende, and up to a month to reach Manggarai. Since trucks carry smaller volumes, they do not have to wait so long to depart for their destinations. Since it takes trucks only three to five days to transport goods from Surabaya to Manggarai and Ende in Flores, they become, an attractive option for these locations, especially if the goods need to arrive there quickly.

***The crossing time for seagoing ferries also determines whether trucks are used for transport of goods within NTT province.*** How goods are transported on ferries is determined in part by the crossing time for a given route. On routes with fairly short passage times such as Kupang-Rote (5 hours) and Sape-Labuan Bajo (9 hours), for example, most goods are transported on trucks or other goods vehicles. In contrast, on routes with longer passage times such as Kupang-Larantuka (15 hours), most goods are carried on ferries as bag cargo. Longer crossing times mean that the trucks are basically "idle" while on the ferries, leading to higher costs.

***The cost of transporting goods to NTT by ship is far lower than for trucks and ferries.*** For example, according to an interview with an owner of goods, to transport an electricity generator from Surabaya to Ende on the island of Flores using a medium-sized truck with total load of around 5 tons, the owner would have to spend around Rp 30 million for the truck rental and all associated travel costs (fuel, driver, ferry tickets etc.). In contrast, transporting this item by ship would only cost between a third and a half of that amount. In another case, for daily needs and groceries, the transport cost by ship from

Surabaya to the Port of Reo in Manggarai (Flores) is Rp 25,000 to Rp 30,000 per *koli*[4], while using trucks would cost around Rp 60,000 per *koli*. The large number of ferry crossings required when using trucks contributes significantly to this high cost. On the other hand, the cost for using trucks and ferries can be reduced if the owner of the goods also owns the truck, eliminating the need to pay rental costs.

***Certain types of goods can only be transported by ship.*** Goods such as basic needs, clothing and the like can be transported either by ship or by truck and ferries, but certain other goods can only by transported by ship. Electricity poles, for example, are too long to be carried by truck.

***The risk of damage or loss of goods is lower when transported by truck than when using ships, especially for non-container goods.*** The use of ships increases the risk of damage or loss of goods, because dockworkers tend to be careless in doing their work. This applies especially to goods that are not packed in containers. As **Figure 3.3** shows, this safety consideration has also caused the volume of general cargo unloaded and loaded at the Port of Tenau to decline by 11% and 36%, respectively, from 2007 to 2009. In contrast, the use of containers increased dramatically, by around 141%, during the same period.

**Table 3.1 Factors Determining Choice of Transportation Mode in NTT**

| Description | Ship | Truck |
|---|---|---|
| Cost (case: Surabaya-Reo) | Rp 25,000 - 30,000 per *koli* | Rp 60,000 - 63,000 |
| Destination | Timor, Rote, Sumba, Alor, and parts of Flores, especially the eastern part | Flores, especially the western part |
| Shipping time/ speed | Effective sea passage time from Surabaya to Kupang is 2-3 days, while from Surabaya to Flores (Ruteng, Ende or Maumere) it is 3-4 days. However, actual time needed from point of origin to destination ranges from a week to a month. | Normal passage time from Surabaya to Ruteng or Ende is around 4-5 days. |
| Type of goods transported | Durable goods and certain goods with large dimensions that cannot be carried by truck | Non-durable goods |
| Safety | Relatively safe when goods are packed in containers, but risk of loss or damage if placed directly on the ship (or as bag cargo), particularly during loading/ unloading | Low risk of loss or damage |

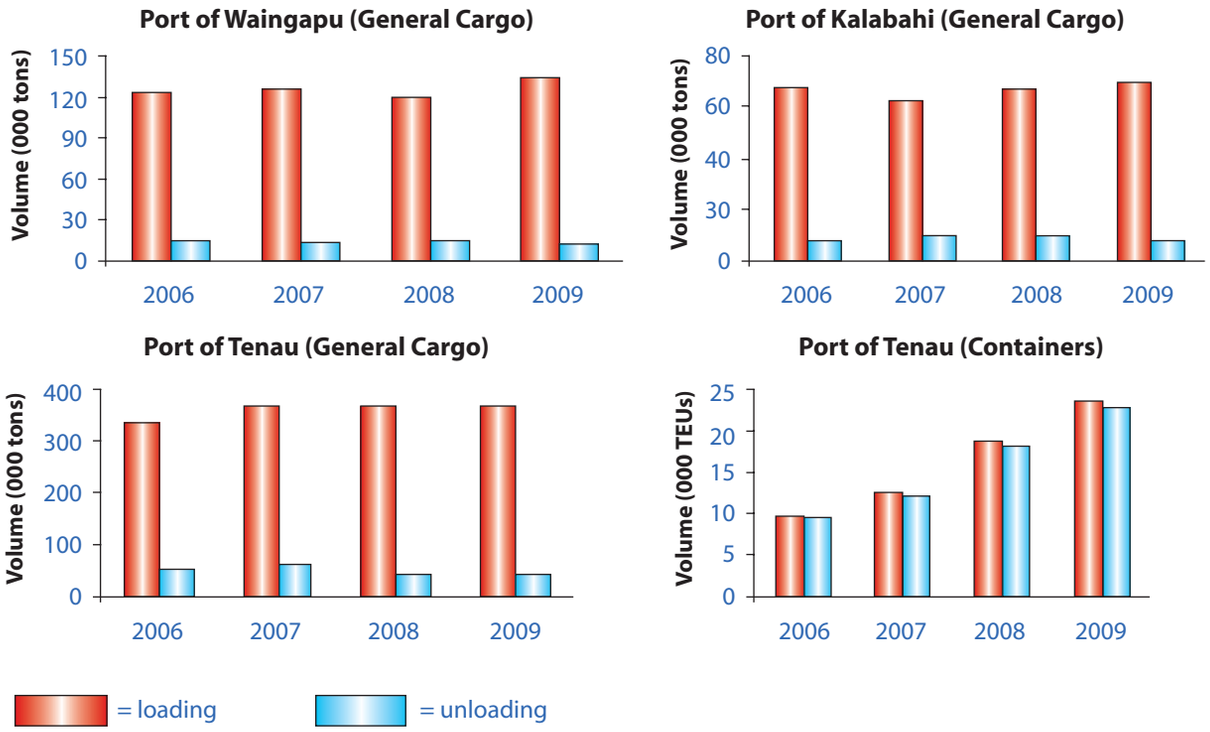
Source: Interviews with respondents, processed by LPEM-FEUI, 2010.

4 *Koli* is a term for a package of goods. The weight of the package may vary, depending on the type of goods; there is no fixed standard. A koli typically weighs between 20 and 30 kg, but could be more or less.

## C. Volume and Types of Goods Being Traded

***There is an extreme imbalance between volumes unloaded and loaded in NTT.*** Data on stevedoring activities in several commercial seaports (managed by PT Pelindo III Kupang Branch) such as the Ports of Tenau, Kalabahi and Waingapu show that the average volume loaded to leave NTT Province is only around 10% to 16% of the volume of goods unloaded **(see Figure 3.3)**. For containers, Pelindo's data only provides the numbers of containers loaded and unloaded, so there is no significant difference between unloading and loading. However, interviews found that ships often leave Kupang carrying empty containers.

**Figure 3.3 Statistics on Loading/unloading Volumes, Pelindo III Kupang Branch, 2007-2009**




Source: Pelindo III Kupang Branch (2009), adapted by LPEM-FEUI (2010)
Note: One TEU (twenty-feet equivalent unit) is equivalent to one 20-foot container.

***In terms of type, the goods that are unloaded and loaded have different characteristics and value***. Most goods that are unloaded in NTT are secondary and tertiary goods, such as basic foodstuffs (rice, flour, cooking oil, etc.), electronic goods, building materials, and automobiles. In contrast, the goods loaded at the ports are mostly primary goods such as agricultural and plantation produce (cashews, chocolate/cacao), livestock, forest products (candlenuts, tamarind, wood), minerals (manganese), and fishery products, which have relatively low added value **(see Table 3.2)**.

**Table 3.2 Types of Goods Entering and Leaving NTT Province**

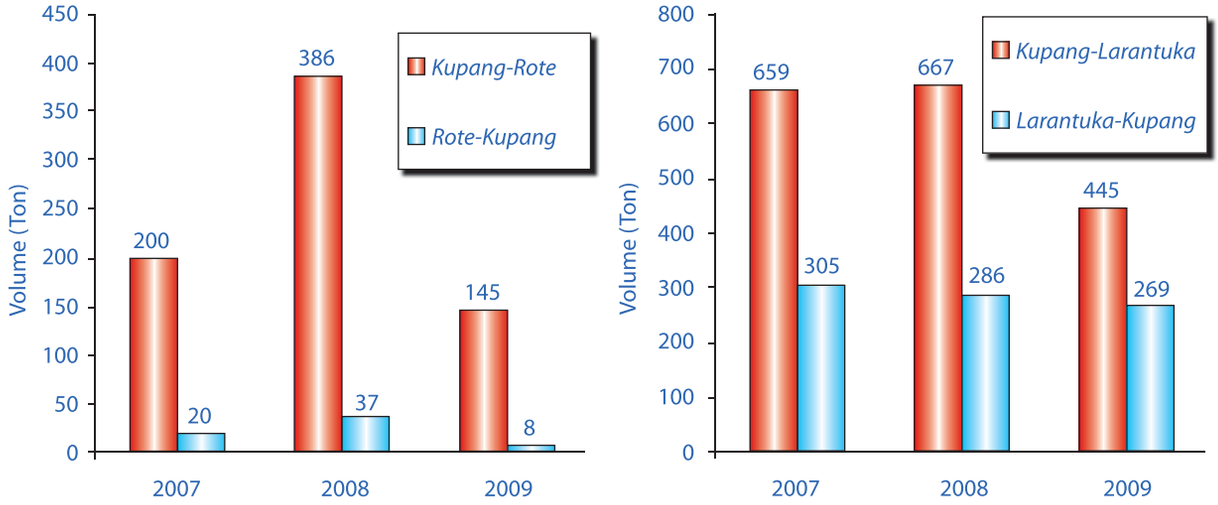
| Goods Coming In | | Goods Going Out | |
|---|---|---|---|
| Basic foodstuffs and groceries | Rice, sugar, cooking oil, flour, margarine, eggs, milk, corn, iodized salt, soap, livestock feed, snacks, food ingredients, small red onions, garlic, soft drinks, alcoholic beverages, ready-made clothing, dried fish, bran, soybeans, peanuts, cigarettes, matches, konveksi, brem (fermented rice cake), plastic bags, mineral water, mixed goods, tobacco | Agricultural, plantation, and forest products | Coffee, candlenuts, copra, cacao, vanilla, cloves, cashews, bananas, peanuts, mung beans, soybeans, tamarind, lac, bananas, honey, coriander, great morinda, rice, livestock feed, corn, small red onions, turmeric, citrus peel, sandalwood, lumber, processed wood, fustic, teak beams |
| Building materials | Cement, building materials, lumber, teak, zinc roofing, nails, concrete-reinforcing rods, angle iron, light gypsum pipes, plywood, ceramics, gypsum, glass | Marine products | Pearls, seaweed, shark fins, squid, oysters, dried sea slugs, shrimp/lobster, skipjack tuna, grouper, dried fish, ray gills, smoked fish, flying fish, deho/komo fish and other ornamental fish, fish powder, agar-agar |
| **Goods Coming In** | | **Goods Going Out** | |
| Automotive and electronic goods | Automobiles, motorcycles, car tyres, motorcycle tyres, spare parts, electronic goods, electrical cables | Minerals | Black stones, coloured stones, coral, iron sand, laga/lola rock, pebbles, gravel, marble, manganese |
| Fuel | Gasoline, diesel fuel, kerosene, aviation fuel, lubricants/ motor oil | Livestock | Cattle, water buffalo, horses, goats, pigs |
| Other | Coal, asphalt, woven goods, LPG, empty drums | Used goods | Scrap metal, empty bottles, mixed goods, aluminum, used batteries |

Source: NTT Province Trade and Industry Office, 2009

***The different characteristics and value of goods loaded and unloaded reflects the economic structure of NTT.*** The large amount of primary goods loaded in NTT reflects the structure of the province's GRDP, to which the agriculture sector makes a very large contribution, averaging 40% in the period 2006-2008, though this contribution has been declining from year to year. In contrast, the many secondary and tertiary goods unloaded in NTT, with a far greater added value, strengthen NTT's position as a periphery in terms of its trade.

***A similar imbalance in loading/unloading volumes also occurs in inter-island trade within NTT Province.*** From the statistics on flow of goods for the routes covered by this study, such as Kupang-Rote and Kupang-Larantuka **(Figure 3.4)**, it can be seen that the weight of goods shipped from Kupang is much greater than in the opposite direction. On the Kupang-Rote route, the weight of goods loaded from Kupang averaged 244 tons/year in the period 2007-2009 – more than ten times the flow of goods into Kupang, which averaged only 22 tons/year. The Kupang-Larantuka route shows a similar pattern, although the discrepancy is not as great as for Kupang-Rote. The weight of goods carried by ferry from Kupang to Larantuka averaged 590 tons/year – more than double the weight carried from Larantuka to Kupang (averaging 287 tons/year).

**Figure 3.4 Statistics on Flow of Goods and Vehicles by Route, 2007-2009**




Source: PT ASDP Kupang Branch, adapted by LPEM-FEUI, 2010

***Similarly, in terms of types of goods, industrial products are transported from Kupang, while natural products are brought to Kupang.*** Based on the field survey findings, more than half the goods taken from Kupang to Rote are building materials and marble, followed by household goods (20%), basic foodstuffs (13%), rice (7%) and fertilizer (7%). The commodities going in the other direction are natural products such as rice (40%), seaweed (27%) and liquid sugar (20%). Generally, the added value of goods taken from Kupang is much higher than that of goods brought to Kupang.

***The limited infrastructure, particularly the road network to remote regions, contributes to the trade imbalance in NTT.*** On average, the ratio of length of roads to land area in NTT is 0.33 km/km$^2$, which is quite low compared with the road ratio in NTB (0.37 km/km$^2$), let alone with other regions in Indonesia. At the regency/municipal level, the ratio of length of roads to land area varies tremendously, from 0.04 km/km$^2$ to 4.4 km/km$^2$. The relatively low population density in NTT makes the ratio of road length to population relatively high. The mobility ratio in NTT is 3.4 km per 1,000 residents, twice as high as in NTB (1.7 km per 1,000 residents). The very limited road network, especially at the regency level, impedes the distribution of goods and means that many agricultural commodities lack adequate access to markets.

***The limited road network is exacerbated by the lack of monitoring and legal enforcement of vehicle weight limits.*** Most truck weigh stations in regencies/cities in NTT are not functioning, either because they are out of order or because of their low capacity. In practice, trucks carrying goods almost never enter the weigh stations. This creates an incentive to exceed the maximum specified loads. For example, Kupang has class II roads, for which the Maximum Axle Load permitted is 10 tons[5]. How-

5 Pursuant to Minister of Transportation Decree Number KM 20 of 2004, the roads in NTT Province are designated as class II, IIIA, IIIB, and IIIC. Class II roads may only be used by vehicles with MAL not exceeding 10 tons, while the Maximum Axle Load on class IIIA, IIIB, and IIIC roads is only 8 tons.

ever, the trucks operating in Kupang typically exceed the permitted Maximum Axel Load. The same is true for the Ruteng-Labuan Bajo route. In the case of class IIIA roads, for which the Maximum Axel Load is only 8 tons, the average load of trucks on these routes is 25 tons. If this situation is allowed to continue, the roads will deteriorate, affecting the distribution of goods and commodities that could support local economic growth in the future. In addition, excessive loads endanger truck crews as well as other road users.

## D. Weather Conditions in NTT

***The number of crossings for the two routes surveyed had a negative correlation with high wind speeds.*** Based on statistical data from the Meteorological, Climatological and Geophysical Agency (BMKG) on daily winds, and data on the number of crossings from PT ASDP Kupang, in 2008 and 2009 there was a correlation between the number of days when wind speeds exceeded 10 knots per hour and the frequency of crossings. As **Table 3.3** shows, the frequency of Kupang-Rote and Kupang-Larantuka crossings correlated negatively with the respective wind speeds in Rote and Larantuka.

**Table 3.3 Matrix on Correlation between Frequency of Monthly Crossings and Wind Speeds**

| Kupang-Rote route | | | |
|---|---|---|---|
| | Kupang-Rote crossing | Kupang wind | Rote wind |
| **Kupang-Rote crossing** | 1.000000 | | |
| **Kupang wind** | 0.003415 | 1.000000 | |
| **Rote wind** | -0.170797 | 0.665091 | 1.000000 |

| Kupang-Larantuka route | | | |
|---|---|---|---|
| | Kupang-Larantuka crossing | Kupang wind | Larantuka wind |
| **Kupang-Larantuka crossing** | 1.000000 | | |
| **Kupang wind** | 0.024401 | 1.000000 | |
| **Larantuka wind** | -0.439839 | 0.061150 | 1.000000 |

Source: Processed from secondary data from BMKG and PT. ASDP Kupang, LPEM-FEUI, 2010

***The frequency of Kupang-Rote and Kupang-Larantuka return crossings is relatively low in January and February.*** As **Figure 3.5** shows, as a result of strong winds and high waves, the frequency of crossings for the two routes surveyed is not even throughout the year. The average frequency of crossings in January and February for the Kupang-Rote route is only 65% of that in other months. The conditions on the Kupang-Larantuka route are even worse, with a frequency of crossings in January and February that is only 44% of the average for March-December. Similar conditions were identified by Kompas daily newspaper for the Sape (Sumbawa, NTB)-Labuan Bajo route. This clearly disrupts distribution of goods and increases transportation costs in NTT province.

**Box 3.1 More than 100 Vehicles Still Queuing in Sape**

**(Sunday Kompas, 24 January 2010)**

Bima, Kompas. The weather is gradually returning to normal, at least as indicated by the resumption of operation of ferries on several ferry routes in Nusa Tenggara over the past week.

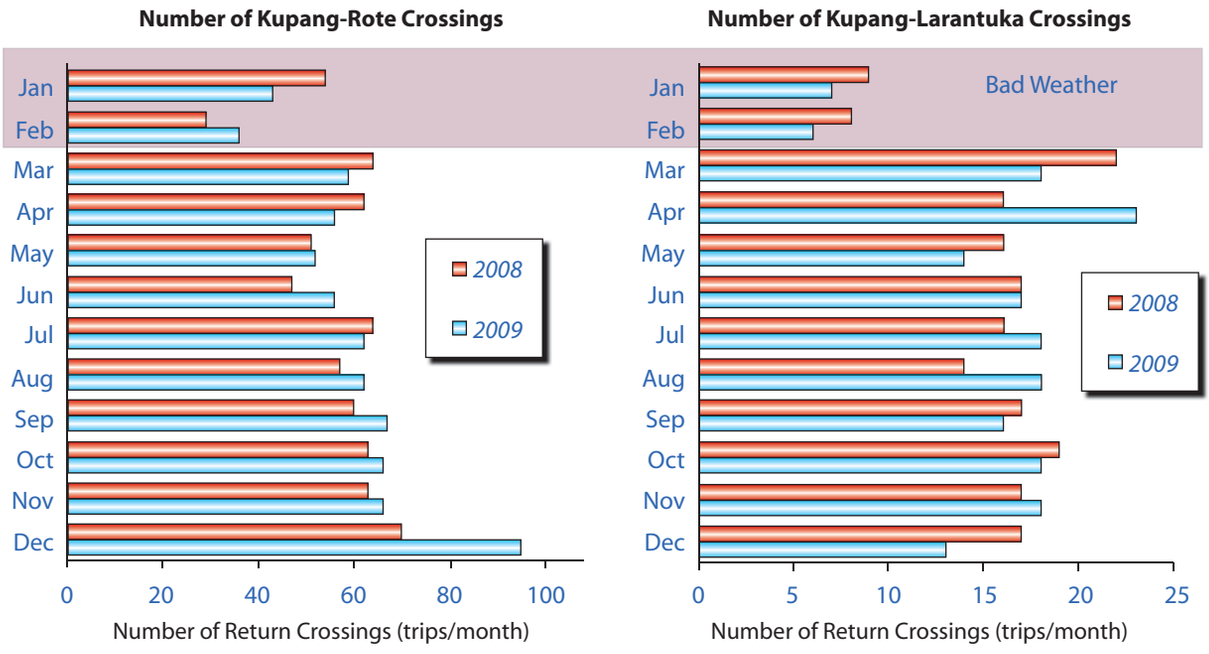
Nevertheless, ferry traffic was still disrupted as of Saturday (23/1) afternoon. At the Port of Sape, Sumbawa, West Nusa Tenggara (NTB), more than 100 vehicles – trucks, passenger vans, and others – were still waiting their turn to cross to Labuhan Bajo, the capital city of Manggarai Barat Regency on the western tip of the island of Flores, East Nusa Tenggara (NTT).

"In Sape now there is still a long queue of vehicles waiting their turn to cross. If the weather continues to improve, it will still take around a week to ferry more than 100 trucks and other vehicles that have been held up in Sape for over a week due to bad weather," said the head of PT ASDP Indonesia Ferry at the Port of Sape, Jumono, on Saturday afternoon.

Apart from the bad weather, crossings between Sape and Labuhan Bajo have also been disrupted by the limited size of the ferry fleet.

There are at present only three ferries under the control of PT ASDP Sape. Two of these are in full operation serving the Sape-Labuhan Bajo route, while the other serves the Sape-Sumba (NTT) route every Monday and Thursday. Consequently, this third ferry can effectively only help on the Sape-Labuhan Bajo route on Saturdays and Sundays.

**Figure 3.5 Number of Crossings by Month in 2008-2009 Sumber: PT. ASDP Cabang Kupang**



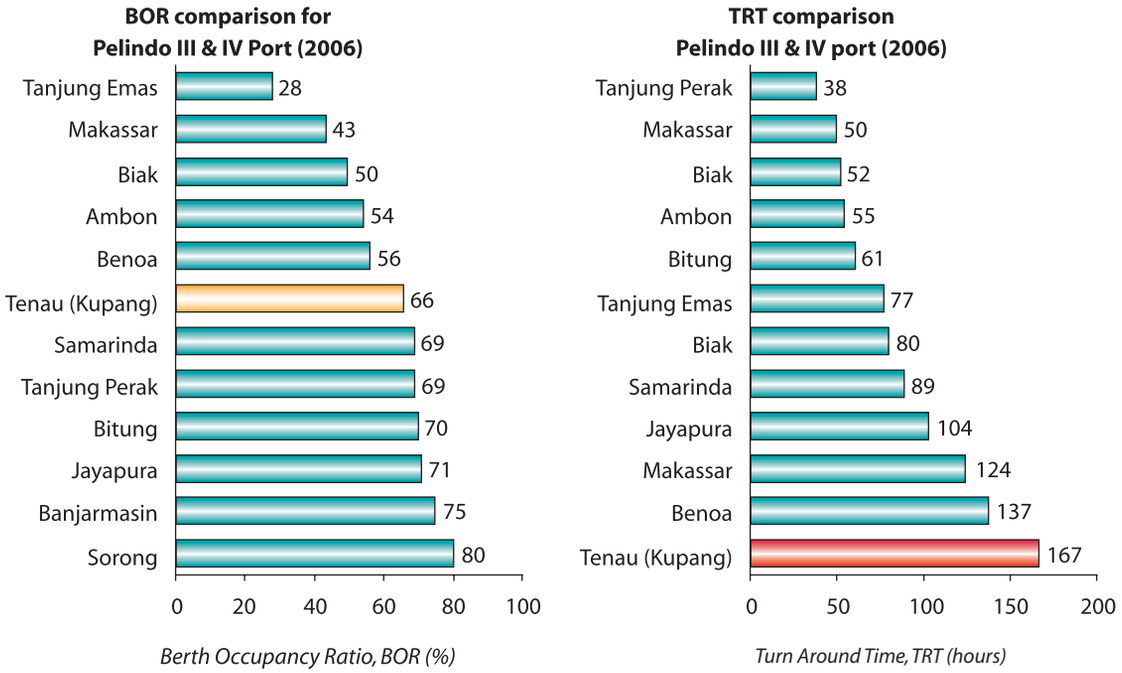

Source: PT ASDP Kupang Branch

## E. Seaport Capacity and Performance

***The performance of the Port of Tenau is still poor.*** In general, the berth occupancy ratio (BOR) at the Port of Tenau in Kupang was 65.7% in 2006 – an improvement on the 1999 figure of 74.4%. However, Tenau's BOR is still higher than the average for other ports in Indonesia, which is only 57.6%. Meanwhile, Turn Around Time (TRT) in Tenau is the worst among the 12 ports managed by Pelindo III and IV. So unless an increase in loading/unloading activities at the Port of Tenau is not accompanied by an expansion in harbor capacity, this will impede ships' journeys and increase their waiting time.

***The productivity of container loading/unloading equipment in ports is still low.*** Compared with other ports, the productivity of container loading/unloading equipment at the Port of Tenau in Kupang is low. With an average of around 12 boxes per hour, the loading/unloading speed at Tenau is far below that at the Port of Palaran in Samarinda, which achieves 24 boxes per hour, let alone if compared with an international port such as Tanjung Priok, which has average container movement of 45-50 boxes per hour. Relatively high loading/unloading speeds at these two ports are closely tied to the availability of adequate facilities and container crane equipment.

**Figure 3.6 Performance of Port of Tenau (Kupang) Compared with Main Seaports under Pelindo III and IV**




Source: Ray, 2008, adapted by LPEM-FEUI (2010)

***Productivity of general cargo loading/unloading at Tenau is also low.*** Loading/unloading productivity for general cargo is only 600-750 tons per day. This performance is far below that found at the Port of Lembar in NTB, which averages 1,500 tons per day. This low performance leads to longer loading/unloading times. To illustrate this point, while it takes only two days to unload 3,000 tons of rice at the Port of Lembar, this takes four days at the Port of Tenau – twice as long.

***The shift work tariff model at Tenau does not encourage improvement in the productivity of stevedoring personnel.*** Tenau, the main port in NTT, applies rates for stevedoring personnel (TKBM) based on a shift work model. The roughly 300 dockworkers who work under the auspices of the TKBM Cooperative are divided into three groups based on the nature of their work: stevedoring, cargodoring, and delivery. With effective working time of 21 hours per day (plus three hours for breaks), there are three shifts each day, with seven working hours per shift. As the dockworkers have relatively fixed incomes, this shift work tariff model gives them no incentive to work more productively. Several stevedoring companies that were interviewed complained about the dockworkers' slow work rhythm, including taking longer breaks than allowed. This is the chief cause of low productivity in general cargo loading/unloading in Tenau.

***In contrast, some other ports apply different systems that create incentives to work harder.*** As an example, the Port of Atapupu uses a job-lot model as the basis for the stevedoring tariff. This model uses the tonnage of goods to be unloaded/loaded as the basis for setting the rate. Several non-commercial ports, such as Larantuka Seaport on the island of Flores, apply a sack/*koli* tariff model that uses the number of sacks/*koli* as the basis for paying the stevedores. Both these models encourage dockworkers to work faster and move more goods, because doing so increases their income. Stevedoring companies at the Port of Lembar in NTB offer two models of stevedoring rates: shift and job lot.

**Table 3.4 Comparison of Stevedoring Rate Models**

| Description | Shift (Tenau) | Job Lot (Lembar) | *Koli*/Sack (Larantuka) |
|---|---|---|---|
| Basis for setting wages | Working hours are fixed at 7 hours per day | Number of tons loaded/unloaded; the more tons handled, the greater the wages earned | Number of sacks/*koli*; the more sacks/*koli* handled, the greater the wages earned |
| Effective time of loading/unloading activity | 21 hours per day (plus 3 hours of breaks), starting at 08.00 | 08.00 - 22.00 | Follows port hours of operation |
| Cost | Rp 58,095 per person per shift. So, if a person works one shift per day and 21 days per month, he earns Rp 1,219,995 (21 x Rp 58,095). This is higher than NTT's minimum wage (Rp 800,000) and does not include other cost components such as dockworker insurance and administrative costs. | - General cargo (*koli*/wooden crate): Rp 7,200 per ton<br>- Bag cargo: Rp 6,200 per ton<br>- Drum/liquid: Rp 7,200 per ton | Rp 10,000 per sack for small sacks (≤50 kg) and Rp 15,000 for medium and large sacks (>50 kg). |
| Examples of ports using this system | Port of Tenau, Kupang | Atapupu Seaport, Belu Regency; Lembar Seaport, NTB | Larantuka Seaport, Flores Timur Regency |

Source: Interviews with respondents, processed by LPEM-FEUI, 2010

***Dockworkers' slow performance also means that some goods cannot enter the recipients' warehouses.*** The effective loading/unloading time at the port is 21 hours per day, while warehouse operating hours are shorter, ending at 22.00. As a consequence, goods that are unloaded often spend a long time in the storage yard as they cannot be taken directly to the warehouse. This increases storage costs. In this context, the stevedoring personnel actually play a critical role. This extra cost could be removed if worker productivity was high and/or there was adequate support equipment, such as gantry cranes.

**Box 3.2 Dockworkers**

At most ports in NTT Province, especially non-commercial ports, dockworkers play a critical role in loading/unloading activities. First, adequate loading/unloading facilities such as cranes and forklifts are not available. This means that the owners of goods have no other alternative but to use laborers to perform the loading/unloading work. Second, dockworkers have a high degree of control of port activities. The assertion that they must be involved in port activities because they are local residents is often used as a shield to force the hand of the port authorities. The problem is that in several places, such as the Local Port (PELRA) of Wuring in Sikka, the informal power of workers has indirectly replaced port authority's role. For example, a labor leader holds the keys to the port gates.

With the workers' increasingly strong bargaining position vis-à-vis users of services and the port authorities, the workers (and their organizations) have become monopolistic, with various consequences. Interviews with several users of ship services in Larantuka, for example, revealed that this monopoly situation has made labor costs high. The cost to transport a single sack of goods is around Rp 10,000-15,000, which is considered too high. Furthermore, the dockworkers' limited working hours also cause loading/unloading times to be longer.

Source: Interviews with business operators/ owners of goods, LPEM-FEUI, 2010

## F. Goods Transportation Costs in NTT

***Based on data for three routes surveyed, transportation costs for goods are in the range of Rp 700,000 to Rp 1.9 million.*** The cost of transporting goods by truck is highest using the Kupang-Larantuka ferry (both directions), Rp 1.8 million per trip on average. In contrast, the cost of transporting goods on the Labuan Bajo-Ruteng route is the lowest, with an average cost of just Rp 730,000. That is because there are no ferry ticket costs on the latter route. There is a significant difference in the cost of transporting goods on the Kupang-Rote route and the return trip. The cost of transporting goods from Kupang to Rote is higher than the return trip because: (i) the Kupang-Rote ferry cost averages Rp 1 million per truck, while the return cost is only Rp 730,000 per truck; (ii) shorter overland journey–

trucks from Rote to Kupang stop at the Port of Tenau, which is only 4 km from the ferry port at Bolok, while going the other way, trucks leave from a loading point 8 km further away; and (iii) waiting time in Kupang is much longer.

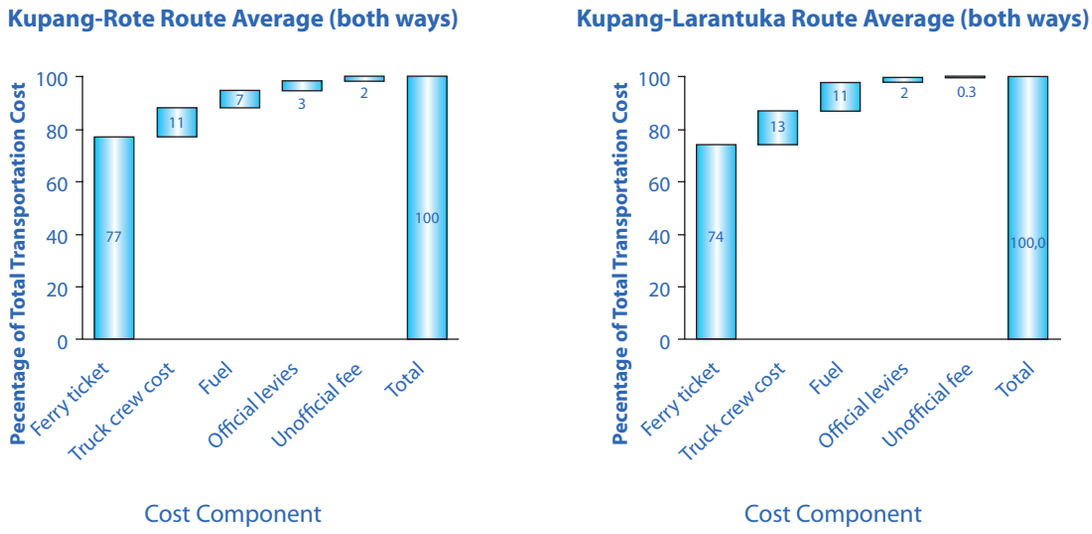
**Table 3.5 Total Transportation Cost Based on Route**

| Route | Total Cost (Rp) | Distance (Km) |
|---|---|---|
| **Kupang-Rote average** | **1,116,536** | **36** |
| Kupang-Rote | 1,268,500 | 40 |
| Rote-Kupang | 964,571 | 32 |
| **Kupang-Larantuka average** | **1,815,104** | **83** |
| Kupang-Larantuka | 1,873,333 | 95 |
| Larantuka-Kupang | 1,756,875 | 70 |
| **Labuan Bajo-Ruteng average** | **731,625** | **129** |
| Labuan Bajo-Ruteng | 736,250 | 129 |
| Ruteng-Labuan Bajo | 727,000 | 128 |
| **Average of three routes** | **1,221,088** | **82** |

Source : Processed from primary data, LPEM-FEUI, 2010
Note : Total transportation cost for the Kupang-Rote and Kupang Larantuka routes includes ferry ticket and waiting time

***The biggest source of transportation costs is ferry tickets.*** Given the province's geography as an archipelago, ferry crossings are a very significant cost component. Ferries account for 72-79% of the total cost of transporting goods in NTT. The proportion is somewhat higher on the Kupang–Rote route, reaching around 75-79%, while on the Kupang–Larantuka route, ferries account for 72-76% of the total cost of transporting goods. A study by Bank Indonesia's Mataram (NTB) Branch also found that ferry costs contributed greatly to the total cost of transporting goods from East Java to Sumbawa, reaching 61% of the total cost (BI, 2009).

**Figure 3.7 Structure of Cost Components in Transportation of Goods, Based on Route (in percentages)**




Source: Processed from primary data, LPEM-FEUI, 2010

***Waiting/queuing time tends to be long at ferry terminals in NTT***. Waiting time is defined as the length of time a truck has to wait for a ferry at the ferry terminal, starting when the truck arrives at the port and ending when the truck boards the ferry. The average waiting time for trucks going from Kupang to Rote at the Bolok Ferry Terminal is more than a day – nearly five times that for trucks going in the opposite direction from the Pantai Baru Rote Ferry Terminal. This long waiting time at the ferry terminal means it takes nearly two days in total to ship goods from Kupang to Rote, which is two thirds longer than the time needed to ship goods from Rote to Kupang. For the Kupang-Larantuka route, conditions are a little different. The waiting time at Larantuka Ferry Terminal is three hours longer than at Bolok (Kupang). Nevertheless, the waiting time on the Kupang-Larantuka route is generally shorter than that of the Kupang-Rote route **(Table 3.6).**

**Table 3.6 Total Delivery Time for Goods, Based on Route (in Hours)**

| Route | Waiting time at port of origin | Time to board ferry | Waiting time on ferry | Crossing time at sea | Disembarking time at destination port | Travel time on land | Total Delivery Time |
|---|---|---|---|---|---|---|---|
| Kupang – Rote | 33 | 0.5 | 2 | 4 | 0.25 | 3.5 | **43.25** |
| Rote - Kupang | 7 | 0.5 | 2 | 4 | 0.25 | 3 | **16.75** |
| Kupang - Larantuka | 4 | 0.25 | 3 | 12 | 0.25 | 3.5 | **23** |
| Larantuka - Kupang | 7 | 0.25 | 3 | 12 | 0.25 | 2.5 | **25** |

Source: Processed from primary data, LPEM-FEUI, 2010

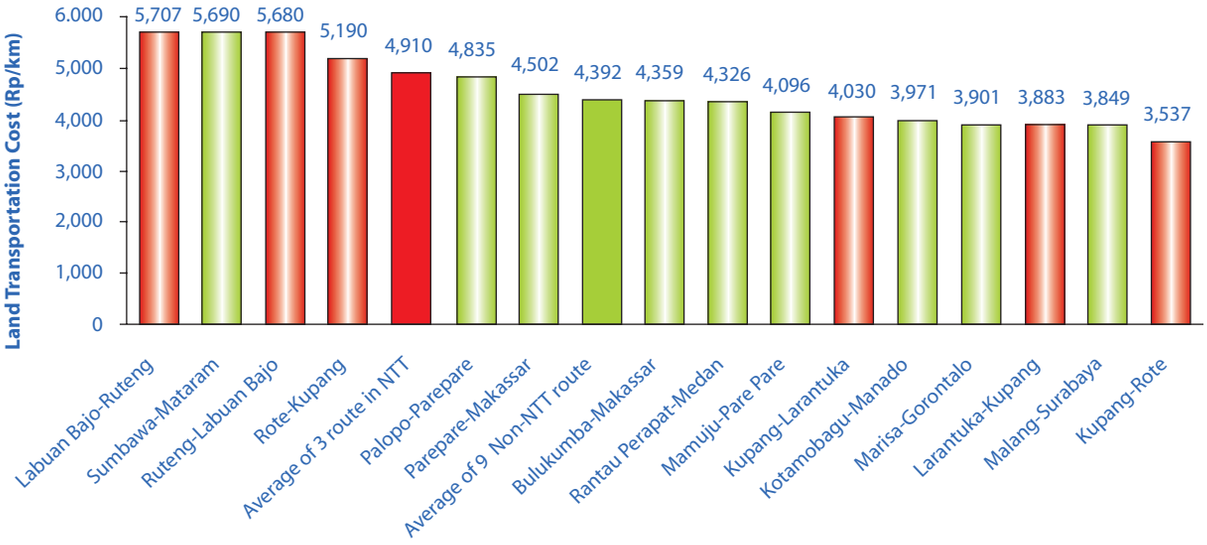
***The large number of trucks, which exceeds the available capacity of the existing ferries, is the main reason for long waiting times.*** For the Kupang–Rote ferry route, only one crossing is made per day, while the number of trucks wanting to cross far exceeds the capacity of the ferry. In contrast, the waiting time on the Kupang–Larantuka route is much shorter, since relatively few trucks use this ferry. Based on interviews, on average one truck makes 12-16 trips on the Kupang-Rote route each month, but only 5-8 trips on the Kupang-Larantuka route.

***The structure of the truck transportation industry in NTT also contributes to the long waiting times.*** Generally, goods vehicles/trucks tend to be owned by individuals (business people or owners of goods) rather than agents or freight forwarding companies. Since in practice each truck can only transport goods being sold or bought by the owner, truck capacity is not optimised, and the majority of trucks going on ferries carry relatively small cargos.

***If ferry cost components (tickets and time) are excluded from the calculation, the average cost of transporting goods on the three routes in NTT becomes Rp 4,910 per kilometre.*** By excluding both ferry cost components, transportation costs in NTT can be compared with the results of other studies that only calculate land transportation costs. As **Figure 3.8** shows, the average cost of transporting goods by land is highest on the Labuan Bajo – Ruteng route (Rp 5,707 per kilometre) and lowest on the Kupang–Rote route (Rp 3,537). The large disparity between the cost of the Kupang–Rote route and the Rote-Kupang route is due to the high cost of official levies – user fees or third party contributions (SP3) – on the Rote-Kupang route.

***The average transportation costs for the three routes in NTT are higher than for various other routes in Indonesia.*** Based on the findings of a study by LPEM-FEUI and The Asia Foundation (2008), the average land transportation costs in a number of selected regions in 2006 was Rp 3,514 per kilometre. Adjusting for inflation in each region observed, the average transportation cost for 2010 is estimated at Rp 4,392 per kilometre. On average, the cost of transporting goods in NTT is higher than for the nine other routes in Indonesia. However, as the graphic shows, relatively high costs are found only on the Labuan Bajo-Ruteng (both directions) and Rote-Kupang routes. In contrast, the Kupang-Rote and Kupang-Larantuka (both directions) routes are relatively low-cost.

**Figure 3.8 Comparison of Land Transportation Costs in NTT and Other Locations**




Source: Processed from primary data, LPEM-FEUI (2010) and LPEM-FEUI and The Asia Foundation (2008)

Key: = route surveyed in this study

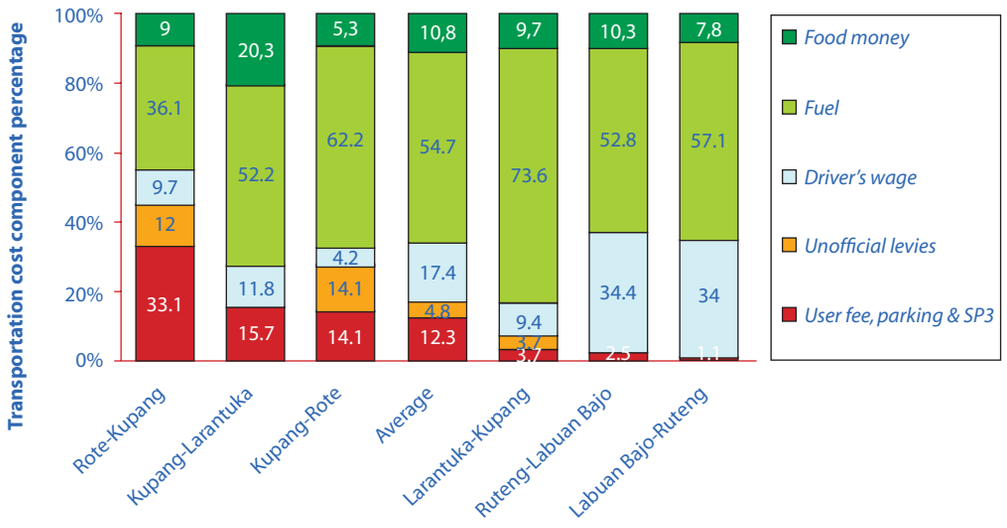
= route surveyed in the study by LPEM-FEUI and The Asia Foundation (2008)

## G. Official and Unofficial Levies

***Total levies are higher in NTT than on nine other routes in Indonesia, but unofficial levies are relatively low.*** Average total levies (official and unofficial) arising in delivery of goods in NTT are 17% of transportation costs (excluding ferry costs). The biggest contribution comes from official levies (user fees, harbor entry, parking, SP3), which account for 12%, while unofficial levies do not exceed 5% of total transportation costs **(see Figure 3.9)**. This finding differs from other studies, such as the study on goods transportation in other regions of Indonesia (LPEM-FEUI and The Asia Foundation, 2008), which found that all levies together accounted for around 12% of total transportation costs on the nine routes recorded in **Figure 3.9.**

***Nevertheless, there are significant differences in the components of levies between the different routes.*** User fees, harbor entry permits, parking and SP3 are very high for the Rote-Kupang route (both directions), and for Kupang-Larantuka. In contrast, these "official levies" are not significant on the three other routes. Meanwhile, unofficial levies are quite common on the Kupang-Rote (both directions), quite rare on the Larantuka-Kupang route, and do not occur at all on the other three routes. This reflects good practices on the island of Flores.

**Figure 3.9 Structure of Transportation Cost Components, Excluding Ferry Costs (by percentage)**




Source: Processed from primary data, LPEM-FEUI (2010)

***The high variation in official levies between routes is due to differences in the characteristics of the goods that are transported, the trade model, and whether or not there are ferry crossings.*** Most goods transported on the Rote-Kupang route are fishery and livestock commodities, which are subject to user fees and SP3. In contrast, the goods carried on other routes are secondary and tertiary products, which are not subject to levies. Based on the trade model, the Labuan Bajo-Ruteng route (both directions) can be categorized as "half-to-half" – these two regions are neither the point of origin nor the final destination of the goods being transported, making it possible that various official levies were not recorded by the survey. Many official levies occur at ferry terminals, so trucks carrying goods along the Labuan Bajo-Ruteng route, which is entirely an overland journey, are free from levies. It should be noted that the cost of entering the ferry terminal and parking in Bolok (Kupang) and Rote is higher than in Larantuka.

***The reincarnation of user fees as Third Party Contributions (SP3) should be noted***. A number of regional regulations (perda) that imposed taxes and user fees on transportation of goods between regions have been revoked at the recommendation of the central government because they conflicted with a higher-level regulation[6] and the principle of free domestic trade. Nevertheless, several local governments – including Alor, Manggarai Barat, and Sumba Barat Daya – have issued a regulation of the regent (which has lower status than a regional regulation), requiring a "donation" from businesspeople transporting various agricultural, livestock and fishery commodities, in order to replace them.

6 Article 158 point b of Law 32/2004 on Regional Governance prohibits governments to impose levies of any name except through a law. Article 7 points a and b of Law 33/2004 on Fiscal Balance between Central and Regional Government prohibits local governments to issue local regulations (perda) on revenues that lead to high-cost economy and impede the traffic of goods and services between regions. Law 28/2009 on Regional Taxes and Regional Retributions contains a list of regional taxes and regional retributions that can be levied by a regional government.

While this "donation" is not binding, in practice almost all businesspeople pay it. This finding was confirmed by the results of a SMERU study (2007) on the business climate in West Timor, which also found that most parts of the region – Kota Kupang Regencies of Kupang, Timor Tengah Utara, Timor Tengah Selatan, and Belu – had applied SP3.

## H. Seaport and Ferry Data Collection System

***Seaport loading/unloading statistics published by various agencies are inconsistent, and some are illogical.*** For example, based on BPS data, the unloading volume at the Port of Kalabahi in 2006 was 84,389 tons, while the loading volume was 79,114 tons. While according to the data from PT Pelindo III Kupang Branch as the operator of the Port of Kalabahi, in 2006 the unloading volume at this port was 67,334 tons and the loading volume was 7,935 tons. To take another example, according to BPS data, the unloading and loading volumes at the Port of Atapupu in 2006 were 193,185 tons and 152,665 tons, respectively. However, data from the local transport office for the same year show unloading volume of 7 million tons and loading volume of 1.2 million tons. Furthermore, loading/unloading statistics are not available for all years for certain ports. This poor data management is inseparable from the poor quality of the record keeping and formats provided at the port level, and of reporting to higher-level agencies.

***Like seaports, the system for collecting and managing data at ferry ports is also weak.*** Cargo statistics at ferry ports only record the volume of goods taken onto ferries as passenger baggage and general cargo placed directly on the ferries (bag cargo), and do not show the volume of goods carried onto the ferries in trucks. Consequently, the recorded value and volume of goods is much lower than the actual amount. This is the result of a ferry ticket policy that is based solely on the category of goods transport vehicles and does not take into account the weight or volume of the goods carried by the trucks.

# Chapter IV.
# CONCLUSIONS AND RECOMMENDATIONS

1. **Transportation costs in NTT can be lowered by reducing the trade imbalances in inter-province and inter-island trade.**

   The pattern of trading relationships between NTT and the outside world, and between Kupang and other regions of NTT, is an imbalanced centre-periphery pattern in which Surabaya is the centre and NTT is the periphery, and Kupang is the centre and other regions of NTT are periphery. NTT 'imports' secondary and tertiary goods with very high added value and in large volumes, and only 'exports' primary commodities (agricultural, forestry, fishery and plantation commodities) with a low added value and in relatively small quantities. This imbalance increases transportation costs per unit or volume of goods, since compensation is needed for the empty containers on routes from NTT to other provinces, and from other regions in NTT to Kupang. In addition, delivery time for goods is also longer due to waiting for a full load. Another implication of these circumstances is that many businesspeople (traders) who need to ensure that their goods are delivered quickly prefer to own their own transport vehicles. This prevents truck cargo from being optimised (i.e., they are not fully laden), lengthens queues to board ferries, and ultimately impedes the development of the goods transportation business. Another impact of these trade imbalances is the high Consumer Price Index (CPI) in NTT, which averaged 128.3 for the period January-July 2010 – the second highest in Indonesia after Papua (132.4).

   To reduce trade imbalances, both inter-province and inter-island, the best solution is to improve local economic performance by creating a good business climate – improving infrastructure quality and management, losing various regional regulations that impede investment and business development, and helping the business community (especially small and medium-scale businesses) to gain better access to capital and markets.

   In the case of the road infrastructure, expanding the network and improving and maintaining roads, especially at the regency level, should be a main priority to encourage local economic development in NTT. In addition, legal enforcement is needed to ensure that weigh stations function to protect road quality and safety, so avoiding high added costs arising from damage to roads.

2. **Performance of seaports needs to be improved, especially the Port of Tenau in Kupang.**

   Improving the performance of the Port of Tenau, as the main gateway for transporting goods into and out of NTT, would have a substantial impact on the total cost of transporting goods in this province. The limited port infrastructure, such as piers and container handling facilities, causes loading/unloading performance to be less than optimal. Likewise, availability of adequate support facilities such as gantry cranes would affect the speed of loading and unloading containers.

   In addition, management of stevedoring personnel would impact the loading/unloading of general cargo not put in containers. This study has identified that the labor tariff scheme currently in force – a shift work system – provides little incentive for dockworkers to be more productive. The Tenau Port Authority needs to review and discuss a tariff system that would give dockworkers an incentive to work faster, such as the job-lot or koli/sack system used in several other ports. In

addition, since the dockworkers' cooperative has no competitors, stevedoring companies have no alternative. Opening up this business sector would encourage competition, which would in turn increase productivity.

3. **Better terminal performance and lower ferry costs are needed to support the smooth flow of goods in NTT, along with improved data collection on inter-island traffic of goods.**
This study found that ferry costs contributed hugely to total transportation costs in NTT, reaching 72-77%. For ferry operators, this relatively high cost is needed to cover the high operational costs of ferries. Clearly, greater ferry operator efficiency is needed to reduce ferry tariffs. Another thing that needs to be considered to reduce the tariffs is encouraging competition among operators, as permitted by the prevailing regulations. The government could provide operators with various incentives. One such incentive would be a tax holiday for anyone investing in ferry services. Another incentive would be a loan facility at below-market interest rates. However, it is still the government's responsibility to provide the infrastructure – both soft infrastructure (such as good regulations) and hard infrastructure, such as ferry terminal facilities and road access.

4. **Aside from the costs associated with NTT's geography, levies are an important component in reducing the relatively high transportation costs.**
In general, transportation costs in NTT are higher than in other regions. Some of the factors that create these transportation costs are difficult to reduce because they are endowment factors, such as the need for ferries, the weather, and the land contours in NTT. But even if we discount

ferry costs (cost of tickets and the time involved), the average cost of transporting goods by land on the three routes in NTT is still high compared to other locations in Indonesia. The average land transportation cost of Rp 4,910 per kilometre in NTT compares with an average of Rp 4,392 per kilometre on nine other routes in Indonesia (LPEM-FEUI and The Asia Foundation, 2008)[7].

One substantial component of costs that falls under local government authority is official levies, which average 12% of total transportation costs. They especially occur on the Kupang-Rote route (both directions) and the Kupang-Larantuka route. These official fees – consisting of user fees, third party contributions (SP3) and parking fees – are mainly regulated by head of region regulations, which are relatively easy to revise since they do not require approval from the local legislative council (DPRD). Aside from burdening business actors and creating high economic costs, many of these official levies actually conflict with higher regulations such as Law 28/2009 on Regional Taxes and Regional Retributions.

Meanwhile, unofficial levies still occur in some parts of NTT, although averaging only 5% of total transportation costs. These levies chiefly occur on the Kupang-Rote route (both directions) and the Larantuka-Kupang route. To deal with this issue, the local government needs to coordinate with various central government vertical agencies.

If we relate the contribution of the transportation sector to inflation, this study also shows that a 10% reduction in transportation costs in NTT would reduce the inflation rate by at least 1%. In other words, if the 17% of costs going to levies as found in this study could be eliminated, this would reduce NTT's inflation rate by at least 1.7%. The figure of 1.7% is the lower bound, because it does not take into account indirect impacts. See **Appendix 2** of this report.

**5. Good policy initiatives cannot be taken without sufficient data and information.**

A major problem faced by the study team was the limited nature and poor quality of the secondary data held by the relevant authorities. The data held by one agency were often very different from the data held by another, and some data did not reflect conditions observed in the field. This issue clearly makes it difficult for the central, provincial and regency/municipal governments to determine the impact of a given policy or to select appropriate policy measures to deal with problems faced in the field. In addition, insufficient and unreliable data and information also makes it difficult for business actors to make investment decisions and develop their business.

7 This cost is in 2010 prices, after adjusting for inflation.

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# APPENDIX 1

# Methodology of Field Survey Using Questionnaires

### *Methodology of Field Survey Using Questionnaires*

The field survey was conducted by interviewing truck drivers using closed questions from a questionnaire. The choice of routes was based on loading/unloading activities at the ferry ports.

### *Choice of Routes*

To obtain information on the costs of transporting goods between islands in NTT, this study selected three of the approximately 20 existing routes. The three routes are Kupang–Rote, Kupang–Larantuka, and Labuan Bajo–Ruteng. These three routes were chosen based on the relatively high level of loading and unloading activities and the greater frequency of ferry arrivals and departures.

The Kupang–Rote serves quite a high traffic of goods and passengers. Loading/unloading activity at the Pantai Baru Rote terminal is the second highest after Bolok (Kupang) among ferry ports in NTT. There is one crossing on this route each day.

Loading/unloading at the port of Labuan Bajo is the third highest after Bolok (Kupang) and Pantai Baru (Rote), with daily arrivals and departures each served by one ferry. The port of Labuan Bajo is the only ferry port that serves inter-province goods traffic, i.e. between NTT and NTB, which connects to Bali and East Java (Surabaya).

The volume of unloading at the Seaport of Larantuka is fourth largest, after the port of Waingapu. However, because the crossing distance between Kupang and Waingapu is further and takes longer, we chose the Kupang–Larantuka route, which is shorter and takes less time.

### *Selection of Truck Sample*

For each route, this study took a sample of 30 trucks, with the drivers as the respondents. For each route selected, 15 outbound trucks and 15 returning trucks were chosen. The sample was selected at

random and data were collected using questionnaires. The surveyors followed or boarded the trucks from the arrival port to the destination where the goods were unloaded from the trucks. This was done so that the surveyors could capture everything that happened during the truck's journey.

### *Technique for Conducting Field Survey Using Questionnaires*

For trucks leaving Kupang for Rote, the surveyors followed the trucks from Pantai Baru Ferry Port (Rote) to the destinations around the city of Ba'a, a distance of roughly 30 kilometres. Going in the opposite direction, the surveyors followed the trucks from the Bolok Ferry Port to destinations around the Kota Kupang, a distance of roughly 25 kilometres.

For trucks leaving Kupang for Larantuka, the surveyors followed the trucks from the Seaport of Larantuka to the economic centre of the city of Larantuka (as far as the border approaching Maumere, a distance of 20-50 kilometres). For the route from Larantuka to Kupang, the surveyors followed the trucks from the Port of Bolok to destinations around the Kotaa Kupang, a distance of roughly 25 kilometres.

For the Labuan Bajo–Ruteng route, of the 30 trucks selected, the surveyors only followed (boarded) two trucks; one going from Labuan Bajo to Ruteng, and the other going in the opposite direction. This was based on two considerations: (i) the great distance between the two cities, with quite difficult topography (129 kilometres, many curves and grades), and (ii) no findings of either legal or illegal levies. Data for the other 28 trucks in the sample were based on in-depth interviews with the truck drivers. For trucks coming from Ruteng, interviews were conducted at the Labuan Bajo Ferry Port, and for the opposite direction, interviews were conducted in the municipality of Ruteng.

# APPENDIX 2

# Contribution of the Transportation Sector to Inflation

***The weight given to the transportation sector in creating inflation is estimated at 10.4%, after the weights for food (34.7%) and housing (27.0%).***

To recognize to what extent improvements in the transportation sector can reduce the rate of inflation, we must first know the weight of the transportation sector in creating the Consumer Price Index (CPI). Although the CPI figures for each component are available from the National Statistics Office (BPS), their weightings are not.

Because the calculation of Indonesia's CPI employs the Laspeyres method, meaning that each component has a fixed weight, we can use an econometric approach. Although econometrics are not normally used to estimate deterministic equations, the parameters that are produced will be in line with the weight given by BPS, as long as all the components forming the CPI are included in the estimation process.

The data used to estimate the contribution of the transportation sector to inflation are taken from the monthly price index data for 66 major cities in Indonesia. From the results of our estimation, we obtained a weighting for the transportation sector in the creation of CPI of 10.37%, as shown in **Table 2.1** below. To test whether this figure is reasonable, a Wald test was performed with a null hypothesis that the total of all parameter values is equal to one. This indicates that the total weight for all components is equal to 100%. Table 2.1 shows that we cannot reject the null hypothesis, meaning that the total of the parameters is not other than 1.

***A 10% reduction in transportation costs in NTT will reduce the inflation rate by at least 1%.***

From the results obtained, it can be concluded that a 1% cost efficiency gain in the transportation sector will help reduce the inflation rate in NTT by 0.1%. But it must also be remembered that this 0.1% figure is the lower bound, as it does not take into account indirect impacts. These indirect impacts are the reduced costs of other goods resulting from reduced transportation costs. But because we do not have information on the average transportation component of the various products included in the calculation of CPI, these indirect impacts cannot be calculated.

**Table 2.1 Result of Estimating Weighting of Components in Consumer Price Index**

Dependent Variable: Inflation
Method: GLS (Cross Section Weights)
Sample: 2 15
Included observations: 14
Number of cross-sections used: 2
Total panel (unbalanced) observations: 26
Convergence achieved after 12 iteration(s)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **Food** | 0.347048 | 0.002705 | 128.3052 | 0.0000 |
| Ready-to-Eat Food, Beverages & Tobacco | 0.088848 | 0.005682 | 15.63628 | 0.0000 |
| **Housing, Electricity, Gas and Water** | 0.270163 | 0.007611 | 35.49864 | 0.0000 |
| Education | 0.018930 | 0.011535 | 1.641048 | 0.1231 |
| Health Care, Recreation and Sports | 0.065712 | 0.016162 | 4.065956 | 0.0012 |
| Clothing | 0.043834 | 0.005170 | 8.478219 | 0.0000 |
| **Transportation** | 0.103796 | 0.005431 | 19.11056 | 0.0000 |
| Transportation Support Services | 0.014787 | 0.003456 | 4.278189 | 0.0008 |
| Communication | 0.019435 | 0.002206 | 8.808295 | 0.0000 |
| Finance | 0.028876 | 0.006917 | 4.174681 | 0.0009 |
| Fixed Effects | | | | |
| Indonesia | -0.000285 | | | |
| Kupang | 9.10E-05 | | | |
| Weighted Statistics | | | | |
| R-squared | 0.999980 | Mean dependent var | | 0.056843 |
| Adjusted R-squared | 0.999964 | S.D. dependent var | | 0.141669 |
| S.E. of regression | 0.000855 | Sum squared resid | | 1.02E-05 |
| Log likelihood | 184.5399 | F-statistic | | 76267.77 |
| Durbin-Watson stat | 1.902246 | Prob(F-statistic) | | 0.000000 |

Source: Results of estimations by LPEM-FEUI, 2010

**Table 2.2 Result of Wald Test with Null Hypothesis: All Weights Total One**

Wald Test:

| Null Hypothesis: | C(1)+C(2)+C(3)+C(4)+C(5)+C(6)+C(7)+C(8)+C(9)+C(10) =1 | | |
|---|---|---|---|
| F-statistic | 0.003780 | Probability | 0.951735 |
| Chi-square | 0.003780 | Probability | 0.950973 |

Source: Results of estimations by LPEM-FEUI, 2010

# Appendix