

Japan International Cooperation Agency (JICA)
Ministry of Transport and Communications (MOTC)
Klaipeda State Seaport Authority (KSSA)

No.

KLAIPEDA

*The Study on The Port Development Project
in The Republic of LITHUANIA*

FINAL REPORT

SUMMARY

September 2004
Nippon Koei Co., Ltd.

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EXCHANGE RATE

1 Euro = 1.238 US dollar = 3.44 Lytas = 130 Yen
(as of end of January 2004)

PREFACE

In response to a request from the Government of the Republic of Lithuania (hereinafter referred to as “GOL”), the Government of Japan decided to conduct a Study on the Port Development Project in the Republic of Lithuania and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team to Lithuania three times between March 2003 and June 2004, which was headed by Mr. Kiyokuni Okubo of Nippon Koei Co. Ltd. (NK).

The team held discussion with the officials concerned of the GOL and conducted the field surveys at the study area. Upon returning to Japan, the team conducted studies and prepared this report.

I hope that this report will contribute to the promotion of the project and to the enhancement of the friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of GOL for their close cooperation extended to the team.

September 2004

Kazuhisa Matsuoka
Vice President
Japan International Cooperation Agency

LETTER OF TRANSMITTAL

September 2004

Mr. Kazuhisa Matsuoka
Vice President
Japan International Cooperation Agency

Dear Mr. Matsuoka

It is my great pleasure to submit herewith the Final Report of “The Study on the Port Development Project in the Republic of Lithuania”.

The study team comprised of Nippon Koei Co. Ltd. (NK) conducted surveys in the Republic of Lithuania over the period between March 2003 and June 2004 according to the contract with the Japan International Cooperation Agency (JICA).

The study team compiled this report, which proposes the Master Plan and Short-term Development Plan of Klaipeda Port for 2025 and 2015 respectively, together with the feasibility study on the key projects, through close consultations with officials of the Ministry of Transport and Communications, Klaipeda State Seaport Authority and other authorities concerned.

On behalf of the study team, I would like to express my heartfelt appreciation to the Ministry of Transport and Communications and Klaipeda State Seaport Authority and other authorities concerned for their cooperation, assistance, and heartfelt hospitality extended to the study team.

I am also greatly grateful to the Japan International Cooperation Agency, the Ministry of Foreign Affairs, the Ministry of Land, Infrastructure and Transport, and the Embassy of Japan in Lithuania for valuable suggestions and assistance during the course of the study.

Yours faithfully,

Kiyokuni OKUBO
Team Leader
The Study on the Port Development Project
in the Republic of Lithuania



Master Plan of Klaipėda Port



KLAIPĖDA
1 : 15 000 (1 cm = 150 m)

Sutartiniai ženklai • Legend • Zeichenerklärung

<ul style="list-style-type: none"> Pagrindinė gatvė / Through street Gatvė su skersiniais keliais / Main thoroughfare street Gatvė / Street Prochų gatvė / Pedestrian street Prochų keliai, lauko kelias / Pedestrian street, field road Tiesiamoji gatvė / Street under construction Geležinkelis / Railway Kelvy bėgiai / Ferry Vienpusis eismas / One-way street Daugiasukčių namų kvartalas / Built-up area Individualūs namų kvartalai / Private houses area Pramoninės kvartalas / Industrial area Jamų pastatas / Removable building Architektūrinis pastatas / Architectural building Pastatas / Building Geotektoninis paminklas / Monument Kapinės / Cemetery Miškas, parkas / Forest, park Pilvė, veja / Lawn Sodas / Garden Bažnyčia / Church Geotektoninis paminklas / Railway/bus station Paštas / Post office Ligoninė / Hospital Policija / Police Muziejus, galerija / Museum, gallery Teatras / Theatre Pilis / Castle Viešbutis / Hotel Kempingas / Camping 	<ul style="list-style-type: none"> Paminklas / Monument Kapinės / Cemetery Miškas, parkas / Forest, park Pilvė, veja / Lawn Sodas / Garden Bažnyčia / Church Geotektoninis paminklas / Railway/bus station Paštas / Post office Ligoninė / Hospital Policija / Police Muziejus, galerija / Museum, gallery Teatras / Theatre Pilis / Castle Viešbutis / Hotel Kempingas / Camping 	<ul style="list-style-type: none"> Restoranas / Restaurant Placius / Backstand Stoties / Station Degalinė / Fuel station Saugoma aplinka / Protected area Saugoma istorinė aplinka / Protected historical area Automobilis / Car service Šviesos / Light Uostas / Port Ligoninė / Hospital Grubus vaizdas / Bad view Miesto šlis / City limits Nacionalinis parkas / National park Autobuso maršrutas / Bus line Maršrutas patalpa / End of line Vienakypis maršrutas / One way line
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Location Map of Klaipėda Port Area

EXECUTIVE SUMMARY

PRESENT CONDITIONS SURROUNDING KLAIPEDA PORT

- (01) Lithuania occupies a strategic location on the eastern edge of the Baltic Sea, to the north of Poland and Kaliningrad (Russia). To expand east-west seaborne trade and sustain national economic growth, **Klaipeda Port**, a gateway port of Lithuania, should compete with rival ports in the eastern Baltic Sea region, including Tallinn Port in Estonia, Riga and Ventspils Ports in Latvia, and Kaliningrad and St. Petersburg Ports in Russia.
- (02) Since the collapse of the FSU, all the eastern Baltic ports, apart from Ventspils, have experienced a very significant growth in freight traffic. St. Petersburg Port handled a total freight cargo of 41.3 million tons in 2002, and is the largest of the Eastern Baltic ports. **Klaipeda Port**, with a cargo throughput of 19.7 million tons, is the fourth largest port, after St. Petersburg Port, Tallinn Port (37.9 million tons) and Ventspils Port (28.7 million tons).
- (03) Ventspils has the largest capacity (80.2 million tons) with the next largest being St. Petersburg (50 million tons). **Klaipeda** (30 million tons) has the fourth largest capacity of those in the Eastern Baltic region. Comparison of the port capacity with total traffic levels indicates that many are operating at more than 70% of capacity, in particular Riga (at 91%), St. Petersburg (at 83%), and Tallinn (at 81%). **Klaipeda** (at 66%) is not far behind.
- (04) **Klaipeda Port** has the largest number of berths (152) and the longest quay length (19.2km) of the Eastern Baltic ports. The staple transit outbound cargoes through **Klaipeda Port** comprise oil, steel, fertilizer and grain, most of which are transported from its hinterland countries by Russian Railway. Lithuania's import cargo and inbound transit cargo from Western countries are transported via expanded transport corridors, including the EU's Trans-European Network (TEN).
- (05) The transport tariff policy in CIS countries, particularly railway tariffs, has been strongly biased by the preferential tariff of the Russian Railway. The railway tariff to Kaliningrad (Russian Port) is only 23% of that to **Klaipeda Port** for steel products and 21% for oil and grain. As a result, transit cargo through **Klaipeda Port** has fallen drastically.
- (06) In the meantime, EU has supported a fair tariff policy based on market price. The EU policy has until now been primarily focused on road transport and partly on rail transport, with no pricing policy being established for ports. The ownership, organization and administration of ports vary greatly among member states, and the EU Commission is looking at ways of pricing port infrastructures to ensure costs of port services and facilities are paid by port users in accordance with the principles of fair and efficient pricing.
- (07) Port dues for Ro/Ro vessels in **Klaipeda** are up to two times lower than those in other ports. In comparison to stevedoring charges between **Klaipeda Port** and St. Petersburg Port, charges for containers and motor cars at **Klaipeda** are almost half those of St. Petersburg. Nevertheless, the preferential Russian Railway rates can easily compensate

for any additional costs in Russian ports.

- (08) *To cope with current transport situations in the Baltic States and CIS countries, an economic and efficient trade system of port/railway joint service is being promoted. This includes: i) 2K Project (tariff coordination and a joint operation of container shuttle train to Moscow initiated by **Klaipeda** and Kaliningrad ports) and ii) Viking Project (a joint operation of shuttle train from **Klaipeda Port**, crossing Lithuania, Belarus and Ukraine to Odessa Port).*

EXISTING CONDITIONS OF KLAIPEDA PORT

- (09) ***Klaipeda Port** extends on a north-south axis along a long and narrow band over 10km in length lying mostly adjacent to the urban area of **Klaipeda City**. The water area of **the Port** is a natural channel connecting the Kursiu Lagoon and Baltic Sea. The left bank of the channel is the coast of Kursiu Spit and is mostly designated as a national park. These site conditions place physical constraints on large-scale expansion inside **the Port**. **The Port** has direct access to the expressway (No E85) running between **Klaipeda** and Vilnius. The expressway has junctions with other principal roads linked to Riga, Kaliningrad, Tallinn, Warsaw and Minsk.*
- (10) *Klaipeda State Seaport Authority (KSSA) leases the port land to around 60 lessees, including 21 private companies. They are divided into the two categories, viz. port terminal operators and manufacturers. The terminal operators include “Klaipeda NAFTA”, “Klaipeda Stevedoring Company” (KLASCO) which operates General Cargo Terminal, Container Terminal and International Ferry Terminal, “Klaipeda Stevedoring Company” (BEGA), “Klaipedos Smelte” (SMELTE), Klaipedos Terminals, Baltic Ferry Terminal, etc. Manufacturers are represented by the ship-building industry, including “Laivite Ship Repair Yard”, “Baltija Ship Building Yard” and “Western Ship Repair Yard”. Their employment totals approximately 9,000, of which about 2,700 are involved with commercial shipping, ferries and cargo-handling operations, with the remainder working in the shipyards and other non-port related industries.*
- (11) *Vessel navigation is controlled by the subdivision of the Harbor Master’s Office. The VTS manages vessel navigation from the first buoy to the inner channel throughout the entire territory of the port waters. Channel width varies from place to place with the narrowest part being the port entrance at around 125m. The water depth is 14.5m in the sea channel, 14m up to the turning basin in front of Berth No. 10, and 12 to 12.5m up to the innermost basin for the International Ferry Terminal.*
- (12) *The Klaipeda railway network is divided into a northern area and a southern area, which are separated by the Dane River. The northern area has Klaipeda Station, Pauosio, Angline and Uosto Yards, and handles railway cargo for Klaipedos NAFTA and General Cargo Terminal of KLASCO. The southern area has Draugyste Station, Rimku Station and Perkelos Yard, and handles railway traffic for the remaining part of the port terminals and factories.*
- (13) *During Soviet times, the port territory was controlled by a number of different bodies under different ministries. After restoration of independence in 1990, all the port territory and water area were quickly brought under one control, KSSA, and the port users inherited assets and business under the lease contract with KSSA. The lessee*

may use the berth and related territory for activities associated with port use and a minimum performance of stevedoring. The maximum length of lease is 50 years. The land lease rates are calculated according to a formula, which depends on various factors such as railway access to berth and water depth at a berth. The average land lease rate for the port territory is 3.86 Litass (1.12 Euros) per square meter per year, and in total comprises 14% of KSSA's revenue.

- (14) *Lithuanian Railway (LG) is responsible for all mainline tracks in Lithuania. The marshalling yards are under LG ownership and control. The connection between the LG system and the port terminals is under the responsibility of KSSA. In addition, KSSA has also undertaken responsibility for the development of railways on the terminals.*

TRAFFIC FORECAST FOR KLAIPEDA PORT

- (15) *The traffic forecast has been prepared consistent with the Short-term Development Plan for the year 2015 and Master Plan for the year 2025. The traffic demands of freight commodities have been forecast based on four separate traffic categories—Lithuanian import, Lithuanian export, Inbound transit through Lithuania to CIS countries and Outbound transit through Lithuania from CIS countries. Two scenarios (Case-1: pessimistic and Case-2: optimistic) have been prepared for the forecast of each commodity. In comparison, the forecasting of passenger traffic is relatively simple, consisting of arriving and departing passengers for the years 2015 and 2025 against the base of 2001. No separate low/high cases have been analyzed.*
- (16) *For the estimation of Lithuanian import/export cargo, nine major commodities have been selected, including foodstuffs, oil products, fertilizers, timber/timber products, grain, scrap metal, Ro/Ro, containers and others. The traffic for each commodity has been forecast by correlating with growth rates of GDPs or population, per capita GDPs of Lithuania or trading partners, trends of production /consumption rates of products, etc. For the estimation of transit cargo, major commodities to/from hinterland countries (Kazakhstan, Ukraine, Belarus and Russia) have been selected, including petroleum products, fertilizer, grain, iron/steel and foodstuff. The traffic has been forecast as a balance between production volumes and domestic consumption, each being projected by correlation with trends of production growth rates/GDP and per capita GDP, etc. The traffic volumes of transit cargo have been distributed by the different transport routes using formulae based on the relative proportion of the inverse of the their respective total transport costs.*
- (17) *As a result of the traffic analysis, the outbound cargo (export+transit) for the years 2015 and 2025 has been estimated at 26.1 million tons (low scenario) and 27.6 million tons (high scenario) in 2015, and 33.2 million tons and 36.1 million tons in 2025. For inbound cargo (import+transit), the estimates are 9.6 million tons and 12.5 million tons in 2015, and 11.4 million tons and 16.4 million tons in 2025, respectively. For the high scenario, the total cargo volumes are 37.9 million tons in 2015 and 48.6 million tons in 2025, some 1.9 and 2.4 times larger than the actual cargo throughputs in 2003. The passenger traffic has been estimated at 212,000 in 2015 and 291,000 in 2025 respectively, about two times and three times greater than present.*

MASTER PLAN OF KLAIPEDA PORT

- (18) *To meet the cargo traffic demands up to the year 2025, three port development scenarios have been envisaged, including Scenario(1): Existing port development only (A), Scenario(2): Inner port expansion + (A), and Scenario(3): Outer port expansion + (A). These development scenarios have been evaluated through the port capacity analysis.*
- (19) *The cargo handling capacity of **Klaipeda Port** has been analyzed using a simulation model, where actual cargo/ship handling activities have been reproduced, including navigation channel conditions, berth conditions, capacities of shore cranes, vessel arrival patterns, etc. On the basis of cargo traffic projection, ship-size distribution has been assumed and incorporated in the modeling. Based on the simulations, offshore waiting times of calling ships have been monitored. The port capacity (seaside) has been evaluated through the service level, which is defined as the percentage of offshore waiting time to turnaround time from arrival to departure of a vessel at the port. A figure of 10% is generally considered “adequate”. (Larger figures mean more port congestion.)*
- (20) *Through the simulations, the service levels have been estimated with the results as follows. For Scenario (1), the service level will reach 20% in 2015 and 57% in 2017. For Scenario (2), it will grow substantially to 611% in 2025. For Scenario (3), it will remain at 7% even in 2025. The simulations suggest that the outer port development should be implemented in the master plan, and by the year 2015, the existing port facilities should be utilized to the maximum level.*
- (21) *To maximize the potential capacity of the existing port, ongoing and planned renovation plans of berth facilities should be implemented. These include provision of 10 ha storage areas, irrespective of the outer port expansion, particularly behind the BEGA and SMELTE terminals. In addition, the railway facilities should be expanded, including additional tracks in Klaipedos NAFTA, an access track between Draugyste Station and BEGA, and construction of a new yard in SMELTE territory.*
- (22) *Even if the existing port is fully renovated, the analyses have indicated traffic demand would exceed the existing port capacity by around 2015 to 2017. To cope with the anticipated capacity shortage and to meet the shipping needs based on **Klaipeda Port** being able to receive Baltmax-type vessels (to sustain competitiveness in the Eastern Baltic Sea), **Klaipeda Port** should be expanded beyond the existing port territory, preferably to the outside of the Lagoon area. The required marine facilities for the outer port consist of a petroleum jetty (Baltmax type), a grain terminal (Baltmax type), two fertilizer terminals (Panamax type), a general cargo terminal (Panamax type), a container terminal (Panamax type), and breakwaters that will protect the port basin. To accommodate the above terminals, an artificial island (1500m long and 700m wide) will be developed 350m offshore from the coast line. The reclaimed outer port area will have road/railway access linked to the existing railway and road networks inshore.*

SHORT TERM DEVELOPMENT PLAN AND KEY PROJECTS

- (23) *The Short-term Development Plan will be executed in the existing port and the outer port areas. The existing port development consists of renovation of the existing Berth Nos. 5, 6 and 82-100, installation of ship-loaders at Berth Nos. 5-6, No.82 and No.101 and RTGs at the Eurogate Container Terminal, expansion of cargo storage areas in the reserved zones and improvement of railway access. The outer port development will include land reclamation of 53 ha, construction of the petroleum jetty, grain terminal and multi-purpose terminal along with widening/deepening of the sea channel protected by the breakwaters.*
- (24) *Some of the Short-term Development Plans in the existing port area are already under construction or are to be implemented shortly using the KSSA's earmarked budgets or the terminal operators' own finances. As such, among the Short-term Development Plans, the "Outer Port Development Project" and the "Southern Access Railway Project" have been selected as "Key Projects".*

ENGINEERING STUDY

- (25) *In Klaipeda Port, the navigation area remains ice-free throughout the year. The waves are dominant in the W-WSW direction, with near shore waves less than 1.0m and 1.5m high occurring more than 73% and 87% of the time, respectively. The coastal currents in the Baltic Sea move anti-clockwise and flow northwards near Klaipeda. The littoral drift off Klaipeda Port is not significant.*
- (26) *For the structural design of marine facilities and analysis of the calmness of the outer port basin, the wave data have been collected from a wave recorder installed by the JICA Study Team and also estimated based on the analysis of available ocean wind data. The design wave has been set at 6.7m height and 9.0 seconds in the case of the westerly direction. The proposed alignment of the breakwaters will maintain the waves in the basin to a height of less than 0.7m for 95% of the time.*
- (27) *The influence of the outer port development on the surrounding coastal areas has been assessed. It is preliminarily concluded that the shore line to the north of the outer port, although limited in its extent, is likely to experience some erosion. This will therefore require more detailed analysis during the implementation stage. Even now, periodic monitoring surveys along the existing shoreline to the north and south of the port are considered essential.*
- (28) *Based on the engineering data gathered on site from the field investigations and surveys executed by the JICA Study Team, outline designs have been carried out for major marine facilities including breakwaters, a dolphin structure, quay walls and access road/railway. In the course of the designs, local design codes have also been taken into account. For the selection of the optimum breakwater, three types of structures have been analyzed. Based on a comparative cost analysis, an ACCROPOD-armored, rock-mound structure has been chosen for the West Breakwater, a combination of concrete caisson and ACCROPOD-armored rock-mound structures for the South Breakwater and ACCROPOD-armored structures for the North Breakwater. For Berth No.1, a dolphin structure has been selected to receive a maximum of Baltmax oil tankers. For the remaining berths, a concrete caisson structure has been chosen after considering subsoil*

conditions and construction costs.

PORT IMPLEMENTATION PROGRAM

- (29) *Based on the engineering study results, development costs of Klaipeda Port have been estimated for the Master Plan and Short-term Development Plan. For the implementation of the Master Plan, the estimated total construction costs are 638 million Euros. This comprises 633 million Euros for the Outer Port Development and 5 million Euros for the Southern Access Railway Improvement. The Short-term Development Plan is 350 million Euros for the Outer Port Development and 5 million Euros for the Southern Railway Improvement.*
- (30) *The time requirements for the implementation of the Short-term Development Plan will be 5.5 years for the Outer Port Development and 2 years for the Southern Railway Improvement. This includes periods necessary for engineering design, tendering works and construction.*

ECONOMIC AND FINANCIAL ANALYSIS

- (31) *The economic feasibility of the Key Projects has been evaluated by assessing the Economic Internal Rate of Return (EIRR), comparing “with projects” and “without projects” cases. The benefits accruing from the implementation of the projects will include: i) savings in vessel waiting costs at offshore anchorage, ii) savings in sea transportation costs, iii) savings in land transportation costs, and iv) growth in port revenues. The EIRR for the Key Projects has been estimated at 12.6% for the base case, which is in a quite acceptable range in terms of the national economy.*
- (32) *The financial viability of the Key Projects has been assessed as a whole through the Financial Internal Rate of Return (FIRR) and Ratio Analysis. Major revenue sources comprise: i) port dues from vessels calling at the outer port, ii) cargo handling charges at the outer port terminals, and iii) port dues from vessels calling at the inner port. The FIRR has been estimated at 7.5%, which is more than the Government’s target profitability of 7%. The sensitivity analysis shows that even under the worst case scenario the FIRR would be around 5.6%, which is much higher than the international loan rate of 2.84%. As such, the Projects are financially feasible.*

OPERATION AND MANAGEMENT

- (33) *Lithuania has become a member of the EU, so EU Competition Policy is now more likely to govern the financial relations between the state and KSSA. Nevertheless, it is not clear what public financing is acceptable under EU competition law. Under these circumstances, KSSA should maintain the existing relational details with the state and maintain proper accounts.*
- (34) *To initiate the outer port development under the market-oriented EU policy and to sustain KSSA’s financial soundness over the longer term, a more flexible and cost-based tariff system should be established. To this end, it is desirable that the land lease rate and terms should not be restricted by the existing rules. Instead, they should be determined in relation to development cost and reflect the true value of land. The terminal operators also need to adjust their tariffs, initially to attract cargo to the new*

terminals in the outer port.

- (35) *To compete with rival ports in the Eastern Baltic Sea region, KSSA should upgrade the port communication system, including the port traffic management system (PTMS), Data Warehouse and Port Community System. In addition, more aggressive marketing activities should be undertaken in close coordination between KSSA and terminal operators.*

ENVIRONMENTAL ANALYSIS

- (36) *In the IEE and EIA studies, it has been evaluated that the Southern Access Railway Improvement Project would cause no major adverse impacts. The Outer Port Development at Melnrage would be less desirable due to an adverse impacts on surrounding natural landscape and nearby property values, and likely beach erosion to the north of the Outer Port. It has, however, also been assessed that the Outer Port Development Project would generate very positive impacts. In broad terms, it will increase Lithuania's trade and generate new Government revenue, and provide substantial new employment, thereby improving socio-economic conditions and stimulating the local economy.*

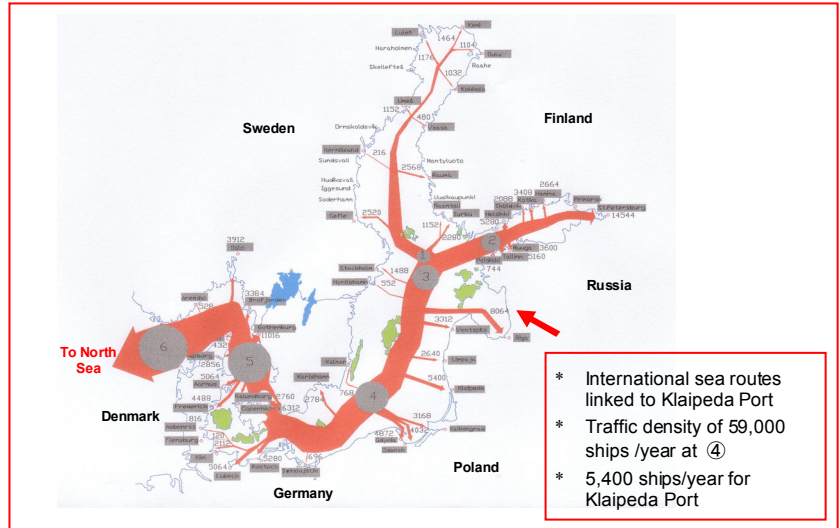
CONCLUSIONS AND RECOMMENDATIONS

- (37) *It is necessary to undertake an outer port development to meet the growing traffic demands and shipping needs. Nevertheless, prior to proceeding to this stage, the existing potential capacity of Klaipeda Port should be fully utilized by renovating seaside and landside facilities, including expansion of storage areas and access railway lines.*
- (38) *For the smooth implementation of the outer port development, KSSA should undertake preparatory works to authorize the Master Plan / Short-term Plan in close coordination with the City Plan of Klaipeda and in full consultation with environmental organizations and local communities.*
- (39) *The KSSA should monitor the movements of cargo/ship traffic at Klaipeda Port and other rival ports, and make an earlier decision to proceed to the outer port development, particularly if projections in the Study related to decision-making matters for the outer port expansion are observed.*
- (40) *For the successful implementation of the outer port development, KSSA should proceed with environmental procedures as proposed in the EIA study. The level of environmental conservation in the Melnrage area should be fully integrated between the City Plan and Port Development Plan of KSSA.*

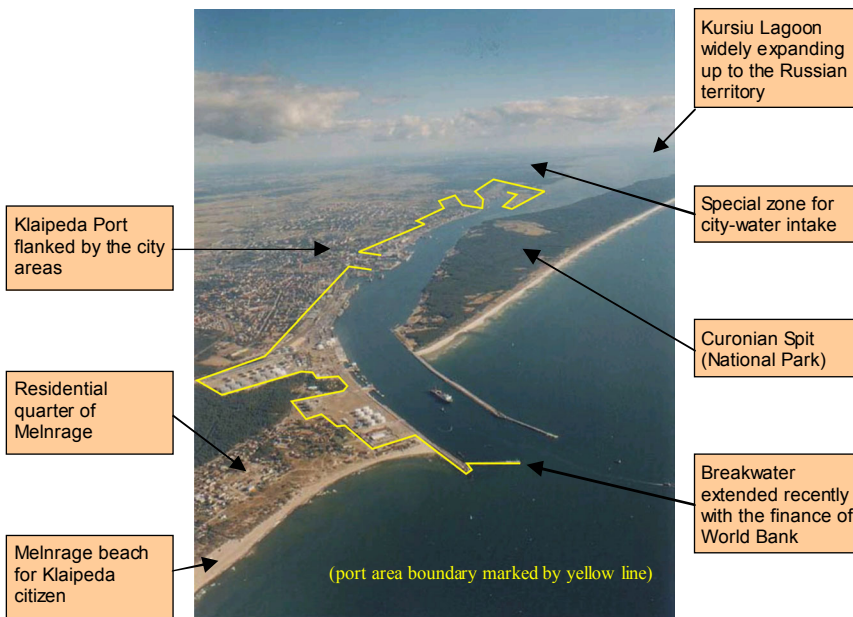
PRESENT SITUATION OF KLAIPEDA PORT



Location of Principal Baltic Sea Ports



Number of Ships Sailing in the Baltic Sea



Land-Use around Klaipeda Port

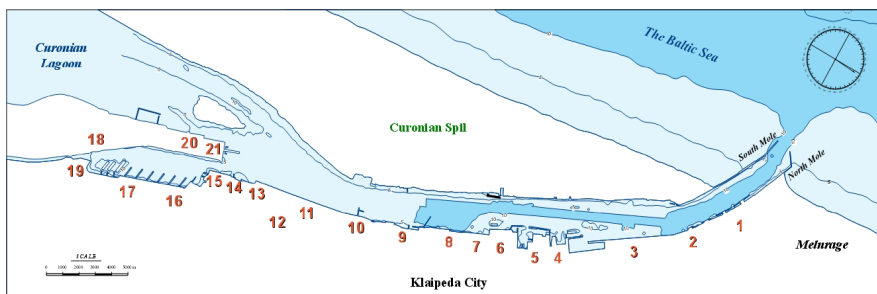
Cargo Throughputs of Klaipeda Port

(unit: thousand tons)

	2000	2001	2002	2003
Metal	4,348	1,563	1,022	973
Scrap	388	511	681	700
Fertilizer	2,904	2,840	3,443	3,987
Timber	681	714	944	1,073
Grain and Foodstuffs	707	289	745	851
Sugar	479	561	660	702
Frozen Goods	376	326	288	322
Cement	235	145	145	158
Peat	90	90	62	75
Container	395	505	731	1,099
Ro/Ro	2,549	2,998	2,556	3,072
Oil and Oil Products	5,198	5,135	6,739	6,640
Total	18,350	15,677	18,016	19,652

Source: KSSA

- * metal cargo decreased drastically due to Russian tariff increase
- * staple cargo (timber, fertilizer and oil) showed a gradual increase
- * Ro/Ro traffic with a little change
- * container on a sharp increase

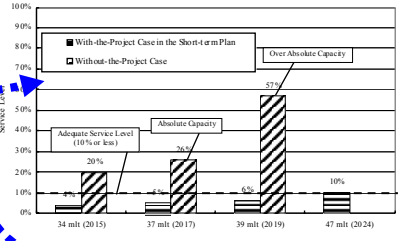


Location of Major Terminal Operators (21)

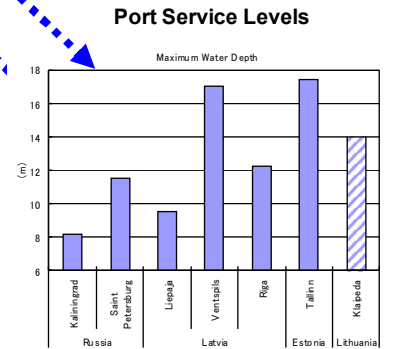
CURRENT ISSUES OF KLAIPEDA PORT

PHYSICAL CONSTRAINTS

- * Shortage of channel capacity to cope with future traffic demands and a narrow port entrance
- * Decrease in shipping capacity in the Eastern Baltic Sea due to the absence of Baltmax-type berths
- * Difficulty of storage yard expansion toward the city area
- * Shortage of spacious port-use areas
- * Shortage of railway capacity behind berth areas
- * Shortage of berths capacity for future traffic demands



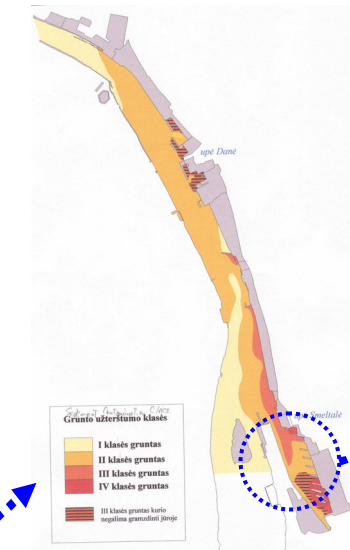
Narrow Port Entrance



Comparative Capacity Analysis of Eastern Baltic Sea Ports

INSTITUTION, OPERATION AND MANAGEMENT

- * Review of transport tariff policy among EU and CIS countries, including re-alignment of the Russian railway tariff
- * Public investment policy for port development (high respect for EU Guideline along with national investment support)
- * Revision of Klaipeda Port Law (more flexibility of terminal operators' activities and active marketing services)
- * Clear demarcation of responsibility between KSSA and Lithuanian Railway in maintenance work of railway facilities in the Port
- * Reinforcement of marketing system



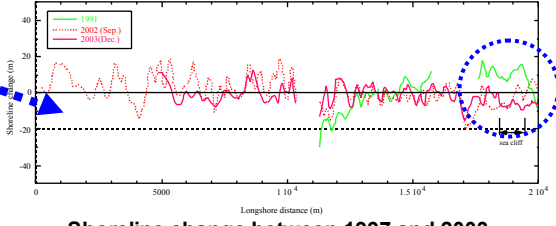
Distribution of seabed pollution levels in the port



Residential areas close to the port zone

ENVIRONMENTAL ISSUES

- * Deterioration of water quality and seabed in the port
- * Internationalization of environmental laws relevant to water/ecological system inside the Lagoon
- * Recent appearance of beach erosion



Shoreline change between 1997 and 2003



Highly polluted zone deep inside the port



Sea Cliff at Karkle

MASTER PLANNING OF KLAIPEDA PORT

NECESSITY AND TARGET OF MASTER PLAN

* Development of Klaipeda Port will facilitate seaborne trade of Lithuania, promote transit cargo between CIS and EU countries and contribute to the national economic growth

* To meet growing cargo demands in the future
 * To cope with larger-size ship requirements ("Baltmax" passing the strait off Denmark with the max draft of 15.5 m)
 * To rehabilitate and modernize the existing facilities (enhancement of cargo handling efficiency to compete with rival ports in the Baltic Sea)
 * *To upgrade port operation/management system to top-class international level

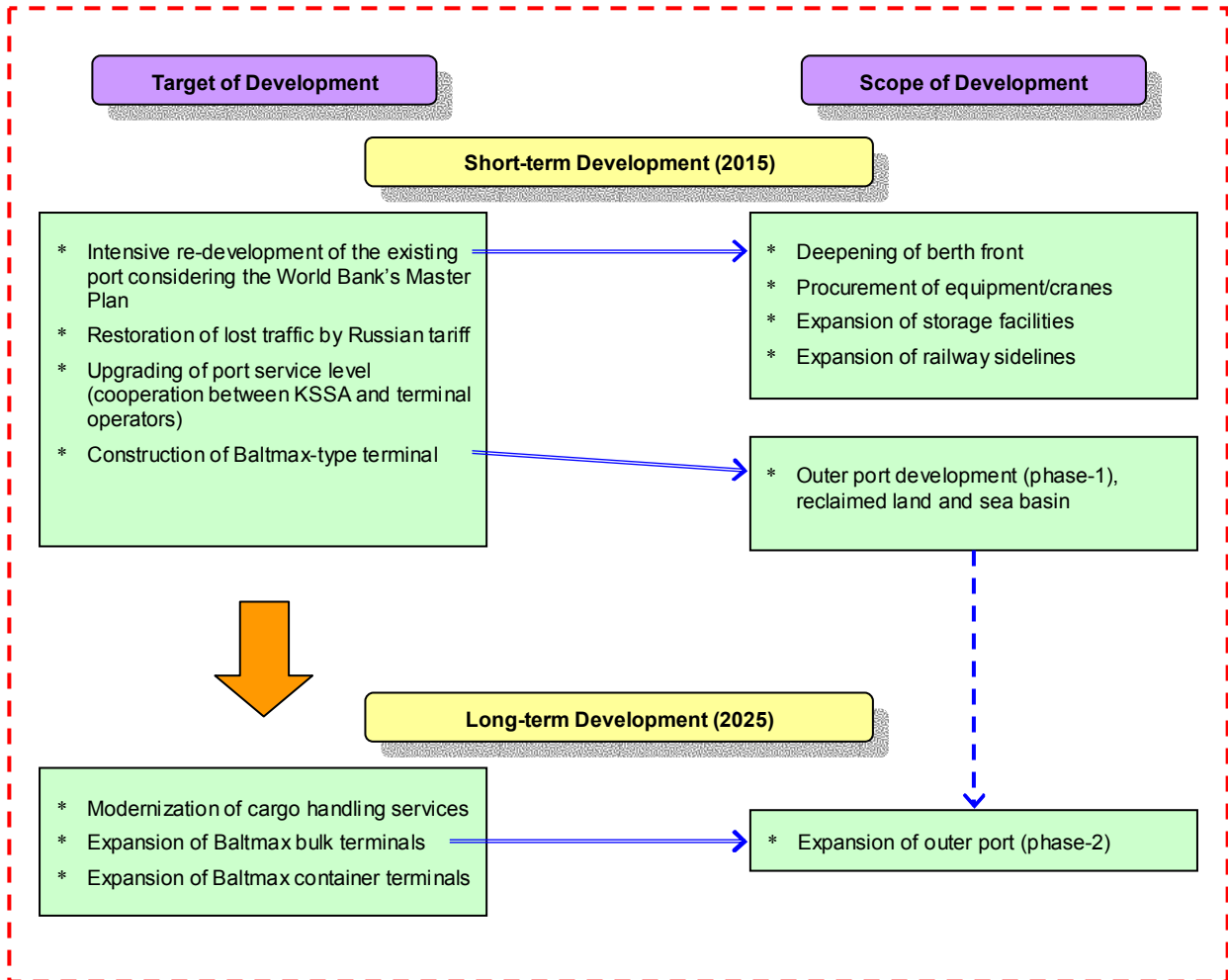
Traffic Forecast for Klaipeda Port

(unit: thousand tons)

	2001	2015	2025
Import/Inbound	12,629	26,816	34,646
Export/Outbound	5,679	11,069	13,912
Total	18,308	37,885	48,558

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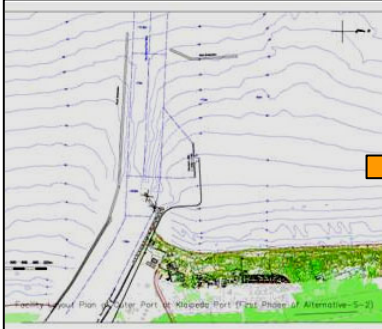
* Increase 2 and 2.7 times larger in 2015 and 2025 than the 2001 level



OUTER PORT DEVELOPMENT

SCOPE OF SHORT-TERM DEVELOPMENT PLAN

- * Land reclamation (59ha)
 - * Oil terminal (1)
 - * Grain terminal (1)
 - * Multi-purpose terminal (1)
 - * Breakwater (2.9km)
- Construction cost:
350 million Euro**



Optional plan of constructing an oil berth only at first



Short-term Development Plan

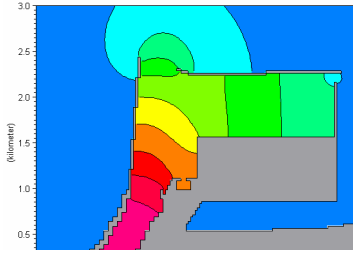
Economic/Financial Evaluation	
EIRR:	12.6 %
FIRR:	7.5 %

SCOPE OF LONG-TERM DEVELOPMENT PLAN

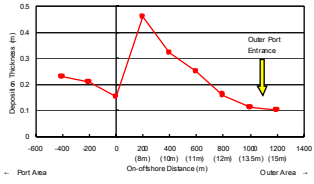
- * Land reclamation (121ha)
 - * Oil terminal (1)
 - * Grain terminal (1)
 - * Fertilizer terminal (2)
 - * General cargo terminal (1)
 - * Container terminal (1)
 - * Breakwater (3.7km)
- Construction cost:
633 million Euro**



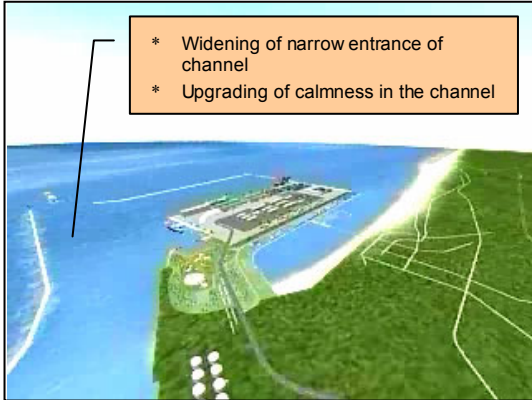
Long-term Development Plan



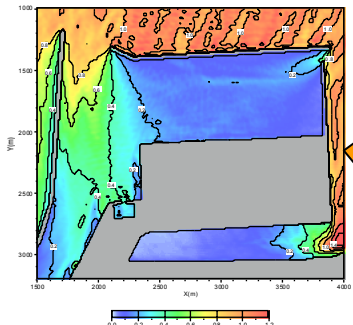
Simulation result of distribution of suspended load concentration



Sedimentation rate with on-offshore distance



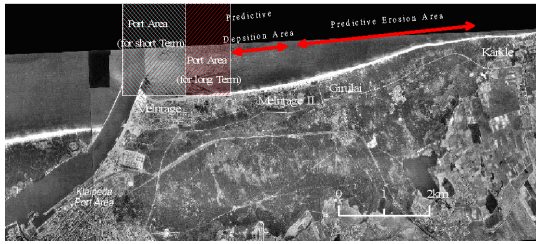
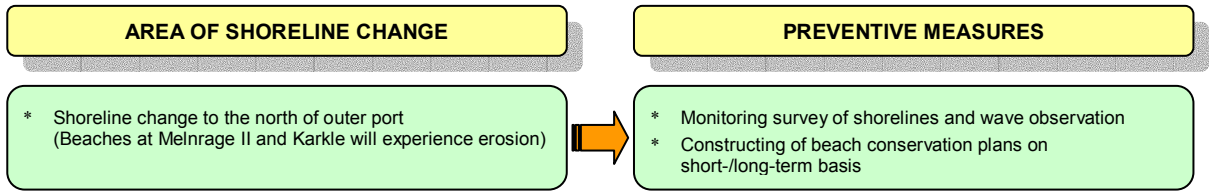
Sky view from the north of the outer port
(a basin between the beach and reclaimed land will serve as a recreation zone)



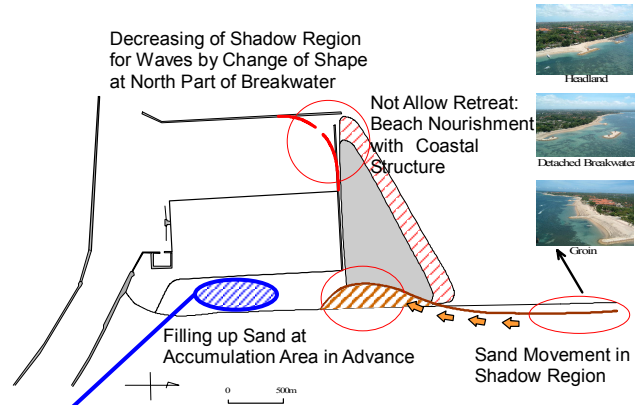
Simulation result of calmness analysis inside the basin

- Sedimentation rate at the outer channel will decrease
- Confirmation of required basin calmness

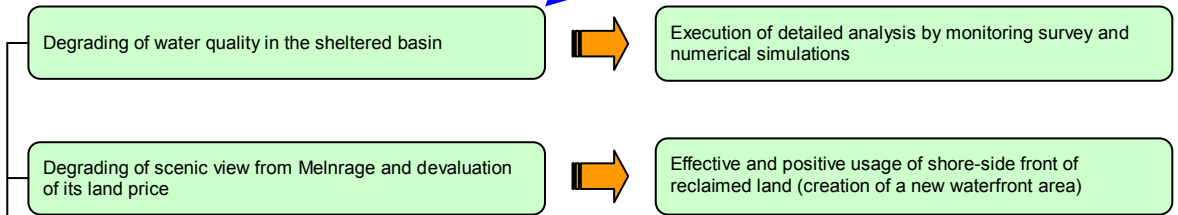
CHANGE IN SHORELINE AND PREVENTIVE MEASURES



Location of Predicted Shoreline Change in Northern Side



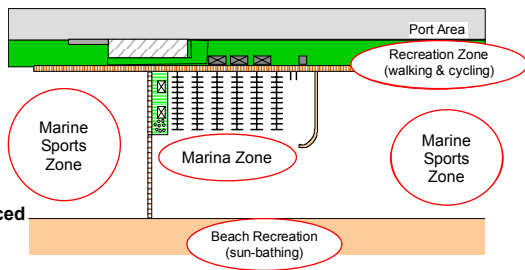
Proposed Countermeasure



Residential area of Melnrage influenced by the outer port development



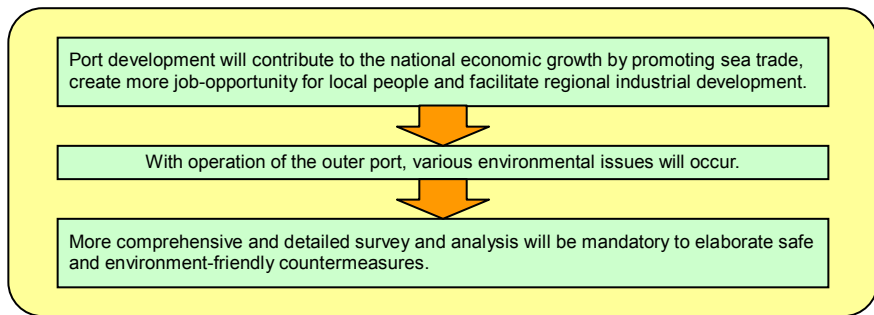
Melnrage beach influenced by the outer port development



A plan of waterfront usage (marina)

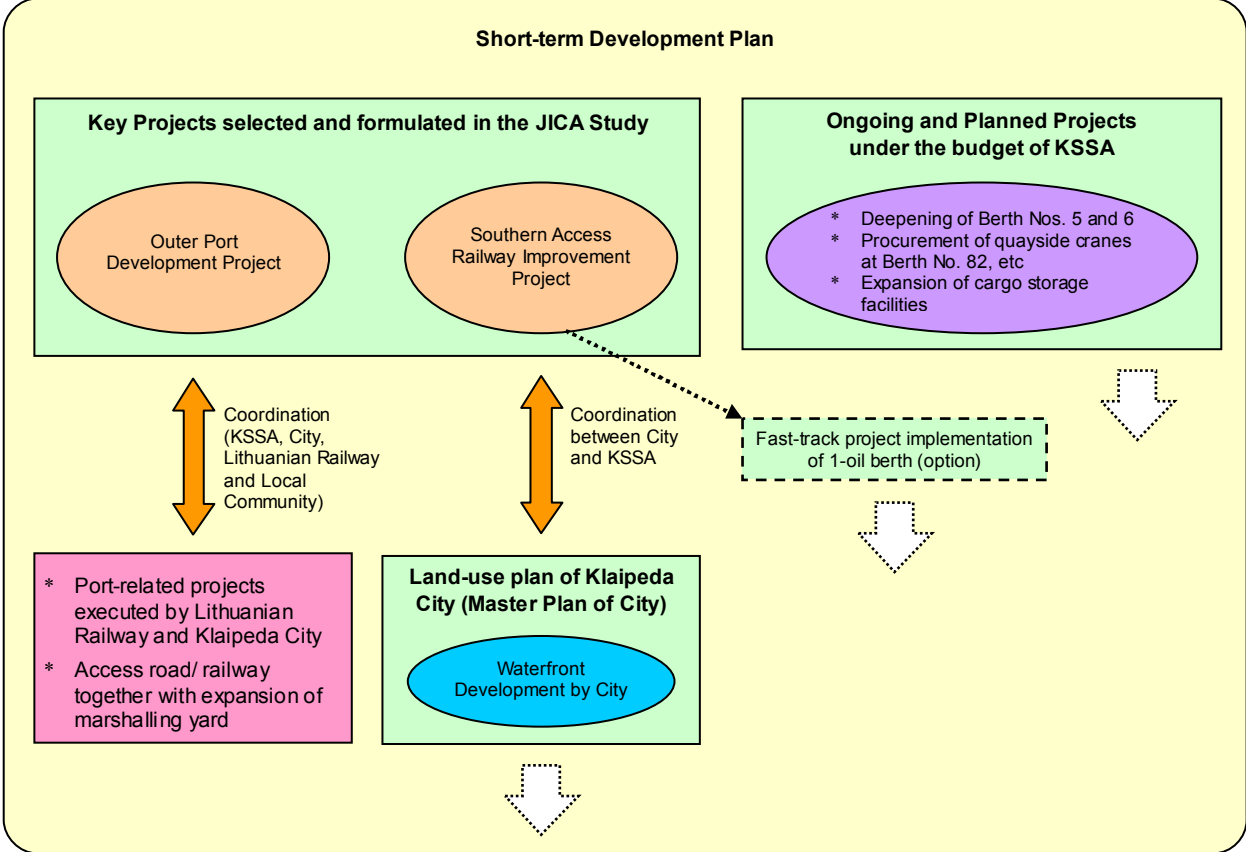


Image plan of marina



IMPLEMENTATION PROGRAM

POSITION OF KEY PROJECTS



OUTLINE SCHEDULE OF KEY PROJECTS AND RELEVANT WORKS

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Rehabilitation works for the existing port by KSSA	-----											
Review of JICA Master Plan (KSSA, MOTC, City and MOE)	—————											
Waterfront development by City						-----	-----	-----	-----	-----		
Selection of terminal operators				-----	-----							
Execution of a full-scale EIA	-----	-----	-----	-----	-----							
Detailed design and tendering				-----	-----	-----						
Construction of outer port							-----	-----	-----	-----		
Opening of outer port											↓	

THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA

SUMMARY

Preface
Letter of Transmittal
Master Plan of Klaipeda Port
Location Map of Klaipeda Port Area

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ABBREVIATIONS TABLE

'E'	Road European Road Number
2K	Project K is the initial of Klaipeda Port and Kaliningrad Port
APEC	Asia Pacific Economic Cooperation
AIS	Automatic Identification System
BAF	Bunker Adjustment Fee
BBT	Baltic Bulk Terminal
BC	Belarusian Railways
B/C	Benefit/Cost
BOD	Biochemical Oxygen Demand
BOT	Build, Operate and Transfer
Bpd	Barrels per day
BSL	Baltic Sea Level
CARs	The Central Asian Republics
CD	Chart Datum
CEDA	Central Dredging Association
CFC	Standard Conversion Factor
CFS	Container Freight Station
CFSL	Conversion Factor for Skilled Labour
CFUL	Conversion Factor for Unskilled Labour
CIF	Cost, Insurance and Freight
CIM	Uniform Rules Concerning the Contract for International Carriage of Goods by Rail
CIS	Commonwealth of Independent States
CMR	Centre of Marine Research, Ministry of Environment
CNC	Compagnie Nouvelle de Conteneurs
DAP	Diammonium Phosphate
DEP	Department of Environment Protection
DGPS	Differential Global Positioning System
DIN	Deutsches Institut für Normung e. V
DWT	Dead Weight Tonne
EBRD	European Bank for Reconstruction and Development
EC	European Communities
ECE	Economic Commission for Europe
EDI	Electronic Data Interchange
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
EIU	Economist Intelligence Unit
EPD	Environmental Protection Department
ERR	Economic Rate of Return
ESN	European Shortsea Network
ESTO	European Sea Ports Organization
ETSNG	Unified Cargo Nomenclature of CIS (Russian Abbreviation)
EU	European Union
EVR	Estonian Railway
F/S	Feasibility Study

FAO	Food & Agriculture Organisation
FEC	Federal Energy Commission
FEZ	Free Economic Zone
FIRR	Financial Internal Rate of Return
FOB	Free on Board
FSU	Former Soviet Union
GDP	Gross Domestic Product
GOJ	Government of Japan
GTA	Global Trade Atlas
HKN	Harmonized Cargo Classifier (Russian Abbreviation)
IADC	International Association Dredging Companies
IBRD	International Bank for Reconstruction and Development
ICD	Inland Container Depot
ICF	Intercontainer-Interfrigo
IEE	Initial Environmental Examination
IMDG	International Maritime Dangerous Goods
IMF	International Monetary Fund
IMO	International Maritime Organisation
IPC	Implementation Provisions of the Community
IRR	Internal Rate of Return
ISPA	Instrument for Structural Policies for Pre-Accession
ISPS	International Ship and Port Facility Security
IT	Information Technology
JICA	Japan International Cooperation Agency
KSSA	Klaipeda State Seaport Authority
KUBIS	Klaipeda Port Community Information System
KZH	Kazakhstan Railways
LAN	Local Area Network
LCL	less-than-carload
LDZ	Latvian Railway
LEI	Lithuanian Energy Institute
LG	Lithuanian Railways
LINAVA	Lithuanian National Road Carriers Association
LOA	Length Overall
LRP	Level Repayment Principle
MLA	Multi-Lateral Agreement
MOE	Ministry of Environment
MOF	Ministry of Finance
MOTC	Ministry of Transport and Communications
MTT	International Transit Tariff (Russian Abbreviation)
N/A	Not available
NATO	North Atlantic Treaty Organisation
NCC	National Container Company
NEN	North European Network
NIB	Nordic Investment Bank
NMBS	Belgian National Railways
NPV	Net Present Value
OCJD	Organization of Cooperation of Railways (Russian Abbreviation)
OD	Origin and Destination
OECD	Organization for Economic Co-operation and Development

OSJD	Organization for Railway Cooperation
PAHs	Polycyclic Aromatic Hydrocarbons
PHARE	Poland, Hungary, Aid of Economic Reconstruction
PIANC	Permanent International Association of Navigation Congresses
PTMS	Port Traffic Management System
RF	Russian Federation
Ro/Ro	Roll on Roll off
RTG	Rubber-Tire Gantry Cranes
RZD	Russian Railways
SCF	Standard Conversion Factor
SMGS	Agreement on International Goods Transports by Rail
SOLAS	Safety of Life at Sea
SPM	Single Point Mooring Buoy
TACIS	Technical Assistance of the Commonwealth of Independent States
TBT	Tributyl Tin
TEN	Trans-European Network
TEU	Twenty Foot Equivalent Unit
TINA	Transport Infrastructure Needs Assessment
TIR	Carnet TIR (Transport Internationaux Routiers:French; International Road Transport)
TOR	Terms of Reference
TRACECA	Transport Corridor Europe Caucasus Asia
UAIS	Universal Automatic Identification System
UAN	Urea Ammonium Nitrate
UIC	International Union of Railways (French abbreviation of Union Internationale Des Chemins de Fer)
UN	United Nations
USD	United States Dollars
VAT	Value Added Tax
VLCC	Very Large Crude Carrier
VTS	Vessel Traffic System
VTT	Technical Research Centre of Finland
WGS 84	World Geodetic System 1984
WTO	World Trade Organization

Abbreviation of Common Weights Measures and Technical Terms

%	Percentage
⁰ / ₀₀	Parts per thousand
⁻² , m ² , sq. m	Square e.g. square metre(s)
⁻³ , m ³ , cu. m	Cubic e.g. cubic metre(s)
Bn or 10 ⁹	Billion
GT	Gross ton(s)
HP, PS	Horsepower
hr or h	Hour(s)
Hz	Hertz
In.	Inch(es)
Kl	kilolitre(s)
knots	Marine speed measurement
Kph	Kilometres Per Hour
l	Litre
mg O/l	Milligrams of Oxygen per litre
Mill	Million
NM	Nautical mile(s)
No	Number (serial number)
no(s)	(units)
⁰	Degrees of latitude or longitude
°C	Celsius Degrees (Centigrade)
ppm	Parts per million
Psi	Pound per square inch
rpm	Revolutions per minute
W	Width

MEASUREMENT UNITS TABLE

Extent

cm ²	Square-centimetres (1.0 cm x 1.0 cm)
m ²	Square-metres (1.0 m x 1.0 m)
km ²	Square-kilometres (1.0 Km x 1.0 Km)
ha.	Hectares (10,000 m ²)

Length

mm	Millimetres
cm	Centimetres (10 mm)
m	Metres (100 cm)
km	Kilometres (1,000 m)

Currency

US\$	United State Dollars
¥	Japanese Yen
€	EURO
Lt.	Litas (3.4528Lt/€)

Weight

mg	Milligram (s)
g	Gram (s) (1,000 mg)
Kg	Kilogram (s) (1,000 g)
Ton ,t or MT	Metric tonne (1,000 kg)

Time

sec.	Seconds
min.	Minute (60 Sec.)
hr.	Hours (60 Min.)

Standard Conversions

1 inch = 25.4 mm
1 feet = 0.3048 m