

STATISTICS REPORT DENMARK – Unitised Goods Flows via Ports in Denmark

Annex 1.3.3.1 to the Final Report



January 2007

PREFACE

This technical paper – including separate databases for unitised goods flows via Danish ports – has been elaborated as part of the SUTRANET project (Work Package 1: Transport Research and Development Network). SUTRANET (**S**ustainable **T**ransport Research & Development **N**etwork in the North Sea Region’) is a project within the framework of the European Commission’s (EC’s) Interreg IIIB North Sea Programme.

The aim of the paper is to provide a basis for the analysis of available statistics as regards unitised goods flows via ports in Denmark with a view to international freight traffic in the North Sea Region. The paper gives a short presentation of the available data sources and relevant statistics. It is assumed that all Danish ports, which handle unitised goods flows in international traffic, to a varying degree represent transport links related with the North Sea Region (NSR).

The SUTRANET databases for ports in Denmark are presented separately as Excel files and structured in a way so that they are consistent with the similar SUTRANET databases elaborated on unitised goods flows for other countries in the NSR. This enables a comparison and analysis of data across the countries.

The paper finally presents some findings and recommendations with the aim to improve and harmonise the statistical reporting on unitised goods traffic in between the countries bordering the North Sea.

The paper and the SUTRANET databases have been elaborated by a team of researchers at Aalborg University, Department of Development and Planning. Valuable additional information has been provided by Statistics Denmark and by some of the operators consulted.

Aalborg University, January 2007

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A few editorial modifications have been added in June/July 2007.

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Abbreviations and Acronyms Used

EEA

European Economic Area.

EC

European Commission.

LoLo

Lift-on lift-off. This way of cargo handling mainly applies to container ships.

NSR

North Sea Region.

NUTS

Nomenclature of Territorial Units for Statistics. The NUTS nomenclature is a standardised and hierarchical zoning and classification system applied by Eurostat (EC's statistical office).

RoPax

RoPax vessels are ferries for combined transport of RoRo handled goods, passenger cars and passengers (Pax).

RoRo

Roll-on roll-off. RoRo vessels are freight ferries for transport of RoRo handled goods only.

SUTRANET

Sustainable transport research network in the North Sea Region.

TEU

Twenty-foot Equivalent Unit. TEU is a unit indication for the equivalent number of twenty-foot containers.

Overview of the SUTRANET Databases for Danish Ports

The SUTRANET databases consist of information about:

- Unitised goods flows via Danish Ports (International Traffic) – Comparative Tables for the years 2003-2005 (ref. Annex 1);
- RoPax and RoRo Goods via Danish Ports – Distribution on Danish ports, on countries, and on routes 2004, and total distribution of other RoRo goods than RoPax on countries for the years 2003-2005 (ref. Annex 2);
- Container traffic via Danish Ports – Distribution on Danish ports and on countries for the years 2003-2005 (ref. Annex 3).

The SUTRANET databases for Danish ports present the total annual throughput figures for each port. Statistics Denmark and Annex 3 also provide a breakdown into inbound and outbound traffic.

The present paper provides the method of extending the databases to include additional years before 2003 and to update with year 2006.

Similar database structures have been elaborated for ports handling unitised goods in Norway, Sweden, UK, Germany, and partly the Netherlands/Belgium.

Location of Danish Ports Handling Unitised Goods

The SUTRANET databases include the following ports in Denmark which have been identified as handling unitised goods with foreign origin or destination in 2003-2005:

- | | |
|------------------|--------------------------|
| 1. Frederikshavn | 8. Fredericia |
| 2. Hirtshals | 9. Aabenraa |
| 3. Hanstholm | 10. Elsinore (Helsingør) |
| 4. Aalborg | 11. Copenhagen |
| 5. Grenaa | 12. Koege |
| 6. Aarhus | 13. Roedby |
| 7. Esbjerg | 14. Gedser |

The following overview map indicates the name and location of the Danish ports handling unitised goods in international traffic. The ports handling unitised goods - which are located in southern Norway, on the west coast of Sweden and on the Baltic Sea coast and North Sea coast of Germany - are also marked on the map.



Figure 1: Location of Danish ports handling unitised goods in international traffic

Three minor Danish ports (Roenne, Havneby, Hundested) are included in the SUTRANET databases, in order to provide a complete national picture of unitised goods flows. These ports do not appear in the above list or on the overview map, because they mainly serve local cross-border traffic or very small quantities. There was no reporting of unitised goods in international traffic via Koege port in 2003-2005, but this port is included because it is expected to be handling unitised goods with foreign origin/destination in the future.

Sources of Information

The main sources of information for this paper, i.e. statistics covering unitised goods traffic via Danish ports, are:

- Statistics Denmark, www.statistikbanken.dk: Tables SKIB32, SKIB43, SKIB49 and SKIB 50.
- Statistics Denmark: Statistiske Efterretninger Transport 2005:12, 10. maj 2005. Skibsfarten på danske havne 2004 (*Maritime traffic to/from ports in Denmark 2004*).
- Additional excel tables received from Statistics Denmark concerning:
 - 1) the distribution on selected origin/destination countries for annual RoRo traffic by freight ferries (non-RoPax vessels) for the years 2003-2005, and
 - 2) distribution on countries of international container traffic via selected major Danish ports for the years 2003-2005.

It has proven difficult to extract statistics from the individual port administrations, except in the rare cases where relevant statistics is presented on the particular port website. Nevertheless most of the statistics in the ports' position is reported to Statistics Denmark. The ferry operator 'Color Line' has kindly provided some information that indicates recent trends in semi-trailers traffic via routes between Hirtshals and Norway.

The collection of foreign trade statistics (according to EU's Intrastat and Extrastat procedures) has not been possible within the limited scope of the SUTRANET project. However, the SUTRANET reports on modelling and scenario descriptions provide some time series and findings regarding the comparison of trade and transport statistics.

The website www.freightferries.co.uk/routes has been consulted concerning existing RoPax and RoRo routes.

ShipPax Information, Sweden presents some data on route lengths and frequencies (ref. 'Statistics 05. The Yearbook for Passenger Shipping Traffic Figures'; and 'Statistics & Outlook 06. The Yearbook for Passenger & RoRo Shipping').

Availability of Port Data from Statistics Denmark

The present paper has mainly been analysing compiled statistics covering the year 2004, because a main part of the SUTRANET data compilation was carried out during the first half of 2006. Since the database figures for 2004 were extracted, Statistics Denmark has published the statistics for 2005, and this year and year 2003 are included in the SUTRANET databases as well.

As it is the case for other EU Member States and Norway, the statistical reporting system has to meet the requirements of the EC maritime statistics Directive (Council Directive 95/64/EC). The Council Directive has been followed up by four Commission Decisions specifying the

rules and arrangements for implementing the Directive. The information published by Statistics Denmark is based on the following three sources:

- Monthly reports from ferry line operators about transported vehicles, passengers and goods. This reporting covers goods carried by RoPax vessels only. Goods by freight ferries (RoRo vessels) are not included.
- Monthly reports from selected larger Danish ports (with an annual throughput of about 1 million tonnes or more, including all types of cargo such as bulk and general cargo etc.) about each call in the port of freight vessels.
- Annual reports from the other Danish ports about calls of vessels and throughput of goods at a more aggregated level.

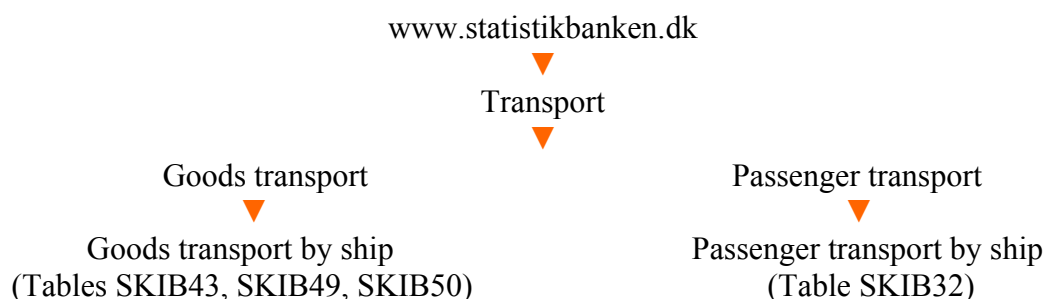
The statistical product is further described in a Statistics Denmark's declaration (uploaded to the Statistics Denmark's website on 14 October 2005).

Comments on Relevant Statistical Tables

This section presents a short commenting as regards the relevant tables made available by Statistics Denmark. The comments include the following sources/tables in particular:

- Transport 2005:12, Table 12;
- SKIB32: International transport by ferry route and unit (1990-2005);
- SKIB43: Throughput of goods in Danish ports in international traffic by seaport, direction and type of goods (1997-2005);
- SKIB49: Throughput of containers and RoRo units in major Danish ports by seaport, direction, unit of cargo and unit (1997-2005);
- SKIB50: Throughput of goods in major Danish ports by direction, country and type of goods (2004-2005).

The relevant tables are found on the Statistics Denmark's website as follows:



The statistics published for the years 2003 and 2005 are applying the same types of tables as for year 2004, and thus the general comments below are valid also for statistics covering these years. Compared to the Transport 2005:12 publication (maritime traffic via Danish ports in 2004), the equivalent publication covering the year 2005 has been abbreviated and does not

provide a specification and breakdown on ferry routes. However, most of this information can be extracted from the Statistics Denmark Table SKIB32 that is available on the website.

Assumptions

The weight of goods figures in the tables includes the immediate packaging. The weights of the transport unit and the tare weight of the container or RoRo unit are not included in the tonnes figures presented in these tables.

Transport 2005:12: Maritime traffic via Danish ports 2004

This publication issued by Statistics Denmark presents annual figures for year 2004 based on the quarterly and annual reporting. The Tables 10, 11 and 12 in the publication include statistics of relevance to unitised goods flows via Danish ports to/from foreign countries. Similar publications covering previous years could be exploited for the elaboration of time series etc.

Table 10: Annual throughput of goods handling via Danish ports by cargo category 2004

Table 10 provides for each port the annual tonnes figures, and with a breakdown on outwards and inwards goods. For each of these figures, the table presents a further breakdown in 21 categories of commodities, including some of the NST/R¹ commodity groups and the following three types of unitised goods handling:

- goods in containers,
- ferry goods (by RoPax ferries), and
- other RoRo goods.

However, the figures are the sum of domestic and foreign traffic and there is no specification of the share of international goods traffic. As regards containers and other RoRo freight ferry traffic, the domestic part is minor, but the domestic share of freight by RoPax ferries is significant.

Table 11: Annual throughput of container and RoRo traffic via major Danish ports 2004

Table 11 presents for each of a few selected major ports (Copenhagen, Koege, Roenne, Aabenraa, Esbjerg, Fredericia, Aarhus and Aalborg) the annual throughput figures for 2004 - both outwards (loaded) and inwards (unloaded) - for container goods in tonnes and TEU², and for RoRo goods in tonnes and units. For containers there is a further breakdown in number of

¹ NST/R is a revised standard goods classification for transport statistics applied by the European Commission (EC).

² TEU is the unit for the equivalent number of twenty-foot containers (TEU = 'Twenty-foot Equivalent Unit').

units for each of the following container sizes: 20', >20' and <40', 40', and >40', and in number of empty/loaded containers.

The figures presented in Table 11 indicate the sum of domestic and foreign traffic, and there is no specification of the share of international goods traffic.

Table 12: Passenger and ferry service. Routes between Denmark and other countries

Table 12 presents the annual figures for both 2003 and 2004, and a breakdown on each of the RoPax ferry routes between Danish ports and foreign ports on the Faroe Islands, and in Norway, Sweden, Germany and Poland.

For each route there is a breakdown on number of trips, number of passengers and passenger cars and buses, and a breakdown on the following types of road goods vehicles:

- Road goods vehicles without accompanying trailers.
- Articulated vehicles.
- Road goods vehicles with accompanying trailers.
- Unaccompanied trailers (semi-trailers).

Unit figures and tonnes figures are presented for each of the routes and types of road goods vehicles. The type 'unaccompanied trailers' is, however, only specified for units and for some of the routes, see below.

Table 12 provides a breakdown of unit figures on accompanied and unaccompanied trailers (semi-trailers) only for a few ferry ports (Frederikshavn, Grenaa, Copenhagen). Thus Table 12 offers no systematic breakdown of these figures (indicated as 'A1' and 'A2' figures in the SUTRANET database: Annex 1). This shortcoming also applies to Table SKIB32 (see below) which is based on the identical reporting to Statistics Denmark.

Table 13 presents the same detailed information for domestic ferry routes.

The similar publication issued by Statistics Denmark covering the year 2005 (Transport 2006:15) does not present the detailed information that was included in Tables 10-12 for the year 2004 and previous years. Information at a disaggregated level will have to be retrieved from Table SKIB32 (see below).

The following tables, which are available at the Statistics Denmark's website (www.statistikbanken.dk), include information of relevance to or related to unitised goods flows via Danish ports to/from foreign countries and on maritime routes between Danish and foreign ports.

SKIB32:

International transport by ferry route and unit (1990-2005)

This table presents for the years 1990-2005 a specification of traffic on all international ferry routes (RoPax vessels only) via Danish ports. This includes information about passenger traffic and about cargo units and tonnes figures.

For units figures there is a breakdown on the following types of unitised cargo handling:

- Lorries without trailers.
- Lorries with trailers (including unaccompanied trailers in some cases).
- Articulated vehicles.
- Road tractors without semi-trailers.

It should be noted that this breakdown does not include a systematic specification of unaccompanied trailers (semi-trailers). However, according to the Danish text version of the Statistics Denmark's website, the type termed 'Road tractors without semi-trailers' may indicate unaccompanied trailers (semi-trailers) for some of the ferry routes.

For tonnes figures, Table SKIB32 provides a breakdown on:

- Goods total.
- Road goods (road goods vehicles as specified above).
- Rail goods.
- Other goods transported.

Separate units figures and tonnes figures for unaccompanied trailers (semi-trailers) are not provided systematically for all ferry routes, because the quarterly reporting by some of the ferry operators to Statistics Denmark does not make a specification of the number of semi-trailers and tonnes carried by semi-trailers. Transport 2005:12 (ref. above) in Table 12 provided this specification for some of the routes in 2003-2004 e.g. the Frederikshavn-Gothenburg route. This cargo handling type is indicated in Table SKIB32 as 'road tractors without semi-trailers'.

There was no reporting in 2003-2005 of goods carried by rail wagons on ferry routes via Danish ports.

The table does not include traffic figures for the RoPax ferry route between Esbjerg and Harwich (in UK).

Table SKIB32 presents no breakdown of flows on route direction (loaded, unloaded in the Danish port).

SKIB43:

Throughput of goods in Danish ports in international traffic by seaport, direction and type of goods (1997-2005)

This table includes, for the years 1997-2005, the annual throughput in tonnes figures for each Danish port (including all the smaller ports). There is a breakdown on inwards (unloaded), outwards (loaded) and total.

For each of these categories the table presents a further breakdown on 22 types of goods (commodity groups), including:

- Goods in containers.
- Unregistered vehicles.
- Ferry goods (carried by RoPax vessels).
- Other goods in RoRo units (assumed to be carried mainly or only by freight ferries).

Table SKIB43 does not present any units and TEU figures.

SKIB49:

Throughput of containers and RoRo units in major Danish ports by seaport, direction, unit of cargo and unit (1997-2005)

This table provides, for the years 1997-2005, the total annual throughput figures of containers and RoRo units (in number of units and tonnes) for each of the selected major Danish ports (in this case: Copenhagen, Koege, Roenne, Aabenraa, Esbjerg, Fredericia, Aarhus, and Aalborg). Thus the throughput in several other Danish ports handling international unitised goods flows, such as Hirtshals, Frederikshavn, Hanstholm and Grenaa, are not included in the table.

Figures are provided in tonnes and units number (RoRo-units and containers) and TEU (containers). There is a breakdown on inwards (unloaded), outwards (loaded) and total. For containers there is further breakdown in the following sizes: 20', >20' and <40', 40', >40'.

The table does not include ferry goods by RoPax vessels, except for the Esbjerg - Harwich route.

The annual throughput figures include domestic traffic, but the domestic share is small as regards goods carried by container ships and freight (RoRo) ferries.

SKIB50:**Throughput of goods in major Danish ports by direction, country and type of goods (2004-2005)**

This table presents information on how the annual throughput (for the years 2004 and 2005) via major Danish ports is distributed on 42 foreign countries/country groups. The figures present the sum of selected major ports. The selected ports are not specified, but according to Statistics Denmark they include the same ports as indicated in Table SKIB44 (see below under Table SKIB44). Thus the figures do not include a few other Danish ports handling international unitised goods flows.

There is a breakdown in the same 22 types of goods as applied for Table SKIB43.

Table SKIB50 only presents figures in tonnes, and no unit figures. The table provides some useful information concerning the geographical distribution.

The following tables (SKIB41, SKIB42, and SKIB44) may include supplementary information not directly applied in the SUTRANET databases.

SKIB41:**Transport of goods over Danish ports by unit (1990-2005)**

The table presents the data as a basis for time series covering the period 1990-2005 regarding the annual goods traffic via Danish ports in total including all the smaller ports. The table provides figures in tonnes only and no units figures.

There is a breakdown in traffic by 'cargo vessels' and 'ferries' (RoPax vessels) respectively. Within each of these two groups there is a further breakdown on international traffic (unloaded, loaded, total) and national (domestic) traffic.

Goods carried by freight (RoRo) ferries are included in the figures for the cargo vessel group but the share of RoRo goods is not specified.

The time series 1990-2005 for total international goods by RoPax vessels via Danish ports is of relevance as supplementary information to the SUTRANET databases.

SKIB42:

Throughput of goods in Danish ports by seaport and unit (1990-2005)

The table presents time series covering 1990-2005 of the annual goods traffic via each Danish port including all the smaller ports. The table only provides tonnes figures, and no units figures.

For each port, there is a breakdown in traffic by 'cargo vessels' and by 'ferries' (RoPax vessels). Within each of these two groups there is a further breakdown on international traffic (unloaded, loaded, total) and national (domestic) traffic, ref. also Table SKIB41.

There is no breakdown on 'Road goods' and 'Other goods transported' like in Table SKIB32, which makes the information in Table SKIB42 less useful to the specific purpose of the SUTRANET databases.

SKIB44:

Throughput of goods in international traffic in major Danish ports by seaport, direction and country (2004-2005)

The table presents, for each of the selected major Danish ports, the annual throughput in tonnes for each of the years 2004 and 2005. In this case the selected ports include: Elsinore, Copenhagen, Koege, Gedser, Roedby, Roenne, Aabenraa, Esbjerg, Fredericia, Aarhus, Aalborg, Hirtshals and Frederikshavn. Thus the throughput in a few other Danish ports handling international unitised goods flows, such as Hanstholm and Grenaa, are not included.

There is a breakdown on inwards (unloaded/import), outwards (loaded/export) and total.

The geographical breakdown covers the same 42 foreign countries/groups of countries, as it is the case for the geographical breakdown in Table SKIB50. However, there is no breakdown of the total throughput for each port in unitised and non-unitised goods, which makes the table less relevant to the SUTRANET databases.

The Tables SKIB45, SKIB46 and SKIB48 only involve domestic (national) traffic information, and Table SKIB47 provides information about the distribution on Flagstate for some major Danish ports.

Foreign Trade Statistics

The collection of foreign trade statistics (according to Intrastat and Extrastat procedures) has not been possible within the limited scope of the SUTRANET project.

International Ferry Routes via Ports in Denmark

Statistics for the geographical distribution of freight traffic by RoPax and RoRo vessels via Danish ports are included in the overview tables in the SUTRANET database: Annex 2.

The website www.freightferries.co.uk/routes presents an overview of all international ferry routes serving freight, i.e. the overview both includes routes served by RoPax and freight (RoRo) ferries. As of 1 February 2006, the above mentioned website indicated the following routes to/from Denmark:

Baltic Sea Countries:

Aarhus - Klaipeda

Aabenraa - Klaipeda

Sweden:

Frederikshavn - Gothenburg

Grenaa – Varberg

Elsinore – Helsingborg

Roenne - Ystad

Norway:

Frederikshavn – Oslo

Frederikshavn – Larvik

Hirtshals - Oslo

Hirtshals – Larvik

Hirtshals – Kristiansand

Hirtshals - Stavanger

Hirtshals – Bergen

Copenhagen - Oslo

UK:

Esbjerg - Immingham

Esbjerg - Harwich

Germany:

Gedser – Rostock

Roedby - Puttgarten

Roenne - Sassnitz

Poland:

Copenhagen – Swinoujscie

Roenne – Swinoujscie

Several routes serving RoRo traffic via Danish ports in 2004 were not indicated in the ‘freightferries’ website, ref. the SUTRANET database Annex 2.

The picture of unitised goods flows via ports is dynamic. Some routes are being closed down, and new routes and services are being introduced. The comments in this paper refer to the ports which were reported serving unitised goods in 2003-2005.

Presentation of the SUTRANET Databases

The following general assumptions apply to the statistical figures in the SUTRANET databases (Annexes 1-3):

- 1) Domestic goods transport between Danish ports is not included in the tables of the databases.
- 2) The weight of goods figures includes the immediate packaging. The weights of the transport unit, and the tare weight of the container or the RoRo unit, are excluded. This is also the case for statistics of ports in Sweden, Norway and UK, but not generally for port statistics covering Germany and the Netherlands/Belgium where some of the data sets for unitised goods may include the tare weight.

Annex 1

Annex 1 presents an overall comparative table for the years 2003, 2004 and 2005, including the annual throughput figures for the different types of unitised goods for each of all the Danish ports handling unitised goods in international traffic.

To ensure comparability of the tables and statistics for different countries, Annex 1 applies the following terminology:

- **A1 tonnes and units figures** include ferry goods quantities carried on road goods vehicles with or without accompanying trailers.
- **A2 tonnes and units figures** are ferry goods quantities carried on unaccompanied road goods trailers (semi-trailers), including goods carried by “normal” RoPax ferries and by RoRo freight vessels.

As mentioned elsewhere, Statistics Denmark provides no systematic reporting regarding the share of unaccompanied trailers (semi-trailers) on the RoPax ferry routes.

- **B tonnes and units figures** are goods quantities carried on vessels by other equipment than road goods units and containers. Other equipment includes ‘Ship-borne port-to-port trailers and barges’, ‘Other mobile self-propelled units’, and ‘Other mobile non self-propelled units’ according to the specification in Council Directive 95/64/EC, and goods on rail wagons.

The Statistics Denmark does presently not apply the cargo handling types ‘Ship-born port-to-port trailer etc.’, ‘Other mobile self-propelled units’ and ‘Other mobile non self-propelled units’, such as it is the case for e.g. Statistics Norway and UK statistics. As a consequence, the figures for these cargo handling types do not appear in the tables in Annex 1. It is assumed that their contribution to unitised goods flows via Danish ports presently is relatively limited.

No international goods traffic on rail wagons were reported via Danish ports in 2003-2005, and this category is not reflected in the Statistics Denmark’s tables or in Annex 1 for Danish ports.

Statistics Denmark provides no separate presentation of figures for containers handled by RoRo equipment (e.g. mafi-trailers) and carried by RoRo vessels, such as it is the case for e.g. Statistics Norway.

- **C tonnes and TEU figures** cover quantities of goods in containers carried on LoLo vessels, i.e. mainly on feeder ships to/from countries in Northern Europe and the Baltic Sea Region, and between Danish ports and the deep sea container ports in north-western Europe notably Hamburg and Bremerhaven. The figures do not include containers smaller than 20’ (e.g. 10’ containers).

Statistics Denmark does not provide a separate presentation of routes served by RoRo vessels (freight ferries).

Annex 2

Annexes 2A and 2B present - for each Danish port and the year 2004 - the distribution on selected countries, and on RoPax and other ferry/RoRo routes to the extent possible.

Annex 2C presents for the years 2003-2005 the total distribution on countries of other RoRo goods (excluding goods by RoPax ferries except for the route Esbjerg-Harwich) via Danish ports.

Annex 3

Annex 3 presents - for each Danish port and the year 2004 - the distribution of container traffic on selected countries and country groups to the extent possible.

Other Remarks Related to the Databases

As mentioned previously, Annexes 2-3 also exploit some geographical information presented in special tables which the SUTRANET project has received from Statistics Denmark.

The SUTRANET database presented in Annex 1 includes - in the ferry goods (A1+A2) figures based on Table SKIB43 - some smaller quantities of goods that are not transported by road goods equipment (lorries, trailers). However these quantities present only 1-2% of the total road goods figures presented in Annex 2B (based on Table SKIB32), and the slight difference only appears for the ports of Hirtshals, Frederikshavn and Grenaa.

The SUTRANET databases presented in Annexes 1-3 of this paper does not include the quantities carried by 'Unregistered vehicles' (ref. Table SKIB43). 'Other goods in RoRo-units' (ref. Table SKIB43) are assumed to be carried by freight (RoRo) ferries.

Each database table is commented upon in the following text including detailed assumptions.

Comparative Unit Load Figures

The following Table 1 presents an extract from the Annex 1 database table concerning 'Unitised Goods Flows via Danish Ports (International Traffic) – Comparative Table 2004'. Table 1 presents the annual throughput figures in 2004 for the ports in Denmark serving unitised goods, including Copenhagen port (Danish part of CMP³) and the ferry ports in Roedby and Gedser, which also serve NSR related traffic.

The ferry route via Gedser links with Rostock in north-eastern Germany outside the NSR eligible area, but some of the traffic is relevant for the corridor between Norway/Sweden and the Continent.

The ferry route between Roedby and Puttgarten in Germany partly serves NSR related traffic flows as well. This route is envisaged eventually to be replaced by a fixed link across the Fehmarn Belt.

Table 1 excludes all domestic traffic, the Elsinore - Helsingborg ferry route, and local cross-border routes of no particular NSR relevance. The considerable volumes of road goods traffic on the very short and high-frequent ferry route between Elsinore in Denmark and Helsingborg in Sweden partly consists of local cross-border traffic (or "domestic" traffic within the Oeresund Region), and this route basically functions as a "bridge-replacement" link.

³ CMP = Copenhagen-Malmoe Port which is established as a commercial joint venture between the two ports located in Denmark and Sweden respectively.

Table 1: Unitised Goods via Danish Ports (annual throughput in 2004)

No	Port	Ferries (RoPax)		Other RoRo vessels (freight ferries)		Containers (LoLo vessels)	
		1000 tonnes	1000 units	1000 tonnes	1000 units	1000 tonnes	1000 TEU
1	Frederikshavn	2,849	203				
2	Hirtshals	1,009	90			42	6
3	Hanstholm	327	26				
4	Aalborg					244	52
1-4	North Jutland, total	4,185	319	0	0	286	58
5	Grenaa	348	21	16	1	4	1
6	Aarhus			376	25	2,589	331
7	Esbjerg	365	32	1,202	64	48	6
8	Fredericia			230	15	197	18
9	Aabenraa			227	11		
5-9	Central-South, total	713	53	2,051	116	2,838	356
1-9	Jutland, total	4,898	372	2,051	116	3,124	414
11	Copenhagen	281	22	60	4	749	102
13	Roedby	4,911	296				
14	Gedser	1,188	71				
11-14	Zealand, total	6,380	389	60	4	749	102
1-9, 11-14	Total	11,278	761	2,111	120	3,873	516

The table indicates that Frederikshavn and Hirtshals are the most important ferry ports in Jutland; Esbjerg is the largest port regarding other RoRo goods; and Aarhus is dominating on container traffic via Danish ports.

As mentioned elsewhere, it is not possible - based on the published Danish port statistics - to provide a breakdown in accompanied trailers and unaccompanied trailers/semi-trailers except for some of the ferry routes. There is also no separate account of goods in containers served by RoRo equipment and RoRo/RoPax vessels.

Geographical Distribution of International RoRo and Container Traffic

The available information on the geographical distribution of unitised goods flows is presented in Annex 2 (RoPax and RoRo traffic) and Annex 3 (container traffic) for the following selected countries or country groups:

- North Atlantic (Faroe Islands, Iceland, Greenland),
- UK,
- Norway,
- Sweden North Sea (Kattegat and Oeresund),
- Sweden Baltic Sea,
- Germany Baltic Sea,
- Germany North Sea,
- Baltic Sea countries indicated as one group, or in some cases specified separately for Finland, Poland, Lithuania and other Baltic Sea countries,

- the Netherlands,
- Belgium,
- Atlantic Arc (France and Portugal), and
- Mediterranean.

Distribution on RoPax and Freight Ferry Routes:

Table 2 presents an extract from Annex 2A as regards RoPax routes.

Local cross-border ferry routes, RoRo routes to the Baltic Sea Region and the RoPax routes to Poland are not included in the table.

Table 2: Ferry traffic (RoPax) to/from Denmark 2004

To/from Country	Route	Route length km	1000 tonnes	1 million tonne-km	1000 units
North Atlantic	Hanstholm-Torshavn	1,037	67	69.5	5
	Total		67	69.5	5
UK	Esbjerg-Harwich	619	365	225.9	32
	Total		365	225.9	32
Norway	Frederikshavn-Oslo	291	205	59.7	14
	Frederikshavn-Larvik/Moss		223		20
	Hirtshals-Oslo	260	199	52.7	21
	Hirtshals-Larvik	163	202	32.9	21
	Hirtshals-Grenland/Langesund	157	255	39.3	17
	Hirtshals-Kristiansand	125	318	41.7	32
	Hanstholm-Eigersund/Bergen		260		21
	Copenhagen-Oslo	504	233	117.4	14
	Total		1,895		160
Sweden (Kattegat)	Frederikshavn-Gothenburg	93	2,399	223.1	169
	Grenaa-Varberg	115	346	39.8	21
	Elsinore-Helsingborg	5	4,417	22.1	377
	Total		7,162	285.0	567
Germany (Baltic Sea)	Gedser-Rostock	46	1,188	54.6	71
	Roedby-Puttgarten	19	4,911	93.3	296
	Total		6,099	147.9	367

Sources:

Figures are from Statistics Denmark: Transport 2005:12, Table 12, except for the Esbjerg-Harwich route. The figures for Esbjerg-Harwich is from the 'Statistics Report UK' (Annex 2).

The Frederikshavn-Gothenburg and Esbjerg-Harwich routes are far the largest routes in terms of tonne-km performed even compared to Roedby-Puttgarten.

Table 3 presents some key figures for the geographical distribution of international RoRo traffic served by freight ferries (excluding RoPax vessels) via ports in Denmark, in total. The figures are extracted from Annex 2C except for UK.

Table 3: Freight ferry traffic (other RoRo) to/from Denmark 2004

To/from country	Total 1000 tonnes	1000 units
Lithuania	502	30
Finland	347	22
Other Baltic Sea countries	26	2
Sweden North Sea/Kattegat	5	0
Norway	0	0
North Atlantic	12	1
UK	1,130	61
Germany Baltic Sea	2	0
Mediterranean	56	2
Other countries	15	1
Denmark, total	2,095	119

The table illustrates that apart from UK, Lithuania and Finland, freight ferry goods flows are modest compared to the goods quantities carried by RoPax vessels.

Geographical Distribution of Container Traffic

Statistics Denmark publishes the total distribution on countries of international container traffic via Danish ports (ref. Table SKIB50). The distribution for each individual major port is reported to Statistics Denmark but not being published. Table 4 presents an extract of information from the Annex 3 database.

Table 4: Overall geographical distribution of container traffic 2004

OD country	Total 1000 tonnes	Import 1000 tonnes	Export 1000 tonnes	Total 1000 TEU
North Atlantic	452	179	274	85
UK	84	17	67	12
Norway	8	1	7	2
Sweden North Sea	446	400	47	59
Sweden Baltic Sea	79	69	11	14
Germany Baltic Sea	2	1	1	1
Germany North Sea	2,294	963	1,331	265
Finland	150	92	58	23
Other Baltic Sea countries	54	20	34	16
The Netherlands	57	36	20	12
Belgium	88	45	44	9
Atlantic Arc	91	38	53	10
Other countries	21	11	10	2
Total	3,827	1,872	1,955	509
Not accounted for	58			17
Grand total	3,885			526

A considerable part of the container traffic between Danish ports and 'Germany North Sea' is shipped via Hamburg and Bremerhaven for transshipment to deep sea container lines. However, such information cannot be extracted from the available statistics.

Finally, Table 5 below presents some key figures for the annual throughput in 2004 via some selected ports located in Jutland, in order to compare the relative share of unitised goods (unit loads) flows with the total goods flows including bulk and general cargo.

Table 5: International unit load traffic via selected ports in Jutland compared to the total annual throughput (2004 figures)

Port	Total annual throughput 1000 tonnes	Import/export share 1000 tonnes	International unit loads: annual throughput 1000 tonnes			
			Con- tainers	RoPax RoRo	Other RoRo	Total
Frederikshavn	3,145	3,049	0	2,849	0	2,849
Hirtshals	1,291	1,236	0	1,009	0	1,009
Hanstholm	578	407	0	327	0	327
Aalborg	5,725	3,727	244	0	0	244
Grenaa	749	640	4	348	16	370
Aarhus	10,357	6,268	2,589	0	376	2,965
Esbjerg	3,665	2,768	48	365	1,202	1,615

The total annual throughput figures include domestic traffic.

Except for Aalborg, the unitised goods share of the import/export traffic flows constitutes around 50% or more of the total flows in terms of tonnes. If the value of goods was considered, this share would be even more significant.

Databases: Additional Comments and Assumptions

The assumptions and some comments in more detail are presented as follows, and in addition to the sources and notes indicated in the SUTRANET databases in Annexes 1-3.

Annex 1

Sources:

- 1) Statistics Denmark (www.statistikbanken.dk) Table SKIB32: International transport by ferry route and unit (1990-2005) – as to RoPax units (A1+A2) figures.
- 2) Statistics Denmark (www.statistikbanken.dk) Table SKIB43: Throughput of goods in Danish ports in international traffic by seaport, direction and type of goods (1997-2005) – as to all tonnes figures.

- 3) Statistics Denmark (www.statistikbanken.dk) Table SKIB49: Throughput of containers and RoRo units in major Danish ports by seaport, direction, unit of cargo and unit (1997-2005) – as to the estimate of TEU figures (containers) for some ports.
- 4) Information from the Maritime Statistics Branch, Department for Transport, UK - as to the estimate of RoPax tonnes and units figures via Esbjerg for the year 2004.
- 5) Statistics Denmark: Transport 2005:12, Table 12 – as to separate A1 and A2 RoPax figures for the year 2004.
- 6) Statistics Denmark: Additional tables issued to the SUTRANET project regarding container traffic to/from major Danish ports – as to TEU figures for major ports.

Separate A1 and A2 figures for goods carried by RoPax vessels via Danish ports cannot be retrieved from Statistics Denmark except for a few of the ferry routes.

Notes:

- 1) The weight of goods figures includes the immediate packaging. The weights of the transport unit, and the tare weight of the container or the RoRo unit, are excluded.
- 2) Domestic goods transport between Danish ports is not included.
- 3) **A1 figures** include ferry goods quantities carried on road goods vehicles and accompanying trailers.
- 4) **A2 figures** are ferry goods quantities carried on unaccompanied road goods trailers (semi-trailers), either by RoPax or RoRo vessels.
Some of the ferry goods quantities according to Table SKIB43 are not carried in lorries and trailers, but they are still included in the A1- and A2 figures. However, these quantities are relatively very small, and they only appear in the cases of the ports of Hirtshals, Frederikshavn and Grenaa.
Any ferry goods by 'unregistered vehicles' etc (according to Table SKIB43) are not included in A1- and A2 figures.
- 5) The Transport 2005:12, Table 12 provides a breakdown of units figures on accompanied and unaccompanied trailers (for the years 2003 and 2004), except for routes to Norway via the ports in Hirtshals and Frederikshavn, and except for routes to Germany via Gedser and Roedby. Transport 2005:12, Table 12 and Table SKIB32 provide no breakdown on A1- and A2 tonnes figures. See also comments under point 8 below.
- 6) **B figures:** There are no separate figures available at Statistics Denmark for goods quantities carried by ship-borne port-to-port trailers, ship-borne barges, other mobile self-propelled units and other mobile non self-propelled units.
There were no goods carried on rail wagons reported via Danish ferry ports in 2003-2005.
- 7) **C figures** are goods carried in containers by LoLo vessels. The number of TEUs includes empty containers.
- 8) The statistics of **A1 figures** exclude other vessels than ferries. Furthermore, there is only a specification of flow figures for the routes that are served by RoPax vessels (combined passenger and freight ferries), ref. Statistics Denmark: Statistiske Efterretninger Transport 2005:12, and Statistics Denmark's Table SKIB32. These figures include (ref. Table SKIB32) the following cargo handling types transported by RoPax vessels: 'lorries without trailers', 'lorries with trailers' (accompanied trailers), 'articulated vehicles' and 'road tractors without semi-trailers'. For some of the ferry

routes 'unaccompanied trailers' (semi-trailers) are not specified in Table SKIB32 but included in the cargo handling type 'lorries with trailers'. For a few other ferry routes (e.g. Frederikshavn-Gothenburg and Grenaa-Varberg), Table SKIB32 indicates semi-trailer figures under the cargo handling type 'road tractors without semi-trailers'.

- 9) Goods via the RoPax route Esbjerg-Harwich (in UK) is not indicated separately by Statistics Denmark. This quantity is included in the 'RoRo total' (A1+A2) figure. The 'RoPax' figures for Esbjerg in year 2004 are derived from the Statistics Report UK (Annex 2: Harwich-Esbjerg). The 'Other RoRo' figures are calculated as the difference between RoRo total and RoPax. UK Statistics present slightly different figures for 'Other RoRo' (Immingham-Esbjerg: 1,068x1000 tonnes and 68x1000 units) and 'RoRo total' (1,433x1000 tonnes and 100x1000 units).
- 10) 'Local routes' are the cross-border ferry routes Roenne/Bornholm-Sassnitz (Germany Baltic Sea), Roenne/Bornholm-Ystad (Sweden Baltic Sea), Havneby/Roemoe-List (Germany North Sea) and international container traffic (of 12,000 tonnes in 2004) via the small port of Hundested on Zealand.
- 11) Any small deviations between the sum figure for each table column and the indicated Denmark total figures are due to indication in 1000 tonnes or 1000 units.
- 12) The foreign part of 'Other RoRo' units via Hirtshals and Grenaa is estimated as 14 tonnes per unit, based on the tonnes figures in Table SKIB43.
- 13) The foreign part of container traffic measured in TEU for the ports of Hirtshals, Frederikshavn, Grenaa, and Hundested is estimated based on the tonnes figures in Table SKIB43. Table Skib49 provides figures for container units and TEU, but only for selected major ports, and these figures include domestic traffic. Thus the TEU figures for these ports are derived from Statistics Denmark: Additional tables provided to the SUTRANET project regarding container traffic to/from major Danish ports 2003-2005. Number of TEU via Hirtshals, Frederikshavn, Grenaa and Hundested (that are not included in the selected major ports) is estimated as 7.5 tonnes per TEU (e.g. for Hirtshals in 2004: 42/7.5 tonnes per 20' container = approximately 6x1000 TEU).
- 14) Most or all of the container traffic via Aalborg in 2003-2005 was to/from Greenland.
- 15) In 2003-2005, only domestic container traffic was reported via Koege.

Annex 2

Sources:

- 1) www.freightferries.co.uk/routes - as to the identification of RoRo routes.
 - 2) ShipPax Information (Halmstad, Sweden): Statistics 05 and Statistics&Outlook 06 - as to some route lengths in nautic miles only. However, these lengths often deviate from route lengths indicated by Statistics Denmark.
 - 3) Statistics Denmark: Transport 2005, Table 12 - as to RoPax tonnes and units figures and route lengths in km for all RoPax routes except for Esbjerg-Harwich.
- Statistics Denmark, www.statistikbanken.dk:
- 4) SKIB32: International transport by ferry route and unit (1990-2005) - as to RoPax tonnes and units figures.
 - 5) SKIB43: Throughput of goods in Danish ports in international traffic by seaport, direction and type of goods (1997-2005) - as to RoPax and other RoRo tonnes figures.

- 6) Additional table provided by Statistics Denmark: Foreign RoRo traffic (by freight ferry vessels) 2003-2005 via major Danish ports in total. This table presents a geographical breakdown of RoRo figures (not including RoPax) on selected countries, and including a breakdown on inward (import) and outward (export).

Definition of A1- and A2-figures: see Annex 1.

Routes marked with * are not included in the www.freightferries.co.uk/routes overview as of 1 February 2006.

Notes:

- 1) The weight of goods figures includes the immediate packaging. The weights of the transport unit, and the tare weight of the RoRo unit, are excluded.
- 2) Domestic goods transport between Danish ports is not included.
- 3) Baltic Sea countries include Finland, Russia (Baltic), Estonia, Latvia, Lithuania and Poland.
- 4) Total country figures derived from Table SKIB32 differ insignificantly from the sum figures in the additional table. Thus some minor deviations may occur compared to the RoRo figures in Annex 1 and Annex 2B (distribution on ports).
- 5) Grenland is indicated as 'Langesund' (that is part of the Grenland port area) in the Danish ferry route statistics in Table SKIB32. However, Statistics Norway suggests 163x1000 tonnes only, whilst Statistics Denmark suggests 255x1000 tonnes on the route Grenland-Hirtshals (2004 figures).
- 6) Aarhus-Klaipeda (Lithuania) and Aabenraa-Klaipeda are included in one route service: Aarhus-Aabenraa-Klaipeda.
- 7) Hirtshals-Stavanger and Hirtshals-Bergen are included in one route service: Hirtshals-Stavanger-Bergen.
- 8) The number of freight ferry RoRo units via Grenaa are estimated.
- 9) The RoPax figures for Esbjerg-Harwich are extracted from UK statistics (ref. Statistics Report UK, Annex 2). The Esbjerg-Immingham RoRo figures are calculated as the difference up to the total reported figures for RoRo traffic between Danish ports and UK (these figures include freight on the Esbjerg-Harwich RoPax route).
- 10) 'Not specified' on countries in Annex 2B (306x1000 tonnes in 2004) includes RoRo traffic via Copenhagen, Grenaa and Fredericia.

Annex 3

Sources:

Statistics Denmark, www.statistikbanken.dk:

- 1) SKIB43: Throughput of goods in Danish ports in international traffic by seaport, direction and type of goods (1997-2005) - as to total tonnes figures (by containers) for each of the ports not included among the selected 'major Danish ports'.
- 2) SKIB49: Throughput of containers and RoRo units in major Danish ports by seaport, direction, unit of cargo and unit (1997-2005 - as to the estimate of total TEU figures for each of the ports not included among the selected 'major Danish ports'.

- 3) SKIB50: Throughput of goods in major Danish ports by direction, country and type of goods (2004-2005) - as to figures for the total distribution of container traffic (sum for all major Danish ports) on countries. These figures can also be derived from the additional tables, see below.
- 4) Statistics Denmark: Additional table for each of the years 2003, 2004 and 2005 regarding container traffic to/from major Danish ports. This table presents a geographical breakdown of C-figures for each of the major Danish ports on selected countries/groups of countries, and including a breakdown on inward (import) and outward (export).

‘Grand total’ figures are taken from Annex 1.

There is no information available on foreign origin/destination ports for the container traffic.

Notes:

- 1) The weight of goods figures includes the immediate packaging. The weights of the transport unit, and the tare weight of the container, are excluded.
- 2) Domestic goods transport between Danish ports is not included.
- 3) The total number of TEU includes empty containers.
- 4) The 'Denmark total' figures may deviate slightly from the total figures in Annex 1, partly because Annex 3 is based on the additional tables regarding container traffic to/from major Danish ports. These ports do not include Hirtshals, Grenaa and other smaller Danish ports in terms of container handling.
- 5) The 'North Atlantic' involves Faroe Islands, Iceland and Greenland. 'Other Baltic Sea countries' include Russia (Baltic), Estonia, Latvia, and Poland. The 'Atlantic Arc' includes France and Portugal.
- 6) The foreign part of container traffic measured in TEU is estimated for the ports of Hirtshals, Frederikshavn, Grenaa and Hundested as described in the notes for Annex 1.
- 7) Most of the container traffic via Aalborg in 2003-2005 was to/from Greenland.

The full databases (Annexes 1-3) can be provided as Excel files on request to the SUTRANET secretary, ref. the website www.sutranet.org.

Findings and Recommendations

In order to improve the statistics reporting concerning unitised goods flows via Danish ports, and harmonise it with the similar statistics for other NSR countries, some findings and recommendations have been identified as follows.

Findings

The website database programme presented by Statistics Denmark is user friendly and easy to apply.

A breakdown in separate units figures and tonnes figures for unaccompanied trailers (semi-trailers) are not provided, because the quarterly reporting by ferry operators to Statistics Denmark does not make a systematic specification for all ferry routes of the number of semi-trailers and tonnes carried by semi-trailers.

There is no separate presentation of figures for containers handled by RoRo equipment (e.g. mafi-trailers) and carried by RoPax/RoRo vessels.

As to the port statistics of container traffic, it is not possible to identify the complete picture concerning distribution on feeder ships and deep sea ships, considering to which extent short sea traffic includes feeder traffic. The share of transshipment is not reported/counted, i.e. container traffic that flows from a Danish port to a deep sea container ports - such as Hamburg and Bremerhaven - for further transshipment to overseas countries. Thus the share of this container transshipment cannot be identified based on available statistics.

There is no mention of the NST/R goods classification in the annual report for Statistics Denmark's maritime statistics. A clarification would eventually be needed of the relations and usefulness of the trade statistics' breakdown in NST/R (or NST 2000) commodity groups vis-à-vis the goods carried in containers and RoRo equipment.

Small containers (10 foot and less) are not included in the container traffic by LoLo vessels, such as it may be the case for some other national statistics e.g. Norway. It could be clarified whether 10' containers and less are included in the 'Other general cargo' or 'General cargo' category.

Recommendations

As mentioned above, there is no systematic separate reporting of figures (tonnes and units) for unaccompanied trailers (semi-trailers). The introduction of such harmonised reporting involving all ferry operators is highly recommended, in order to monitor the development trend for the share of semi-trailers by RoPax ferry routes, and for the statistics to be consistent with other NSR countries. The flow volume of semi-trailers via the ferry routes is an important indicator of intermodal transport.

It could be considered publishing the reported geographical distribution of container traffic via major Danish ports. There is also a need in order to enable the identification of some data on the share of feeder and transshipment traffic.

It is recommended to make a distinction between RoPax and RoRo vessels in the relevant tables, so that unitised goods flows could be specified also on other RoRo routes. Thus it should be considered including information on RoRo (freight ferry) routes in the standard reporting procedures of ferry operators, in order to make these data available in the port statistics, ref. Table SKIB32. Table SKIB32 could provide the information required to aggregate the tonnes and units figures for goods carried by RoRo (freight ferry) vessels and RoPax vessels respectively. Similar information could be included in Table SKIB49.

In Table SKIB32 it is advised renaming the cargo handling type 'road tractors without semi-trailers' to 'unaccompanied trailers (semi-trailers)'.

Table SKIB49 could be expanded to include a breakdown in domestic and international traffic, and on RoPax and other RoRo flows.

In order to be able to assess whether containers handled by RoRo equipment is a growing market, it could be identified which type of equipment that is applied for the RoRo handling process, and to include tonnes and units figures for this type of cargo handling in the statistical reporting.