



**DIOMIS**  
Developing  
Infrastructure &  
Operating  
Models for  
Intermodal  
Shift

**AGENDA 2015  
FOR COMBINED  
TRANSPORT  
IN EUROPE**

JANUARY 2008

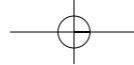


# AGENDA 2015

COMBINED TRANSPORT IN EUROPE

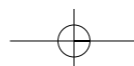
## DIOMIS

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## FOREWORD

The UIC Combined Transport Group and the UIC Freight Forum are pleased to present the **AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE**, which constitutes the epitome of the work carried out over two years in the **UIC DIOMIS** project: developing infrastructure and operating models for intermodal shift.

DIOMIS originated from the "Study on Infrastructure Capacity Reserves for Combined Transport by 2015" published in May 2004. The Study, carried out by KombiConsult and Kessel+Partner, analysed whether enough capacity would be available for combined transport on the European Railway Infrastructure by 2015 considering growth previsions for combined transport, taking into account the projected or foreseeable evolutions of other rail activities and visualising, on the basis of the current and planned infrastructure realisations and projects, the railway infrastructure available in 2015.

The Study highlighted the threat of severe bottlenecks on many parts of the European railway network and pointed to the necessity, in all fields (infrastructure network, operations, terminals) of innovative solutions leading to a deep re-evaluation of our current infrastructure and operating models.

The Study was a first milestone in the debate about the evolution of the railway infrastructure available for freight and its adaptation to the needs of rail freight, supported by other UIC and CER studies like ERIM led by UIC, and the business cases for "Towards a primary European rail freight network" published by CER in August 2007, to which our Study significantly contributed.

The Communication from the Commission "Towards a rail network giving priority to freight" published on October 18<sup>th</sup>, 2007, is the result of all the discussions and reflections, which our Capacity Study has contributed to set into motion.

DIOMIS carried the findings and conclusions of the Capacity Study several steps further.

It was established by the Capacity Study that Combined Transport has become the main growing business segment of freight railways and provides the opportunity to increase the market share of rail freight in Europe. Bearing in mind the necessity for infrastructure investments, DIOMIS looked at how all stakeholders, i.e. railways undertakings, operators and terminal managers

can optimize capacity use in order to face the expected strong growth of combined transport of 7.3% domestic and 8.7% internationally.

In seven specific modules covered by published reports, DIOMIS has developed for Combined Transport proposals and lines of action in the domains of efficient use of infrastructure, path-saving production systems, enhanced process organisation of rail traction, application of best practices in terminal operation and management, and international co-ordination (including terminals), etc.

The results published in this **AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE** constitute a call for action for all the decision makers of the stakeholders (Railway Undertakings, Combined Transport Operators, Terminal Managers, Infrastructure Managers, ...), but also the national and supranational public authorities as well as port authorities. The ambition of **AGENDA 2015** is to become an integral part of their respective development strategies.

The second phase of DIOMIS, which will span over 2008 and 2009, will ensure full dissemination of **AGENDA 2015** and will update the report on Combined Transport. It will expand to CEEC the geographical scope of DIOMIS, investigate the third parameter which constrains growth: the wagon, and benchmark US-Europe (business models, IT systems, rolling stock management, financing models).

DIOMIS is a UIC project, but was also fully supported by the UIRR (International Rail-Road Union, the association of the Combined Transport Operators) and by Euro platforms, associating the logistical villages and terminal operators.

KombiConsult and K+P Transport Consultants carried out DIOMIS in the footsteps of the Study. We are very thankful to Rainer Mertel from KombiConsult, and Hans-Paul Kienzler, from K+P Transport Consultants, and their respective teams.

DIOMIS was also coached by a very active Steering Committee, composed of Martin Burkhardt (UIRR), Javier Casanas (Trenitalia), Gerard Dalton (UIC), Gilberto Galloni (Europlatforms), Sandra Géhénot (UIC), Eric Peetermans (SNCB Holding), Eric Pfaffmann (DB Intermodal, succeeding Albert Richey from Railion), Erich Rohrhofer (Rail Cargo Austria), and Oliver Sellnick (UIC).

**AGENDA 2015** must now be integrated into the strategies of the stakeholders and we are confident that all parties concerned will share our excitement at this perspective and will co-operate to this achievement.

Eric Peetermans  
Chairman of the UIC Combined Transport Group

Oliver Sellnick  
Director Railway Undertakings, UIC

January 2008



With the DIOMIS project the UIC was first, after the 1988 AT Kearney study, to take stock of the entire combined rail/road transport industry in Europe. The survey revealed that, in 2005, the volume of unaccompanied combined transport amounted to more than 125 million tonnes. Compared to 17 years before, the intermodal freight volume had almost quadrupled. This result highlights the fact that combined transport is not only one of the most dynamic modes of transportation but also ranks top among the growth segments of rail freight services in Europe. Combined transport positively has become a "quantité remarquable".

With the objective to support and promote the further enhancement of the intermodal industry and to convey to all stakeholders a vision of the evolution and growth potential of combined transport services, the UIC has set up the present AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE. It particularly suggests to both suppliers and customers of intermodal services strategies, actions and tools how this vision can be ensured and the way for a continuously stable growth of combined transport by the year 2015 and beyond paved.

Based on a comprehensive assessment of the current market structure, actors and capabilities of European combined transport AGENDA 2015 addresses three issues:

- Growth potential of unaccompanied combined rail/road transport in Europe by 2015
- Prerequisites and fields of action for the growth of intermodal volume in a congested rail network and terminal infrastructure environment
- Stakeholder involvement

**STRONG GROWTH POTENTIAL FOR COMBINED TRANSPORT BY 2015**

AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE shows that the intermodal industry can more than double the total volume of shipments by 2015. Total unaccompanied combined rail/road traffic in Europe is forecasted to

Unaccompanied combined rail/road transport in Europe by market segments: total goods moved 2005-2015

COMBINED TRANSPORT MARKET SEGMENT	TRANSPORT VOLUME (MILLION GROSS TONNES)		2015 / 2005 CHANGE
	2005	2015	%
DOMESTIC SERVICES	71,7	145,0	102,2%
INTERNATIONAL SERVICES	53,6	123,0	129,5%
<b>TOTAL VOLUME</b>	<b>125,3</b>	<b>268,0</b>	<b>113,9%</b>

increase to 268 million gross tonnes by 2015 up 114 per cent from the 2005 volume of approximately 126 million tonnes. This signifies a mean annual growth rate of 7.9 per cent in this period thus achieving a significantly higher increase than expected for road or conventional rail freight transportation.

Every market segment will contribute to this remarkable growth of intermodal freight by 2015:

(1) The volume of goods shipped on domestic intermodal services in Europe is expected to more than double to about 145 million tonnes. The main momentum is due to be released by container hinterland traffic assuming the boom of global container traffic continues. On average the amount of maritime containers on inland intermodal services will increase by 8% annually, provided that efficient hinterland services from and to sea ports will be extended.

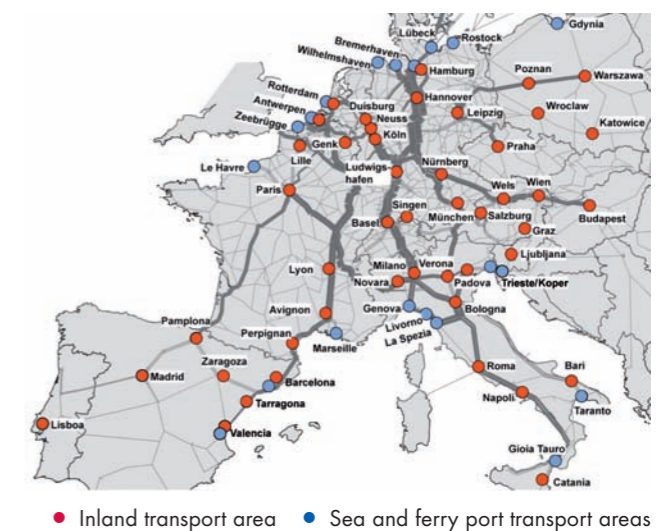
(2) While freight carried by maritime containers, in fact, is global cargo, the "real" domestic intermodal shipments are conveyed on continental services, that is the transport of European-sourced goods between „dry“ inland terminals. The mean annual growth rate of domestic continental services will be slightly smaller with approx 6%, but they also have good prospects particularly if they are intelligently linked with an effective international network.

(3) International combined transport across Europe is estimated to rise from 54 (2005) to 123 million gross tonnes (2015) corresponding a mean annual growth rate of 8.7%. Like in previous years growth will be fuelled by continental services. The largest absolute increase is

expected to be gained from existing "mature" north-south and north-southwest intermodal corridors though the relative growth rates are forecasted to be higher on routes with the new EU Member States in Central and Eastern Europe and with countries in southeast Europe.

(4) The growth of combined transport volumes will bring out a European-wide network of domestic and international services and terminals. The following figure is intended to give an impression of the key corridors and nodes - inland terminals, sea and ferry port related transshipment centres - in this network by 2015, although it will be much denser and involve more terminals than can be represented.

Key inland and port-related transport areas of unaccompanied combined rail/road transport in Europe by 2015



• Inland transport area • Sea and ferry port transport areas



## EXECUTIVE SUMMARY

The main drivers of combined transport growth, which either have to be taken by intermodal actors themselves (intermodal-industry inherent drivers) or arising as external factors, are :

- Integrated shuttle service network
- Hub systems in continental CT
- Dry Port in container hinterland CT
- High-quality CT services
- Consistent price policy
- Capacity management systems (CMS)
- Quality management systems (QMS)
- Interoperable crossborder services
- Terminal "last mile" logistics
- Competition on rail traction & CT service
- Global trade growth
- EU Single Market
- Truck driver working time/black box
- 44 tones regulation

### REQUIRED MEASURES TO REALISE FULL GROWTH POTENTIAL OF COMBINED TRANSPORT

AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE clearly highlights the opportunities for a further, strong and lasting growth of unaccompanied combined transport by 2015 and beyond. This is in line with what market investigations show: more and more shippers and logistic service providers are set to shifting freight off the road to ensure sustainable supply chains for goods to collect or distribute. Against the background of the fierce global competition on production and trade their expectations towards the key actors of intermodal services are high. They call on them to continuously enhancing the quality and efficiency of the existing supply, reinforcing efforts to design intelligent customer-driven solutions, and innovating production systems.

The intermodal industry in Europe - in particular combined transport operators, railway undertakings, infrastructure, terminal and wagon and managers - have already taken numerous actions to gear the productivity and performance of services to customer requirements, increase the network and capture new markets. Many innovations concerning rail production, process organization, technology, and capacity management are yet on the agenda.

What, however, poses an extraordinary challenge is how the combined transport actors can achieve to expand services and volumes of shipments in the face of an increasingly congested rail and terminal infrastructure in Europe. Based on the knowledge acquired by the DIOMIS studies AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE addresses three main fields of action designed to make sure combined transport will grow as forecasted:

- More efficient employment of network and terminal infrastructure
- Realization of envisaged infrastructure enlargement investments and fast implementation of further actions to eliminate infrastructure bottlenecks
- Improvement of co-operation and international co-ordination amongst intermodal stakeholders

For every field of action, AGENDA 2015 proposes a set of measures, directed to the intermodal stakeholders, which are suitable for enhancing productivity, performance and competitiveness of intermodal services on the entire network. However, they particularly are required and effective on the corridors constituting the intermodal backbone network in Europe.

#### More efficient use of infrastructure

AGENDA 2015 encourages intermodal actors committing themselves to implement any feasible measure, which contributes to employing existing rail network and terminal infrastructures more efficiently. The DIOMIS studies identified numerous actions, which are suitable for operating more freight trains on a given rail network or increasing the

operational transshipment capacity of intermodal terminals. Most of these measures are being applied at various

places and have proved their effectiveness and positive impact on infrastructure in practice.

AGENDA 2015 encourages all intermodal stakeholders to spread the employment of these actions, especially to corridors and areas suffering from constrained capacities.

The actions have been clustered in eight categories and assessed with respect to their overall impact on increasing the market-effective train path capacity of the rail network and/or the transshipment capacity of combined transport terminals in Europe (cf Figure below).

Best practices to employ network and terminal infrastructure more efficiently

ACTION	IMPACT*		
	LOW	MEDIUM	HIGH
Comprehensive employment of train path-saving rail production systems	■	■	■
Incentives in infrastructure access tariffs to induce resource-saving production systems	■		
Improvement of the performance of services	■	■	■
Enhanced process organization of rail traction services	■	■	■
Implementation of advanced train and network capacity management systems	■	■	
Enforcement of longer and/or heavier trains including minor infrastructure adaptations	■	■	
Increased wagon axle loads	■		
Application of good practices in terminal operations	■	■	

\*on efficiency of infrastructure use



### More infrastructure investments, co-operation and international co-ordination

The DIOMIS project has produced clear evidence that even if the above actions, which are aimed at obtaining more transport and handling capacity from existing infrastructure resources, were implemented they would by no means be sufficient to absorb the expected growth of combined transport volumes - and other freight as well as passenger traffic - by 2015 and beyond.

In order to ensure this objective the AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE suggests a comprehensive infrastructure programme comprising a set of clearly defined enlargement investment measures and calls on the political, administrative and commercially involved stakeholders to improve the international co-ordination as follows:

#### 1. Implementation of ongoing and envisaged rail network investments

Unaccompanied intermodal services primarily are targeting higher-value freight markets with demanding logistic service profiles, which are dominated by road transport. In order to be competitive with truck and match the customers' quality requirements such as transit time and reliability combined rail/road transport services particularly need to be performed on the main, highly efficient rail lines in Europe. Since this core network by now is considerably congested it is of paramount importance that all ongoing and envisaged enlargement investments are realized on time.

#### 2. Conclusion of international agreement on "Achilles' heels" removal programme

Even if all planned enlargement investments in rail infrastructure were implemented by 2015 severe capacity bottlenecks would remain. Since most of them concern key sections of the European rail network they would become "Achilles' heels" for combined transport and rail traffic in general. This would have serious consequences, since all flows crossing these sections would be affected by the capacity deficit. A bottleneck, for example in the area of Basel, would influence various trans-European flows between Northern Europe and Italy, the Benelux and Italy and others. A solution is not in the hands of individual countries. A co-ordinated international approach joining all forces is required to pave the way for the expected growth of combined and conventional rail freight services. AGENDA 2015 proposes that, maybe under the guidance of the European Commission, all European countries affected shall conclude an international agreement on removing the major bottlenecks on the international backbone network.

#### 3. Realization of ongoing and envisaged terminal investments and implementation of an intermodal hub programme

DIOMIS studies have shown that almost in all European economic centres terminal capacity are scheduled to be enlarged in the years to come. The evolution of intermodal volumes, however, is expected to be even more dynamic. AGENDA 2015 highlights the need of enlargement investments in addition to the ongoing and envisaged projects and requests both from private and public investors to ensure a timely completion. AGENDA 2015 also calls on the stakeholders to consider an international programme on establishing a system of intermodal hub terminals. They are required as turntables ("dry ports") for container hinterland traffic in countries such as Belgium, the Netherlands, Germany and Italy, and for integrating small- and medium-sized transport areas into continental and maritime combined transport. Owing to the key role of such intermodal hub terminals for European freight traffic it should be considered whether 50 per cent of the investment costs could be financed by TEN funds.

#### 4. Implementation of a standardized process for ensuring the international co-ordination of combined transport terminal development

The DIOMIS studies demonstrated that a lack of international co-ordination of terminal development plans produces temporary or even enduring capacity constraints, which increasingly impede the extension of combined transport services and volumes and also negatively impact on revenues of CT stakeholders. AGENDA 2015 suggests establishing a standardized process based on a two-tier set of terminal committees and a corresponding feedback mechanism. In a first step, on a domestic level, terminal committees consisting of national intermodal stakeholders under the chairmanship of the national Ministries for Transport, would analyze the state-of-affairs concerning terminal capacity employment and investment plans, and assess the expected terminal capacity needs in the own country and formulate the capacity requirements in other countries. In a second step, national ministries on a bi- or multilateral level would exchange both their domestic terminal development plans and the requests on terminal capacity in the corresponding countries trying to find joint agreements on co-ordinated expansion programmes. Results would then be fed back into the national committees.

#### 5. Reinforcing the exchange of knowledge on best practices in terminal management

DIOMIS best practice evaluations proved that practically all measures and instruments suitable for using terminal

capacities more efficiently are known or already applied by someone. Yet they are mostly seen as "stand-alone" solutions geared to the specific situation of one terminal operator. It is of great importance that the stakeholders disseminate their solutions and results, thus encouraging a common learning process and come to a coordinated process to make combined transport more efficiently to the benefit of all.

### ROLE AND RESPONSIBILITIES OF ALL STAKEHOLDERS

The present AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE formulates a vision of the development of the intermodal industry in Europe by 2015 and beyond. With an aim to supporting intermodal stakeholders AGENDA 2015 provides a tool-box of effective actions mentioned above, which are suitable to enable a more than 100% growth of total combined transport volume in the period to 2015. AGENDA 2015 encourages all combined transport stakeholders to contribute to this objective and particularly taking account of the following prerequisites:

Most of the actions proposed require for involving various groups of stakeholders. The more the stakeholders enhance their co-operation and synchronize their actions the more combined transport will strengthen its competitiveness.

Owing to the outstanding and continually increasing importance of international combined traffic AGENDA 2015 calls for an improved international co-ordination between stakeholders affected.

The success of AGENDA 2015 particularly depends on stakeholders committing to this programme and integrating it into their own business or policy strategies.

There is a need to expand and enhance combined transport services in Europe in the next years in order to cope with the expected increase of foreign trade and the growth of global supply chains.

**So prospects for the European intermodal logistics industry are extraordinary. If every stakeholder takes on its responsibility combined rail/road transport will enhance the scope and performance of logistic services, strengthen competitiveness and more than double traffic volumes by 2015.**



Figure 1:  
DIOMIS components leading to AGENDA 2015



Combined rail/road transport is one of the most remarkable success stories of European post-war logistics. Within hardly 40 years, starting up at the end of the 1960s, the intermodal stakeholders achieved to create a logistic business of its own right. Based on a series of technological innovations, numerous commercial and operational improvements and the continuous enlargement of the network of domestic and international services they won recognition of shippers, forwarding agents and shipping lines throughout Europe. With a volume of more than 125 million tonnes of high-value goods moved in 2005, the intermodal industry has become one of the prime suppliers of long-distance freight services for general cargo. Combined rail/road traffic is a prerequisite for maintaining an efficient and environmentally-friendly supply of the European economies.

The success story can go on. As the DIOMIS studies demonstrate the European intermodal industry provides for a growth potential allowing for more than doubling the total volume by the year 2015. In order to convey this vision of the evolution of the intermodal network to all stakeholders the UIC has set up the present AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE. It addresses the most vital issues both the suppliers and customers of intermodal services are faced with and also contributes to fulfilling the above vision by suggesting the implementation of appropriate means and actions. These recommendations are based on the knowledge acquired by a number of investigations carried out during the two-year DIOMIS project (cf Figure 1).

AGENDA 2015 is a strategic document, which shall support all actors involved in European combined transport in enhancing and promoting this industry. It particularly seeks to contribute to the following objectives:

- AGENDA 2015, by setting up a development scenario of the intermodal business in Europe, provides a comprehensive frame of reference as concerns the necessity, the extent and the efficiency of investments into this industry for:
  - Shippers, forwarders or shipping lines who investigate the feasibility or reinforcement of intermodal-based supply chain solutions;
  - Intermodal and wagon operators, railway undertakings and users who wish to procure for equipment such as wagons, locomotives or loading units.
- AGENDA 2015 has been conceived against the background of increasingly saturated infrastructure capacities. With an aim to ensure growth of combined transport services in such an environment it recommends employing infrastructure-efficient rail operation schemes and terminal management models.

- AGENDA 2015 clearly identifies the infrastructure enlargement investments - both projected and not yet planned - , which, in spite of the deployment of more efficient operational models, will be required to ensure that sufficient capacities will be available in due time and on corridors and at locations used by intermodal services. Thus it provides a frame of reference for infrastructure managers, terminal owners and authorities for decisions on investments and financing of infrastructure.
- AGENDA 2015 seeks to encourage all intermodal stakeholders to improve the co-ordination of actions and investments particularly on an international level, and, to this purpose, highlights what are the benefits of a co-ordinated and lasting co-operation for every party.

**The actions described in AGENDA 2015 are considered as prerequisites to achieve the above objectives and keep combined transport in Europe on the expected path of growth.**





# CURRENT STATE OF

## COMBINED TRANSPORT INDUSTRY IN EUROPE

### BUSINESS MODELS

The establishment of combined rail/road services as a transport industry in its own right, in Europe, is closely connected to the emergence of specialized service providers, i.e. combined transport operators, some 40 years ago. With the co-operation of railways they have been successful in bringing together two logistic “worlds”: the freight volume and logistic skills of shippers, forwarders and shipping lines, and the operational capabilities of railways.

While, in the early 1990s, this operator market hardly comprised of more than 20 independent companies the comprehensive market survey of the European intermodal industry carried out for the year 2005, identified 84 combined transport operators that provided unaccompanied services, and eight suppliers of accompanied intermodal services (rolling highway technology). This significant growth of the intermodal operator market, for one part, results from the enormous increase of the traffic volumes during the last decade, though the liberalization of the market access to intermodal and rail traction services was key to generating and facilitating this process.<sup>1)</sup>

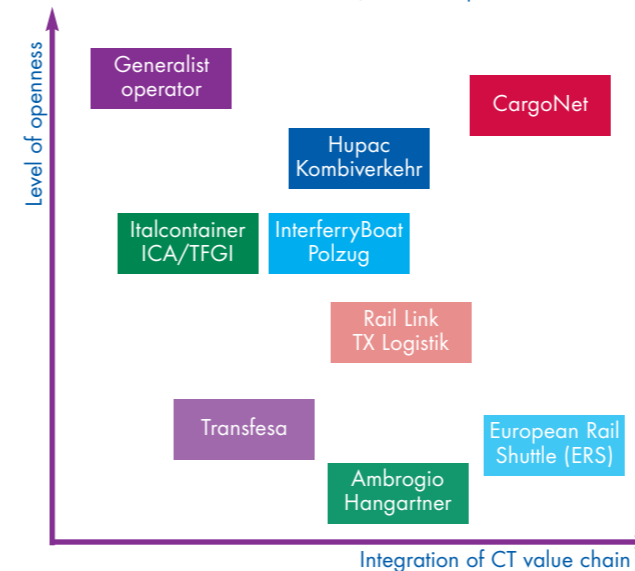
It also stimulated the **emergence of new operator business models** since the mid-1990s and a change of the market pattern concerning unaccompanied service providers. New business models play an increasingly important role. Currently the majority of combined traffic is carried by generalist operators primarily represented by the original UIRR intermodal companies and Intercontainer and its partners.

The generalist type of operator is characterized by a rather lean organizational structure, a small proportion of the intermodal value chain, and by operating a system of services, which - depending on the market positioning - are “open” for every customer or a defined clientele. The main features of the generalist business model are as follows (cf also Figure 2):

- They implement intermodal services on account of third parties and their cargo.
- They procure for train capacities and rail traction services from railway undertakings and (retail) sell train space to customers.
- They prefer purchasing most supply services such as rail/road transshipments or road trucking and not to invest heavily in assets except for specialized wagons.

<sup>1</sup> This chapter is based on “Report on Combined Transport in Europe 2005”, DIOMIS A11 report.

Figure 2  
Business models in combined rail/road transport



The new business models are distinctive since, compared to the generalist business model they either enlarge the intermodal value chain or reduce the level of openness or both. One group of operators has a background as railway. Rail traction providers such as CTL, PCC Rail or TX Logistik seek a horizontal extension of their scope of logistics in combined transport and offer rather “open” intermodal services. An exceptional case is CargoNet, the former Norwegian state freight railway that has focused its business almost entirely on intermodal services. CargoNet operates a completely open system of intermodal trains and, at the same time, can offer to customers a totally integrated door-to-door supply chain. The other group of newcomers accomplish a “downward” vertical integration of the intermodal supply chain. Forwarders or shipping lines whose core business is to organize door-to-door or port-to-port logistics such as

Ambrogio, CMA-CGM (Rail Link), DHL, Hangartner, Hellmann or Maersk (European Rail Shuttle), in the last decade have inaugurated intermodal services for own account. In the first place, the intermodal services were rather designed as “closed systems” for conveying shipments arising from within their own logistics. However, the companies quickly adopted the operator role by offering spare transport capacity to other users in order to improve the capacity employment rate, and, with the extension of the business, specifically plan intermodal services with regard to volumes of third parties. Some of these new operators even push the integration further ahead by providing rail traction or terminal handling services of their own. It seems as if the emergence of such types of business models induce more and more generalist operators to re-consider their approach especially with regard to improving their control on the intermodal supply chain and increase their content of the value chain. Thus it becomes more important to own or operate key terminals, gain experience in traction services, offer pick-up and delivery trucking, or develop additional customer groups.

Combined transport is an extraordinarily dynamic industry. Not only that within less than twenty years the number of intermodal operators has about quadrupled, services and business models were innovated to match changing logistic requirements of shippers, forwarders and shipping lines, which particularly were resulting from the deregulation of the European freight market during the last two decades.

The pioneers in combined transport, i.e. the generalist type of intermodal operators, have also taken on the challenges set off both by the changing logistic environment and the increasing competition within the intermodal industry. They examined their business approach and



overhauled the market appearance and business models where necessary. In particular they have been enlarging the network of services to an extent that practically any economic centre in Europe is now part of this growing logistics market.

This evolution of European combined transport is good news for customers: They now have a much greater range of choice of suppliers of intermodal services and of service portfolios.

### MARKET POSITIONING

Likewise other logistic service trades the combined transport operator industry in recent years has pushed forward the internationalization of services. In 2005, 50 operators out of a data pool of 70 firms (73 %) served cross-border intermodal lines. However, those 45 per cent of all operators that supply both domestic and international services achieved a more than proportionate market share of 68 % whereas operators focusing on one of these markets reach a considerably smaller average volume (cf Figure 3).

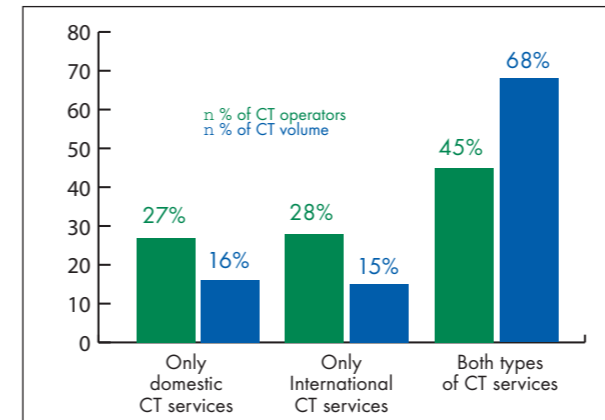
This result suggests that a business strategy, which is directed at creating a European network of services including effective Gateway connections with domestic lines, is capable of catching more volumes. It is also very attractive to big customers that are sourcing and/or distributing European-wide and expecting that their supplier of intermodal services operates on a comparative level.

### LEVEL OF COMPETITION

The growth of the number of intermodal operators over the past 15 years has fuelled the competition in this industry. This particularly applies to the major trans-European corridors while the degree of competition on domestic markets except for Germany, the United Kingdom and partly Italy, has not remarkably increased yet.

<sup>1</sup> Following conventions on statistical data collection tonnage includes both the weight of the goods carried and the tare weight of the intermodal loading units employed.

Figure 3: Scope of internationalization of combined transport operators



Even if customers can now choose between the unaccompanied combined transport services of various providers, generally speaking, the intermodal market is characterized by a rather high level of concentration (cf Figure 4):

- In 2005, three operators out of a data pool of 76 companies moved more than 750,000 TEU. Together they accounted for a market share of 24 per cent.
- Almost 50 per cent of all domestic and international shipments in Europe were carried by nine combined transport operators corresponding to 12 per cent of the total industry.
- An annual volume of 250,000 to 500,000 TEU has been achieved by almost 10 per cent of the operators, 100,000 to 250,000 TEU by 20 per cent.
- A majority of 60 per cent of all intermodal companies currently are small-scale operators. Achieving a turnover of less than 100,000 TEU annually or 400 TEU daily they accounted for 13 per cent of the total unaccompanied volume in 2005.

### COMBINED TRANSPORT VOLUMES

In 2005, intermodal operators shipped more than 125 million gross tonnes<sup>1</sup> of goods or 12.7 million TEU (Twenty Foot Equivalent Unit) on unaccompanied rail/road services in Europe. Approximately 54 million tonnes (5.38 million TEU) were recorded on international services but almost 72 million tonnes (7.29 million TEU) on domestic trains (cf Figure 5).

Figure 4: Degree of concentration of combined transport operator market

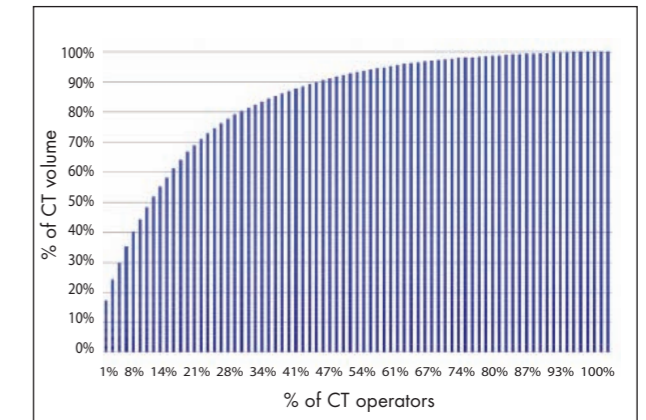


Figure 5: Unaccompanied combined rail/road transport in Europe: TEU moved per market segment: 2005

Combined transport market segment	Continental volume	Container hinterland volume	Total volume
Domestic services	2.10	5.19	7.29
International services	3.46	1.92	5.38
Total services	5.56	7.11	12.67

Against the background of the increasing globalization of trade and logistics it may surprise that domestic combined transport services achieved a 57.5 per cent market share (cf Figure 6). However, we should take into account that, in European countries with a large territory such as France, Germany, Italy or Sweden, the national long-distance goods transport, which is the basis for intermodal services, continues to exceed international haulages considerably. Thus operators in these countries find a substantial market potential, which can be captured with competitive services.

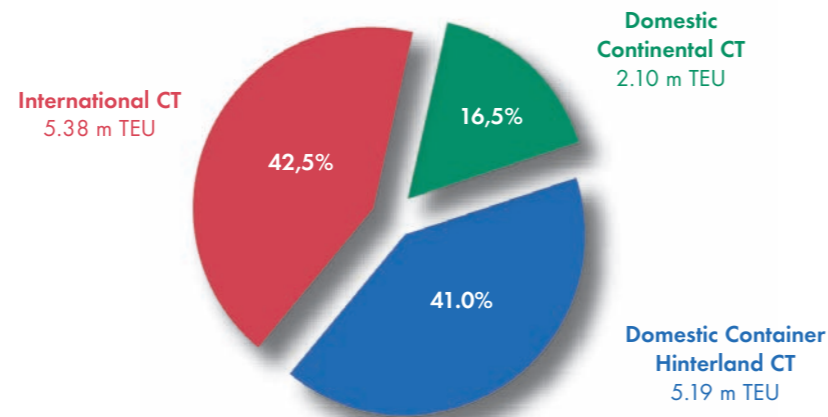
What, however, is crucial for the prevalence of domestic combined transport is the enormous amount of maritime containers carried on hinterland services between sea ports and inland terminals. They account for 71 per cent of the total volume of domestic intermodal shipments (7.3 million TEU). Since maritime containers are employed for trading goods between countries, in fact, the proportion of international combined transport is much higher than the statistically registered 42.5 per cent. It accounted for more than 10.5 million TEU (83.5%) while just the 2.1 million TEU of continental traffic,



that is the carriage of European-sourced cargo between „dry“ inland terminals mainly in domestic freight containers, swap bodies and liftable semi-trailers, can be designated as “real” domestic shipments (cf Figure 6).

On international combined transport services the ratio of continental shipments and maritime containers is almost the opposite of domestic services (cf Figure 7). The analysis proves that continental cargo accounts for 64 per cent (3.5 million TEU) of the total volume of 5.4 million TEU while the maritime market just reaches about half of this volume. This result also indicates that, in many countries, shippers and consignees of intercontinental containers prefer to route them via “their” national ports.

Figure 6  
Unaccompanied combined rail/road transport in Europe by domestic and international services: TEU moved 2005



Thanks to its strong position on national intermodal markets container hinterland combined transport also has the edge to continental traffic as concerns the total goods shipped on unaccompanied services in Europe (cf Figure 8). While during the last decade the continental market has considerably caught up with the hinterland traffic particularly owing to the enormous expansion of international services and volume of shipments, for the time being, this “race” has come to a draw following the recent boom of global container traffic.

Figure 7  
International unaccompanied combined rail/road transport in Europe by market segments: TEU moved 2005

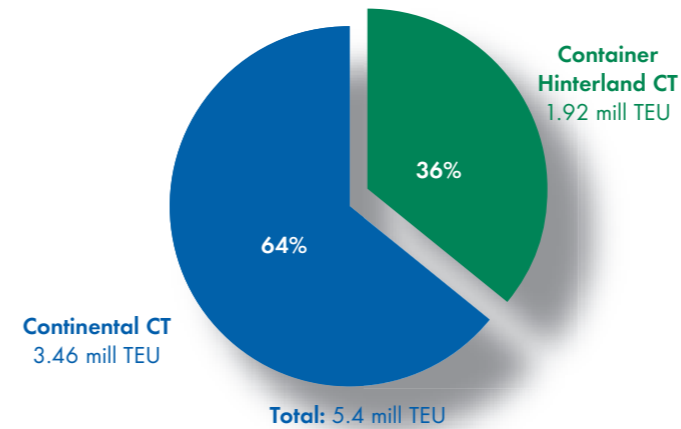
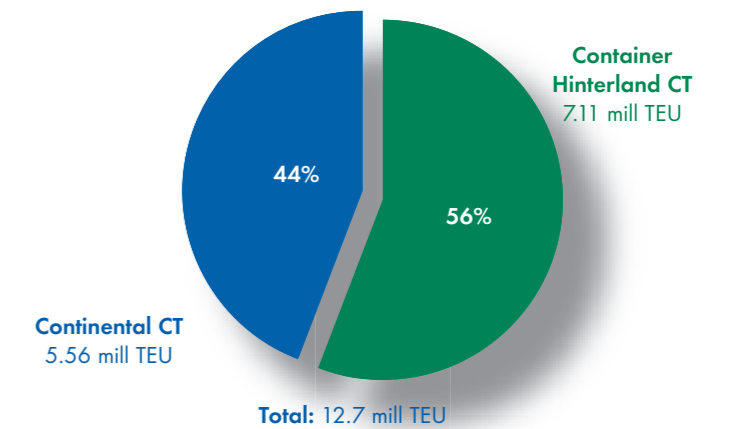


Figure 8  
Total unaccompanied combined rail/road transport in Europe by market segments: TEU moved 2005

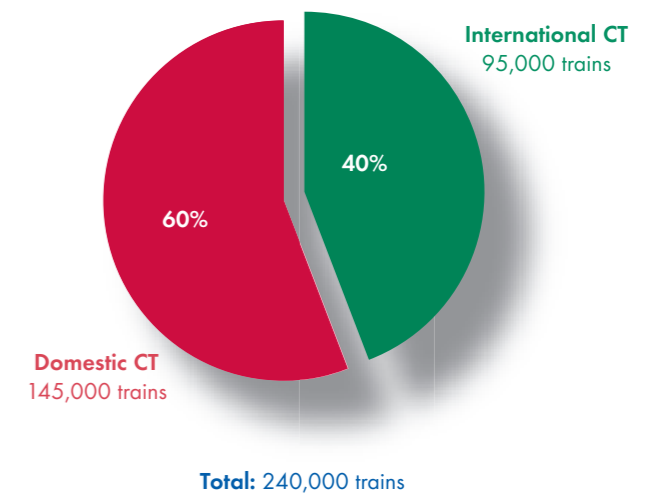


### INTERMODAL TRAINS

The overwhelming amount of intermodal shipments are now being conveyed on dedicated rail services. The percentage of intermodal units moved in conventional trains has been decreasing for years since both the operators and railways were keen to raise the efficiency and performance of combined rail/road transport services in order to match customer requirements.

According to available records, we estimated the total number of dedicated intermodal trains to almost 240,000 in 2005, of which 60 per cent were operated on domestic services (cf Figure 9). This means that on average every working day more than 1,000 long-distance trains run through Europe only moving intermodal shipments. Considering the total annual intermodal volume of 12.7 million TEU in Europe every train would have been loaded with a mean factor of 53 TEU. However, we assume that about 5 to 10 per cent of the intermodal shipments recorded had been carried on conventional trains. Thus the average load factor of the dedicated intermodal trains reached about 48 to 50 TEU.

Figure 9  
Total unaccompanied combined transport in Europe by market segments: dedicated trains operated 2005





There is a need to expand and enhance combined transport services in Europe in the next years in order to cope with the expected increase of foreign trade and the growth of global supply chains. The intermodal industry in Europe - in particular combined transport operators, railway undertakings, wagon and terminal managers - have already taken numerous actions to gear the productivity and performance of services to customer requirements, increase the network and capture new markets. Many innovations concerning rail production, process organization, technology, and capacity management are yet on the agenda. The key industry-inherent drivers as well as those external influences, which are expected to have the strongest impact on the evolution of the intermodal industry in Europe by 2015, are briefly characterized in Figure 10.<sup>1)</sup>

The direction and extent of impact of the internal drivers on the expansion of the intermodal market and the competitiveness of services as concerns performance and efficiency (cost, productivity) are presented in Figure 11.

Against this background the growth perspectives of unaccompanied combined rail/road transportation for the horizon 2015 and beyond, generally speaking, are excellent.

<sup>1)</sup> Drivers are extensively described in "Trends in domestic Combined Transport", DIOMIS A1 report.

Figure 10  
Key intermodal industry-inherent and external drivers on evolution of unaccompanied combined rail/road transport by 2015

	KEY DRIVER	DESCRIPTION
CT industry inherent drivers	Integrated shuttle service network	Establishment of full-blown backbone network of international inter-related shuttle and direct CT services between economic centres and ports with effective connections to small - and medium - sized areas via hub/gateway systems.
	Hub systems in continental CT	Implementation of CT services especially for less-than-trainload routes: trains loaded with shipments for various destinations meet at dedicated hub terminal where units are transhipped to create single-destination trains.
	Dry Port in container hinterland CT	Establishment of hinterland hub terminals (dry ports) for relieving congested sea ports and as turntable for creating efficient CT services for medium-sized areas.
	High-quality CT services	Establishment of dedicated CT services for superior goods market such as parcel services, groupage or refrigerated cargo.
	Consistent price policy	Transparent price system of CT services; stable freight rates allowing customers to plan logistics and investments.
	Capacity management systems (CMS)	Smart IT-based reservation and revenue management system including booking, priority features and through-booking of gateway shipments enabling to optimize the capacity load factor of CT service network.
	Quality management systems (QMS)	Comprehensive and co-ordination application of quality assurance & monitoring measures based on operational quality objectives and a system of measuring quality objectively (performance indicators).
	Interoperable crossborder services	All measures designed to avoid or reduce border stops such as multi-system locos, standardized operational rules, documents and processes, or mutual recognition of rules.
	Terminal "last mile" logistics	Improved co-ordination of actors and interfaces of "last rail mile" between end of long-distance rail journey and CT terminal.
External influences	Competition on rail traction & CT service	On an increasing number of European corridors CT operators can choose from various railway undertakings (rail traction) and customers from several operators.
	Global trade growth	Continual high growth rates of transcontinental trade and container volumes.
	EU Single Market	Enlargement of European Union and the increasing elimination of trade barriers, customs and border controls effectuates more than proportionate increase of international good transport and facilitates freight services.
	Truck driver working time/black box	Recently introduced regulation on weekly and monthly truck driver working times limits the "net" driving times and, in conjunction with electronic monitoring (digital tachograph/black box) leads to increased personnel cost in road transport.
	44 tones regulation	Allowance for 44 tonnes max gross weight for road vehicles for pick-up and delivery services in CT (in countries with 40 tonnes limit).

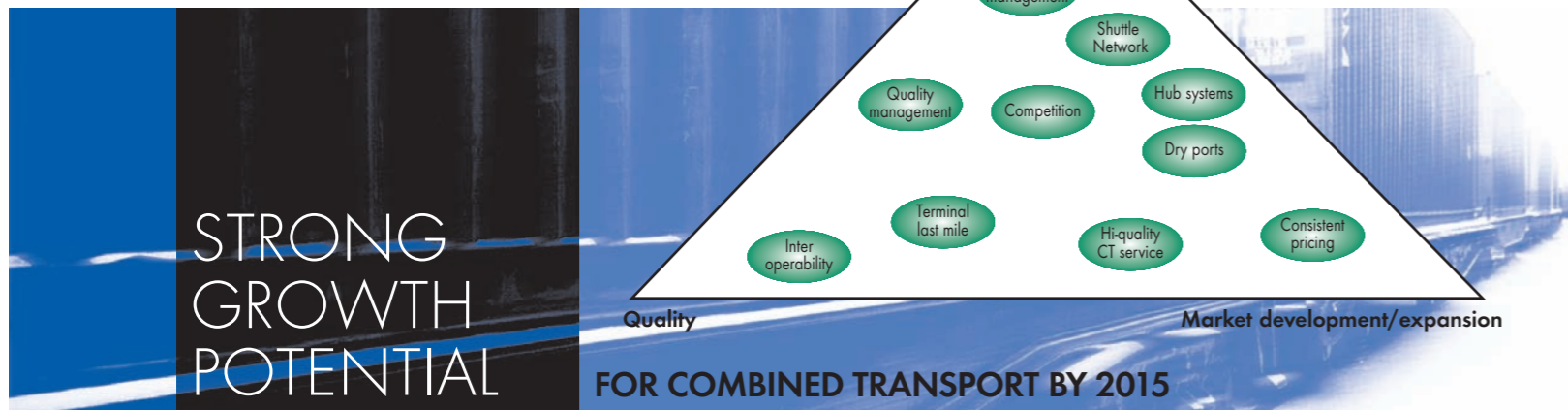


Figure 11  
Impact of key internal drivers on evolution of unaccompanied combined rail/road transport by 2015

**STRONG GROWTH POTENTIAL**

**FOR COMBINED TRANSPORT BY 2015**

Against this background total unaccompanied combined rail/road traffic in Europe is forecast to increase to 268 million gross tonnes by 2015 up 114 per cent from the 2005 volume of approximately 126 million tonnes.<sup>1)</sup> This would mean a mean annual growth rate of 7.9 per cent in this period. Each of the intermodal market segments is expected to contributing to this remarkable improvement:

1. By 2015 the entire volume of domestic intermodal shipments will more than double to about 145 million tonnes (cf Figure 12). The growth will be prompted by the carriage of maritime containers assuming that the boom of global container traffic will persist and call for efficient hinterland services of European sea ports. This market segment can achieve an average annual growth rate of more than 8 per cent. Domestic continental services also have good prospects in the next years particularly if they are smartly linked with an effective international network. Growth is likely to vary considerably by country but, if the opportunities existing particularly in the larger countries were taken, an overall annual increase of 6 per cent would be within reach.

2. Like in previous years the growth of international combined transport across Europe by 2015 will be fuelled by continental services. The largest absolute increase is expected to be gained from existing "mature" north-south and north-southwest intermodal corridors though the relative growth rates are forecast to be higher on routes with the new EU Member States in Central and Eastern Europe and with countries in southeast Europe (cf also Figure 14). The total volume is estimated to rise from 54 million tonnes (2005) to 123 million tonnes (2015). As a result, in this ten-year period, the mean annual growth rate of 8.7 per cent would even exceed the value of 8.2 per cent in the previous 17 years since 1988, for which year international combined transport was recorded last time before DIOMIS (cf Figure 13).

According to the DIOMIS analysis the intermodal actors are set to seize these opportunities and establish a true European network of combined transport services (cf Figures 14-15). The backbone will be those corridors, which, in the first place, have a key supply function both for domestic and cross-border carriages

<sup>1)</sup> Cf "Trends in domestic Combined Transport", DIOMIS A1 report.

Figure 12  
Unaccompanied domestic combined transport in Europe: goods moved 2005/2015

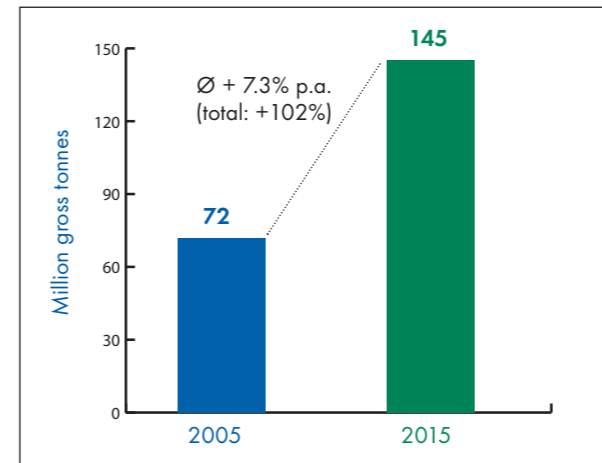
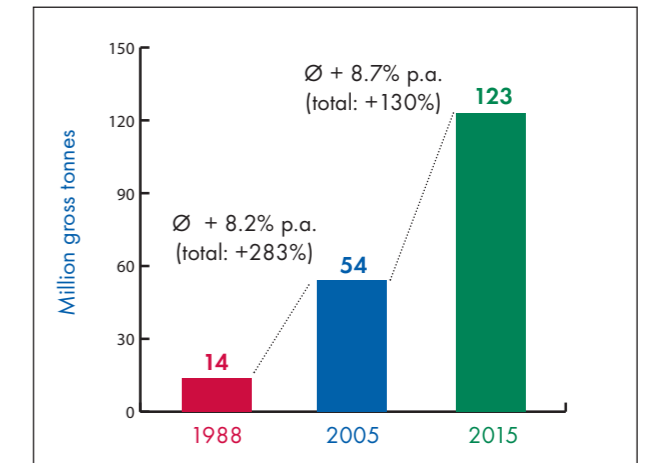


Figure 13  
Unaccompanied international combined transport in Europe: goods moved 1988/2005/201



of goods connecting the major European economic areas, sea ports and other logistic nodes. In addition, they have integration and "incubator" functions.

Since they provide for a regularly high and bundled amount of shipments they facilitate the integration of less-dense regions with small- or medium-sized economic activities into the intermodal network and, in a dynamic view, enabling them to become part of the backbone network - provided that the trade lanes will be generating a sufficient amount of cargo.

It goes without saying that this pattern of European intermodal traffic is reflected in the structure of the terminals that represent both the nodes of this network and the interface between road and rail. In 2005, less than 40 transport areas - a transport area is a region defined by economic-geographic terms, which can comprise one or more individual terminal sites - accounted for more than 80 per cent of the total international volume of transshipments at intermodal terminals in Europe.

Since, in the period to 2015, the bulk of intermodal growth will be generated on the backbone corridors the ranking among the top transport areas is expected to remain rather stable (cf Figure 15).

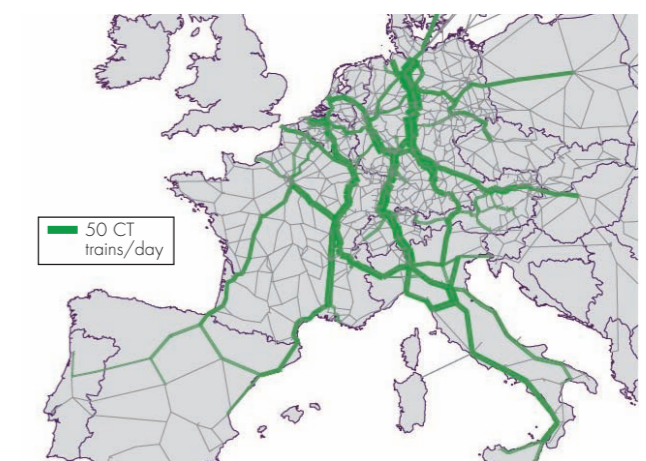


Figure 14  
Combined transport trains on the European rail network: 2015

Figure 15:  
Key inland and port-related transport areas of international unaccompanied combined rail/road transport in Europe by 2015





REQUIRED MEASURES

TO REALISE FULL GROWTH POTENTIAL OF COMBINED TRANSPORT

**FIELDS OF ACTION**

The opportunities for a further, strong and sustainable growth of unaccompanied combined transport by 2015 and beyond are there. The economic and legal framework is expected to develop favourably. Also more and more shippers are set to shift freight off the road to ensure sustainable supply chains for distributing and/or procuring goods resulting in clear requirements for the key actors of intermodal services - operators, railway undertakings and terminal managers. They are called on to maintaining their policy in enhancing the quality and efficiency of the existing supply, and reinforcing efforts to design intelligent solutions for customers and innovative production systems.

What, however, poses an extraordinary challenge is how the combined transport actors can achieve to expand services and volumes of shipments in the face of an increasingly congested rail and terminal infrastructure in Europe. Based on the knowledge acquired by the DIOMIS studies AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE highlights three main fields of action (cf Figure 16).

For every field of action, AGENDA 2015 proposes a set of measures, directed to the intermodal stakeholders, which are suitable for enhancing productivity, performance and competitiveness of intermodal services on the entire network. However, they particularly are required and effective on the corridors constituting the intermodal backbone network.

These findings are consistent with the UIC "European Rail Infrastructure Masterplan (ERIM)". The combined transport backbone network of the Agenda 2015 is also congruent with the core grids for international rail freight services identified by both the European Commission in its Communication "Towards a rail network giving priority to freight" and the CER position paper "Towards a primary European rail freight network (PERFN)". The DIOMIS reports emphasize the specific concerns of combined transport services in considerably more detail and include an abundance of effective, low-cost solutions, which would enable to grow intermodal freight volumes in the face of congested infrastructure.

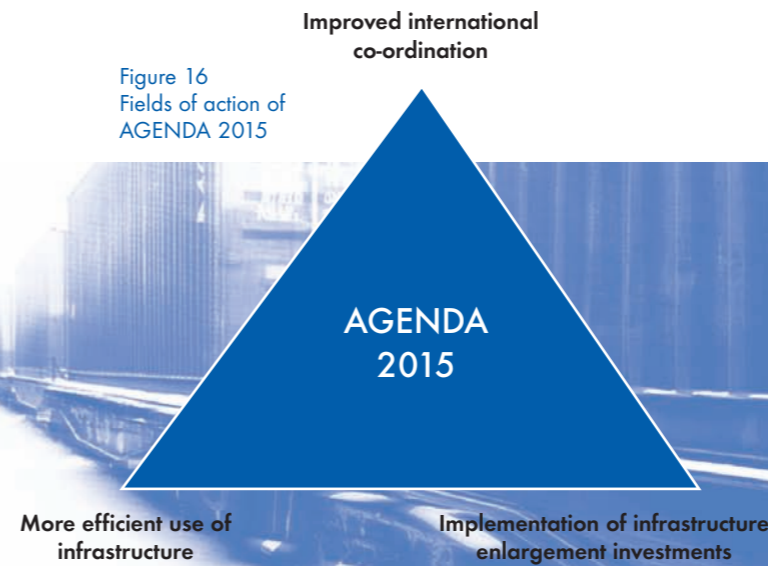


Figure 16  
Fields of action of  
AGENDA 2015

Taking this work as a background AGENDA 2015 particularly highlights the distinctive capabilities of the intermodal industry to contribute towards alleviating the bottlenecks identified. It also shows how a reinforced international co-operation and the synchronization of national efforts, particularly as concerns the development of rail and terminal infrastructure, would substantially foster progress for rail freight services.

**MORE EFFICIENT USE OF INFRASTRUCTURE**

AGENDA 2015 encourages intermodal actors committing themselves to implement any feasible measure, which contributes towards employing existing rail network and terminal infrastructures more efficiently. This is not only because of budget constraints with regard to investing in new infrastructure but also for social reasons to use resources responsibly. Therefore this field of action is of paramount importance for the evolution of combined transport in Europe.

The DIOMIS studies identified numerous actions, which are suitable for operating more freight trains on a given rail network or increasing the operational transshipment capacity of intermodal terminals. Most of these measures are being applied at various places and have proved their effectiveness and positive impact on infrastructure in practice. AGENDA 2015 encourages all intermodal stakeholders to spreading the employment of these actions, especially to corridors and areas suffering from constrained capacities.

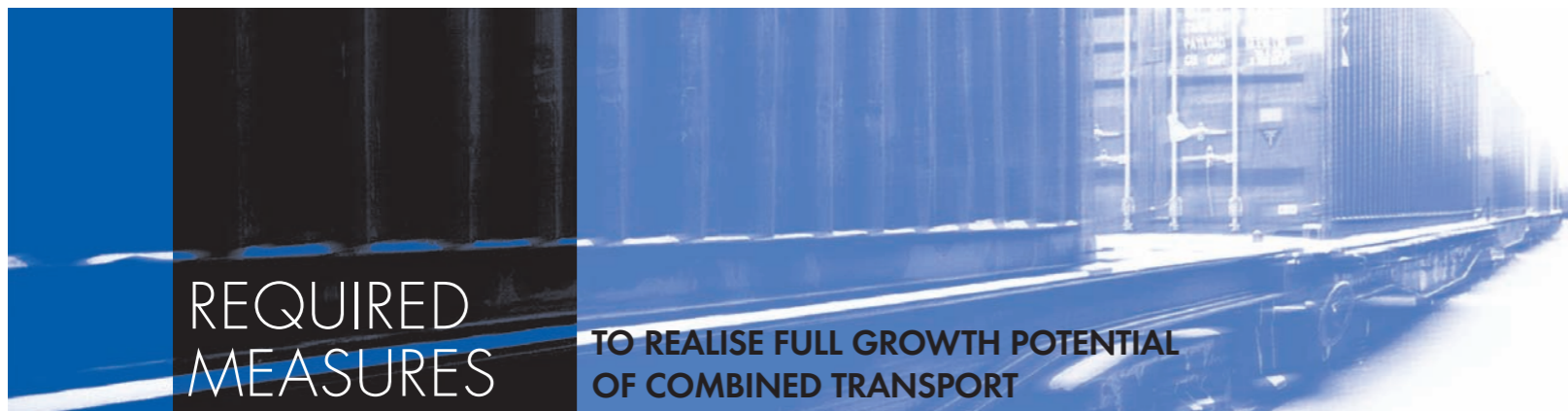
Figure 17  
Impact of actions on the efficiency of employing rail network and terminal infrastructure

ACTION	IMPACT*		
	LOW	MEDIUM	HIGH
Comprehensive employment of train path-saving rail production systems	Light Green	Medium Green	Dark Green
Incentives in infrastructure access tariffs to induce resource-saving production systems	Light Green	Medium Green	None
Improvement of the performance of services	Light Green	Medium Green	Dark Green
Enhanced process organization of rail traction services	Light Green	Medium Green	Dark Green
Implementation of advanced train and network capacity management systems	Light Green	Medium Green	None
Enforcement of longer and/or heavier trains including minor infrastructure adaptations	Light Green	Medium Green	None
Increased wagon axle loads	Light Green	Medium Green	None
Application of good practices in terminal operations	Light Green	Medium Green	None

\*on efficiency of infrastructure use

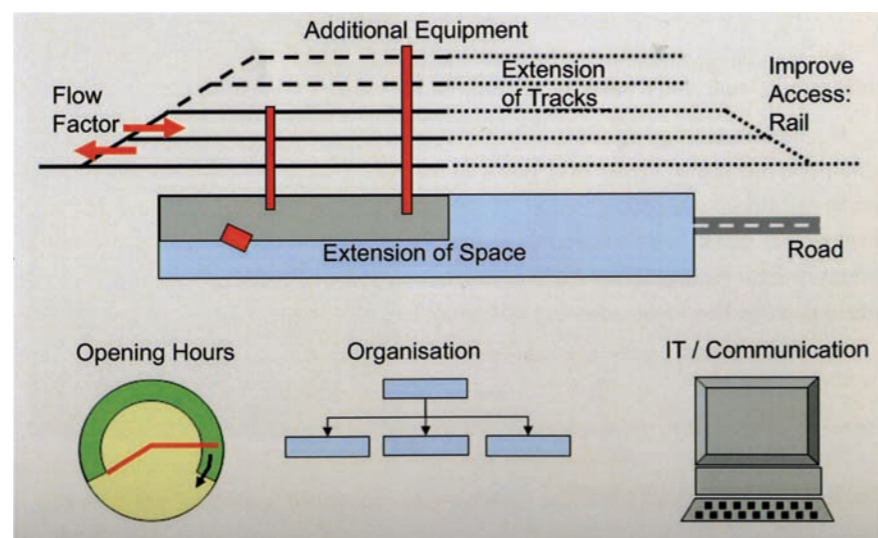
The actions have been clustered in eight categories and assessed with respect to their overall impact on increasing the market-effective train path capacity of the rail network and/or the transshipment capacity of combined transport terminals in Europe (cf Figure 17):

- (1) Employment of infrastructure-efficient, train path-saving rail production systems
- (2) Application of incentives in infrastructure access charging systems to induce resource-saving production schemes
- (3) Significant improvement of the rate of punctuality of rail traction services:
- (4) Enhanced process organization of rail traction services
- (5) Implementation of advanced train and network capacity management systems



- (6) Implementation of longer and/or heavier trains including minor infrastructure adaptations
- (7) Increased wagon axle loads where existing rail infrastructure allows
- (8) Application of good practices in terminal operation and management

Handling capacity enlargement of CT terminals by «hard» and «soft» measures



**1. Employment of infrastructure-efficient, train path-saving rail production systems**  
 The most efficient rail production systems in combined transport are shuttle, direct and gateway services as concerns the use of rail infrastructure and in the economic perspective of intermodal operators (cf Figure 18).<sup>1)</sup> The idea is to establish a European-wide backbone network of international shuttle & direct services between the key economic centres and ports, on the basis of the existing core network, and integrate small- and medium-sized transport areas mainly by efficient gateway/hub services.

<sup>1</sup> cf "International Combined Transport production systems, long and heavy trains", DIOMIS A7 report

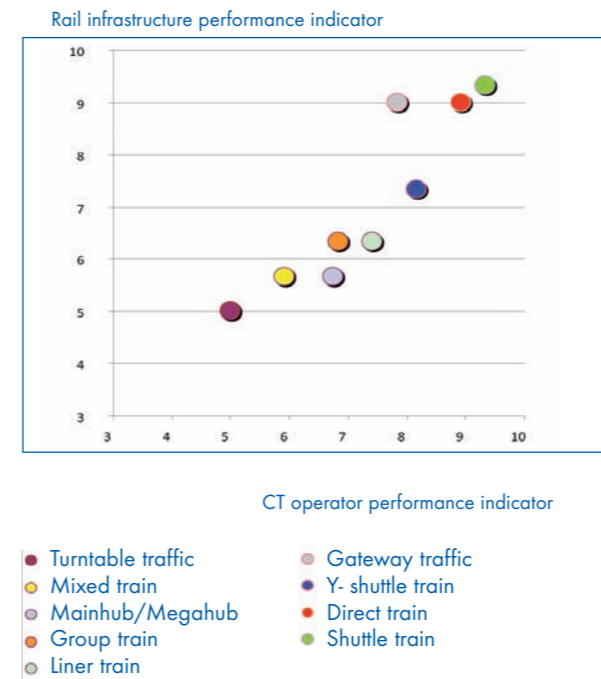
<sup>2</sup> ibid.

<sup>3</sup> cf "Trends in domestic Combined Transport", DIOMIS A1 report

<sup>4</sup> cf "Improving the use of available train length", DIOMIS A5 report

<sup>5</sup> cf "International Combined Transport production systems, long and heavy trains", DIOMIS A7 report

Figure 18  
 Efficiency of intermodal production systems



**3. Significant improvement of the rate of punctuality and consistency of rail traction services**

Trains running out-of-schedule consume a more than proportionate amount of scarce train path capacity. The more punctual trains are operated the less train paths are required to produce a service and convey a certain amount of freight. Therefore, in a medium to long-term perspective, all intermodal actors in particular the rail traction service providers should be committed to match the quality target of a rate of 97% commercial punctuality of block trains with 60 minutes tolerance, which has been stipulated by CER in the PERFN position paper.

**4. Enhanced process organization of rail traction services**

Railway undertakings in co-operation with intermodal operators and infrastructure managers could seize a wide range of measures, which would contribute to employing rail network infrastructure more efficiently and often also enable raising the performance and productivity of rail traction services. The most effective actions are as follows:<sup>3)</sup>

- change of locomotive and/or loco-driver at places or nodes, which minimize the loss or consumption of train paths;
- expansion of interoperable cross-border traction services
- improved co-operation between actors

**5. Implementation of advanced train and network capacity management systems**

The application of IT-based reservation and revenue management systems should enable raising the capacity load factor of every single intermodal train and the entire network of services of every operator in question.<sup>4)</sup>

This system features:

- an industrialized production of daily multi-frequency direct/shuttle services
- expansion of gateway terminals and services
- high level of interconnectivity between direct/shuttle services at the the gateway terminals hubs
- standardized wagon technology if permitted by goods structure

**2. Application of incentives in infrastructure access charging systems to induce resource-saving production schemes**

The utilisation of infrastructure-efficient rail production systems could be promoted and accelerated if the increased economic risk of direct and shuttle services borne by intermodal operators and/or railway undertakings were at least partly compensated by reduced infrastructure access fees. In order to raise the compliance a win-win-situation between infrastructure managers and intermodal operators and railway undertakings should be ensured. Such a scheme could also be applied for the use of terminal infrastructure by involving terminal operators and ensure a win-win-situation between intermodal operators, railway undertakings and infrastructure managers as well as terminal operators. <sup>2)</sup>



## REQUIRED MEASURES

### TO REALISE FULL GROWTH POTENTIAL OF COMBINED TRANSPORT

Such systems, which may also contribute towards improving the collaboration between the CT stakeholders aiming at sharing of capacity employment risks, would feature the following functionalities:

- booking including priority features
- through-booking of gateway shipments
- optimization of train set by deploying types of wagons that are most suitable for the pattern of goods and loading units appearing on underlying intermodal service

An increased capacity load factor massively contributes to saving train path capacity and permitting to implement more intermodal services. The DIOMIS investigations prove that increasing the average capacity load factor of trains, for example, from 80% to 90%, saves about 15% of train paths. This would allow to operating about 17,000 trains more in 2015, accounting for a volume of some 12 million tonnes of goods (cf Figure 19).

#### 6. Implementation of longer and/or heavier trains including minor infrastructure adaptations

DIOMIS studies assumed that, by 2015, intermodal freight trains will have a standard length of 750 meters on most of the European rail network. A detailed analysis proved that, if even longer trains of up to 1,500 meters – sometimes in conjunction with an increased tonnage – could be employed, based on the expected 2015 traffic volume, 23 per cent fewer train paths would be required on some international corridors. These savings could also be used for implementing further intermodal services and reinforcing the growth of this industry.<sup>3)</sup>

While slight improvements of the permissible train length and weight might be enforced without any additional investment infrastructure on some corridors, the doubling of the train length to 1,500 meters would require significant infrastructure actions such as the extension of overtaking tracks and enhancement of the signalling systems.

<sup>1</sup> cf “Assessing new technologies in the wagon field”, DIOMIS A10 report

<sup>2</sup> cf “Best practices for the management of Combined Transport terminals”, DIOMIS A4 report

<sup>3</sup> cf “Trends in domestic Combined Transport”, DIOMIS A1 report; “Study on Infrastructure Capacity Reserves for Combined Transport by 2015”

Figure 19  
Impact of train capacity load factor on train path capacity need: international intermodal trains 2015

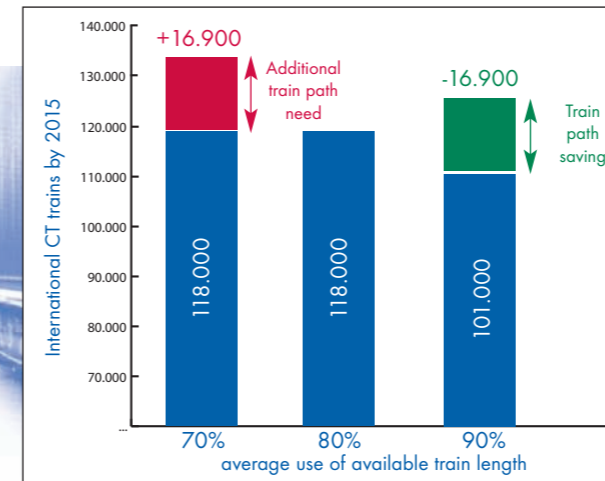


Figure 20  
Impact of good practices in terminal operation and management on the transshipment capacity

#### 7. Increased wagon axle loads

According to European experts on wagon technology a further significant reduction of the tare weight of intermodal wagons compared to the latest available wagon designs cannot be expected. For those combined transport services designed for carrying a large amount of heavy goods, they suggest to improving the payload-tare weight ratio by increasing the maximum axle weight from 22.5 to 25 tonnes. All recently manufactured intermodal wagons are basically designed to be upgraded, and also the rail infrastructure on some corridors is suitable to accommodate for increased axle loads. As a result, more goods could be moved by intermodal trains on the existing infrastructure.<sup>1)</sup>

#### 8. Application of good practices in terminal operation and management

In the framework of the DIOMIS project a working group of European intermodal terminal managers has identified ten key actions which considerably enhance the terminal process organization and operation, and assessed their capacity enlargement impact.<sup>2)</sup> Figure 20 illustrates the potential efficiency increase of each of these actions though it should be emphasized that the effects of the individual practices cannot necessarily be added up. It also became obvious that many of these good practices applied by the management of some terminals could easily be transferred to others. So it is suggested to reinforce the exchange of knowledge amongst all parties by appropriate means such as “common learning groups”.

ACTION	CAPACITY ENLARGEMENT IMPACT (%)				
	10	20	30	40	50
Increased folw factor (use of tracks for > 1 service)	██████████				
Management of “last mile” (section between terminal and network) by terminal operator	██████				
Supply of road trucking services by terminal	████				
Extended terminal opening hours	██████				
Bonus-malus incentives on use of infrastructure	████				
IT-supported capacity management system	██████████				
Automated loading unit/wagon identification	████				
Separation of road- and rail-side handlings	██████████				
Prenotification-based task management	████				
Punctual rail services in arrival	██████████				





## REQUIRED MEASURES

### TO REALISE FULL GROWTH POTENTIAL OF COMBINED TRANSPORT

#### MORE INFRASTRUCTURE INVESTMENTS AND INTERNATIONAL CO-ORDINATION

The DIOMIS project has produced clear evidence that even if those actions, which are aimed at obtaining more transport and handling capacity from existing infrastructure resources, were implemented they would by no means be sufficient to absorb the expected growth of combined transport volumes - and other freight as well as passenger traffic - by 2015 and beyond. In order to ensure this objective the AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE suggests a comprehensive infrastructure programme comprising a set of clearly defined enlargement investment measures and calls on the political and administrative stakeholders to improve the international co-ordination as follows:

##### 1. Implementation of ongoing and envisaged rail network investments

Unaccompanied intermodal services primarily are targeting at higher-value freight markets with demanding logistic service profiles, which are dominated by road transport. In order to be competitive with truck and match the customers' quality requirements such as transit time and reliability combined rail/road transport services particularly need to be performed on the main, highly efficient rail lines in Europe (cf also Figure 14). Since this core network by now is considerably congested it is of paramount importance that all ongoing and envisaged enlargement investments are realized on time.<sup>3)</sup>

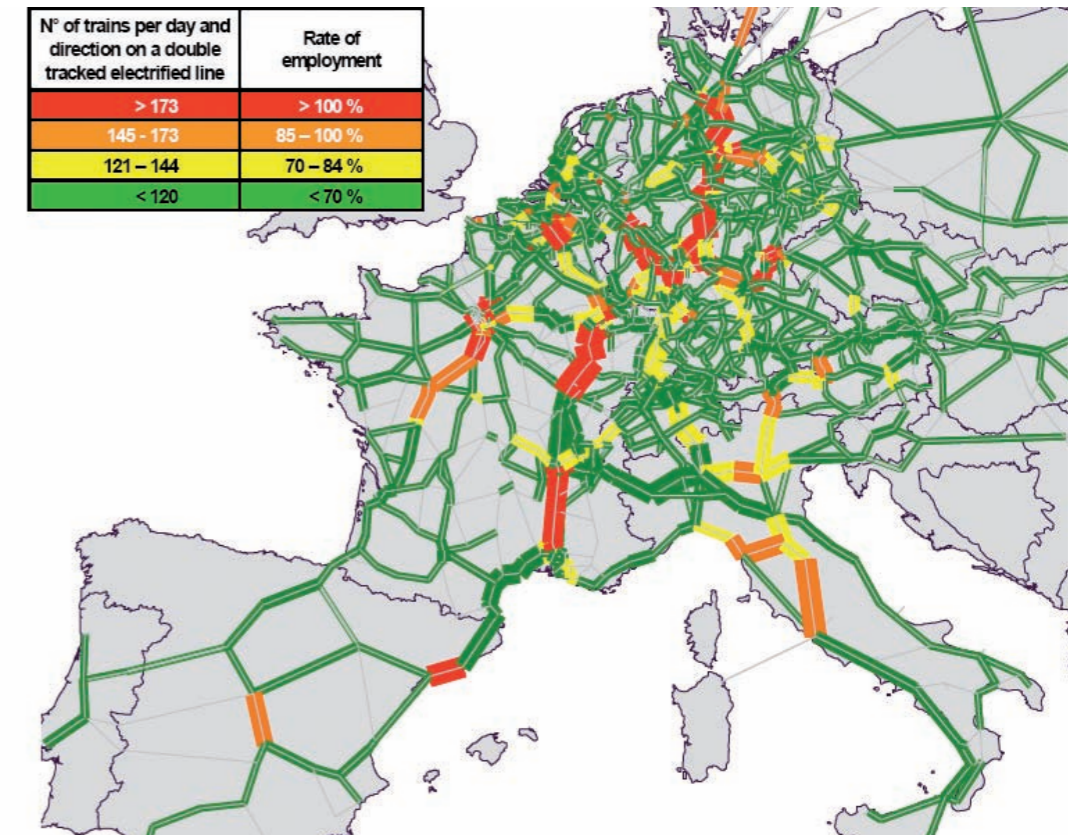
##### 2. Conclusion of an international agreement on "Achilles' heels" removal programme

Even if all planned enlargement investments into the rail infrastructure were implemented by 2015, according to the DIOMIS investigations, severe capacity bottlenecks would remain. Since most of them concern key sections of the European rail network they would truly become "Achilles' heels" for combined transport and rail traffic in general. This would have serious consequences, since all flows crossing these sections would be affected by the capacity deficit. Consequently, a bottleneck for example in the area of Basel could then affect various trans-European flows between Northern Europe and Italy, the Benelux and Italy and others.

It is obvious that a solution is not in the hands of an individual country. A co-ordinated international approach joining all forces is required to pave the way for the expected growth of combined rail/road freight services. AGENDA 2015 proposes that, under the guidance of the European

Commission, the EU Member States and Switzerland - as an involved country - should conclude an international agreement on removing the major bottlenecks on the international backbone network (cf Figure 21).

**Figure 21**  
Important corridors of combined transport requiring for additional enlargement investments beyond ongoing and planned projects: 2015





# REQUIRED MEASURES

## TO REALISE FULL GROWTH POTENTIAL OF COMBINED TRANSPORT

It should preferably include the following components:

- Identification of those infrastructure investment measures with strongest effects in terms of the capacity increase - cost-ratio and date of realization, based on the findings of the DIOMIS studies
- Scheduling of measures
- Financing of measures by additional national and TEN funds.

If such a comprehensive programme can't be achieved at all or not timely, as alternative, AGENDA 2015 recommends to investigate bi- or multilateral investment programmes involving the countries along individual freight corridors.

### 3. Realization of ongoing and envisaged terminal investments and implementation of an intermodal hub programme

The DIOMIS studies have shown that almost in all European economic centres that play an important role for domestic and/or international combined transport services by 2015, the development of further terminal capacity is envisaged for the next years. The evolution of intermodal volumes, however, is expected to be even more dynamic so that enlargements investments in addition to the ongoing and envisaged projects will be required for most of the transport areas.<sup>1)</sup>

Moreover AGENDA 2015 calls on the stakeholders to consider an international programme for establishing a system of intermodal hub terminals. They are required as turntables ("dry ports") for container hinterland traffic in countries such as Belgium, the Netherlands, Germany and Italy, and for integrating small- and medium-sized transport areas into continental and maritime combined transport. Owing to the key role of such intermodal hub terminals for European freight traffic it should be considered whether 50 per cent of the investment costs could be financed by TEN funds.

### 4. Implementation of a standardized process for ensuring the international co-ordination of combined transport terminal development

DIOMIS studies demonstrated that a lack of international co-ordination in terminal development plans produces temporary or even enduring capacity constraints, which increasingly impede the extension of combined transport services and volumes.

In addition these shortcomings negatively impact on revenues of CT stakeholders and cause external costs for society. Taken altogether the opportunity costs incurred by CT stakeholders and society for every service not launched on time because of lacking coordination in terminal development would amount to approx. Euro 3.4 to 4.7 m annually. AGENDA 2015 suggests establishing a standardized process for ensuring international co-ordination of combined transport terminal development based on a two-tier set of terminal committees and a corresponding feedback mechanism which would work as follows (cf also Figure 22):<sup>2)</sup>

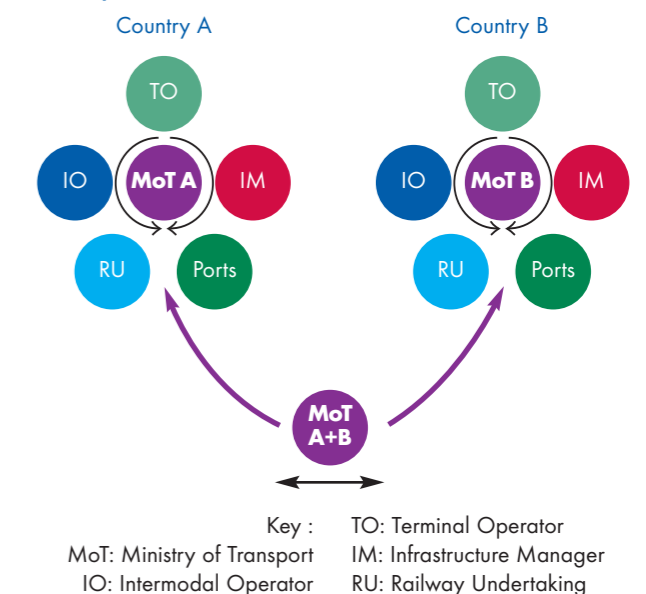
- In a first step, on a domestic level, terminal committees consisting of national intermodal stakeholders under the chairmanship of the national Ministry for Transport, would analyze the state-of-affairs concerning terminal capacity employment and investment plans, and assess the expected terminal capacity needs in the own country and formulate the capacity requirements in other countries.
- In a second step, national ministries on a bi- or multilateral level would exchange both their domestic terminal development plans and the requests on terminal capacity in the corresponding countries trying to find joint agreements on co-ordinated expansion programmes.
- The results - solutions as well as conflicts - would then be fed back into the national terminal committees.

### 5. Reinforcing the exchange of knowledge on best practices in terminal management

DIOMIS best practice evaluations proved that practically all measures and instruments suitable for using terminal capacities more efficiently are known or already applied by someone.

Yet they are mostly seen as "stand-alone" solutions geared to the specific situation of one terminal operator. Therefore it seems to be of utmost importance that the stakeholders disseminate their solutions and results, thus encouraging a common learning process and, finally, come to a coordinated process to make combined transport more efficient to the benefit of all.

**Figure 22**  
International co-ordination of combined transport terminal development



<sup>1</sup> cf "Trends in domestic Combined Transport", DIOMIS A1 report; "Study on Infrastructure Capacity Reserves for Combined Transport by 2015"  
<sup>2</sup> cf "International co-ordination of Combined Transport terminal development", DIOMIS A8 report;



Combined rail/road transport in Europe has a 40 years record of growth. AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE shows that the intermodal industry can more than double the total volume of shipments by 2015 thus achieving a significantly higher increase than road or conventional rail freight transportation. AGENDA 2015 also highlights the strategies, measures and tools how this success can be ensured and the way for a continuously stable growth beyond 2015 paved. Apart from implementing the actions it is paramount that all combined transport stakeholders – railway undertakings, intermodal operators, infrastructure managers, terminal and wagon managers, the national and European Union authorities, and the railway industry - become aware of the following prerequisites:

- Most of the actions proposed require for involving various groups of stakeholders. The more the stakeholders enhance their co-operation and synchronize their actions the more combined transport will strengthen its competitiveness.
- Owing to the outstanding and continually increasing importance of international combined traffic AGENDA 2015 calls for an improved international co-ordination between stakeholders affected.
- The success of AGENDA 2015 particularly depends on stakeholders committing to this ambitious though realistic programme and integrating it into their own business or policy strategies.

Figure 23 summarizes the actions proposed by AGENDA 2015 and also indicates which group of stakeholders should take on the driving force and which other stakeholders should be involved to ensure the results envisaged.

Given this context, **AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE** will convey the vision of a common international strategy to all stakeholders.

ACTIONS	MAIN ACTOR AND INVOLVED PARTIES								Reference DIOMIS report...
	Infrastructure Manager	Railway Undertaking	Intermodal Operator	Terminal Operator	Ministry of Transport	European Commission	Other		
<b>MORE EFFICIENT USE OF INFRASTRUCTURE</b>									
Employment of infrastructure-efficient, train path-saving rail production systems		n	n						A7
Application of incentives in infrastructure access charging systems to induce resource saving production schemes	n	n	n	n					A11
Significaant improvement of the rate of punctuality and consistency of rail traction services	n	n	n	n					A11
Enhanced process organization of rail traction services	n	n	n						A11
Implementation of smart train and network capacity management systems		n	n	n					A5
Implementation of longer and/or heavier trains including minor infrastructure adaptations	n	n	n				n <sup>1</sup>		A7
Increased wagon axle loads	n	n	n				n <sup>1</sup>		A10
Application of good practices in terminal operation and management	n	n	n	n					A4
<b>MORE INFRASTRUCTURE INVESTMENTS AND INTERNATIONAL COORDINATION</b>									
Implementation of ongoing and envisaged rail network investments	n				n	n			A0/A1
Conclusion of an international agreement on "Achilles' heels" removal programme	n	n	n		n	n			A0/A1
Realization of ongoing an envisaged terminal investments and implementation of an intermodal hub programme	n		n	n	n	n			A0/A4
Implementation of a standardized process for ensuring the international co-ordination of combined transport terminal development	n	n	n	n	n				A8

Figure 23  
Linkage of means and actions and actors involvement

n Main actor    n Involved party

<sup>1</sup> Railway industry

## LIST OF REPORTS

N°	TITLE
A 0	Study on Infrastructure Capacity Reserves for Combined Transport by 2015
A 1	Trends in domestic Combined Transport
A 4	Best practices for the management of Combined Transport terminals
A 5	Improving the use of available train length
A 7	International Combined Transport production systems, long and heavy trains
A 8	International co-ordination of Combined Transport terminal development
A 10	Assessing new technologies in the wagon field
A 11	Report on Combined Transport in Europe 2005

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