

FREIGHT TRANSPORT AND INTERMODALITY

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TECHNICAL COMMITTEE B4 FREIGHT TRANSPORT AND INTERMODALITY

INTRODUCTORY REPORT

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EXECUTIVE SUMMARY

Efficient, safe and sustainable transport of freight is vital to the economy and society. Technical committee B4 Freight Transport and Inter Modality has focused on three issues during the last PIARC cycle to make freight transport more efficient, safe and environmentally friendly:

- Management of strategic freight corridors
- Interfaces of freight transport on roads with other modes
- Urban freight management

Our work on these three issues has concentrated on effective ways for public authorities to manage freight transport in main corridors and in urban areas and to help develop more efficient intermodal freight terminals.

1) Management of strategic freight corridors

The efficient, reliable and safe movement of freight in general, and road freight in particular, is vital to most economies in the world. As many stakeholders are involved in the management of freight transport corridors, there is a great need for cooperation and interaction. Government authorities must assume the task of facilitating and coordinating the management of strategic freight corridors. Efficient freight services require investments in infrastructure service, maintenance and operations so that acute bottlenecks disappear and accessibility improves. This may involve a broad spectrum of measures such as infrastructure construction (reduction of bottlenecks, construction of safe and secure parking spaces and buffering zones), traffic management using ICT/ITS-solutions, smarter use of the capacity, better enforcement of road freight regulation, efficient processes and handling at border crossings etc. Operating the infrastructure in an efficient and customer-oriented way is a key success factor. Truck drivers are strongly dependent on good information about rules and terms for driving in different countries, as well as on attractive and secure rest areas along freight corridors.

2) Interfaces of freight transport on roads with other modes

Intermodal freight transport makes better use of the capacity in the transport system, increases safety and reduces environmental burdens. Efficient intermodal seaport and inland terminals are crucial for attractive and competitive intermodal transport. Government authorities should take the responsibility for coordination and interaction between stakeholders involved in terminal planning and operation, secure land at strategic locations for intermodal freight terminals, guarantee enough space for possible terminal expansion, provide good road access to terminals, support benchmarking and quality certification of terminal services, support the integration of intermodal terminals in freight villages and encourage Public Private Partnership (PPP) solutions for the development of terminals. Government authorities should also guarantee sound competition between terminal operators within the terminals. Co-financing of intermodal terminals can be a suitable option if terminals are not economically viable.

3) Urban freight management

Many stakeholders are involved in urban freight transport: freight carriers, shippers, residents (consumers), authorities and administrators. They face complicated problems of congestion, environment, crashes, high energy consumption, and labour issues relating to urban freight transport. The target of urban freight transport policy is optimal mobility, sustainability and liveability. Under the framework of urban governance these stakeholders work together in the form of Public Private Partnerships (PPP) to identify problems, find approaches and solutions, implement policy measures and evaluate the outcome. Urban governance requires the participation of all stakeholders from the initial planning stages. Urban governance is needed because stakeholders have different objectives and perspectives on urban freight transport in terms of the efficiency, negative environmental impacts, and traffic safety issues within society. Therefore, the multi-objectives of multi-stakeholders should be well incorporated when adopting policy measures. Balancing the policy measures for efficient and environmentally friendly urban freight transport systems is essential. In most cases a single measure is not enough to obtain successful results; a combination of multi-measures is more effective. It is also important to create win-win situations for authorities and the logistics and freight transport industry. The results of the policy measures should be evaluated empirically and scientifically with quantitative data as far as possible. The entire management regime should be improved using the PDCA cycle (plan, do, check, and act).

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1. THE SESSION

Efficient, safe and sustainable transport of freight is vital to the economy and society. Technical committee B4 Freight Transport and Inter Modality addresses issues of freight road corridors and those associated with the interfaces of road freight transport with other modes, as well as urban freight. At this session technical committee B4 would like to present the result of the committee's work during the last cycle. Three reports are enclosed:

1. Management of strategic freight corridors
2. Intermodal freight terminals – challenges and good practice
3. Public sector governance over urban freight transport

The report "Management of strategic freight corridors" includes policies and measures for safety, regulation and enforcement as well as infrastructure measures for important international freight corridors. The conclusions and recommendations are based on about 20 case studies from all continents.

The report "Intermodal freight terminals" addresses terminal infrastructure planning and design, operation and management, environmental aspects, land use and community acceptance and finally institutional and financial issues. The conclusions and recommendations are based on about 15 case studies, mainly from Europe, Asia and North America.

The report "Public sector governance over urban freight transport" includes about 15 case studies from different continents and network simulations of Japanese cases. Focus is on implementation and evaluation of case studies, and the report includes guidelines for implementing urban freight management.

In addition to these three reports from the committee, there will be a presentation of some individual papers dealing with these three issues. The discussion will focus on effective measures for public sector management of freight transport in main corridors and in urban areas and the development of more efficient intermodal freight terminals.

2. MANAGEMENT OF STRATEGIC FREIGHT CORRIDORS

The purpose of this report is to establish the major issues facing the management of strategic freight corridors around the world, in particular in relation to policy, control and infrastructure, and to draw attention to any weaknesses in these areas.

In addition, the report aims to identify good practices in this field from various parts of the world and consolidate these to form a list of practices that can be applied to areas of freight corridor management that may benefit from improvement. In this report, a good practice has been classified as a well-defined process that not only delivers a favourable result when applied to a particular set of circumstances, but that is unique in its concept and application as well.

The good practices listed in this report were extracted from the completed surveys and relevant case studies provided by PIARC members. This report seeks to provide a key that links a given problem relating to the management of strategic freight corridors to a relevant and effective solution in the form of a good practice.

2.1. Contents

We have developed a survey designed to capture relevant information and good practices in areas such as security, enforcement, traffic regulation and freight services on strategic freight corridors. The good practices identified in this report are a direct result of feedback provided in the survey by PIARC member countries.

The survey consisted of three (3) parts. Part one identified the main features of the corridor, illustrating its geographical location and defining it as a particular type. The categories under which the corridors could be defined were as follows:

- International Corridor (land border crossing)
- High Density / High Volume Corridor
- International Corridor from a Port
- Lifeline Corridor (only viable option for movement of freight from one point to another)

Part two, the largest portion of the survey, was split into seven themes. These themes aimed to provide information on good practices and solutions for different aspects of freight corridor operations and management. The themes explored in the survey were as follows:

- Security and Customs Activities
- Stakeholder Involvement
- Travel Time Reliability
- Road Safety
- Traffic Regulations
- Services
- Infrastructure

The third and final part of the survey called for any additional information about techniques or strategies not covered in the questionnaire that may be considered good practice for the improvement of strategic freight corridor management.

Responses were received from numerous countries. While the original survey distributed to PIARC members was intended to identify issues and good practices in countries of differing economic status, unfortunately information from developing countries was not readily available. Therefore, data captured by the surveys is not representative of strategic freight corridor management in these countries.

2.2. Conclusions

The objective of this report was to provide good practice information in relation to the management of strategic freight corridors. The report presents a summary of current good practices in a range of areas relevant to strategic freight corridor management and offers possible suggestions for their implementation.

The report does not contain comprehensive coverage of good practice, but presents a number of identified good practices that would be worth consideration by authorities. There is a bias towards good practices most relevant to developed economies, reflecting the responses to the surveys, but many of the good practices could be planned and/or implemented in developing countries and countries in transition.

The Trucker's Guide to Driving in Norway, developed by the Norwegian Public Roads Administration, is a broad guide aimed at reducing the number of heavy vehicle related crashes on Norway's winter roads. The guide deals with questions such as driving times, vehicle loading, navigation assistance and driver training. Although the advice within the guide is primarily intended for foreign drivers entering Norway, it is very relevant to general road safety in countries with similar winter environments.

Efficient border crossing is a significant issue for most if not all countries. The presence of bottlenecks is a major concern at border crossings. To combat this, the Canadian Border Services Agency (CBSA) is in the process of implementing eManifest, an initiative that requires trade partners in all modes of transportation to submit relevant information to the CBSA electronically prior to arrival at the border. This allows for an automated, paperless system and will therefore facilitate the movement of freight across the border while improving communication between the stakeholders involved in cross-border freight movement.

Trucks driving too closely together on the road, or 'tailgating', is a major concern for many road users and can adversely affect the perception of the safety of the industry. This in turn can affect access and priority for freight to important corridors. In response, the Swiss roads authority has developed a truck capacity management scheme at the transalpine crossing in the Gotthard tunnel in Switzerland. Traffic is monitored at the entrance to the tunnel and a maximum number of heavy vehicles per lane per hour are permitted, thus ensuring a safe travel distance between heavy vehicles in the tunnel.

In the area of enforcement, heavy vehicle overloading is a constant concern for road managers, especially on freight routes, and is potentially extremely dangerous. The use of high speed Weigh In Motion (WIM) technology in North America and other countries to select and intercept trucks to be weighed at large upstream weigh stations is very effective in ensuring that overloaded heavy vehicles are discouraged.

Road user services, in particular the provision of suitable heavy vehicle rest areas, are also essential for managing driver fatigue and providing a service to truck drivers whose workplace includes the road. The European LABEL project, which follows on from the Secure European Truck Park Operational Services (SETPOS) project, assigns a "label" to each heavy vehicle rest area based on several criteria, such as security, comfort, services and safety. This gives drivers an indication of the overall quality of available rest areas and encourages operators of other rest areas, whether private or public, to improve their standards.

Similarly, to increase the capacity of heavy vehicle rest areas and reduce the risk of hazardous overcrowding, Germany has successfully trialled the Telematics Controlled Parking system. When a heavy vehicle driver arrives at the rest area, he or she enters the type of vehicle and the desired departure time. From there, the driver is allocated an appropriate parking space that ensures minimal disruption to other vehicles and provides the best use of available space. The trial found that approximately 40 per cent more parking spaces could be made available at any given time using the Telematics Controlled Parking system.

The efficient, reliable and safe movement of freight in general, and road freight in particular, is vital to most economies in the world. The best practices identified in this report provide an insight into opportunities for authorities to improve their management of the arteries of the freight system: the strategic freight corridors.

3. INTERMODAL FREIGHT TERMINALS – CHALLENGES AND GOOD PRACTICE

Intermodal freight transport is growing faster than pure road or rail freight transport in many parts of the world. Accordingly, intermodal transport is attracting more attention and is increasingly seen as an alternative to road transport.

This report about intermodal terminals can be seen as a follow-up of the committee report from the last cycle: “Measures promoting alternatives to the road and intermodal terminals”. This study showed that intermodal transport contributes to

- a better use of capacity of the whole transport system,
- a relief from road freight transport on motorway and highways,
- a reduction of environmental burdens, and
- an increase in safety.

The study is the basis for the further analysis of intermodal freight terminals that is presented in this report.

A terminal is a facility where cargo containers are transhipped between different transport modes for onward transportation. Transshipment may be between ships and rail or road, in which case the terminal is described as a maritime or seaport terminal. Alternatively the transshipment may be between land vehicles, typically between train and truck, in which case the terminal is described as an inland terminal. Maritime terminals tend to be part of a larger port, and inland container terminals tend to be located in or near major cities.

Intermodal terminals – seaport and inland terminals – play a crucial role in providing efficient and reliable intermodal transport for deep sea, short sea, inland waterway and rail shipping.

The capacity, efficiency and quality of intermodal terminals depends on a number of factors, including terminal design, terminal access, terminal services and operation, terminal organisation and management, the use of information and communication systems and the framework conditions. Also relevant in this respect is cooperation between the terminal operators and other actors such as railway enterprises, infrastructure managers and pre- and end-haulage transport operators.

Many countries face infrastructure, operational and organisational problems and challenges at terminals, which need to be solved.

The work presented here addresses these problems and challenges by providing good practices, standard requirements and recommendations for measures to solve them. The results will support the authorities (and private actors) in providing efficient and high quality terminals with respect to terminal infrastructure planning, design, operation, organisation, management and funding while taking into account sustainability aspects.

3.1. Contents

The objectives of this study are to

- Identify and verify problems and challenges
- Collect, analyse and evaluate existing case studies and current practices relating to intermodal terminals
- Derive good practice and recommendations and report the main results.

The report deals with all aspects of intermodal freight terminals. The focus is on measures that public authorities can influence.

The report covers the following main topics:

- Types and functions of intermodal freight terminals (mainly based on a literature review)
- Problems and challenges relating to intermodal freight terminals (based on a questionnaire among PIARC members and literature review)
- Good practices (based on good practice collection among PIARC members and literature review) in the following areas
 - Terminal infrastructure planning and design (incl. road access)
 - Terminal operation and management
 - Environment, land use and public involvement
 - Institutional and financial issues
- Conclusions and recommendations.

Based on the information and material available and the case studies collected, we primarily concentrate on developed countries. However, the general principles and good practice for intermodal terminals are generally also valid for developing countries and countries with an economy in transition.

3.2. Conclusions

From the survey of the PIARC members, literature review, case studies and actual developments we can derive the following conclusions.

Challenges

A number of problem areas relating to intermodal terminals also affect the efficiency and quality of the entire intermodal chain:

- Infrastructure and equipment – e.g., congestion on terminal access roads, unsuitable terminal layout, insufficient railway access, one-sided access from main track
- Operation and management – e.g., lack of cooperation among stakeholders, little influence by terminal operators on ship/train arrival
- Land use, environment, and community issues – e.g., air/noise pollution, lack of space for expansion, conflict with other land uses
- Institutional and financing issues – e.g., non-existent intermodal terminal location/network policy, lack of steady and/or sufficient funding

Terminal infrastructure and design

Regarding terminal infrastructure and design we recommend the following:

- Limit the usually high investment costs by using a modular terminal design and approach.
- Provide a high standard road connection with sufficient capacity between intermodal terminals and the motorway network.
- Design railway access to the transshipment area from both sides to limit the shunting efforts and operational costs. For large rail/road terminals, rail access must have enough capacity to allow rail arrivals and departures at the same time.

- The transshipment areas with loading tracks should be compatible with train length (e.g. 750 m in Europe) to avoid shunting.
- For intermodal sea and inland port terminals, provide rail access where feasible.
- On freight corridors, synchronisation and coordination of terminal infrastructure planning and extension is needed to make the best use of the intermodal capacity on the corridor.
- Technical standards for planning and design of seaport and inland terminals should be developed on an international level to harmonise the infrastructure conditions. This is especially important for freight corridors.
- An integrated planning and design process is needed, from market analysis to financing and implementation.

Terminal operation and management

Regarding terminal operation and management we recommend the following:

- Extend the standard loading/unloading procedure to allow for a floating loading/unloading procedure (30 to 40% capacity increase without additional loading tracks).
- Use IT-based terminal capacity management systems to increase the efficiency and quality of terminal processes.
- Support automation and the use of advanced IT-systems in major seaport terminals to improve efficiency and productivity.
- Extend terminal operation times to weekends and nights to make better use of existing infrastructure where feasible.
- Create economic incentives to avoid traffic peak hours on access roads and to make better use of the terminal infrastructure.
- Implement Benchmarking and Quality certification for terminal processes (example Container Terminal Quality Indicator) to increase the efficiency and quality of terminal operations. Technical standards for the processes and operation of intermodal terminals can support this.
- Implement bonus/malus schemes for storage space to make better use of storage capacity.
- To increase the attractiveness of intermodal transport, improve safety and security procedures for freight intermodal transport operations.

Land use, environment and community involvement

Regarding land use, environment and community involvement we recommend the following:

- Promote integrated land use and transport planning and encourage greater proportionate use of rail to support a modal shift from road to rail yielding both local and national environmental benefits.
- Support the concept of “lean” and “compact” rail/road terminals in countries where not enough space is available. The increase in efficiency and productivity generally reduces the environmental impact as well (especially use of space).
- Support the integration of intermodal terminals in freight villages / logistics areas to create synergies with other economic activities and increase the market potential for intermodal transport.

- Secure land at strategic locations for intermodal terminals (purchase or long-term land lease agreements), taking into account terminal expansion requirements in the long term (incl. storage purposes).
- Encourage land use compatibility to minimise conflicts between terminal land use and adjacent lands. Consultations are highly recommended to realise the goals for the community and the intermodal facility.
- Initiate a consultation process with stakeholders during site evaluation and the planning phase to increase community and market acceptance.
- Evaluate site / location for new terminals systematically, taking into account all relevant factors (accessibility, market potential, technical feasibility, environmental impact, cost-benefit analysis, etc.), using multi-criteria evaluation. By doing so, the new/expanded terminal should have low negative social and environmental impacts.
- Undertake environmental assessment studies to ensure that appropriate mitigation measures (e.g., noise, pollution, nature conservation, ground water protection, etc.) are developed and implemented.
- Develop best management practices, protocols, specific measures, etc. for handling dangerous goods and hazardous incidents, including pollution prevention plans (e.g. spill prevention and cleanup plans, protection of groundwater, drainage).

Institutional and financial issues

Regarding institutional and financial issues we recommend the following:

- Develop an intermodal terminal transport network strategy and policy (with main hubs and regional terminals) which also provides a basis for funding.
- Develop/enhance international agreements between countries on a freight corridor with minimum standards for intermodal terminals (especially infrastructure) when international design standards are not available.
- Develop suitable co-funding schemes for intermodal terminals (which would otherwise not be economically viable).
- Combine funding rules with the existence of benchmarking and/or quality certification systems for terminal operation with the provision of statistical data on supply and demand at intermodal terminals.
- Create steady, predictable, and continuous government funding/financing programmes to fund intermodal projects. This will greatly help regional and municipal organisations as well as the private sector in developing their long- and medium-term capital plans with greater certainty of the availability of funds for implementing their capital projects.
- Encourage the use of PPP's in funding intermodal terminals where market conditions are right (e.g., available expertise in evaluating PPP proposals and developing PPP agreements).

4. PUBLIC SECTOR GOVERNANCE OF URBAN FREIGHT TRANSPORT

This report was prepared to provide practical information and advice on urban freight management, especially to government policy decision makers, but also for all other stakeholders including the freight industry themselves.

4.1. Contents

The report addresses four main stages in freight vehicle movement management; 1) problem identification, 2) approaches to find solutions, 3) implementation and 4) evaluation.

“Typical” problems commonly seen in many cities throughout the world were identified and categorised by type. Congestion, environmental nuisance, road accidents, energy consumption, visual pollution, damage to infrastructure, often unsuitable infrastructures, drivers’ stress and insufficient reliability are often found; we have categorised them as “social problems”. Lack of communication and information and other problems related to organisation are identified as “organisational problems”.

Several approaches and measures are presented as possible solutions to the problems that were identified. Our work is unique in suggesting design of a desirable freight vehicle movement combined with approaches and measures for urban logistics problems instead of implementing an isolated countermeasure, so that thoughtful consideration is given and short-sighted action can be prevented. The importance of selecting the best combination is highlighted. Types of approaches include the regulatory approach, logistical approach, cooperative approach, technology approach and behavioural approach.

The “implementation” section presents an entire workflow of freight vehicle traffic management. This includes 1) formation of RFTM (Road Freight Transport Management) and partnership/public involvement, 2) problem identification, 3) identifying causes of problems, 4) goal setting, 5) designing the desirable freight vehicle movement, 6) selecting the best combination of approach and measures, 7) identifying unexpected side effects, 8) pilot programme 9) implementation of the programme and 10) evaluation of the programme.

Among all steps of the workflow, we put particular emphasis on “design of desirable freight vehicle movement”, because this is the key to successful management by sharing the common ideal situation among all stakeholders. Optimal freight vehicle movement should be both economically efficient and environmentally friendly by (i) minimising the travel distance in the urban areas, (ii) using arterial roads, (iii) choosing lower-emission vehicles and (iv) selecting desirable times of day. The report provides further discussion regarding these requirements.

The workflow also works as a PDCA cycle (plan, do, check and act) in which freight measures will be improved and more efficient as each cycle ends, an example using Freight Quality Partnership (FQP) based management is provided in the report.

Evaluation and feedback are equally important to guarantee the success of the measures undertaken and to minimise any adverse secondary effects as a result of the intervention. We have provided several key performance indicators to evaluate the measures and have checked whether and how evaluation was performed in each case example we collected from the PIARC member countries. In addition, we have given consideration to what we can learn from the case examples.

4.2. Conclusions

This report presents experience from around the globe of different methods employed for the innovative governance of urban freight transport. The target of urban freight transport policy is optimal mobility, sustainability and liveability. To achieve this, it is vital to bring together freight carriers, shippers, residents (consumers) and public authority managers, who face complicated problems relating to urban freight transport. It then becomes possible to consider the types of approach and the measures to be taken.

Using a partnership approach offers a constructive way of consulting and involving stakeholders in each stage of planning. This allows stakeholders' objectives and perspectives to be taken into account. The solutions adopted tend to be more reflective of the multiple objectives of all stakeholders.

Using the approaches analysed, a framework for tackling urban freight transport issues is presented. The framework consists of four steps: (a) problem identification, (b) finding a combination of approaches and solutions, (c) implementation and (d) evaluation. At each step stakeholders should be involved in various ways. The procedure is often iterative, with the communication and feedback between each step helping to shape decision-making. Communication plays an important role in gaining consensus. This participatory process has not been found to be essential in all cases. However, there is good evidence suggesting that it tends to increase support for and the quality of decision-making.

The approaches proposed in this report to classify known solutions to the problems and side effects of urban freight transport will aid practitioners to gain a better understanding of an area where there has been a lack of awareness and knowledge of each stakeholder's role.

Our proposed framework for urban freight transport management is innovative in that it provides the workflow of 1) recognising the nature of identified issues, 2) identifying what is causing the issues, 3) designing the desirable freight vehicle movement in/around the city from the perspective of optimal traffic throughout the city and 4) selecting the best combination of approaches and measures for problem solving.

Public authorities are responsible for planning, implementing and managing policy measures associated with urban freight transport. Municipalities have the ultimate responsibility for producing plans for urban freight transport. Central governments generally assume the responsibility of harmonising policy measures. Some level of centralised policy coordination is important to simplify and establish more consistent regulations governing commercial vehicles.

Local authorities have often overlooked urban freight transport issues, perhaps because they believe that freight transport is the responsibility of private companies, or simply due to a lack of knowledge of urban freight transport. However, a large number of cities are facing similar problems of urban congestion and environmental issues partially caused by freight vehicles, which makes tackling nuisance and promoting efficiency of freight imperative.

The problems of urban freight transport in developing countries are basically similar to those in developed countries. Therefore the knowledge and experience from the developed countries should be transferred to developing countries.

An analysis of Urban Freight Management projects drawn from PIARC member countries revealed success factors, barriers and solutions for overcoming barriers. The lessons learned reveal that consensus building is extremely important and a shortcut to success in many cases. Another important point is that each case is unique and there is no universal solution to any given problem. While it is true that consensus building is extremely important, there are many ways to achieve it. The best way will depend on the situation.

There is a great deal of qualitative evidence of actions combining different approaches, particularly the use of cooperative efforts among stakeholders and between stakeholders and local planning authorities. However, little quantitative information about the benefits and costs derived is provided by the vast majority of case studies, whether regarding reductions in vehicles or emissions or the value attached to externality reductions. More work is needed in order to assess those benefits. Those that do assess projects use a wide range of Key Performance Indicators and there are often different methodologies for the calculation of each.

One way in which PIARC may be able to assist is in the formulation of a standard set of assessment tools for evaluating projects on a global basis.

Finally, further research on urban freight transport is required, since this research has uncovered numerous good examples but many of the benefits have been assumed rather than quantitatively evaluated. Other issues, such as utilisation of alternative modes to road transport, carbon dioxide emissions and traffic safety issues, need to be studied as well. International cooperation, knowledge-sharing and experience exchange are important in order to facilitate the establishment of efficient and environmentally-friendly urban freight transport systems.

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DRAFT CONCLUSIONS

The draft conclusions from the work in TCB4 Freight Transport and Inter Modality can be summarised as follows:

1) Management of strategic freight corridors

- Government authorities must assume the task of facilitating and coordinating the management of strategic freight corridors. Efficient freight services require investments in infrastructure service, maintenance and operations so that acute bottlenecks disappear and accessibility improves. This may involve a broad spectrum of measures such as infrastructure construction (reduction of bottlenecks, construction of safe and secure parking spaces and buffering zones), traffic management using ICT/ITS-solutions, smarter use of the capacity, better enforcement of road freight regulation, efficient processes and handling at border crossings etc.
- Efficient border crossings are essential for optimal freight transport in international corridors. Good practices using automated, paperless systems make the procedures at border crossings much more efficient.
- In the area of enforcement, heavy vehicle overloading is a constant concern for road managers, especially on freight routes, and is potentially extremely dangerous. The use of high speed Weigh in Motion (WIM) technology in North America and other countries to select and intercept trucks to be weighed at large upstream weigh stations is very effective in ensuring that overloaded heavy vehicles are discouraged and, when apprehended, appropriately penalised.
- Road user services, in particular the provision of suitable heavy vehicle rest areas, are essential for managing driver fatigue and providing a service to truck drivers whose workplace includes the road. There are good examples of systems that give drivers an indication of the overall quality of available rest areas and encourage operators of other rest areas, whether private or public, to improve their standards.
- Information to drivers is important, for example rules for driving time and vehicle loading, or tips and advice for winter driving. There is a good example of such a Trucker's Guide.

2) Intermodal freight terminals – challenges and good practice

- To achieve more efficient intermodal terminals, government authorities should take the responsibility for coordination and interaction between stakeholders involved in terminal planning and operation, secure land at strategic locations for intermodal freight terminals, guarantee enough space for possible terminal expansion, provide good road access to terminals, support benchmarking and quality certification of terminal services, support the integration of intermodal terminals in freight villages and encourage Public Private Partnership (PPP) solutions for the development of terminals.
- Government authorities should also guarantee sound competition between terminal operators within the terminals.
- Technical standards for the planning and design of seaport and inland terminals should be developed on an international level to harmonise infrastructure conditions. This is especially important for freight corridors.
- Economic incentives should be created to avoid traffic peak hours on access roads and to make better use of the terminal infrastructure.

- An intermodal terminal transport network strategy and policy (with main hubs and regional terminals), which also provides a basis for funding, should be developed.

3) Public sector governance of urban freight transport

- Using Public Private Partnership (PPP) offers a constructive way of consulting and involving stakeholders at each stage of planning, since freight transport involves many stakeholders. As for PPP, either forming Freight Quality Partnership (FQP) or Public Involvement (PI) at the initiative of public authorities can be used depending on the situation. Although public meetings or hearings may be used for public involvement, a focus on interested groups and citizens is recommended in order to promote dialogue instead of one-way communication.
- Public authorities are ultimately responsible for planning, implementing and managing policy measures.
- For problem-solving, we recommend designing desirable freight movement on roads in the entire city in order to select the best combination of approaches and measures.
- Results of policy measures should be evaluated empirically and scientifically with quantitative data as far as possible. The entire management regime should be improved using the PDCA cycle (plan, do, check, and act).