

# **FREIGHT TRANSPORT**

Tuesday 21 October 2003 (1.30 – 5.00 p.m.)

## **SESSION AGENDA & INTRODUCTORY REPORT**

# SESSION AGENDA

## **1. Introduction**

Mr. Anders LUNDQVIST (C19 Committee Chairperson/SWEDEN)

## **2. Topic 1: Logistic platforms in a context of multi modality**

Ms. Wanda DEBAUCHE (C19 French-speaking Secretary/BELGIUM)

## **3. Topic 2: Vehicle control in a context of road safety**

Mr. Jozsef PALFALVI (C19 member/HUNGARY)

## **4. Topic 3: Heavy vehicle safety, including accident statistics and risk analysis processes**

Prof. Eiichi TANIGUCHI (C19 member/JAPAN)

## **5. Conclusions and possible future activities of C19**

Mr. Anders LUNDQVIST (C19 Committee Chairperson/SWEDEN)

## **6. Discussion**

## **7. Conclusions**

Mr. Anders LUNDQVIST (C19 Committee Chairperson/SWEDEN)

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# 1. EXECUTIVE SUMMARY

This report summarises the main areas of work and findings by Committee 19.

## **Road freight transport is predominant**

The transport of freight is essential for the functioning of economies world-wide, as people and industries demand access to goods.

The work undertaken by the Committee has shown that the movement of freight by road continues to dominate in most developed, transition as well as developing countries. This trend has been continuing over the last fifteen years. During that period, road freight transport constantly gained market share, to the detriment of rail transport and inland waterway transport. Nevertheless, the situation varies according to the different regions of the world we have studied (Western Europe, Eastern Europe, Japan, Australia, Canada, USA) (Theme 1 and theme 3 below).

This trend brings with it the major challenge of how to continue to move goods while at the same time, meet the needs of society for a more sustainable environment. This places governments, road authorities and other interested parties at the forefront of dealing with often conflicting policies, ie.: mode choice, efficiency of the economy, environmental sustainability, all of which lead to questions such as do you regulate or deregulate the carriage of goods, do governments directly intervene in the market and impact efficiencies, and other critical issues such as how to manage congestion, noise and environmental damage, to name a few.

## **Why is this happening?**

In a number of countries (Eastern and Western Europe) certain deregulation and privatisation measures that have improved the efficiency of road transport have been undertaken since the beginning of the 90's. Some examples are measures to facilitate companies' access to the market, price liberalisation, introduction of cabotage and the increase of vehicles' loading weight. All these measures allowed competitiveness of road transport to improve, whereas during the same space of time, countries, (except for the USA and Switzerland), have taken no equivalent significant measures in rail transport (Theme 2 and 7 below).

## **Which effects are caused by the dominant position of road transport and what can be done?**

A range of effects can be identified, both positive and negative.

- **Safety:** although the number of heavy weight vehicles involved in accidents is low compared to other categories of road users, the gravity of the accidents is more serious (Theme 6 below).
- **Environment:** Heavy weight vehicles cause noise and pollution, especially in certain environmentally sensitive regions. Certain measures have to be taken. (Theme 7 below).
- **Accessibility:** Road freight transport contributes to congestion and reduced accessibility and decreased mobility. (theme 3 below)

## **What are the solutions?**

- Harmonisation, monitoring and control of vehicle size and weight limits?
- Control and enforcement in a broader range?
- Potential answers/solutions by logistical platforms?
- Change in practices to reducing impacts?

The above provides the main thread to the various themes below, studied by Committee 19.

### **1. Evolution of modal sharing**

All transport modes are needed and it is important that they function efficiently together. Although road freight is dominant in many countries, it still forms part of an integrated transport network. Different countries and different regions of the world have treated modal split in different ways. The study provides an overview on the evolution of modal sharing of freight transport around the world, identifying some of the critical drivers to the choice of mode.

### **2. Role of regulation and deregulation**

During the last ten years, a large number of countries have started a deregulation process, a privatisation process or a regulation process in the road haulage sector. This area of work reviews the main thrust of the regulations implemented by the different countries. It focuses particularly on the rules of access to the market, vehicle weight and dimensions, and the measures dealing with the liberalisation of prices.

### **3. Emerging problems, potential answers offered by logistical platforms**

A study of logistical platforms consisted in making a categorisation of the different kinds of platforms, identification of the conditions for success for their implementation and their impact. In addition to the literature review, concrete examples from different countries were added. The main results are the following and are likely to have major consequences for freight transport:

- JIT (Just In Time) production: Industries produce only the necessary quantities of product at the right moment. More trips are generated because no (or less) stock is held. This trend is possible due to relative low transport costs.
- New delivery systems (logistic concepts) such as home deliveries and e-trade are implemented. Goods are delivered to the clients themselves or they can be picked up at local depots closer to clients.
- Companies are focussing on their core-business. Secondary activities such as freight transport and logistics are delegated to specialised companies, and
- Distribution is becoming more competitive.

#### **4. Experience gained in monitoring and control of vehicle size and weight limits including emerging trends**

Weight monitoring and enforcement are important tools to improve efficiency in road construction and maintenance. Optimised use of both freight vehicles and road-infrastructure is of great importance to achieve an effective road transport system and to minimise the negative effects of freight traffic. It's important for both construction and maintenance costs of roads that the authorised vehicle weights are adjusted to the standard of the infrastructure.

Monitoring and enforcement of vehicle weights are important tools to achieve a sustainable road network as well as fair competition between the transport operators. The Committee has undertaken a study to review various aspects of this topic.

#### **5. Control and enforcement in the road freight transport**

There are several important reasons for having control and enforcement in road freight transport. One of the basic reasons is the never ending challenge to achieve safe traffic conditions. Traffic accidents cause great human suffering and huge costs to society. Well functioning control and enforcement of traffic, vehicles and their drivers, is a necessary means to reducing accidents.

The report describes how different countries are dealing with control and enforcement, including description of roles of parties that need to work together to provide the control.

#### **6. Heavy vehicle safety, including accident statistics and risk analysis processes**

Every year more than 1.17 million people are killed in road accidents around the world. Millions of people are badly hurt. That makes road traffic one of largest causes of human suffering. Freight vehicles, not least heavy freight vehicles, are frequently involved in serious accidents. When a heavy vehicle is involved in an accident, there is a lot of crash violence involved and the consequences are often fatal. By studying accident statistics and risk analysis processes, solutions might be found to lower the risk of accidents and to reduce the consequences when they happen. The Committee has reviewed accident statistics from different countries and has drawn a number of conclusions.

#### **7. Practices for reducing impacts on sensitive environments**

Committee 19 reviewed the impact of heavy freight transport on sensitive environments. Recent major tunnel accidents have highlighted how accidents by freight vehicles can severely impact the environment. This study reviews practices for reducing impacts on sensitive environments.

# THE SESSION

This report forms the introduction to the session on Freight Transport and to the discussion in XXIIInd PIARC World Congress in Durban. The Committee 19 session and the presentations will be focused on the following topics:

- Logistic platforms in a context of multi modality  
Vehicle control in a context of road safety.

## 2. COMMITTEE MEMBERS WHO HAVE CONTRIBUTED TO THE REPORTS

Anders LUNDQVIST	SWEDEN	Chair
Wanda DEBAUCHE	BELGIUM	French-speaking Secretary
Gail MOODY	AUSTRALIA	English-speaking Secretary
Peter TSCHIRNER	AUSTRIA	
Jari GROHN	FINLAND	
Jean-Pierre ORUS	FRANCE	
Jozsef PALFALVI	HUNGARY	
Emanuele SCOTTO	ITALY	
Eiichi TANIGUCHI	JAPAN	
Mircea NICOLAU	ROMANIA	
Werner JEGER	SWITZERLAND	

# 3. SUMMARY OF THE REPORTS

This chapter contains summaries of the reports on the different topics.

## 3.1 Evolution of modal sharing (Leading author: Gail Moody)

**Freight Modal Split** - The study provides a statistical overview of trends in freight transport, in particular the growth in different modes of freight transport. The report also considers the factors influencing modal split and outlines future prospects for freight transport.

### 1. Statistical Trends in Freight Transport

Statistical trends in freight transport were examined by location and region. In the North American region, Canada, Mexico and the United States were studied. In Europe, the European Union and Central Europe and in Asia, Japan, China and Australia. Road, not unexpectedly, was the dominant mode in all but the developing or transitional countries (Central Europe and China). The basic information was obtained from national and international documentation.

### 2. Factors Influencing the Modal Split

The report identified that selections regarding the choice of transport modes are made on the following criteria:

- Freight rates (cost minimisation);
- Speed of delivery;
- Reliability of delivery time;
- Reliability of freight arriving safely;
- Flexibility of the mode to meet specific customer needs.

Historical influences vary from region to region and also have an impact on the modal share. Such influences include:

- Investments in infrastructure;
- The evolution of operational methods and technologies;
- Transport regulation and other relevant government policies;
- Trends in economic growth and structural growth in the economy.

Other factors that have an impact on the modal share of a region are:

- Deregulation (as was observed in the US rail system); and
- Intermodality and the availability of appropriate infrastructure.

### 3. Possible Factors Influencing Future Trends in Freight Transport

The report also identified possible other factors that will impact trends in freight transport:

- An increased policy focus on reducing the environmental impact of transportation;
- Improved transport management strategies to reduce traffic congestion;
- Development of greater transport technologies;
- Investments in infrastructure;
- Regulation reform;
- Increased safety standards, and
- Financial encouragement of sustainable transportation strategies.

### 4. Economic and Social Discontinuities

The study also examined the impact on future modal split trends of a range of broader factor.

#### ***Economic Uncertainties***

The state of the economy in future years will dictate transport trends. Economic growth and a wider sharing of technological information may lead to increased innovation providing greater transport efficiency with minimal harm to the environment. This would be required due to the resulting increase in transport demand.

On the other hand, global economic instability will cause transport growth to slow considerably. The financial capability to research and adopt new technologies would be reduced, leading to a decline in the environmental sustainability of urban transportation.

#### ***Social Change***

Diversification in product needs has led to a wider range of available products. Consequently there may be an increased ratio of products that require next day delivery, driving freight supply away from long haul carriers.

Further change may result from improvements in logistics management, warehousing and distribution systems. Distribution centres and retail stores could be bypassed in favour of direct delivery.

#### ***Oil Crises***

A combination of declining non-OPEC oil production and rising demand for crude oil would greatly increase the leverage of OPEC producers. This could trigger savage price rises and physical shortages of petroleum product, leading to accelerated energy saving policies and technologies.

An alternative scenario is based on the assumptions of improved recovery technologies which boost crude oil production over the coming decade. Reduced real oil prices would greatly diminish the incentive to adopt more energy efficient transport solutions, thereby exacerbating a range of environmental problems associated with increased transport demand.

## ***Greenhouse Concern and Policy***

Long-term greenhouse emissions leading to an increase in global temperatures will have dramatic influences. There will be significant inundation of low lying areas affecting agriculture production. A major focus will lie on producing policies for global technological change and environmental sustainability.

## ***Technological Discontinuities***

New technologies such as solar energy and fuel cell technology will enable reduced waste outputs from transportation.

### **3.2 Role of regulation and deregulation** (Leading author: Jean-Pierre Orus)

During the last ten years, a large number of countries have started a deregulation process (Western European countries, Japan, USA), a privatisation process (Eastern European countries) or a regulation process (Australia, Canada) in the road haulage sector. In the same period, the modal split has changed to the advantage of road transport so much so that it is today the significant mode of freight transport in a significant number of countries in the world.

The presentation will review the main thrust of the regulations implemented by the different countries in terms of objectives and content, the changes in the modal split during the last 10 years and will attempt to explain how deregulation is a contributing factor to the increase of the share of road transport. The paper will focus particularly on the rules of access to the market, the vehicle weight and dimensions, and the measures dealing with the liberalisation of prices.

### **3.3 Emerging problems, potential answers offered by logistical platforms** (Leading author: Wanda Debauche)

Due to the increase of traffic, the speed of vehicles is reduced. As a consequence, negative effects like a higher energy consumption and more air pollution and noise are produced. A modal shift towards rail and waterways is promoted. European policies try to stimulate multimodal transport through incentives or higher taxation of road freight traffic. In contrast the American multimodal policy is market-driven.

In this context, even if a logistic platform can be defined as a tool for a multimodal transport policy in favour of sustainable development (the shifting to other modes helps to decrease the present ton-kilometres by road), European application of multimodal transport is still not evident due to:

- different technical standards as track gauges, electrification systems and information systems are different in Europe;
- relative short distances covered at present by road transport;
- the absence of dedicated infrastructure for rail transport: conflicts between passenger and freight transport can't be avoided (e.g. in Australia, priority is given to passenger transport);
- the alternative modes (water/rail) have a relative poor level of quality. Flexibility, reliability, frequency e.g. are lower and costs are higher.

The working group also defined the main effects (positive/negative) generated by a platform:

- synergy effects can be obtained by grouping logistic activities. Common services like gas stations and truck maintenance on site can reduce the number of trips;
- it's not obvious if positive or negative environmental effects must be awaited. For urban deliveries (using UTC<sup>1</sup>) e.g. more vehicle kilometres will be generated due to the use of vans (5 for a similar truck). This will lead to congestion and to a higher rate of fuel consumption (related to the reduction of the average speed of all vehicles). As a consequence also an increase of air pollution will occur. On the other hand, heavy goods vehicles will be avoided in certain zones (historical centres or residential zones e.g.) so less noise and less negative visual impacts<sup>2</sup> will be generated there. Transfer to alternative modes is considered as positive (especially water transport);
- when logistic platforms are not located near dense populated zones, goods can also be delivered at night;
- creation of job opportunities;
- chances for land-use planning;
- implementation of cooperation between forwarders located at the platform but there is a lot of resistance of transport companies to use logistic platforms/co-operatively because then they are losing contact with the client;
- reduction of long distance road trips (alternative rail/water modes);
- due to a higher efficiency/vehicle load factor (using UTC) or reduction of fleet (changing to other modes) e.g., costs can be reduced but that's not guaranteed. Replacing trucks through vans (equivalence of 5 vans for 1 truck) leads to an increase of kilometres and congestion. Also the costs related to extra transshipments are quite high, which makes the transport chain more expensive.

A general problem is that there are now a lot of ex-ante (theoretical based) data/guidelines but a lot of projects about logistic platforms were not executed/evaluated, an ex-post analysis is missing. So the effects are not quantified and economically assessed.

Chances of a successful implantation of a logistic platform are bigger when certain conditions are fulfilled:

- very good knowledge of the existing and future situation in terms of market, traffic flows and positive/negative effects on local and regional level. It's important to have realistic, clear objectives;
- good signalisation for guiding trucks to those platforms is implemented;
- good connection to the road (rail/water) infrastructure. The location of the terminal should be well considered;
- a set of policy measures concerning distribution (e.g.: access restrictions, time windows for delivering) is applied;
- financial means to counter extra costs (public support) are foreseen. Especially when extra transshipments must be executed;
- a continuous information system is available to control without interruption the advancement of the journey of the packages (telematics). Until now telematics are in limited use in big companies only;
- additional services are present. They make terminals attractive (cost savings).

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<sup>1</sup> UTC: Urban Transshipment Centre

<sup>2</sup> Heavy goods vehicles are considered to molest people more than light goods vehicles. Actually it's not sure that this is true. For delivering with vans you need a bigger fleet.

### 3.4 Experience gained in monitoring and control of vehicle size and weight limits including emerging trend

(Leading author: Mircea Nicolau)

There are two important problems with regard to the weight and dimensions of vehicles used in road freight transport.

- *the overload tendency* - The growth in the dimension and weight of freight vehicles is the result of a campaign by transport companies to achieve more efficient use of vehicles and staff. With the rapid growth of the economy the demand for road transport is also growing and the number of vehicles which are constantly overloaded is also increasing rapidly. The result is that road maintenance departments are being faced more and more often with a rapid deterioration of roads and in the quality of the road service. This trend also has a negative influence on road safety.
- *the standardization* - Different continents and countries have different legislation concerning permitted weight and dimensions of road vehicle. Harmonisation of legislation between countries is therefore important so that the vehicles can run in different countries without exceeding legal limits. A standardization of weight and dimensions of vehicles in international traffic within the EU was established by the European Council in Directive 96/53/EC.

The objective of this working group was to overview the problems concerning vehicle weight and dimensions monitoring and enforcement, such as:

- national and international regulation for vehicle weight and dimensions and need of harmonisation; the Directive 96/53 as a legal basis of the harmonisation within the EU and other European Countries
- monitoring and control systems of freight vehicle traffic, methods and equipment
- heavy vehicles aggressiveness on road pavement
- weigh in motion (WIM) system as an efficient tool to evaluate the traffic aggressiveness, and
- enforcement and penalties, legal basis and methods.

The basic information has been obtained from national and international documentation and from the answers given by the C19 members to a survey by questionnaire.

The main conclusions of the analysis of the state of the art of monitoring and control of vehicle size and weight limits are:

- need of harmonisation of legislation for the maximum weights and dimensions of motor vehicles and vehicle combinations. Maximum weight and dimensions of vehicles in international traffic within EU have been established by the European Council in Directive 96/53/EC. This Directive serves as a guide for other countries in Europe;
- simple and accurate enforcement methods are required to ensure that the legislation on vehicle weight and dimensions limits is respected;
- WIM of road vehicles provides a useful tool to collect data about the vehicles weights and dimensions for traffic monitoring and weight limits enforcement and for other applications in pavement and bridge engineering;
- New data is needed in order to identify the extent of overloaded vehicles on the road. For that purpose reliable WIM stations have to be established in an increased extent. Making use of WIM system will enable the estimation of the aggressiveness of heavy traffic against road conditions to become more accurate by establishing the real axle loads of freight vehicles in current traffic.

### 3.5 Control and enforcement in the road freight transport

(Leading author: Jozsef Palfalvi)

Every year more than 1.17 million people die in road crashes around the world. The majority of these deaths, about 70 percent, occur in developing countries. Sixty-five percent of deaths involve pedestrians and 35 percent of these pedestrians are children. It is estimated that developing countries currently lose in the region of 100 billion USD every year. This is almost twice as much as the total development assistance received world-wide by the developing countries. These losses undoubtedly inhibit the economic and social development of each country, consequently ***one of the reasons for the control of road freight vehicles is increasing the safety of the road transport.***

The trend of heavier trucks with the new road friendly suspension is that many bridges would have to be upgraded. That is significant and a costly task. However, when carried out in conjunction with general maintenance and rehabilitation programmes, the saving in transport costs should outweigh the additional bridge-related expenditure in the longer term. Consequently ***the other reason for the control of road freight vehicles is protecting the state of the roads and bridges.***

The report has the following structure :

- Division by the scope of control
  - Control of drivers (driving hours and rest regimes)
  - Vehicle control (weight and dimension / roadworthiness)
    - Special vehicles:
      - ❖ oversize, overweight vehicles
      - ❖ vehicles carrying dangerous goods
      - ❖ vehicles carrying livestock
    - According to vehicles' registration:
      - with domestic registration:
        - ❖ engaged in domestic transport only
        - ❖ engaged in international transport
      - with foreign registration
  - Load control (in general)
- Division by levels of control
  - Technical inspection
  - Environment supervision
  - Road control
  - Control at premises
  - Border crossing control
- Division by the ways of implementation of the control
  - Measurement, testing
  - Control of papers and authorisations.

The report also mentions the different authorities involved in the control: transport supervisory authority, police, customs authority, Ministry of Transport, Ministry of Interior, veterinary officer, etc.

In conclusion, it seems that there are two conceptions by which universal progress can be made in this field:

- a) countries try to make universal prescriptions for periodical technical vehicle inspections in order to screen the faults;
- b) through technical development of vehicles they enhance passive safety and eliminate road damages.

However, these unification programmes are still in progress since there are significant differences among continents and countries in their approaches.

### **3.6 Heavy vehicle safety, including accident statistics and risk analysis processes**

(Leading authors: Eiichi Taniguchi, Yoshi Imanishi)

The Japanese Delegates to PIARC C19 have distributed questionnaires concerning the data maintenance of road accident statistics, the number of accidents, and the accident rates in member countries of PIARC C19. Apparently, many member countries had difficulties in completing the questionnaire, possibly due to the differences in which statistics are presented in each country. For this reason, the sections for data analysis were developed by the delegates using the Japanese database. These are presented hereafter.

#### 1. Characteristics of traffic accidents of goods vehicle in member countries

##### *(1) Major characteristics of accident database*

The way in which the accident database is structured varies according to the member country.

##### *(2) Major issues concerning accident database*

The major issues concerning the accident database are the following:

1. Even though accident data of most member countries is categorized in detail such as vehicle types, vehicle kilometre, data is not categorized in the same manner. Due to this, it is impossible to study safety related analysis such as the accident rates from these data.
2. There is no data available for gross vehicle weight and vehicle size in accident or traffic databases. Accordingly, it is difficult to analyse the relationship between the sizes of vehicle and the road accidents.
3. Although there is a variety of safety measures addressing goods vehicles, there is no linkage between the statistics of the road accidents and safety measures. Thus, it is difficult to evaluate the effects of these measures. Moreover, there is no information on the characteristics of accident location, such as designated routes or restricted areas.

### *(3) Starting date of chronological statistics*

The answers from the member countries indicate that each country has been maintaining road accident statistics over 30 years. Accordingly, it is possible to chronologically observe the trends in road accidents.

### *(4) Accessibility to database*

The answers from the member countries indicate that the database is not accessible enough to the public for data analysis purposes. Further, even research institutions do not have access to all statistical data in many member countries.

## 2. Status of road safety measures of each country

Various road safety measures are being implemented for goods vehicles in member countries. Below you will find a list of examples of road safety measures for goods vehicles.

### 1) Examples of measures employed nation wide

- Large trucks are to keep a certain distance between 2 vehicles as a safety distance.
- Speed limit for goods vehicles and articulated goods vehicles.
- Heavy vehicles are to be fitted with speed limiter.
- Special travel permission is required for over weight or over sized vehicles.
- Routes are designated by administrative organization for special vehicles.
- Driving time is limited to maintain driver's physical condition.
- GPS device installation is required for mobile cranes.

### 2) Examples of measures taken in urban areas

- Delivery time is restricted for certain hours to avoid peak hours.
- Certain goods vehicles access to certain parts of urban areas is restricted.
- Certain goods vehicles are designated to travel in certain lanes.
- Reduced speed limit for residential areas.
- Parking is restricted for goods vehicles in certain parts of urban areas.
- Goods vehicles are restricted to travel through the city area. Ring roads are designated for through goods vehicles.
- Goods vehicles are restricted to travel downtown areas. When entering for unavoidable reasons, permission is required and goods vehicles must travel on designated routes.
- Goods vehicles are not allowed to park continuously for more than certain hours in urban areas.
- Special on-street zones are reserved for deliveries.
- Loading and unloading space is to be installed in new buildings.

### **3.7 A review of practices for reducing impacts on sensitive environments (natural, population, strategic)** (Leading author: Werner Jeger)

Following the definition used by the UN/ECE, "sensitive environments" are areas in which the ecosystem is particularly sensitive, the geographic conditions and the topography may intensify pollution and noise, or where unique natural resources or cultural heritages exist.

Based on the premise that the construction of roads in environmentally sensitive areas and the traffic that subsequently uses them will give rise to the risk of permanently harming the natural development of these areas, and that heavy goods vehicles pose a major threat to the environment in addition to other risks, a workgroup of C19 conducted a study called "Freight transport — review of practices for reducing impacts on sensitive environments".

A survey has been conducted among a variety of countries that were asked to describe potential actions and implemented measures aimed at protecting sensitive environments. The countries concerned were also asked to give details concerning potential problems and the difficulties associated with implementing management strategies/monitoring procedures.

The various reported measures may be classified into five categories: technical, functional, financial, structural and transport policy measures<sup>3</sup>, and in effect these mainly take the form of traffic regulations, specifications governing the construction and equipment of motor vehicles, and financial policy decisions. The cited measures range from complete bans to simple lane restrictions, while others in between include minimum or maximum speed limits, compulsory carriage of fire extinguishers, regulations governing the construction of tunnels and bridges, etc. Depending on their intensity, the negative impacts of some of the measures on other public interests vary greatly.

Some are extremely difficult, if not impossible, to realise or cannot be adequately monitored by the relevant authorities. In some cases, it is possible to avoid or at least reduce negative impacts by combining certain measures. As a rule, the most efficient effect can be achieved through economic or transport policy measures. In this connection, the measures concerned are usually aimed at preventing the need for goods transport at all, or giving preference to other forms of carriage over road transport.

It appears that the risks posed by heavy goods traffic are basically the same for all types of sensitive environments, and it is the effectiveness of the chosen measures that tends to vary. Although practically all the cited measures may be applied to all types of sensitive environments, the actual choice of measures needs to be varied in order to achieve the desired effect.

A policy of sustainable mobility of freight is intended to ensure a dynamic balance between the promotion of economic efficiency and enhanced social solidarity. It is also to help preserve natural resources and habitats for human beings, animals and plants.

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<sup>3</sup> reduce the freight traffic volumes or the proportion of road freight transport by promoting other options (e.g. rail transport)

It is therefore important for national governments to take due account of ecological, economic and social dimensions of sustainability when defining their policies. This means constantly weighing up the three key factors of sustainability. The consequences of any foreseen measure have to be carefully analysed and evaluated, and equal attention should be paid to all criteria. It is important that this weighing-up process does not systematically overlook the same key factor and at least takes the minimum requirements and sensitivity of the environment into account.

Since pollutants are carried through the atmosphere, environmental protection is not a localised problem. Areas that are classified as sensitive environments should therefore not simply trace national borders, and any measures — whether single or combined — should be decided together with the governments of neighbouring countries.

# 4. CONCLUSIONS

## General

- The areas of work generally studied cover the main issues associated with road freight transport especially in developed and transition countries.
- The original work programme for the committee proposed that the areas of work would include comparisons between developed and developing countries. This has not been achieved as the committee was unable to get information from PIARC members.

The work undertaken by the Committee has resulted in divergent conclusions such as:

- the continuing dominance of freight transport by road is encouraged and enhanced by the increasing weight and dimensions of trucks and trailers. This increase is often based on the view that by increasing the loading capacity of vehicles, the number of trucks on the road will be reduced. This is not necessarily the case, in that due to cheaper costs and therefore pricing, goods will be transferred from another mode (such as rail) which cannot compete against these efficiencies and the number of trucks will increase.

## Evolution of modal sharing

- The analysis of trends of modal share highlights the continuing increase of transport demand and the problems with still more intensified road freight transport. One approach to dealing with this transport growth is to encourage increased intermodality. The different transport modes have to be considered as complementary and not competing. Road freight transport should be included in the general logistical chain. However, other modes than road transport have to improve their attractiveness to achieve a bigger share of the transport growth.
- Road transport shall be a well functioning link in the entire transport chain, with well developed interchange to other modes.
- The present situation for increased modal division is that governments generally promote it, but do not follow through with concrete actions.
- Intermodality offers important solutions for developed countries and for the future also for the developing and emerging countries to improve the efficiency of the freight transport system.
- The development of road freight transport is limited by congestion, safety and lack of harmonisation regarding regulation.
- Generally, modal share between road and rail is going in the wrong direction, i.e. road is increasing and rail is either stagnant or decreasing.

- Road transport, in most cases, seems to be the best solution for freight transport. That is the reason why road freight transport takes an ever increasing share of the total inland freight.
- A necessary reduction of the number of heavy goods vehicles on roads can be achieved if other modes take a bigger share and providing the other modes are able to meet market demands, including efficiency.

## **Role of regulation and deregulation**

- Transport in the developed world has on one hand been deregulated especially with respect to access to the occupation, but even more regulated with respect to traffic regulation etc. (driving time, weight and dimension). Regulation is also a tool for harmonisation.
- The harmonisation of regulation is not easy because of the level of development in different countries. It has a very big influence on the modal share, the use and the organisation of logistics and also the level of harmonisation that can be achieved.
- Deregulation and regulation of freight transport on roads considerably influences the modal division.
- Deregulation of road transport has increased competition within the road transport sector while increasing the competitiveness of the road mode against other modes. The same should happen also by deregulation in other modes.

## **Emerging problems, potential answers offered by logistical platforms**

- To promote intermodality, very good quality and level of infrastructure is required. That means efficient platforms but also very good road accessibility to these platforms. The major issue with achieving this outcome is who is going to pay for the investment necessary to achieve this. New partnerships are required between public and private investors. Road authorities should consider playing a role in establishing and/or maintaining logistics platforms.
- Regarding logistic platform itself: to offer benefits to users and economy of scale, it must be dimensioned for a large regional area.
- The location and function of a logistic platform is a balance between the advantage of having large freight vehicles in sensitive areas like a historical city centre or having many small vans in the same area with the disadvantage of increased congestion and air pollution, etc.
- Logistic platforms may offer some solutions in congested areas. However, the lack of terminals are the main obstacle for increased intermodality.
- Solutions for financing terminals might be found if they can offer efficiencies and good return on investment.

## **Experience gained in monitoring and control of vehicle size and weight limits including emerging trend**

- Weighing heavy vehicles in traffic is necessary for knowledge of the current situation and fair competition as well as for road safety and observance of the laws.
- There is one point that is common for developing countries and other countries; the control and monitoring of weight and dimension of trucks which can be developed further and is important for all countries regarding road wear and tear, as well as assisting in ensuring adequate pavement design and condition.
- Weighing in motion data gives important knowledge to road owners on how to deal with road wear and tear.
- The efficiency of the road freight transport is dependent on harmonisation in monitoring, and controlling weights and dimensions of the vehicles. This is important for the developed countries as for the developing countries.

## **Control and enforcement in the road freight transport**

- For each continent there is a need for harmonisation of weight limits for freight vehicles and the implementation systems for control and monitoring.
- It is necessary to intensify control of heavy vehicles and their trailers for safety reasons and for having equal conditions.
- Enforcement of road traffic in general and of freight vehicles in particular is necessary for a sound road freight market.
- Enforcement must be sufficient to avoid market distortion and damage to the infrastructure.

## **Heavy vehicle safety, including accident statistics and risk analysis processes**

- Road safety can be improved by training of drivers and control of drivers and vehicles.
- Standardisation of accident statistics would offer benefits of comparability by country.
- To find solutions for increased road safety is one of the most important topics for the coming years.

## **Practices for reducing impacts on sensitive environments**

- The environmental impacts from transport generally and of heavy freight transport in particular is not recognised and well understood.
- Developed countries are now dealing with environmental problems. The field of environment protection is a question of lower importance in the developing countries. In these countries the development of the infrastructure and the reducing of accidents are much more important at this stage.
- Road freight transport does not do enough to reduce its negative impacts on the environment.
- There are a variety of measures to protect sensitive environments available that could be applied.

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