Green New Deal Series volume 5

GREEN EUROPEAN FOUNDATION

A Sustainable Future for Transport [Now!]

By Pierre Radanne
Political Conclusions by Isabelle Durant

The Greens | European Free Alliance
in the European Parliament

Green New Deal Series volume 5

A Sustainable Future for Transport – Now!

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Preface

This book has two objectives: it provides a critical but constructive contribution to the debate on the elaboration and diffusion of the Commission's new White Paper on transport entitled "Roadmap for a single European transport area". It also aims at using this major project to move mobility and transport away from its confined specialist sphere, and for it to become an important multi-political stake at the heart of the wide spectrum of social, economic and environmental challenges of our time. Pierre Radanne, founder and director of the consultancy bureau Futur Facteur 4 and world renowned specialist in climate change, assesses the aims, the success and the shortcomings of the previous White Papers on transport, at the request of the "Green New Deal" Working Group of the Greens/EFA Group in the European Parliament. The author explains how the challenges of the coming decades require urgent and profound adjustments of the policies that have been carried out to date in this area. Moving from one century, in which transport has largely benefited from cheap and plentiful oil resources, to another in which several modes of transport will have to gradually but decisively free themselves of their dependence on petrol and fossil fuels for want of sufficient supplies to meet the needs of all, will require the forging of new alliances and new models of organisation between the concerned operators, civil society and local and public authorities. A real change of paradigm as regards the role of transport, and in particular of motorized individual transport, is needed in our societies.

This book is therefore a call for general mobilization in favour of more resource efficient transport, and for an eco-friendlier mobility, respecting vital climate and eco-systemic balances. These goals correspond to the Green New Deal approach, initiated more than a year ago by the European Greens. The Green New Deal considers itself a global and integrative response to the economic, social and environmental crises, and can be seen as a common commitment to a new beginning, focused on the quality of life and the preservation of our environment for example, rather than focusing on growth at all costs, and consumerism for consumerism's sake. The aim is to seek the prosperity and the well-being of all on a universal scale, while also taking into account future generations.

Isabelle Durant

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Greens/EFA Member of the Committee
on Transport and Tourism

Executive Summary

1. An increasingly restricted context for transport policy in Europe

1.1. The growth in transport and European construction: an original link

Since the beginning of the European Union the development of trade and of transport, has played a decisive role in the process of European integration. This is why the EU has always worked to facilitate and multiply intra-European trade. The more people and goods move freely from one country to another, the more ties are knotted thus consolidating European construction. This observation strongly determined the Commission's rationale in aiming to encourage the growth of traffic. With the introduction of the Single Market, economics moved to the forefront of the debate with an emphasis on the need to reduce transport costs. Gradually, towards the end of the 1990s, these principles hardened and moved towards a liberalisation of the energy and transport sectors (associated within the DG TREN), supported by the law on competition which challenged national public monopolies, consequently reinforcing the competency in transport of the European Commission.

This priority granted to competition law leads to a greater fluidity in trade, resulting in an increase in traffic and a reduction in prices. The transport sector then entered into a complex spiral – the drop in prices resulted in an increase in traffic, which generated in turn significant spending on infrastructure to absorb the ensuing congestion.

Parallel to this, the 2000s where marked by yet other needs: the requirement for more advanced community legislation in the area of road safety, air security (after 9/11) and maritime safety (after the Erika and Prestige accidents). A consequence of enlargement in the mid 2000s to twelve new members was a bigger financial burden and an accentuation of these existing tendencies: increase in traffic, growth of competition and price drops.

1.2. A mixed heritage for past transport policies

The rise in traffic

Until 2000, traffic volume growth closely followed economic growth in the European Union. Since 2000 the statistics indicate a reversal of the trend.

- A smaller growth in the transport of people in relation to the growth of the economy -6.5% between 2000 and 2008.

- A growth rate in the transport of goods that remains strong.

The commission report of 2007, "Trends to 2030" predicted strong growth for the road and air modes to the detriment of other modes between 2005 and 2030. Clearly, in an evolving international context, none of the factors determining future traffic growth (globalization, development of infrastructure for transport, but also urban sprawl, industrial strategy, the individual aspiration to travel, etc.) show any signs of diminishing in the near future (with the exception of intra-urban car traffic, confronted with congestion).

What is more, the improvement in transport supply (in terms of infrastructure and vehicles) and also the reduction in costs obtained through energy efficiencies have caused a "rebound effect": higher efficiencies have meant financial savings for the end consumer who, taking advantage of the windfall, have tended to increase the distances travelled. The elimination of bottlenecks and the extension of the road network have had limited effect, notably from the point of view of road congestion. To counter the "rebound effect" will require both an improvement in individual behaviour and better collective organisation.

The issue of competition and of brakes on the development of intermodality

The transport sector remains dominated by a vertical organisation of transport modes in lively competition with each other and therefore with little inclination to cooperate. The initiatives in favour of intermodality have encountered serious difficulties. Accordingly, this is one of the criteria for eligibility for funding from the Marco Polo II programme. "The modal shift will not lead to distortions of competition in the relevant markets, in particular between alternative modes of transport to road transport alone or within each mode, to an extent which damages the common interest." *(Regulation (CE) n° 1692/2006.* This regulation raises a central question, that of the boundary between competition law and the common interest. In practise the actors in the road transport sector have used the principle of non distortion of competition to oppose funding for other modes and in this way effectively delaying

the development of intermodality. Added to this is the fact the choice of mode is distorted by biased fare signals, because of the differences in the basis of cost calculations and of the systems of pricing developed modal by modal, without overall coherence. The distortion in the case of the internalisation of costs, for example, is especially strong in road freight traffic transport. It has been estimated that the social costs of road passenger transport are three times greater than the social costs of rail transport.

As a consequence, the association of different modes leads ultimately to inefficiency in the intermodal chain, since the fares may be based on contradictory principles. It is therefore difficult to establish a price for intermodal operators, which impairs their development. This is also true of transnational transport. The price system for infrastructure has been designed specifically for each type of transport and each country. The disparity in the measures which follow from this is consequently a source of difficulties, on top of which are superimposed the pitfalls of technical interoperability. The liberalisation of the transport sector has in practice weakened efforts to bring coherence to the different modes of transport. The enduring influence of state actors does not facilitate the emergence of a multimodal strategy for people and especially for goods because of interruptions at the borders. This lack of coherence is also evident at an infra level since we can notice an absence of coordination between transport, urbanism and spatial development policies and those involved with the localisation of activities, especially tertiary.

2. New challenges to confront

The evolution in the price of fuel

Transport policies, European as much as national or local, can hardly anticipate the future evolution of the costs of transport (following increases in the price of oil, the necessary internalisation of negative social and environmental impacts and allocating a value to carbon.) As recent years have shown, we can expect erratic changes, which will stretch the ability of market actors to react especially at a time when the sector's ability to adjust is weak in the short term, especially since the alternatives to the road are insufficient. The adaption to new environmental and economic realities will inevitably take several decades – the time it will take to design suitable vehicles and the suitable infrastructure, to distribute them and to change modes of organisation and behaviour.

A context of economic crisis and social change

The financial and economic crisis has exasperated the already serious difficulty that exists in overcoming the priority given to road transport. Increased budgetary tensions have been weighing heavily down on the capacity for public investment. In fact, the weak support recently accorded by the Member States to non road modes of transport can be explained by their smaller capacity for public investment. There is a risk that the new Member States will suffer from this scarcity of public investment capacity. Social evolutions, notably the ageing of the population, have also had an impact on the transport sector by increasing demand.

The fight against climate change

At the end of the 2000s the transport sector presents a paradoxical balance sheet. While the need for a European transport policy has become obvious, the incomplete liberalisation process already has had mixed results: road and air are favoured, traffic volumes continue to rise, etc. Moreover, during the last two decades public opinion has been focused on road safety which has lead to stagnation in fuel consumption since 1985 and thus has not opened the way for a reduction in CO_2 emissions, in spite of technical improvements in engines.

If a reduction in air pollution was achieved thanks to an active policy, the emissions of greenhouse gases linked to internal traffic in the EU27 increased by 26% between 1990 and 2005. The growth in energy consumption was almost identical to the growth in traffic. At the moment European transport policy is not fully engaged in the fight against climate change.

Nevertheless, objectives for a reduction in greenhouse gases from 20% to 30% between 1990 and 2020 for the Europe of 27 should correspond to an actual reduction of 13% to 23% between 2010 and 2020. The effort to reduce emissions should be all the more significant in the coming period than in the period from 1990 to 2012. On the horizon of 2050 the objective accepted in the Commission's scenarios for the transport sector is from 55% to 68% compared with the last statistics available

(2008). Compared to 1990 this corresponds to a reduction of 45 to 60%. These calculations were carried out in conformity with the current rules of the Kyoto Protocol, that is to say they exclude air and sea transport. If these were included the reductions would be lesser still, considering the perspective of a twofold increase in air traffic of people and of sea traffic of goods.

These objectives are not enough and constitute a serious bias in the forecasting exercise of the Commission. It assumes that the reduction in emissions attainable in other sectors will be such that it will compensate for the effects of this rise in traffic.

3. Towards a sustainable transport policy

3.1. The main proposals of the Commission's draft White Paper

European transport policy finds itself confronted with a deep contradiction: it has had little success given the resources it has mobilized and above all its results are very unimpressive: traffic is growing at a rate almost equivalent to the rate of economic growth. The Commission's new draft White Paper notes the tension induced, on the one hand by the growth in traffic and on the other by the constraints of climate and energy. This marks a serious bifurcation compared with the content of the White Paper of 2001 and with previous Commission position papers.

It introduces a certain number of new proposals, the principle ones being:

- the establishment of a **European Single Transport** area, through the elimination of remaining barriers between modes and national systems and by a strong integration of national systems backed up by new communication technologies;

- the **stimulation of technological innovation**, especially communication and information technology which should result in an optimization of the management of traffic and facilitates the development of intermodality. However, the potential benefits of these technologies are not without drawbacks: if driving were even simpler and attractive it could lead to a rebound effect, going in the sense of a growth in traffic and contradicting the incentives to use more efficient modes of transport.

- innovative economic principles, like the "**polluter pays**" and the "**user pays**", but for which the conditions and deadlines for implementation are unspecified;

- ways to improve behaviour founded on a **more attractive supply of public transport**. However, it would have been desirable if the draft White Paper had gone further in delivering a deeper reflexion on the question of the changing of the behaviour of users, but also of the shippers, industry, and the service companies.

It should be noted that even if the emphasis is placed on an integrated and multimodal approach, competition is still the ruling principle of the new European transport policy as set out in the draft White Paper.

3.2. The objectives that incline towards a goal: the reduction of 75% of emissions of the Union

The commission must clearly address the future traffic trends of different modes of transport as well as their causes and consequences. With a note of caution: these changes are as much a result of national policies as the choices of local authorities and the every day behaviour of the population.

European Transport policy must

- be based on the question of the goals it wants to obtain and their ranking;

- reopen the debate on the resources required to reach the objectives set;

- form, for increased efficiency, tighter co-operations with public collective subsidiaries.

This new policy must bring about a reversal of priorities and concentrate both on finding a new definition of the common interest and the respect of the strong obligations in the short term to reduce the emission of greenhouse gases. To reconcile a reduction in greenhouse gas emissions, the freedom of movement of people and exchanges of goods requires a rationalisation and an optimization of transport activities.

The draft White Paper clearly takes into account the future challenges concerning energy and the climate. But even though the direction taken by

the draft White Paper represents a considerable advance compared to other versions, it is not at all evident that the proposals are in line with the vision. The results of the forecast exercise are presented and they are very far from the objective of 75% for the Union. What weakened the performance was:

- the strong growth planned for international and intra-community freight traffic;
- the weak improvement in the energy efficiency of trucks and vans;
- the strong growth in air travel.

What is more, one can only regret that the strong emphasis placed on technology does not find an echo in a reflexion on governance between different levels of administration.

3.3. The differentiated priorities for the transport of people and of goods

The new policy adopted following the debate opened up by the draft White Paper must generate a framework directive tasked with:

- determining precisely the principles of common interest to retain;
- fix a ranking in order of priority between the modes of transport;
- agree to orientations for reforms of taxation, fares in relation with the internalisation of external costs.

It should concentrate on the means of changing the attitudes of the current actors who decide on transport policy while at the same time introducing a policy of mastery of mobility to reconcile equal access to transport and energy and environmental objectives, as much for the transport of people as for goods.

This involves notably:

- better localisation of economic activities in function with the habitat;
- giving priority to short circuits;
- reorienting urban policy in favour of compactness;
- rationalising tourism by favouring the long break;
- developing new communication technologies concerning the transport of people, the main challenge is to direct oneself towards a profound transformation of modes of transport, starting with the car in order to improve its energy and environmental performances;
- rethink the size of vehicles in direct coherence with their use and the speed limits (to be generalised around the Union);
- develop other means of getting access to a car than individual ownership;
- develop other modes of engine and transport, notably by a substitution of oil based fuel with electricity;
- reinforce the public transport networks;
- especially facilitate intermodality concerning the transport of goods;
- harmonization of regulations between Member States notably concerning social legislation;
- optimisation of the use of rolling stock;
- develop alternatives to the road: rail, waterways, cabotage, notably for non-urgent transport;
- develop alternatives to oil;
- develop intermodality;
- improve the efficiency of urban deliveries.

4. The instruments to mobilise

4.1. A new institutional and juridical basis

Putting into practice a new European transport policy means finding a coherent articulation between the priorities developed and the rules of competition which provide a framework for procurement markets. This is a crucial juridical stake central in terms of the principles which should underscore this policy. It should result in a directive whose first articles would decide on the one hand the principles of common interest to be respected and on the other the criteria of economic efficiency on which the rules of competition are founded.

One of the major advances in competition law has been to set deadlines to contractual texts,[1] whether for public service delegations or concessions. This type of regular revision of objectives and conditions should be generalised.

4.2 Engage a powerful regulation movement

The White Paper should propose regulatory mechanisms applicable to the transport sector which take into account the political and legal principles which precede as well as the principle components of sustainable development.

- The use of price constitutes a fundamental component but can only be used gradually to avoid social unrest and economic difficulties. It should be clearly signalled over the short and medium term so that people can gradually prepare for it.

- It will be necessary to relaunch public policies at all levels of administration to develop transport alternatives: soft modes, public transport, reinforcing rail, ... funded initially by tax rises (on carbon or fuel).

- A serious effort to communicate the facts of the problem, the paths possible, the need to take into account of very diverse situations should be undertaken to encourage a profound change in attitudes to ensure that a maximum of transformations are carried out on a voluntary basis.

- Other non-price regulatory mechanisms, meaning the legal path, will subsequently be necessary to give the necessary signals and so inform behaviour: speed limits, limits on the speed of cars, parking restrictions, introduction of a bonus-malus system for the purchasing of vehicles.

The need for regulation is also to be seen in terms of the limits or the complements to the principle of competition. The maintaining of unprofitable lines should be targeted in different ways, each of which involves problems and difficulties.

- Transferring a part of the revenues from profitable lines to top up co-operatively the revenues of less profitable lines.

- Obliging companies to manage certain lines, dividing the burden fairly.

- Giving back to the state the direct management of lines that do not find an operator after the tendering process.

The question of the general opening up of the rail passenger transport market to competition and a definitive abandoning of the national monopolies should not be contemplated without public service contractual objectives demanded to all the operators in one way or another.

Finally, general and harmonized reform of tariffs and taxes from now to 2014 would render obsolete questions about competition between different modes of transport. The inclusion of aviation in the European market for quotas from 2012 is essential as is the inclusion of the entire cost of the construction and operating of airports in the price of the airline ticket, excluding all state funding at national or local level (except for certain geographic situations where the airplane has a public service function due to the absence of other operators servicing that line to an equivalent standard).

The articulation and coherence between the European transport policy and national and local policies must be improved. In fact, as energy and climate constraints affect all the Member States it is in everyone's interest that policies converge to obtain the most efficient outcome possible. Moreover, local authorities hold key competencies in terms of transport. European transport policy must consequently support regional and local policy, particularly those of large agglomerations. The form of this coordination needs to be determined. It could pass by the inclusion of transport objectives in the Covenant of Mayors, initially formed to fight against climate change.

4.3 The indispensible internalisation of costs

A good comparison of the technical options in public and professional choices of transport involves adopting on a European (as well as national and local) level a total cost approach which includes in the price all the direct and indirect costs "from oil well to the wheel" after a life cycle analysis.

1 The notion of a contract means in a wide sense every text negotiated between a public order giver and a public or private business person who sets out objectives and conditions of exploitation for a defined period.

Internalisation means that the costs generated by transport are included in the price. Up to now these have been paid by the community (or individual actors). By doing so, sooner or later, it repositions the citizen as an economic actor in a position of choice. This implies that the latter dispose of the necessary information to determine both their personal interest and the common interest. An optimal internalisation leads consequently to the implementation of polluter pays and user pays (regarding the wear and tear on infrastructure, their management and their renovation).

If internalisation of cost is to be introduced as fast as possible it is advisable to organise increases of fares or taxes on fuel incrementally over a long period in order to give the economic actors the opportunity to factor in future rises in the value of fuel and carbon. This gradual adjustment of price must not cancel out the ranking of economic priority that comes from the internalisation of costs.

4.4. The financial needs of a new transport policy

The transport sector being far from economically efficient, the first economic measure should target a reduction in waste. Encouraged by natural inclination to reduce transport costs over more than a century, due to technological progress and the low price of oil (with the exception of the oil shocks and the period we have been experiencing since 2003). The potential for improvement in economic efficiency of the transport sector is considerable and must be exploited to enable the essential shift in this policy.

The principal waste is the disproportionate size and performance of vehicles (cars and vans) and their underuse, taking into account the possibilities of car sharing with the development of communication tools.

Nevertheless a new transport policy which proposes attractive alternatives to the road, provides good quality service and frequency, requires large investment. This means major changes in financial priorities compared with the present situation and specifically from road to rail and urban public transport. A European plan (with the participation of states and subsidiary levels) composed of clear objectives and deadlines will participate in making up for lost time.

4.5. The instruments of a new transport policy

Transport policies consist of defining the instruments that will give strength to certain tendencies or achieve certain objectives without excessively harming others. The debate on the instruments tends to be a little exclusive. Certain advocate that the solution to difficulties is technological innovation, others by investment, by the instruments of the market, by regulatory mechanisms or even by changing behaviour. In fact a transport policy must articulate all these instruments to divide by 4 in the next 40 years greenhouse gases, knowing that the principal actors who are at work may have very different reactions: businesses, states, local authorities, families, ...

The power to create excises (additional taxes already in place in every country, axel taxes or any tax that corresponds to the use of infrastructure, carbon tax) or to put in place neutral fiscal measures of the bonus-malus type constitute the financial instrument that should be favoured, harmonized between the Member States. These instruments will be the ones to adopt in priority as long as the unanimity rule applies in fiscal matters. The project for a fiscal harmonization between Member States, on a voluntary basis and using excise taxes, should be launched by the end of 2012, at the end of the first commitment period of the Kyoto Protocol.

4.6. A profound transformation of individual and professional behaviour

The debate started by the draft White Paper on transport should release processes which will gradually change buying behaviour, the choice of mode of transport, their use and driving practices of people and companies.

The stakes are high: we are reversing the discourse which dominated the whole of the 20th Century on our relation with transport. The European transport policy must rest on a strong cultural dimension. We cannot reorient and optimize transport policy without investing in the power of people to change and in the democratic process and without deploying our efforts in educating, communicating and looking forwards.

1. Dynamics at Work and Objectives to be Set in the White Paper on Transport

1.1. Introduction

This report, financed by the Greens/EFA Group in the European Parliament, has the following objectives:

- to fuel the Greens/EFA Group in the European Parliament contribution to the White Paper on Transport drawn up by the European Commission with the European Parliamentary debate in mind;
- to urge on progress in the area of transport that will contribute to tackling climate change in preparation of the Cancun Conference, drastically cutting greenhouse gas emissions to reach the targets set for 2020 and 2050;
- to add substance to the Urban Mobility Action Plan adopted in September;
- to define the role of transport in the Europe 2020 strategy;
- to stimulate the European Commission's formulation of a transport and climate "package".

2. Analysis of Past European Policies

2.1. A Gradual Change of Priority in European Transport Policy Objectives

An analysis of the European texts of the last twenty years shows a gradual re-orientation of the underlying objectives of the European Transport Policy. The latter refers to the overall strategic aims as well as to the answers to this sector's specific needs:

Mobility of Goods and People at the Heart of the European Construction Process

From the start, the European Commission has worked to facilitate and multiply intra-European trade, whose development has been perceived as a reinforcing process in regards to the acceptance of European integration by both the general population and economic players. Increased mobility has therefore been an objective in itself for European decision makers. This resolution has applied to the mobility of people and goods alike.

The Introduction of the Single Market

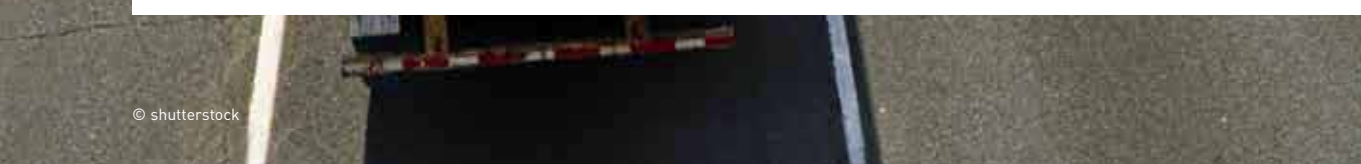
European Transport Policy was thus strongly influenced by the introduction of the Single Market, the latter aiming at improving European competitiveness and reducing the costs associated with the "no-Europe" or in other words the pre-Single Market Union. Consequently, the debate has been more economic, with a drive to reduce transport prices. During this phase, the favoured transport mode for the development of the Single Market was road freight.

The Increase in European Competencies to the Detriment of the Member States

The Commission's efforts to acquire competency in the area of transport has been a defining feature of policy for the last two decades. This is part of a general propensity to enlarge Community competencies, which have, little by little, supplanted Member State intervention in certain fields.

- This growing momentum in European legislation is based on the will of the Commission to harmonize transport policies and to facilitate trade.
- This growing momentum in European competencies has also been a result of its work in the environmental sector, with the introduction of anti-pollution and climate change legislation.
- Moreover, the process of extending the European Union from 6 to 27 members has required a centripetal process of improvement of the new Member State's development levels by easing their economic integration.
- More recently, European Transport Policy no longer seems to be interested solely in the road transport mode. Currently, the European Union's Integration Targets are extending to rail and air by stricking at monopolistic situations.

The importance given to the mobility of goods and people in the European Single Market Construction Process culminated in the adoption of a number of directives in the 1990s sanctifying the European Union's appropriation of the Transport Competency.



This recent period is also characterized by other developments.

A Powerful Movement of Liberalisation of the Sector and the Confrontation with New Stakes

- Gradually, towards the end of the 1990s, principles hardened and evolved towards the liberalisation of the energy and transport sectors (brought together within the DG TREN), in particular through an increasingly assertive Competition Law on national public monopolies. This development, in accordance with the movement initiated during the previous phase, was justified by the determination to reduce the costs engendered by monopolistic situations and by the desire to assert the primacy of Community competencies over national competencies.
- This hardening of the competition law is based on a higher fluidity of exchanges, causing an increase in traffic and a decrease in prices resulting from the questioning of dominant position abuses, especially in the field of air transport. Indeed, considering the European Union's continental size and the integration of the Central and East European Countries as well as the Balkans, air transport has become a major component of integration.
- In parallel, the 2000s have also been characterized by other necessities: the need for more Community safety regulation for road, air (following the 11th of September 2001) and sea transport (following the Erika and Prestige accidents).
- The accession of twelve new Member States in the mid 2000s inevitably meant that major financing was needed to modernize infrastructure in those countries and that more intense competition in various sectors (road freight transport in particular) would follow. This extension has accelerated the existing trends: increased traffic, stiffer competition and lower prices.

A Delay in the Taking Into Account of the New Energy and Environmental Stakes

- Paradoxically, the question of fuel price rises, obvious from October 2003, was hardly taken into account by the European Commission (as by the Member States); the supposition being that this was a temporary phenomenon. On the one hand, this perception was understandable in the light of the cyclical history of oil prices, but on the other hand, the European experience of earlier oil crises had clearly shown the negative economic and social impacts of higher oil prices. However, the Commission did not prepare a response strategy with regard to this price hike (neither on its own, nor collectively).
- Moreover, up to now the European Transport Policy has only been slightly impacted by the fight against climate change. Unless a more binding alternative system is put in place, it stays unconcerned, for example, by the Emissions Trading System (as will be seen in the chronology of the ETS on page 75). The Commission's initiative was limited to a voluntary agreement negotiated with the car manufacturers concerning a reduction of emissions per kilometre.
- This lack of clarity concerning the direction of the European Transport Policy can also be found in national policies and in those of the majority of local authorities.

The Voluntary Reduction Objectives Agreed With Car Manufacturers

- Whereas limits on CO_2 emissions for cars have been introduced in Japan, China and California, the chosen instrument in Europe up to now has been a voluntary commitment of car manufacturers. In 1998, the European Commission concluded an environmental agreement with the ACEA (European Car Manufacturers Association), by which this association committed itself to reduce new vehicle CO_2 emissions to 140gr per kilometre by the end of 2008. This is the equivalent of a petrol consumption of 5.9 litres and a diesel consumption of 5.3 litres per 100 kilometres. At the time, the ACEA also promised to examine the more ambitious target of 120gr per kilometre for 2012, on the basis of which all the European institutions were asked to reach a decision from the mid 1990s onwards. Following this, the Japanese and Korean Car Manufacturers Associations expressed their agreement with the European Commission on the objective of an emissions reduction of 25% in order to comply with the 140gr per kilometre standard for all vehicles exported to the EU by 2009.
- Nevertheless, by 2005, the ACEA's members had only achieved a reduction to 160gr per kilometre. The German manufacturers, in particular, still had an average of 175gr per kilometre because of the success of their luxury four-wheel-drive sales. Thus, it is the diesel vehicles that have lowered the average emissions of these last few years.

A European Competency Is Now Established but is Unable to Reverse the Trends

At the end of the 2000s, the European Transport Policy displayed a paradoxical report card. While the need for a European transport policy has become self-evident, the liberalisation process is both incomplete and has already shown mixed results:

- It has clearly favoured road and air transport over other modes of transport, despite investment commitments given to the latter.
- Traffic is continuing to grow, generating more congestion, additional fuel consumption and increased greenhouse gas emissions. The latter are proving to nullify a large part of the progress achieved in other sectors.
- The emissions linked to traffic within the EU of the 27 increased by 26% between 1990 and 2004, whereas the emissions from the majority of the other sectors decreased during the same period. In the EU of the 15 the average CO_2 emission per kilometre emitted by new private cars has been decreasing in a regular matter since 2000, but only at an average annual rate of 1.3%. This improvement rate is slower than the one from the previous decade. It has proved insufficient for achieving the 2008/09 objective of 140gr per kilometre, and then the future objective of 120gr per kilometre by 2012.
- The European Transport Policy is today confronted with a deep contradiction. It has sought to facilitate mobility and falling prices while congestion, greenhouse gas emissions and rising energy prices require the opposite. Ultimately, the European Transport Policy has had little success considering the resources that it has mobilised and above all, it has failed to meet its objective, since traffic is continuing to grow at a rate that is at least equivalent to the economic growth rate (2% per year compared to an economic growth rate of 2.2%).
- Most importantly, it is now faced with a deadlock. The European Transport Policy is weakening this sensitive sector by keeping it dependent on oil and the constant growth of its greenhouse gas emissions is jeopardising the European policy of fighting climate change. This acknowledgement gives rise to an obvious fact: the White Paper must closely look at the future trend in traffic growth for the various transport modes, its causes and its consequences.

Nevertheless, we must not put on European Transport Policy the responsibility of the trends that are being experienced by the sector as a whole. The latter are above all a consequence of national policies, corporate choices, local authority decisions and everyday population behaviour. They are also part of a general tendency common to all industrialised countries, which is now spreading to the emerging countries.

The European Transport Policy should, via the new White Paper:

- reformulate the question of the objectives that it wants to achieve, and their ranking;
- reopen a debate on the resources necessary for achieving the objectives that it has set;
- forge, for greater efficiency, stronger co-operation with subsidiary local authorities.

2.2. Analysis of the 2001 White Paper

In addition to what precedes, an analysis of the European Commission's last White Paper, published in 2001, is particularly important.

→ Its Positioning

Firstly, it was not really a White Paper on transport in Europe. This text comprises of proposals relating to the fields on which the European Commission can intervene, which is very different. It is entirely devoid of national and territorial policies.

What It Deals With

This brings us to 2001, a time when the European Commission was engaged in a battle on four fronts:

- to conquer competencies, based on its established strengths: equity on the level of the competition law, the sole prerogative which, as in the field of energy, gives it real authority to intervene in a sector where national governments jealously guard the interests of their state enterprises and their industrial champions (when they have any);
- to intervene in a fundamental project for European Integration, by pushing for the opening of markets through deregulation;
- to begin rationalising a sector where waste is endemic and which is dominated by lobbies that it had no means of confronting directly; there is a deep asymmetry in the capacity of intervention of the institutions, between, on the one hand, the car and infrastructure manufacturers and builders and their operations, and, on the other hand, the users and the local authorities;

- to tentatively address the question of economic optimisation and environmental considerations (incorporation of social and environmental externalities within the fare systems).

What It Favours

Without really saying so, the text leans towards principles that it skilfully balances out:

- universal access to mobility, the aspiration to personal and professional mobility, European integration and the reduction of the prices of products imported from emergent countries all constituting fundamental factors in favour of the purchasing power of the European countries; it is thus positioning itself within the mindset of a reduction of transport prices that is coherent with the globalisation of the economy;
- the adoption of directives calling the national monopolies into question, which corresponds to an internal transfer of power to the Union;
- a massive transfer of investment aid to the newer Members of that time – Spain, Portugal and Greece – and to the candidates for accession – Central and Eastern European Countries; consequently, the text legitimately favours the peripheral countries and advocates low transport costs, especially in terms of taxation;
- the will to deal with congestion points, especially at the borders, and to harmonise the networks.

These choices are quite contradictory at a fundamental level, insofar that the text favours a price indexing policy for households and companies rather than a real reduction in costs that could be made possible by an active multimodality policy.

What It Overlooks

The 2001 White Paper contains flagrant contradictions:

- the text foresees a continuation of the growth in traffic; there is no reflexion on the factors that determine such growth nor, consequently, on the control of transport flows;
- there is no reflexion on the localisation of activities, country and town planning or urbanism;
- the Transport Policy's social aspects are not mentioned (apart from the access to mobility of people with reduced mobility);
- the text pleads for more competition while noting the destructive nature of excessive competition, especially in the road freight sector where the social regulations are not well respected;
- it demonstrates a total lack of analysis of financial waste in the transport sector;
- paradoxically, in 2001, the DG TREN (transport and energy) totally failed to address neither future energy prospects nor obligations concerning Climate and pollutant emissions.

3. The Dynamics at Work

Engaging a robust Transport Policy requires the establishment and ranking of certain priorities, according to the dynamics at work and the objectives to be achieved.

3.1. Tendencies Identified According to the Various Transport Modes

→ Main Tendencies

The distribution between modes of transport in 2008 was: ↓

Increase in Traffic and Covered Distances

The Trends to 2030 report showed a strong growth in the road and air transport modes to the detriment of other modes of transport. ↓

Mode	Overall distribution of emissions
Road	70.8 %
Sea	15.2%
Air	12.8%
Rail	0.7%

Growth in traffic observed between 1990 and 2005					
	1990	1995	2000	2005	Growth
Passenger transport in Gpkm	**4,784.5**	**5,221.8**	**5,819.7**	**6,245.4**	**+30%**
Public Transport road	555.6	498.3	514.0	529.0	-4.8%
Private cars and two wheeled motors	3,459.2	3,930.1	4,375.8	4,714.4	+36.3%
Rail	464.8	412.0	438.5	446.8	-3.9%
Air	247.9	325.9	442.0	506.3	+104.2%
Inland waterways	57.0	55.4	49.4	48.9	-14.2%
Distance covered per person in km	*10,171*	*10,959*	*12,112*	*12,769*	*+25.5%*
Transport of good in Gtkm	**1,878.9**	**1,929.0**	**2,174.9**	**2,463.9**	**+31.1%**
Trucks	1,096.9	1,279.3	1,507.5	1,790.0	+63.2%
Rail	524.8	385.0	396.1	393.9	-24.9%
Inland waterways	257.2	264.7	271.3	280.1	+8.9%
Freight activity per unit of GDP in tlm per thousand € 05	232.0	221.0	216.0	225.0	-3.0%

Source: Rapport Trends to 2030 – update 2007

This increase is associated with:

- an improvement in the quality of life through the access to mobility, especially in the recently admitted countries;
- the increase in the number of vehicle-owning households and the number of vehicles per household;
- road mode domination, especially regarding the investments in infrastructures, which has the effect of marginalising the less motorised populations and forces them to acquire a personal vehicle;
- the lengthening of the average distances covered, rising from 17 km per person per day in 1970 to 35 in 2008, mostly by road, resulting from a contradictory tendency of housing localisation (centrifugal) and employment concentration (centripetal);
- the increase of average travel speeds, in particular on medium and long distance journeys. In the big cities, car speed has levelled off at around 15kph because of urban congestion;
- a congestion phenomenon that is tending to spread and to reach urban fringes, certain main roads and some sensitive routes (mountain crossings in particular;
- whether through the movement of people within its borders or through economic interaction, the European political integration project has legitimised and required low transport prices, to the advantage of road transport and to the detriment of investment in other transport modes;
- a strong growth in the containerisation of goods with the growth of sea transport;
- low transport costs (especially taxation) favour the peripheral more than the central states of the Union.

Energy Consumption Rising Sharply

The growth in energy consumption has almost been identical to that of traffic. The progress achieved in the energy efficiency of vehicles has been countered by losses in the market shares of the most efficient modes (public transport, rail, waterways) and the strong growth of air.

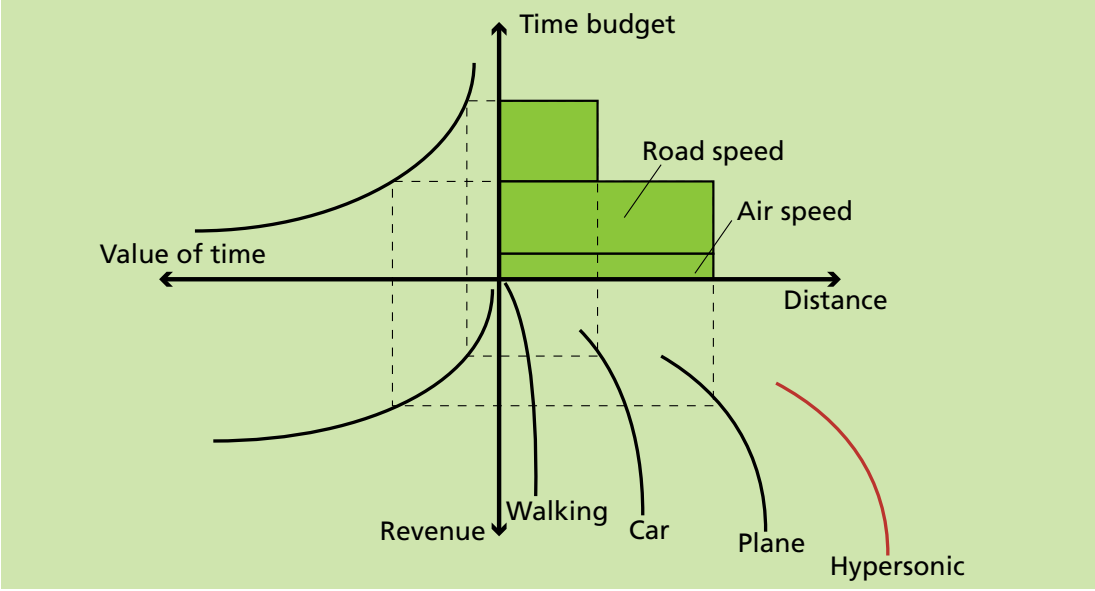
An Uneven Environmental Balance Sheet

- A reduction in air pollution (lead, sulphur dioxide, dust, carbon monoxide and unburnt hydrocarbons) obtained by a gradual strengthening of the regulations, by technological progress and by fuel improvements;
- the persistence of high pollution levels: production of nitrogen dioxide and of very fine particles;
- the growth of energy consumption and therefore automatically of greenhouse gas emissions (+26% between 1990 and 2005);
- a Stable Budget for Time Spent on Transports per Day.

The average journey time per day remains more or less constant, between 1 and 1.1 hours, over all income levels (Metz, 2008). It has remained more or less constant for forty years. The distance covered is therefore a function of the speed. It has recently increased as a result of higher car ownership, the extension of the motorway networks, the development of High Speed Trains and air transport.

Energy consumption of transport in ktep

	1990	1995	2000	2005	Growth
Overall energy consumption of transport in ktep	**279.4**	**299.8**	**339.1**	**361.7**	**+29.5%**
Public road transport	5.2	4.5	4.5	4.3	-17.3%
Cars and motorbikes	148.1	159.1	174.7	175.7	+18.6%
Trucks	80.6	85.8	99.3	117.0	+45.2%
Rail	9.6	9.4	9.7	9.6	-
Air	28.9	34.0	45.4	49.7	-72.0%
Inland waterways	6.9	3.9	5.5	5.4	-21.7%



Source: Laboratoire d'Économie des Transports

An Evolving International Context

Among the overall decisive factors, one can highlight:

- the rise of security questions since 9/11, which generated a strong increase in constraints and additional corporate costs, especially in air transport and public transport. The attacks in the trains of Madrid in 2004 and in the London Underground in 2005 have considerably contributed to the fear of terrorism in Europe;
- the rise of China and India as producers of manufactured goods and consumers of raw materials. This has resulted in a steep rise in maritime traffic (a doubling in 25 years);
- an important European specificity should also be emphasised: the continent's overall high population density, which makes the economy less sensitive to transport considerations than in other countries, such as the United States or Russia in particular.

→ Traffic Growth

The general panorama depicted above is completed here by a more precise analysis of each mode of transport.

Road: Goods/Passengers

It would hardly be useful here to re-examine the dominance of road transport as a mode of transportation. The different elements are well known. Nevertheless, three points deserve to be highlighted:

- trucks account for only 3% of the vehicle fleet, but 20% of the congestion in Europe. The inherent advantage of road transport lies in the generalised extension of the motorway network in all of the Member States;
- vehicle ownership has the effect, once the acquisition has been made, of solely taking into account the cost of use and ease of access and of causing a desertion of the other modes of transport. Not only throughout the 20th century, have road manufacturers formed symbolics and behaviour in line with their interests, but they have also monopolised the media space by their advertisements and the televisual and editorial magazines, whose control they secured themselves through transport-oriented shows and publications;
- various structural changes continue to support an increase in the market shares of road transport, in particular urban crawl, the lengthening of the supply chains and the expected delivery speed of goods.

Air: Goods/Passengers

Of all the modes of transport, air transport has benefited from the strongest growth during recent years, but it still represents only about 10% of passenger transport. International flights (extra-European) have enjoyed continuous growth, with a particularly strong increase in the number of seats available on direct flights between the EU and China, rising from 275,000 to 5,400,000 between 1990 and 2004.

The number of intra-EU connections in a competitive situation increased by 310% between 1992 and 2009. This has facilitated a 170% increase of intra-European traffic since 1990. It is not surprising that the low-cost carriers increased the number of seats offered at the beginning of the 1990s from 1% to 28% in 2006. The enlargement of 2004 led to a doubling of air traffic in the newly admitted countries in only two years. A total of 798 million passengers were carried in 2008, with nearly 44% of these within the EU (worth €516 million).

12.9 million tons of freight were transported by air in 2008 with 80% of this total consisting of goods of non-European origin (perishable goods, flowers, and so on).

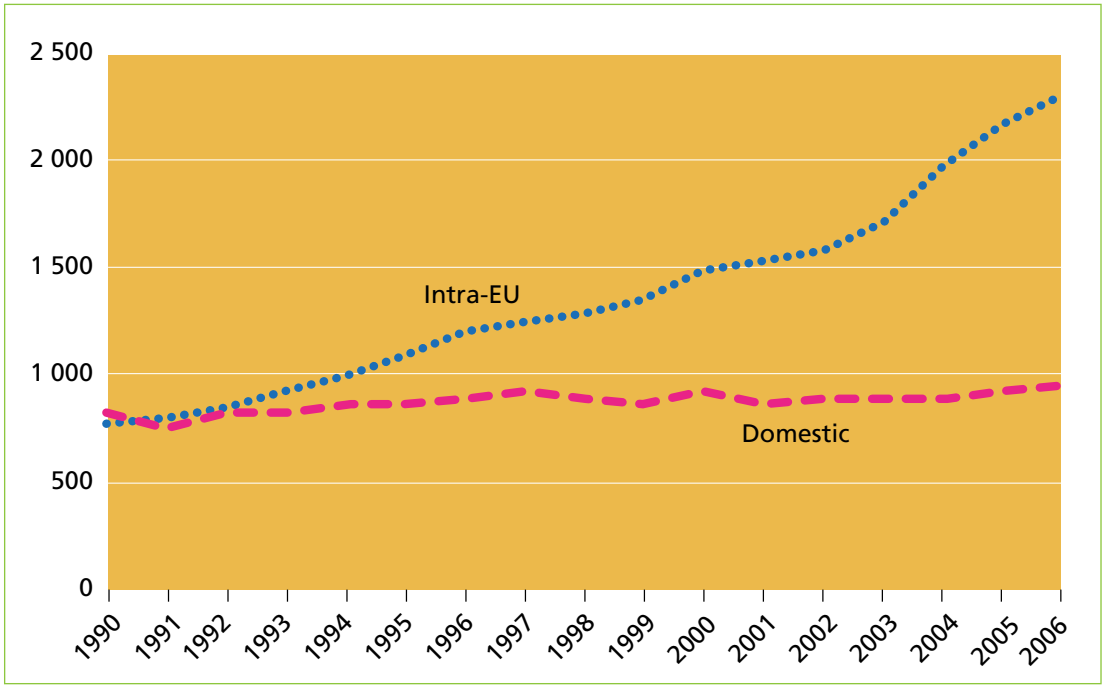
As the thirty largest airlines employ some 360,000 people, it is estimated that air transport generates 3.2 million indirect jobs, i.e. 3% of European employment.

The rapid expansion of air traffic and the specific nature of its infrastructure management requirements have led to the creation of the European Union's SESAR (formerly SESAME) project. The objective of SESAR is to modernise air traffic control in Europe in order to ensure maximum fluidity and safety. This programme aims to enable a tripling of the traffic in European skies, to reduce the environmental impact of air traffic by 10% per flight and to save an average of 8 to 14 minutes and 300-500 kg of fuel per flight.

Aviation is not only the mode of transport with the fastest growth of fuel consumption, it is also the main factor in the growth of greenhouse gas emissions. But in the context of the inventories done by the UNFCC, emissions are currently solely calculated on a national basis only. As a consequence international journeys are not quantified. They have however increased by 2.7% per annum since 1990. Moreover, aviation's contribution to climate change is of particular importance because the CO_2 emitted at high altitude has double the effect of that emitted at sea level.

For passengers, aviation remains relatively cheap because the price of tickets does not include taxes that apply to other transport modes. The European Commission has expressed its intention to remove the legal obstacles to a tax on air fuel indexed in line with the price of kerosene (European Commission, 2005). But little tangible action has been taken. A step in this direction is the inclusion of aviation in the EU Emissions Trading Scheme (ETS). In December 2006, the Commission presented a proposal for a directive with a two-stage

Figure 1: City-to-City Air Connection Trend in the EU of the 27



Source: OAG Schedules

process. From 2011 onwards, the emissions of all internal and international flights between airports of the EU will be concerned. At the beginning of 2012, the field of application would then be extended to the emissions of all international flights involving a European airport, wherever they are coming from or going in the world.

The development of air travel is equally a consequence of a widening of the circle of personal relations (stimulated by the internet), and of the way in which families organise their holidays. The enlargement of the European Union, the free movement of people, the creation of a single European labour market and the opening up of competition have amplified the phenomenon.

In general, long-haul travel is encouraged by the high speed that air transport allows, despite the rise in oil prices.

Air freight traffic is growing even more quickly than passenger traffic. Although air freight accounts for only 1.1% of all international transport volume, it absorbs approximately 40% of the total international freight value.

Rail: Goods/Passengers

Though international connections are more reliable today, freight trains were faster 60 years ago. In reality, the rail sector does not easily lend itself to the opening up of competition, especially when it comes from companies from other Member States. However, right from the start, rail has had an international dimension. English companies provided the traction on the first French lines. French concessionaires were responsible for lines in Austria, Belgium and elsewhere. However, in the light of rail transport's strategic and economic importance, national issues have become increasingly important. National priorities have taken precedence over corporate priorities, which have sometimes led to a strengthening of borders. Rail was the principal means of troop and munitions transport. As a result, certain States adopted a rail system that was incompatible with that of their neighbours.

In 2005, the overall length of the railways in the EU-27 was 219,550 km with an average density of 51 km per 1000 km². Whereas Germany has the largest network (38,206 km), the Czech Republic has the strongest railway density - 122 km per 1000 km². Between 1990 and 2005, the overall length decreased by 6%, resulting from a major reduction in Germany (-13%), France (-14%) and Poland (-26%). Other countries increased their capacity slightly but not enough to compensate for those losses. It should be noted that European comparisons are biased by the disparities between the member States in terms of measuring methods. As a result, the United Kingdom has changed its methods of measurement for its rail network, underlying the need for a harmonised European method of transport infrastructure measurement.

The Thalys train, which connects Paris, Brussels, Cologne and Amsterdam, encounters seven different traffic management systems, including some specific sensors and control panels. These complexities[1] entail additional costs, a 16 kph reduction of the average speed of international trains (non-HTS) and an increased risk of breakdown, on top of the difficulties relating the driver's work. In the light of these major obstacles stemming from the diversity of the national infrastructures across Europe, the European Railway Management System (ERTMS) was created. The ERTMS seeks to remedy this lack of harmonization of signalisation and speed control. The initiatives ensuing from the ERTMS include the development of locomotives adapted to different electricity voltages or even to function on several different voltages and the giving up of certain types of carriages.

The high speed train offer constitutes serious competition for the airlines. According to Eurostat, approximately 1,225 km of high speed railway lines are currently under construction in the EU-27. The longest of these lines will connect Lisbon and Oporto (312 km). Currently, only a third of the Member States has a high speed train network.

Sea: Goods/Passengers

Maritime transport is the most efficient freight transport mode from an environmental perspective; this mode on average produces only 30gr of CO_2 per kg (Saunders & Hayes, 2007).

1 As an indication, there exists at the European level five different track gauges, six various electrical power systems, eight pantograph systems, seven indication systems, more than twenty control systems, four wagon versions, five railway communication systems and numerous unharmonised rules, with regulations in several languages, which almost always requires a change of locomotive and driver when the trains pass from one country to another.

But sea transport presents a contrasting situation. There is fierce international competition in the shipping business, marked by the development of flags of convenience with very low social and fiscal standards. A consequence of this had been a regular decline of the European flag until Greece's entry into the European Union. The deregulation ensuing from fierce competition was only countered by the reinforcement of safety conditions following a series of maritime accidents. On the other hand, in the sector of port activities, a strong corporatism has reigned for a long time in some countries, blocking the development of ports to the advantage of those open to competition. This sector more than any other shows the difficulty that exists in the trade off between the need for competition and the deviations that occur when the social, fiscal and environmental rules are unequal or not observed.

Inland Shipping: Goods/Passengers

The rivers and canals at the heart of the network of Inland Waterways of International Importance form more than 12,000 kilometres of inter-connected inland waterways. This network is built around 450 locks and several hundred inland ports and transshipment sites. The current standards for navigation of the inland waterways were laid down by the UN's European Agreement on Main Inland Waterways of International Importance (AGN) in 1996.

The inland waterway networks offer potential for the transport of freight, but suffer cruelly from bottlenecks that intermodal and multimode services have to face. This is particularly the case for river routes such as the Danube and the Main. Cargo ships are hampered by the obsolescence of certain infrastructure (primarily in the Eastern European countries and in France): insufficient water depth and bridges that are too low...

The "Integrated European Action Programme for Inland Waterway Transport", (NAÏADES 2006-2013) is intended to strengthen the inland waterways in the EU-27 by emphasising five strategic themes:

- increasing market shares;
- modernising the fleet;
- attracting a qualified workforce;
- the construction of a favourable public image;
- the construction of new infrastructures.

Although some progress has been noted in these fields, this transport mode remains marginal in comparison to road freight. One of the major weaknesses of river transport is its sensitivity to weather conditions. Ice and fluctuating river levels cause the ships to be immobilised up to four months a year. Since delivering on time is crucial, an alternative to inland shipping has to be considered. Climate change will gradually increase the unreliability of this transport mode. Investment in a new fleet could consequently prove to be more profitable than the renewal and expansion of the infrastructure. This is, moreover, one of the objectives of the NAÏADES.

→ The Trans-European Transport Network (TEN-T)

The TEN-T introduced the concept of a double planning stratum with, on top of a "basic" network, a higher "layer" – of European interest. This was supported by a majority of the operators, as well as by the EU institutions and the consultative bodies.

3.2. Future Traffic Growth Determinants

The main drives of this traffic growth are:

- the globalisation of the economy and its effects on the processes of production and consumption; a particular consequence of this globalisation is the growth of seaborne transport, which today represents more than 70% of the trade between the European Union and the rest of the world, mainly through higher imports of raw materials and consumer goods;
- the development of transport infrastructures that facilitates movement and travel;
- urban sprawl encouraged by the pronounced preference of households for individual houses;
- the "metropolisation" of the economy, which tends to concentrate employment in big cities and their tertiary centres, therefore increasing the distances between work and home;
- "zero stock" industrial strategies on the supply side and "just-in-time" services on the demand side;
- access to the car has become more and more of a necessity because of how territories are being structured in zones dedicated to specific functions (industrial, commercial, residential, tertiary and tourism); this phenomenon has been widespread for half a century and often makes the use of the car mandatory;

- the aspiration to travel, in particular long distance, which is increasingly prevalent among wider sections of the population;
- an aspiration to substantiate ones personal life by intense living and by experiences expressed by a search for speed and customized services;
- the widening of personal and professional circles due to the development of new communication technologies, which means more reasons to travel;
- European integration itself;
- the socio-economic differences between the Central European and Eastern European countries that affect the road freight sector.

None of these factors show any real signs of weakening in the near future, except for inner-city motor vehicle traffic, confronted with congestion. Moreover, when the public transport offer increases, it generates additional travel more than it substitutes for car use. Obviously, these are global and not only European-specific tendencies (with variations).

The hypothesis retained in the European forecasting exercises

Two forecasting exercises where run by the Commission recently, one exhibited in the Trend to 2030 – Update 2007 report and another which formed the basis of the production of the Commission's draft White Paper of August 2010.

	2005-2030	
	Trends to 2030 (2007)	Draft White Paper (2010)
Transport of people	+42%	+34%
Transport of goods	+50%	+38%

The reduction in the estimate of traffic growth between the two exercises can be explained by the estimate of the price of oil switching-over from 68$/bl in the first forecast to 127$/bl in the second. Beyond 2030, regarding the transport of people, the draft White Paper mentions an annual growth rate of 0.2% for road, 0.8% for rail and 1.3% for air. As for the transportation of goods, the expected annual growth rate would be of 4% for road and for rail and 3% for waterways.

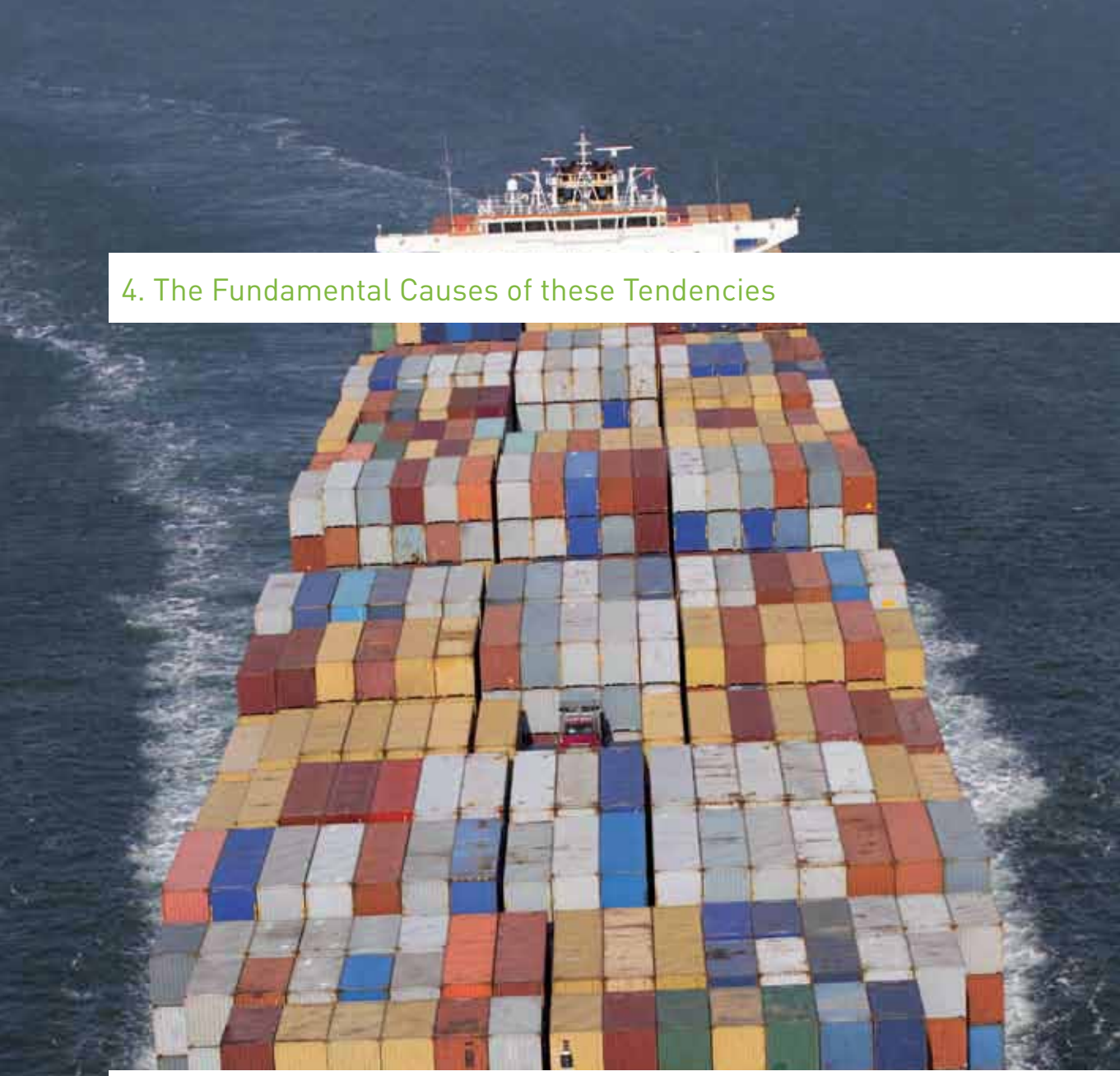
A rebound effect due to improved supply

A better transport supply (infrastructure and vehicle), together with the cost reduction obtained from better energy efficiency, cause a "rebound effect". The rebound effect is the phenomenon by which the enhanced efficiency results in money savings for the final consumer who, benefitting from the bargain, increases his or her consumption. For example, if the cost associated with fuel drops, people are prompted to drive more and at higher speeds. The energy efficiency gains are then partly offset by an increased fuel demand.

The elimination of bottlenecks and the extension of the motorway network have also proved to have limited effects. Thus, from the point of view of road congestion, building new roads generates more traffic, and new congestion points therefore follow.

Consequently, the rebound effect in turn has to be countered. This is only possible through an improvement of individual behaviour and by collective organisation. The conclusion to be drawn from this is that traffic can only be mastered with an intense educational effort conducted at common Community level and European level alike.

4. The Fundamental Causes of these Tendencies



The rise of the European Commission's power of intervention has had little influence on the transport sector's underlying structure. Liberalisation has not transformed the vertical organisation of the transport modes: it has probably even reinforced it. The result has been an absence of overall progression of intermodality, in freight transport in particular.

4.1. Weak Intermodality Development

The transport sector remains dominated by a vertical organisation by transport modes, which are in sharp competition between each other and therefore hardly inclined to co-operate. Consequently, the European Commission's initiatives in favour of intermodality are encountering considerable difficulties.

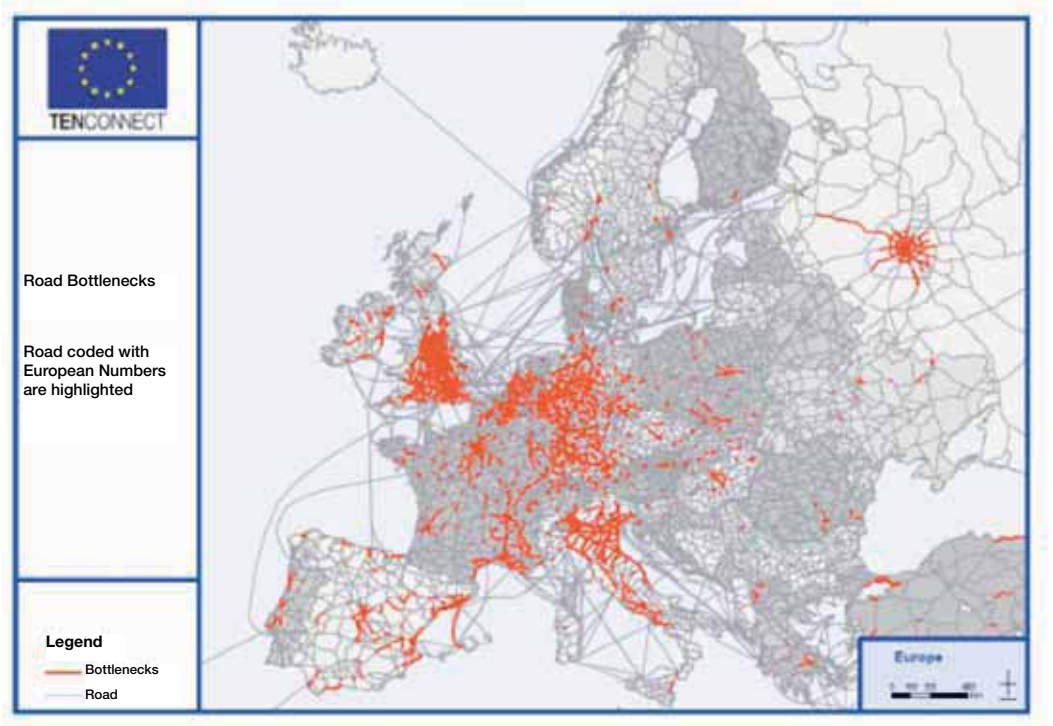
The Marco Polo Programme

The Marco Polo programme and its predecessor, PACT (1997-2001), promote projects that are seeking to transfer goods from road to rail, sea, and waterway. Marco Polo II is thus seeking to transfer 42 billion tonne-kilometres of freight from road to these other mentioned transport modes, which represent the equivalent of half a million trucks between Paris and Berlin.

Rebalancing Between Modes

At the Gothenburg Summit of June 2001, the European Council declared that the rebalancing between transports modes should be at the heart of sustainable development strategies. However, this objective, which was to be achieved via the TEN-T programme, was not accompanied by a release of the necessary funds. Despite this, the Commission remains convinced that "a financing programme focusing on the intermodality market is essential for its development". The European Council underlined moreover the need for reducing congestion in the bottlenecks of several areas, the Alps, the Pyrenees and the Baltic Sea in particular. Thus the development of shipping lines, "the motorways of the sea", is an important component of the trans-European transport network.

Figure 2: Overview of European Road Bottlenecks



Source: Freight Vision (2009)

Compliance With Competition Rules

One of the criteria of eligibility for subsidies in the context of the Marco Polo II programme is "that the modal transfer does not entail distortions of competition in the markets concerned, in particular between transport modes that are alternative to road transport, or within each mode, and which are contrary to the common interest" (Regulation (EC) N° 1692/2006. Moreover, "special attention should be paid to the avoidance of such distortions, so that the actions contribute to transferring freight from road transport to alternative modes, rather than withdrawing rail freight from an existing connection, from short-haul sea transport or from inland shipping".

This regulation pinpoints a key question – that of the demarcation line between competition law and the common interest.

In practice, the road transport industry has used the principle of anti-competitive behaviour to oppose state funding of other modes of transport. In so doing they delay the development of intermodality.

Unachieved Objectives

However, the TEN-T programme should be put into perspective. It was far from achieving its objectives. Nevertheless, it should be pointed out that transport, like any sector where infrastructure questions weigh heavily, is characterised by a strong resistance to change. Major transport projects take more than a decade from their conception to be completed. However, many improvements can be achieved more quickly through regulatory and managerial reforms. Rail projects are also hampered by insufficient resources. Officially however, the financial allocation for the implementation of Regulation (EC) N° 680/2007 over the 2007-2013 period is 8,168 billion €, including 8,013 for the TEN-T programme.

Unfavourable Tax and Tariff Signals

Levels of excise and tax change differ according to the transport mode. Moreover there are serious inconsistencies in the way that externalities between infrastructures are taken into account. Modal choices are distorted by skewed tariff signals, because of different cost allocation bases and price-making systems that have always been developed mode per mode, without any attention being given to overall coherency. Consequently,

the association of various modes ultimately leads to inefficiencies in the intermodal chain, because fares can be calculated on contradictory principles. Consequently, it is difficult to establish prices for intermodal operations, which impedes their development.The argument of competition distortion is used against new projects which promote intermodality.However, this principle is not applied to existing situations where numerous advantages have been gained, especially in terms of taxation.

The traditional instruments of the economy, namely operators' fare revenues and public subsidies, are limited in their capacity to send accurate price signals to users. A consensus has emerged among economists as well as political decision-makers admitting that sustainable transport policies require the development of a better quality offer and an increased public transport capacity. The infrastructure tariff-making systems were designed specifically and therefore differently for each type of transport and for each country. The resulting variations are a source of difficulty. This differential interferes with the competition between modes, which can distort the choice of mode made by passengers or consignors of goods. For example, a goods train that crosses a city must pay a tax whereas trucks can deliver to establishments without paying any charges. The prices for the use of infrastructures should be harmonised and based on their type, the duration of use, the distance and the size and weight of the vehicles. Legislation is needed for the establishment of a system of contribution for the use of infrastructures. This being said, all attempts at technical inter-operability butt against practical obstacles. In practice, it usually requires the creation of new connections. The first attempts are seldom successful.Results are only achieved in the long term.

→ Decoupling Between Economic Growth, Traffic Growth and Environmental Impacts

The essential decoupling between economic growth and the transport's environmental impacts is a subject that is often addressed. But what is the reality? Sustainable mobility action scenarios, (POSSUM), were created in the context of a project developed between 1996 and 1998 to show how to bring about this decoupling. The analysis identified three factors that determine the growth of transports: volume, distance and efficiency. The decoupling strategies have four characteristics: The material intensity of the economy, the spatial structure of production and consumption, freight handling requirements and the organisation of transports. On the basis of these groups of factors, three basic decoupling strategies have been identified:

- reduction of the spatial extension of the trading of materials;
- dematerialisation of the economy;
- optimisation of the organisation of transports.

Lastly, the analysis noted that these three types of coherent policies could only be conceived by relying respectively on the following levers:

- lifestyle and behavioural changes in relation to mobility and the consumption of goods, especially through a better access to information;
- market incentive instruments, involving tax measures;
- regulations according to criteria based on technical or other standards and on an innovative planning method.

Also, such an analysis would need to be conducted over a long period of time in order to learn more precise lessons. This could be a research subject for the Commission, identifying the possibilities for action regarding each of these factors.

For the moment, this expected decoupling between economic growth and the growth of energy consumption has little statistical backing. The transport sector energy consumption increased by an average rate of 1.3% per annum between 2000 and 2005 in the UE-27, i.e. a little less than the GDP over the same period.

4.2. A Fragmented Sector Dominated By Big Companies with Strongly Sectorized Activities

The European and national transport policies do not manage to grasp the importance of the sector's stakes, for several reasons:

- More than any other, the transport sector is organised in vertical "bunkers" (car manufacturers, road infrastructure producers, river, air, rail, principals, consignors of goods, logistics companies, hauliers, public transport networks, ...) who correspond to so many sectors defending their own interests without any global strategy having the power to force coherency into the system.

- A lengthening of the supply chains results from the economic advantage associated with the salary disparities. By increasing the covered distances both at a global level and at the European level, the extra transportation costs remain much lower than the savings made as a result of the differences in labour costs.
- The oil industry has for a long time both overestimated the oil resources and technological progress with regards to extraction and underestimated the growth of the demand from the emergent countries and the geostrategic supply difficulties. This has until now been translated by an insufficient recognition of the energetic, environmental and climatic stakes in a sector that is 97% dependent on petrol and uses 71% of all the petrol consumed in the Union.[2]
- The transport sector, after 30 years of effort, has been globally successful in reducing air pollution by a considerable extent. The cornerstone of this air pollution reduction policy was public health, the car manufacturers' interest lying in their preoccupation to increase the rate of household car ownership.But, apart from this advance, the sector has delayed taking into account the concerns relating to climate change. In addition, the growth in traffic and increased congestion has partly nullified the progress made in reducing air pollution from vehicles.
- The divergent interests between the European countries, for multiple reasons (their geographical position, the pressure of their national industrial interests, and disparities in their social, tax and tariff regimes), make the adoption of common measures difficult.

All these processes have been amplified by deregulation measures in the transport sector (except for situations where dominant position abuses existed, especially in air or sea passenger transport). The liberalisation of the transport sector has in practice distended the efforts to achieve coherency between the various transport modes. This particular point is periodically raised in all the evaluation reports that are produced.

The still strongly felt influence of the national players does not facilitate the emergence of European multimode strategies for passengers and especially for goods as a result of the discontinuities at the borders.

4.3. Institutional Factors

THE GREAT DIFFICULTY IN TRANSCENDING THE PRIORITY GRANTED TO ROAD TRANSPORT MODES

There is an increasing convergence among the majority of public managers on the need for giving priority to rail and to public transport. However, the weak support granted recently by the Member States to the non-road transport modes is explained by smaller public investment capacities than in the past, the Member States being confronted with increasing budgetary overspending because of the financial and economic crisis. On top of this, other, more structural factors, are added:

- the lack of articulation between transport policies and policies in the field of urbanism, activity localisation and most specifically tertiary activity localisation, or town and country policies. This results notably in urban sprawl, which further increases car dependency. These activity localisations have essentially only obeyed the internal criteria of the companies that were establishing themselves;
- during the last two decades, society demand has been focused on road safety, which induced a stagnation of fuel consumption since 1985 and therefore has not opened the way to the reduction of carbon gas emissions, despite improvements in engine technology.

DIFFICULTIES IN ESTABLISHING COHERENCY BETWEEN MULTIMODALITY AND COMPETITION

The difficulties relate at the same time to insufficient account being taken of social and environmental externalities and to the priority granted to certain modes in coherence with the mechanisms of competition:

- this implies reconsideration of the competition legislation in force and of the way in which it is applied. Indeed, the will to open the European market to all the companies of the Member States through public invitations to tender and to create competition in the private sector has the effect of reducing the account taken by the policies of the negative externalities, both social and environmental, relating to the transport prices and the future fuel price rises. For want of a constraining accountancy framework on this point, competing companies are put into

2 Source: EC (2006) "Keep Europe Moving: A Transport Policy For Sustainable Mobility" and Eurostat (2009) "Panorama of Transport".

a situation of failing to win contracts if they incorporate costs that they could outsource;
- moreover, the Eurovignette directive excludes consideration of the external costs in road transport (namely, in the toll tariffs);
- while the methods for calculating the externalities are being refined, the results of the last decade show signs of improvement in the measurement of the ecological impacts of road technologies, and to a lesser extent, in rail transport (UICF, 2008). These methodological and technical advances still have to be incorporated into the operational processes.

The third railway package was launched by the Commission in 2004 by a communication entitled: "Further Integration of the European Rail System: Third Railway Package", (COM 2004/140). It was initially articulated around four actions. In June 2007, Council and Parliament reached a conciliation agreement on this third package.

According to Directive "Market Access" 91/440/CE (COM (2004) 0139), two possible models of competition exist:

- the competitive awarding of a public service contract offering a monopoly for a limited period of time. This model, suitable for short runs, is currently being modernised through the proposal for Regulation (COD/2000/0212) entitled: Passenger Transport by Rail, Road, Inland Waterway, Competition, Obligations and Public Service Contracts. The proposal was adopted at second reading by the Parliament in July 2007. It is now awaiting a Council Decision;
- free access to the infrastructure for new international service operators.

This is this proposal's innovation. In order to foster the development of real competition, cabotage (which consists in leaving passengers on an international itinerary, including between two stations located in the same State) is authorised. Before having access to the infrastructure, the rail companies must obviously have the appropriate equipment, a licence, safety certificates and authorised engine drivers. Thus the directive provides that all international services be open to competition except if the services between two precise localities are the subject of a public service contract and that the economic equilibrium of the service is threatened.

4.4. An Overall Low Transport Cost

The weak relative cost of transport can be understood in several ways:

- Oil prices were low between 1985 and 2003. They then strongly increased, thus constituting one of the factors triggering the economic and financial crisis. Since then, the price has fallen again from $147 per barrel in August 2008 to $40 in November 2008, before rising to $95 in the summer of 2010.
- But, the major lesson of the current period is that the oil price hike will follow a curve admittedly ascending but also erratic (according to economic growth, production vicissitudes, geopolitical tensions, speculative movements, and so on). The economic players cannot adjust in the short term to such variations, so it is for the public authorities to give more stable signals. Transport policies, be they European, national or local, do not anticipate the future trend of the transport costs at all (corollaries of the oil price increase, of the internalisation of the impacts and of a carbon value.)
- Nevertheless, if one takes account of the average rise of the standards of living, it can be observed that the relative weight of fuel prices has been in decline for half a century.
- This fact coexists with an increased car dependency, especially regarding the access of the poorest to employment, which puts them in a situation of future vulnerability in the event of a price rise.
- A very significant part of the expenditure is paid for by the local authorities and is therefore paid for through taxation rather than use (urban roadway systems, and the majority of the road, river and railway infrastructures).
- A weak internalisation of the negative externalities (noise, road mortality, space occupancy, air pollution, greenhouse effect, public infrastructure wear and tear, etc) in spite of a high fuel tax in most European countries. This distortion is especially strong with regard to freight transport by road (because of its strong responsibility for roadway wear-out and the low taxation of commercial diesel) and to passenger transport by air (not taxed). Globally, it is estimated that the social costs of passenger transport by road are triple those of rail transport.
- It is furthermore these relatively low transport prices that are fuelling the globalisation of the economy. More specifically, they allow a wide range of Europeans to become accustomed to consuming goods that come from afar.

The Food From Farm To Table Example

It is difficult to generalise on the various types of products in view of the fact that the goods have different origins, distances and transport modes. It is clear that road dominates short-haul transports, in particular, those relating to food "from the farm to the table". The entire process consists of two major stages: obtaining the products from a producer and forwarding them to a wholesaler. Then bringing the products to the local supermarket, and then to the consumer.

For example, Austrian consumers can have a choice between tomatoes coming from Austria or Holland. As can be seen in the table below, both these types of tomatoes are transported by road. However, the difference in CO_2 emissions due to the distances covered is notable. If one includes a carbon price of 25 € per emitted tonne, the price of the Dutch tomatoes would vary only by 25 additional cents per kilo. However, the price difference between the Austrian and the Chilean grapes would be significant if carbon emissions were taken into account, which is not the case as there is no air transport tax at an international level. This is particularly relevant for perishable goods that have to be delivered frequently and quickly. These goods are transported by air, which gives them a high carbon footprint in comparison to local seasonal products. It can be noted that the sweet peppers from Israel have a lower carbon footprint than that of the tomatoes coming from Holland. This misalignment is due to the higher efficiency of sea transport.

The second part of the "from the farm to the table" path is related to consumer purchasing behaviour. The environmental impacts at this stage are higher than those at the distribution stage (Foster et al., 2006). A consumer who drives 5 km for 25 kg of goods generates 4 kg of CO_2 per trip. This figure is doubled for a trip of 10 km, and so on.

But the transport demand trend is difficult to quantify, insofar as one is often confronted with compromises made between the types and the frequency of the trips. In this case, the reduction of the trips done by car to the supermarket is partly compensated by vans making delivery rounds to houses. The challenge is therefore to ensure that energy efficiency is introduced into the supply chain, from the source of production to the consumer.

Transport-Related CO_2 Emissions For Produce Imported Into Austria Compared To Local Produce

Fruit	Country of Origin	Transport Mode	CO_2 gr/kg
Grapes	Chile	Air and Road	7 410.8
	Austria	Road	8.8
Tomatoes	Holland	Road	104.7
	Austria	Road	0.7
Peppers	Israel	Sea and Road	85.4
	Austria	Road	11.3

Data source: Saunders & Hayes, 2007

5. Major Future Trends

Here we will outline the factors that will be decisive in the decades ahead.

5.1. Increased Budget Pressures Weighing On Public Investment Capacities

The economic and financial crisis is going to weigh on transport policies during the next decade. While overall the urban, interurban and motorway road capacity of the Europe of the 15 has reached maturity, this cannot be said for all the new Member States. And yet, the need for investment is important, especially in the non-road transport modes (railway, urban public transport, ...). There therefore is a risk that they might suffer from a shortage of public investment capacity.

5.2. A Rise in Fuel Prices

While economic growth has slowed down in Europe, it remains very vigorous in the emerging countries where it goes hand in hand with a rising demand in energy. However, the BP oilrig accident in the Gulf of Mexico will impact future fuel prices. Indeed, as two thirds of the discovered oil are now offshore, the safety procedures will have to be reinforced. This will lead to higher operating costs, which will have repercussions on the price of fuel at the pump. At the same time, the banking and insurance industries will be pushed towards raising their tariffs in the light of the risk.

Great uncertainty is disturbing the oil sector with regard to the capacity of the supply to meet an ever-greater demand. Thus, although it is difficult to determine with certainty when "Peak Oil" will be reached, several conclusions can already be drawn:

- the European Union is henceforth completely dependent on external imports of oil and natural gas, and highly dependent on external imports for its coal;
- fuel prices will increase before we are directly faced with a depletion of the resources. There are several reasons for this. First, the costs of extracting the new hydrocarbon resources are now distinctly higher than those of previous oil fields (which have dried up). Subsequently, it is extremely probable that these uncertainties will accentuate speculative movements.

But, as explained above, erratic trends are to be expected, which blurs the market players' ability to anticipate and disturb their adaptability options. However, although price elasticity in the transport sector is a matter of course in the long term (as evident from the consumption differences in litres per 100km between European vehicles and those on the other side of the Atlantic where the fuel prices are much lower), this ability to adjust is very small in the short term, especially when the alternatives to road are insufficient.

The European Union's transport sector would inevitably be affected by a new oil crisis. This major sector's adaptation to the new economic and environmental reality will inevitably take several decades, the time to design appropriate vehicles and infrastructures, to distribute them and to change the organisational modes and the behaviours. Indeed, renewal of the car stock takes a little more than ten years.

5.3. An Increased Carbon Constraint

The objectives of reducing greenhouse gas from 20% to 30% (according to the option finally adopted for the second commitment period of the Kyoto Protocol) between 1990 and 2020 for the Europe of the 27 will in fact correspond to an actual reduction of 13 to 23% between 2010 and 2020 – therefore over ten years. This figure is to be compared with the commitment of the Europe of the 15 to the reduction of 8% between 1990 and 2012 for the first commitment period of the Kyoto Protocol.

The emissions reduction effort will therefore have to be significantly more acute during the period ahead than it was the case between 1990 and 2012. The objective will not to any extent be achievable if the transport sector's emissions are not oriented distinctly downwards.

This particular point is the most decisive of the necessary reorientation of the future transport policy.

5.4. An Ageing Population

The European population, which is hardly growing any more, is becoming increasingly old, which should entail a fall in the relative demand of transport relating to work and business travel, while the share of leisure travel could increase. If public transport are not adapted to the elderly people's mobility needs, they will be more likely to use their private vehicles, up to a certain age.

- It is estimated that the European elderly accomplish approximately half of their trips by car and approximately 30% by foot. For seniors, the feeling of insecurity has a great part to play in their choice of transport mode.
- The choices are also a question of habit: the new seniors have long had access to the car and often live in urban fringe areas. Furthermore, for some of them, taking the bus can be rather unattractive, especially in the event of frequent changes of line, and because of the introduction of electronic technologies in the public transport system that they find hard to operate. It is therefore not certain that ageing increases the share of population without access to their own car. For example, in France, one out of two new vehicles are bought by people who are more than fifty years old (GART, 2009).
- However, beyond a certain age, driving will become impossible and ill-advised for road safety reasons. There is then a risk, if public transports are not well adapted (lack of low platforms), that part of the population will no longer have access to the necessary mobility, while this part of the population lives in suburbs that are ill served by shops and public services.

5.5. Technological Progresses

At the technological level, major developments can be foreseen. The most decisive advances will come from information technology and from the new communication technologies.

Little Progress in Vehicle Engine Technology

Although vehicle ranges are regularly renewed, their major technical principles have remained essentially unchanged since the end of the 19th century. A certain technological conservatism can even be observed on the part of the manufacturers, strongly attached to past symbolical aspects.

But the recent energy price spike have pushed the manufacturers to resume their efforts in relation to fuel consumption reduction, whereas since the middle of the 1980s, they had largely disengaged from progress on the energy efficiency front (As a matter of fact, the average unit consumptions had then increased by one litre per 100 km).

Progress in the Field of Safety

For thirty years, great progress has been achieved with regard to safety. Forty years ago, safety belts were infrequent, anti-locking brakes were de-

ployed aboard planes earlier than in cars, airbags did not exist, and there was little understanding of the effects of vehicle design on personal protection in the event of an accident. Crush-resistance programmes have contributed to a distinct improvement in personal protection. But these safety advances have had the effect of making vehicles heavier and therefore of increasing their fuel consumption.

Vehicle Computerisation

Most of the recent developments ensue from computerisation and from IT miniaturisation. Also, the reduced costs of electronics have allowed a multiplication of sensors, engine regime optimisation, and the development of the on-board computer, geolocalisation and internal information technologies.These technologies also enable traffic management to be optimised and will above all facilitate the development of intermodality.

The Advent of New Communication Technologies

The conversion of digital circuits [2G] for mobile phones in the 1990s has led to reductions in their size and weight, as well to an increase in their data transfer speed. Today, the use of 3G machines involves digital processing of the signal intended to increase the capacity of wireless connections and has led to the production of telephones with colour screens and considerable capacity storage. Consequently, this connectivity today is ubiquitous, as is the possibility of downloading data quickly, turning the cell phone into a general-purpose device.

These information technologies have been quickly integrated into the motor industry. Initially, they improved traffic control and enabled a reduction in accidents and pollution. Moreover, the spread of GPS use contributes to the optimisation of journeys.

But the possible benefits of these technologies are not without drawbacks. They can induce a rebound effect, which can translate itself into an increased in traffic: by making driving even simpler and thus attractive, which can be in contradiction with the incentives to use more efficient forms of transport. Moreover, constant surveillance raises the problem of a permanent invasion of privacy.

Intelligent Transport Systems (ITS) incorporate existing information and communication technologies into the transport sector. Developed within the European transport policy, they are applied to all modes of goods and passenger transport:

- SESAR, for air;
- RIS (River Information Services) for inland shipping;
- ERTMS (European Rail Traffic Management System) and TAF-TSI (Telematic applications for freight) for rail;
- AIS (Automatic Identification System) and LRIT (Long-Range Identification and Tracking) for sea.

The objective is to create the necessary momentum for accelerating the penetration of mature ITS applications and services in Europe. However, it should be noted that the ITS technologies are not yet proposing initiatives seeking to develop intermodality. Thus, there is no coherent European framework for interconnection between road and other means of transport. But this is, however, the essential prospect enabled by the new communication technologies, on the condition that they be associated with advances in the field of understanding the stakes and the behavioural changes.

Although these ITS offer considerable prospects, they require a generalised process of co-operation between at least six European Commission directorates: DG Energy, DG Transport, DG Information Society and Media, DG Research, DG Enterprises and Industry and DG Environment, and with the Member States.

But the interest residing in the new communication modes does not solely limit itself to the management of the systems in the operators' interest. These advances must above all concern the users by the means of more profound transformations that will completely change their relationship with transport, through:

- The capacity to have all the necessary information for transfers from one mode to another (timetables, prices, traffic conditions, journey times) in real time, as the lack of foreseeability and flexibility constitute the main obstacles to intermodality, therefore pushing towards an exclusive use of the car. It is clear that this trend is not moving in the direction of the car manufacturers' interests, but that it is essential to public operators and to local authorities. Initiatives are necessary for standardising their approaches and their tools.

- The option of having access to a vehicle on demand (Car Pooling and Car Sharing), which enables an even profounder change of behaviour by completely changing the relationship with the car. The authorities' interest lies in stimulating this orientation, especially in order to reduce the parking constraint by a considerable extent. It is overall considered that a car-sharing system ensures a service equivalent to the current system based on personal vehicle ownership, with five times fewer cars. This trend will therefore run up against the car manufacturers' interests head-on. The European Commission must form an alliance with the local authorities in order to ensure that this decisive progress brings significant cost reductions.

An asymmetrical Innovation Culture

There are little empirical experiences carried out in the field of transport organisation. There are much less than in the field of vehicle design innovation, even if the latter is strictly framed to serve marketing strategies. Nevertheless, the progress made in road safety can only be applauded. This disparity in innovation between technological and innovative progress and innovation at the level of the organisation of services is specifically handicapping for the development of intermodality.

In fact, promising ideas are often discarded at an early stage. There have been, however, some attempts made in Europe. For example, in 2006, the City of Stockholm set up a congestion pricing system that was to take place over a seven-month trial period, after which there would have been a referendum to decide whether it would be stopped or permanently maintained. Also in 2006, the U.K. Highways Agency launched a twelve-month pilot project, a mixture of active traffic management measures, including the opening to traffic of the hard shoulder lane in order to deal with the rush hour on the M42. Another example is the introduction on a massive scale in La Rochelle of a single travel card giving access to the bus network, sea buses, ferries, bicycles, park and rides, taxis and soon an electric car sharing scheme, all interconnected and linked to the regional train service La Rochelle – Rochefort.

5.6. A Clouded Vision of the Future

It is striking to note the weakness in forecasting when it comes to transport and its public expression. There are several reasons for this:

- the compartmentalisation that exists between the modes;
- the eagerness of manufacturers to keep their strategies secret;
- the dominant force of marketing in the debate;
- the difficulty in shedding light on the sector's contradictions (insufficient funding in relation to the declared objectives, particularly with regard to public transport, the evolution of vehicle floats, energy consumption and environmental impacts).

→ The Commission's Observed Trends

Until 2000, the growth in traffic closely followed economic growth in the European Union.

Since 2000, the statistics indicate a variation in the trends.

They indicate:

- a lower growth rate in the transport of people compared with the economic growth rate: - 6.5% between 2000 and 2008;

- a growth rate in freight transport that outpaces economic growth rates by 4%.

It is not simple to interpret these developments because this period of time witnessed simultaneous variations of determining factors:

- weak economic growth: only 12% between 2000 and 2009;

- the eruption of a serious financial and economic crisis in 2008;

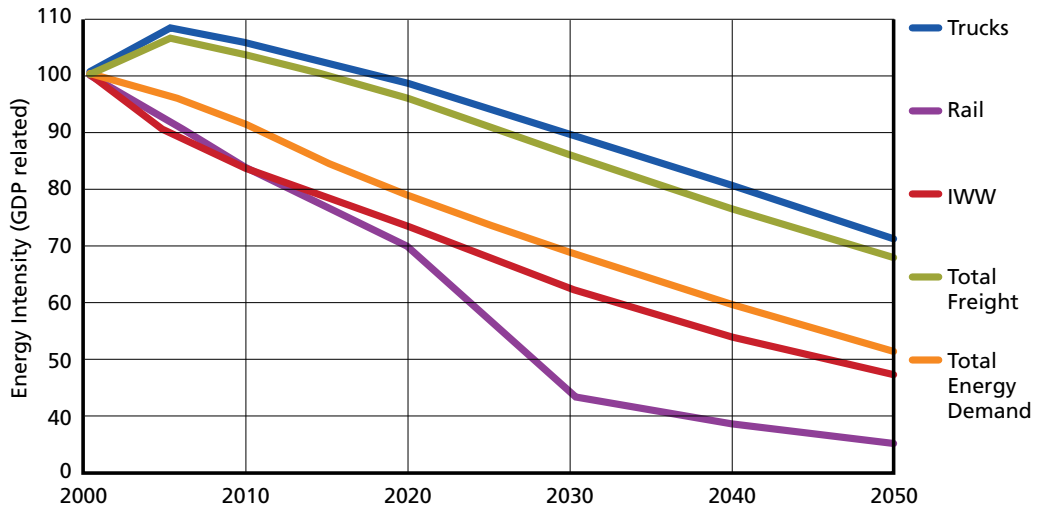
- the accession of 12 new Member States to the Union which stimulated the transport of freight in particular;

- a strong although erratic rise in the prices of oil since 2003.

Moreover, the effects of higher oil prices and of the financial crisis have yet to be fully felt; it will be important to interpret the statistical trends for 2010.

We may be entering a period in which the link between passenger and freight growth and economic growth is broken, once the boosting effect of the accession of the new Member States has passed.

Figure 3: Transport Mode Energy Intensity (2000=100, based on toe/M€05)



Source: Freight Vision (2009)

→ Prospects Drawn out by the Commission

According to the SCENES model, passenger transport traffic should increase by 1.4% per annum between 2005 and 2030, whereas the volume of goods transport should increase by 1.7% per annum. In the past, before the globalisation of the economy, goods transport increased at a lower rate than the GDP. Growth at that time was particularly strong in the road and air modes.

According to the basic SCENES scenario, decoupling will be more distinct long term, because it is the combined result of productivity gains and saturation effects in transport.

On the other hand, these scenarios bank on a clear improvement in energy intensity through technological advances on vehicles, with almost a halving of the energy consumption per unit of wealth.

→ Macro-Economic Framework Elements

With the application of a new policy, the following basic tendencies can be identified:

The Link Between Economic Growth and Transport Flows:

- a reduction of the economic growth rate in Europe because of demographic trends (virtually zero population growth, fewer active people/more pensioners); under these conditions, economic growth can only be fuelled by productivity gains;
- less traffic growth would ensue, for passenger and freight transport alike.

Passenger Transport

- The average time spent in transports would not significantly increase.
- In cities, road passenger transport is close to saturation. Road transport will probably lose market share. According to the SCENES scenarios, the share of road transport could be reduced to 79% in 2030 (83.4% in 2008).[3] There is a significant dynamic in many countries in favour of the development of active modes and of urban public transports.
- The rail transport business, which had been in decline since 1990 because of the low fuel price, could enjoy continuous growth because of new infrastructures, high speed train networks in particular, especially if fuel prices are high.
- Another decisive point will be the Central and Eastern European countries' choice in relation to the weighting that they will grant to the modernisation of their railway heritage or to the priority granted to road.
- Air transport will undoubtedly continue to increase its share in the transport mix.

3 Source : EU Energy and Transport in Figures, Statistical Handbook, 2010.

- The increase in passenger traffic would mainly be enhanced by the availability of long-distance modes: high-speed trains and air services.

Transportation of Goods

- As the European economy will most likely continue to specialise itself, with a drop in the production of some manufactured goods, the flows of goods should increase. The internal goods traffic in Europe will depend mainly on the distribution of the economic activity and the dynamics of the internal market. The amplified orientation towards a service economy could lead to an increase in long-haul transport, with imports by sea in particular.
- Road will continue to dominate freight transport because of the degree of flexibility given by trucks. On certain major roads, at the price of heavy investment, other modes could develop in the medium term (high speed rail, waterway, cabotage freight) while representing relatively low total market shares.

These major tendencies have nothing irremediable about them, so contrasting scenarios, testing other options should be encouraged.

6. An analysis of the Commission's Draft White Paper

Under the title "A Single Transport Area. An Intelligent Mobility for People and Activities", The Commission produced a draft version of the draft White Paper in August 2010, the main points of which are the following.

6.1. The Observations Made

- the weakness of alternatives to road transport for freight;
- the need to make non-road modes more attractive;
- the insufficient development of multimodality;
- the failure to disconnect growth in traffic from growth in the economy;
- the growth in traffic resulting more specifically from the enlargement of the Union to 27 Member States;

the extent of the disparities that exist between countries in spite of the opening up of markets;

- the loss of efficiency resulting from gaps between modes, whether in urban transports or in the transportation of goods;
- climate change, which entails a radical evolution of transports;
- the ageing of the population, which necessitates greater reliability in transport systems.

6.2. The Forecasts for 2030 and 2050

The baseline scenario (based on business as usual) highlights the following trends:

- a strong rise in international trade;
- an increase in freight traffic of 38% by 2030 with no changes in the rail and road ratios;
- road traffic should grow by 34% between 2005 and 2030;
- a twofold increase in air activity by 2030.

If current trends continue, this would result in a reduction of 4% in CO2 emissions from transport by 2030 and a stabilisation beyond that. This finding can be broken down to -9% for passengers and + 6% for freight by 2030.

We have seen earlier how these trends differ significantly from the scenarios drawn up in 2007.

6.3. The Vision for the Future

The draft White Paper acknowledges the tension between on the one hand the growth of traffic and on the other climate and energy constraints.

The principal ways of loosening this noose are:

- Regarding the reduction in the quantity of the transport activity
  - the reinforcement of actions through local policies (urbanism, parking policies);
  - the support of more general policies (spatial planning, information campaigns and education);
  - the introduction of market instruments (fuel and vehicle taxes, tolls for infrastructure, internalisation of external costs).

- Regarding the reduction in energy intensity
  - the promotion of co-modality thanks to an increase in attractiveness of the most efficient modes;
  - but also the modification of price barometers and taxation rates;
  - the deployment of technologies, especially information and communication technology.

- Regarding the reduction in carbon intensity
  - the distribution of cleaner fuel, benefiting from an adequate supply network;
  - the design of more efficient vehicles.
  - technological innovation, particularly in new communication technology;
  - as a complement to technological progress, the stimulation of progress in behaviours;
  - the development of multimodality;
  - the improvement in the quality of the supply of public transports and the services provided.

These orientations clearly signal a profound bifurcation compared with the contents of the White Paper of 2001 and of subsequent orientation documents from the Commission. As we will see further on, these objectives respond to the fundamental challenges that transports must meet. However, these require changes of direction, particularly regarding the perception of law and a profound transformation of fiscal and financial options.

6.4. The objectives by Sector

The objective for reductions in CO_2 emissions for the European Union is 75% compared with the levels of 1990.[4] The objective retained for the transport sector is of 55% to 68% compared to the last available statistics (2008). Compared with 1990 this corresponds to a reduction of 45 to 60%.

These calculations conform to the current rules of the Kyoto Protocol, that is, they exclude international air and sea transport. If these were integrated, the reductions would be a good deal lower considering the fact that a twofold increase in air passenger traffic and in sea freight traffic are expected.

Clearly, these objectives are insufficient and constitute a serious methodological skewing of the forecasting exercise. They assume that the reductions in emissions obtained in other sectors of activity will be enough to compensate for this rise in traffic. However, numerous sectors are also encountering great difficulties in reducing their emissions: sectors such as cement and steel, agriculture or leading head electricity production will have great difficulties in reducing their emissions by a factor of 4.

4 Note that this figure differs from that of the GIEC which fixed this objective at between 80 and 85% for all developed countries.

Potentiel for emission reduction	Share of emissions	Potential of reduction	Total reductions
Intercontinental freight	10%	20-40%	2-4%
International and regional freight	28%	40-60%	11-17%
Urban transport	30%	70-90%	21-27%
Regional transport of passsengers	20%	40-60%	8-12%
Intercontinental and international transport of passengers	12%	20-40%	2-5%
Total for all transports			**45-65%**

This table shows two distinctive categories, each representing a halve of all emissions:

- short distance: urban and regional transport of people, for which major progress in energy efficiency and energy substitution are deemed possible;
- long distance: international transport and freight, for which efficiency gains and especially substitution possibilities are considered weaker.

6.5. An overall approach to the Transport Chain

The draft White Paper develops the concept of the establishment of a European "Single Transport Area", by eliminating residual barriers between modes and national systems and by a strong integration of systems based on the new communication technologies.

This is a powerful option and we can consider it essential for the improvement of the efficiency of transport systems.

6.6. Territorial Cohesion

The draft White Paper, in keeping with preceding texts, insists on the necessity of improving the infrastructure of the new Member States, on reducing the isolation of certain territories, eliminating bottlenecks and on resolving the difficulties in crossing natural barriers.

The draft White Paper offers the concept of green corridors for the transportation of goods.

It also mentions the development of ports in southern Europe, to avoid goods destined for these countries being transited through the big ports of North-West Europe.

However, these last proposals are lacking in details.

6.7. The Support of Technological Innovation, in the Context of the Development of a European Industry of High Added Value

The draft White Paper intends to encourage technological innovation towards the energy efficiency of vehicles and towards finding substitute sources of energy with lower carbon emissions.

Following this, it offers to create clusters of new technologies to facilitate the transition. This proposal is crucial in order to overcome both the compartmentalisation of transport modes and competition between car manufacturers, (especially when industrial secrecy is involved).

6.8. A Reviewed Financial System

The draft White Paper highlights the following principles:

- the application of the principle "the polluter pays".This principle is put forward in order to compensate for the drop in the States' revenues as the progresses made in energy efficiency and energy substitutions lead to a reduction in the consumption of fuel.The application of this principle is legitimate to ensure the internalisation of external costs;
- the principle of "the user pays". Its implementation is intended to finance the maintenance, upgrading as well as the renovation of infrastructures.

The draft White Paper outlines another idea: it proposes to add supplementary services to public transports, such as the access to the internet, which would allow users to use their travelling time in a better fashion and also provide additional incomes.

There is also a proposal to change the way vehicles are taxed, making it proportional to usage and dependent on the type of vehicle, the type of road and the time of day. The operation of such a system would be rendered possible by using satellite positioning.

Furthermore, the draft White Paper pleads in favour of a harmonizing of tax systems between the Member States.

6.9. A Policy Strongly Based on Incentives, on Background of Behavioural Changes

The draft White Paper suggests ideas to improve behaviour based the idea of more attractive public transport services.

It commits to two major developments:

- the transition to an economy based on functionality rather than a system that gives priority to vehicle ownership. This would allow a better match between vehicle size and use, as there would be easy access to different types of vehicles according to need;
- an optimisation of the time spent on transports thanks to an availability of new services and an enhancement of stations.

7. A New Hierarchy of Objectives

The above factors are pulling the transport sector in different, even contradictory, directions and it is not a simple task to draw out a summary.

It therefore seems appropriate to place the debate on a political level, highlighting the principles in order to structure the Greens' approach to these issues.

7.1. A Reversal of Priorities

Transport, from an Adjustment Function to One of Sector Under Crucial Constraint

First of all, an observation is required: the relationship between transport and activity localisation is reversed today. Indeed, transport in the 19th and 20th centuries was the policy adjustment variable in relation to the localisation of industrial activities (mainly determined by the proximity of the mines and the ports) and housing. This process was facilitated by a relative fuel cost that was following a decreasing curve (because of easier access to new, less expensive oil resources, technological progress and rising incomes).

However, transport in the 21st century will be the sector facing the severest constraints, (see previous points) because of the future tensions in the oil market and the pressing obligation to reduce greenhouse gas emissions and air pollution.

The process will therefore have to be reversed, in order to move towards an optimisation of the transport sector and a better match between the localisation of employment, of housing and of other economic functions.

Thus, the European Transport Policy must join the search for a new definition of the common interest.

Strong Short-Term Greenhouse Gas Reduction Obligations

To achieve a reduction of 13% of the European greenhouse gas emissions between 2010 and 2020 (which corresponds to the -20% decrease for the Europe of the 27, announced at the Copenhagen conference, taking 1990 as a base level), will be completely out of reach without a major

inversion of the transport policy. And a fortiori, if the European Union adopts a commitment reduction of 30% for 2020 in relation to 1990.

Since 1990, in many countries, transport, by the growth of its emissions, have been absorbing the lion's share of emission reductions achieved solely in the other sectors (electricity generation, building, renewable energy development, waste recycling, agriculture, and so on). The commitments announced in Copenhagen will be untenable without a distinct reduction of transport emissions. Although the other sectors offer significant emission reduction capacities, they too are confronted with strong inertias (electricity generation, rehabilitation of existing buildings, heavy industries, and so on).

Moreover, even if prospects come to light in the future, for short-haul transport in particular, the disengagement to oil dependency will be too slow to protect the transport sector from the detrimental effects of oil price rises at a social and economic level.

Although the transport policies primarily consist of arbitrating between various objectives by taking account of the dynamics at work, the suggested objectives are proving to be increasingly contradictory, between those to do with the development of transport and energy objectives and those to do with the environment. The growth of traffic indeed raises more and more difficulties in terms of the negative effects that are induced. Reconciling the reduction of greenhouse gas emissions, the freedom of personal mobility and the accomplishment of trade therefore require a rationalisation and an optimisation of the transport business. What is at stake here is obviously a condition of democratic acceptability of the policies to be undertaken.

The Return of the Energy Security Debate

The oil price increases between 2003 and the summer of 2008 and again an upward trend after the fall of the prices caused by the financial and economic crisis of September 2008 have brought back to light Europe's oil dependency.

Since transport absorbs 71% of the oil consumed by the Union, an oil crisis will predominantly manifest itself as a transport crisis. The induced price hikes affecting economic trade will then impact household standards of living and corporate competitiveness.

The energy security debate has currently returned for three reasons:

- the prospect of the energy price rise, the latter being aggravated by price instability, which exacerbates already difficult economic conditions;
- the political context of the Middle East, which entails energy supply risks (more in terms of prices than quantities);
- the dependency on Russia for the gas supply, in the knowledge that, for that country, energy is the main part of its export revenue.

Thus, a Heads of State conference, which will be devoted to energy security and price volatility, has been programmed for the 4th of February 2011.

7.2. New and Clear Ranking of the Objectives to be Achieved

In the light of the foregoing, the new White Paper should firstly position itself in terms of the dynamics at work and the objectives to be achieved. Obviously, these objectives are not all taking place at the same level, which means that they have to be ranked.

The Greens/EFA Group in the European Parliament can therefore propose the order of the objectives and the priorities according to:

→ Result Objectives That Must Imperatively be Achieved

It is clearly the reduction of energy vulnerability and the achievement of the climate objectives that must set the course to be followed.

The White Paper should therefore:

- Incorporate new issues of general interest, concerning air pollution and climate change in particular. The result objectives have already been laid down by international commitments in the context of the UNFCCC. The European Union will quickly have to allocate the effort that ensues from these objectives between Member States and carry out an overall preview assigning them between sectors.
- Confront the increasing constraints concerning the hydrocarbon supply and deflect the consumption of energy; it would be useful for the White Paper to lay down a reduction objective for 2020 for the transport sector's oil consumption share.

The singularity of these two issues is to be determined by strong deadlines and quantitative constraints, even if they are only more or less precise. In the climate negotiations, the emissions reduction objectives ensue from a target to be reached by 2050. The objective expressed by the IPCC of halving world emissions for this deadline, necessary for allowing the climate to be stabilised, induces an emissions reduction of the order of 85% on the part of the industrialised countries. 2050 is also a horizon where world oil production will not only have started to decline but where the prices will be such that they will create serious social problems, especially with regard to access to mobility.

→ Satisfaction Objectives

However, the White Paper should satisfy these energy and climate result objectives while ensuring equitable access for all to the transport modes and services that they allow. If the energy and climate objectives seem to be hampering both freedom of movement and access to essential services and needs, they will inevitably be rejected by the population. These satisfaction objectives must be seen as being at the same level of priority as the preceding result objectives.

For that, the White Paper should:

- meet people's aspirations to individual mobility and to the fulfilment of economic trade, through a better quality of services more than through a strong growth in traffic;
- ensure equitable access for all categories of people;
- meet principles of general interest (social equity of access, road safety, compliance with the social work norms).

It should therefore be clearly expressed that taking account of the energy and climate constraints as quickly as possible is the essential condition for guaranteeing an equitable transport system and for meeting aspirations to freedom of movement and trade.

→ Performance Objectives

Personal freedom of movement and of participation in economic trade has constituted a considerable victory in terms of individual freedom. But, as a Mayor of Los Angeles said some time ago: "The main obstacle to the freedom of movement is the freedom of movement". This observation was obvious in terms of the risk of urban congestion: it now will apply to the capacity to pay for fuel. It is therefore essential to overcome this contradiction by an optimisation of the transport function in order to have the best possible quality of service by reducing the constraints, whether they consist of congestion, wasted time, air pollution, consumption of rare resources or climatic disruptions.

Consequently, the White Paper will have to propose every possible way of enabling the transport activities' performance to be improved:

- optimising mobility thanks to better organisation (localisation of activity, land-use, town planning), in order to reduce compelled travel (especially commuting);
- contributing to the productivity of the economy in a competitive world and control the costs, especially as the distances covered by people and goods are tending to lengthen;
- orienting mobility as effectively as possible towards the most efficient transport modes at energetic and environmental levels;
- redesigning vehicles by aligning their performance and their actual use in order to drastically reduce emissions and fuel consumption;
- reducing the transport modes' vertical organisation in order to improve their competitiveness, competition and transport complementarity;
- incorporating the rapid development of the new communication technologies and facilitating the substitution of physical travel by communication;
- improving individual and collective behaviour in the direction of the common interest.

→ Objectives of Institutional Means

The achievement of the three categories of objectives above requires the adoption of rules and means not only at the European level, but also at national and local levels. One should therefore call into question a conception of a White Paper that would solely relate to the Community level.

The White Paper will have to:

- achieve an integration and a co-ordination of transport at the level of the European Union as a whole;
- transform the sector's operating rules by transcending the often public national structures and organise a single market within a frame-

work for the principle of competition according to principles of general interest;

- transcribe the performance objectives and agree on tax and tariff principles reflecting the priorities between transport modes;
- define a new framework of regulation applicable to the various levels of subsidiarity.

These objectives are not addressed strictly to the European Commission but imply for their success the active participation of the Member States, the regions and the local authorities. Furthermore, a large part of the practical policy implementation competences fall within the responsibility of those subsidiary levels.

7.3. The Common Elements Between the Question of this Search for Common Interest and the Commission's draft White Paper

Fair Observations and a Satisfactory Vision

The Commission's draft White Paper notably proposes a real advance with the concept of "Single Transport Area". This, following the Commission's will to create a "Single European Area" for transport by opening markets, unifying technical standards and developing new communication technologies.There is a profound convergence here with a vision that the Greens could develop.

The draft White Paper clearly acknowledges the extent of the future challenges concerning energy and the planet.It pleads for "a systematic use of the most efficient mode" (ll&8).

This constitutes an evolution from a vision in terms of competition between modes to an integrated vision of systemic nature, which is an important change of direction towards the integration of an ecological viewpoint by the Commission.

This systemic vision goes further, through the desire to improve behaviour and implicitly the control of mobility in urban areas (even if this effort to control remains clearly insufficient in the transport sector).

A Strategic Imbalance

We do, however, regret that the strong emphasis placed on technology is not extended to a study on governance between levels of administration.A deeper reflexion on the question of changing the behaviour of users but also of shippers, industry and service businesses would have been equally welcome.

A Difficulty with Deciding Between the Common Interest and Opening up to Competition.

The report highlights difficulties of a complete opening up of rail to competition. If it persists in maintaining this point of view, it points out to two risks:

- insufficient investment;
- the risk of being unable to increase the market share of rail compared with road and of exacerbating this risk through differences existing between Member States.

It concedes that in this case the implementation of competition could be against the common interest.This question must clearly be approached in the following order: first put in place measures that increase the market share of rail. Then increase investment and then, and only then, increase competition, making sure that it does not challenge the previous points.

The necessity of developing high-speed rail infrastructure for passengers with the aim of dethroning the airplane over long distances, and for the transport of goods with the objective of removing freight from the road, is also identified.

7.4. A Forecast Which Indicates Results Which Are Lower Than What Is Necessary

A Forecast That Reveals Differences of Allocation Regarding the Necessary Progresses to Be Made.

The forecasting exercise of the Commission's draft White Paper comes up with a figure for transport that is far from the objective of a reduction of 75% for the Union. Implicitly, it speculates that these reductions will be compensated for by reductions in other areas, which will be far from easy.Certain sectors are also encountering great difficulties in reducing their emissions (sectors such as cement and steel, agriculture or electricity generation). Four reasons explain the relatively weak reduction of emissions over the long term drawn out by the scenarios of the draft White Paper.

On the positive side:

- the acceptance -finally- to rationalise car use (size, energy efficiency, functionality, improvement in behaviour);
- the priority given to the development of public transport.

But, lessening the performance

- the strong growth envisaged for international and intra-community freight traffic and the weak rate of improvement in the energy efficiency of trucks and vans;
- a strong growth in air travel.

The underlying differences in the analysis.
Implicitly, the draft White Paper deals with the transportation of people and that of goods very differently.

- it shows a lack of reflexion on a control of the mobility for the flow of goods (reduction in zero-stock, redeployment of certain economic activities);
- an underestimation of the importance of downgrading (private cars, vans, trucks and HGV);
- the absence of proposals to master the growth of long distance passenger travel (development of long stay tourism).

These deadlocks result in insufficient reductions in greenhouse gases.

Deadlocks in thinking about energy
This concerns:

- the overestimation of the potential of batteries and hydrogen;
- the debate on the production of electricity and hydrogen, which would increasingly supply the transport sector, has been ignored.

7.5. The Inadequacies Uncovered in the Commission's draft White Paper

Good Economic Principles
The draft White Paper clearly takes a position in favour of allocating the tax revenues flowing in from the implementation of the principles "polluter pays" and "user pays" to the transport sector.

But it is vague regarding the conditions and deadlines for implementation.It essentially presents a didactic argument, which is designed to provoke a political response from the Member States, knowing very well that in the present economic climate, the rule of unanimity in fiscal matters means that there is little hope that these proposals will be implemented any time soon.

An Insufficient Conceptual Framework
The relationship with the market appears to be ambivalent as it holds on to a framework of competition, while still pointing out that the different modes of transport should not be in competition with each other. The conceptual basis has only partly evolved. Even if the emphasis is on an integrated, multimodal approach, competition is still a leading principle.

Resources That Are Not Up To the Objectives
Although the orientations presented in the draft White Paper are a considerable improvement in comparison to previous versions, it is hard to determine whether the proposals match the vision.

- The process of internalising external costs, alone, will not be enough to reorient stakeholders' choices to the expected degree of transformation.
- The policies that need to be pursued require a forecast of future energy prices and a framework of prices contingent on a rigorous economic analysis.
- This policy does not dispose of the necessary investment capacities.
- The negative social externalities caused by the deregulation of freight transport (unrestricted road cabotage) are assumed to be resolved by a convergence in economic development between Member States, which will occur gradually.
- In their current form, the economic signals will not be enough to change the behaviour of individuals or businesses.
- The policies necessary to ensure behavioural change are clearly insufficient.

An impasse on democratic measures
One cannot claim to make such a shift in transport policy, receive acceptance from stakeholders and engender changes in behaviour without engaging in a considerable parallel effort in communication and public debate.

Furthermore, the question of governance and the building of cohesion between institutional levels are not addressed.

Certain proposals seriously lack clarity
The concept of the green corridor can be considered as another attempt at "greenwashing".Vigilance is required regarding this proposal.

7.6. The Need to Propose a General Framework for European Transport Policy

This new policy adopted following the debate opened up by the draft White Paper should give rise to a framework directive, which would be tasked with:

- deciding precisely what principles of common interest should be retained;
- the ranking in terms of priority between various modes of transport;
- agree on the direction for tax and pricing reforms as well as those relating to the internalisation of external costs.

8. Priorities to be Determined

The White Paper ought to enable a wide debate to be opened on the Transport Policy's objectives and new priorities, on the essential co-operation of the players, and especially on the necessary means and instruments for achieving the objectives that are set. The success of a new Transport Policy depends indeed much more on the behaviour of the various players than on technological and economic questions alone.

8.1. Possible Attitudinal Changes of the Players Currently Determining the Transport Policy

More than in any other field of human activity, the transport sector involves players of many kinds, and of course the population as a whole.

The transport sector's development will, to a great extent, be determined by:

- the possible articulations between various levels of public bodies that constitute the organising authorities of transports;
- the positions of the representatives of the economic sectors, in particular employers and contractors (consignors of good, mass distribution, and so on);
- the positions of the various big players of the transport channels, the expectations that they express, the strategies that they develop and the proposals that they make;
- the possible alliances which would allow a regulation and an optimisation of the sector;
- the behaviours of the users and the psychological processes that underlie them, as well as the possibilities of sustainable behavioural changes.

On the basis of the comprehensive vision that the aforementioned objectives express, it is necessary to determine the operational priorities which should be those of a transport policy commensurate with the issues at stake.

We will return at a later stage to the issue of the instruments that have to be developed at the level of the European Union, the Member States and the local authorities in order to implement the following priorities.

8.2. The Components of a Mobility Control Policy

This is the option that has to be central in the new policy in order to reconcile equity of access to transports and various energy and environmental objectives. This policy must apply to passenger and goods transports alike.

The main means should include:

A better localisation of economic activities In relation to housing

Whereas the localisation of housing evolves relatively slowly, that of the economic activities does so faster and has a strong tendency to be concentrated in large metropolises. This results in longer work/home distances. In addition, the practice of zoning activities at the town-planning level has had the same effect (construction of residential suburbs, concentration of shopping malls, of leisure facilities, and so on).

An Optimisation of mobility would involve:

- reconsidering the land-use and town planning policies on the basis of a diversity of functions. This is essentially a question of local authority and regional competences;
- redistributing the offer of tertiary employments through a better espousal of the housing distribution. This would require a land and tax policy on the part of the Member States and local authorities that would head in that direction. It would probably involve a local land tax on the stronger companies in the employment concentration areas and a more attractive tax in the areas that employment tends to desert;
- allowing better access to public services and shops in a proximity rationale by local policies through local policies of support to those activities in suburbs and rural areas.

Prioritising Short Runs

The supply chains within the industrial and agricultural branches should also be shortened as much as possible.

This would involve:

- holding discussions with the branches of activity in order to reduce the recourse to Just-in-Time and Zero Stock storage and to shorten the subcontracting routes.Although this is an imperative need, it conflicts with the principles of the wide opening to competition within the European Union, the goal of which is to ensure the equitable development of all the Member States. Reflection on its practical implementation procedures would therefore be required. One of the ways to encourage this movement would consist in revealing, in invitations to tender, the distances covered and their energy and climate impacts, (as an additional element for decision to an internalisation of external costs).
- developing short runs for the food supply, especially by developing truck farming in the urban fringe. This would also guarantee nutritional quality and public health;
- developing industrial ecology in a short run rationale, so that waste or coproducts of one activity become the raw materials of another, thus limiting the transport relating to their evacuation and avoiding elimination costs;
- developing the recycling that helps to reduce European vulnerability to raw material imports and that contributes to the construction of an economy with shorter runs since the matters to be recycled would emanate directly from the major consumption centres.

Nevertheless, one should be conscious that the European Union is now almost completely dependent on outside countries for its raw material supplies and that this irrefutable fact now constitutes an inescapable and permanent reality. Thus the priority for short runs would in no way culminate in a renunciation of international trade. Henceforth, without mineral raw materials and fossil fuels extracted from its ground, Europe will be in a serious situation of dependency. Policies involving efficient use of resources, recycling and short runs would reduce this dependency but would not be able to eradicate it.

Reorienting urban policies for the promotion of compactness

While the European city centres are generally fairly dense, the peripheral areas, for their part, are not, whether they consist of suburban housing, detached houses or even high-rise apartment buildings. Moreover, these European cities comprise industrial waste lands and urban blight. The stake is to rebuild "the city on the city" rather than nibble away at the nearby arable land. This new housing also has to be designed to facilitate access to nature (balconies, vegetalised terraces and neighbourhood parks). It is also well know that the optimum of is not achieved by constructing high-rise buildings (often spaced in ap-

plication to the rules of perspective, for reasons of hygiene, safety, luminosity...), but rather of a continuity of buildings along the streets with an average level of around ground floor + five.

The main measures are:

- densifying the first city loop housing, by registering this priority in the town planning documents;
- developing land policies ensuring the construction of social housing in dense areas;
- regaining industrial waste lands, ...

This will to densify the city will have four beneficial effects:

- facilitating the mix of functions (residential, services, commercial, touristic, industrial and leisure);
- at the same time, it will shorten the distances and facilitate access to public transports benefiting from a better frequentation, therefore enabling a better frequency;
- reducing the local authorities' installation expenditures on the various networks (water, drainage, electricity, highways and so on);
- integrating the various population layers better by avoiding enclave situations. Insufficient access to transport constitutes one of the main causes of social exclusion. Consequently, the development of public transport is one of the main cures for social exclusion. A social exclusion situation is indeed often characterised by a lack of access to the car, by exposure to the injurious effects of road traffic and by, for want of public transport, inadequate accessibility to the basic services (Priya and Uteng, 2009). This situation is found in numerous indicators such as access to work, training, food shops, healthcare, social and cultural services, and leisure or sports activities.

Rationalising Tourism

The development of mass tourism meets some deep aspirations: discovering other people, societies and lifestyles, which helps to overcome temptations of nationalist fallbacks and encourages world peace. But this development of mass tourism has a heavy impact. It contributes, in particular, to an air traffic growth of almost 5% per annum. Long-distance tourism is therefore the transport field that has both the heaviest impact in terms of climate change (a transatlantic return ticket is equivalent to the use of a city car during an entire year) and is the most dependent on fossil fuels, usually without any possible alternative to the plane.

Tourism generates approximately 3.4% of total employment and 3.8% of GDP at the European level. In certain countries such as Cyprus and Malta, the sector can represent more than 10% of the GDP, which makes it a sensitive topic. Official statistics show that the plane is the principal mode used by European tourists, with the car coming second. Deliberation should therefore be undertaken on procedures for developing this activity by keeping its advantages and reducing its negative effects.

For this, one should:

- encourage long-stay tourism in order to optimise travel, which could be expressed in the form of a distance/number of holiday days ratio;
- get company rules concerning holiday-taking to evolve, in order to facilitate a greater diversity of vacation modes by distinguishing those of very long duration for far-away stays of an exceptional nature and short-haul vacations;
- improving proximity touristic offers and their access by public transports.

Developing new communication technologies

One of the main long-term options consists of developing a comprehensive approach that includes trade both through electronic and physical channels. The development of mobile telephony, e-mail, e-commerce, e-administration and the internet allows physical travel to be substituted by transfers of data and information.

But this complementarity presents real difficulties. While it is obvious that data transfers, access to information and telecommuting avoid physical travel, it is equally obvious that the considerable geographical extension of personal and commercial relations networks enabled by the new communication technologies is in return generating additional travel, primarily long-haul. Consequently, the optimisation of their relationship is not to be taken for granted: it must result from an active approach in order to draw out its best advantages and to reduce its frequent negative effects.

The main orientations to be developed would include:

- replacing travel for meetings by audio- and video-conferences, in particular thanks to the access to the necessary high speeds for improving image transfers; business travel, congresses and international meetings should be substituted in the strongest possible proportion by recourse to these means in order to drastically reduce the use of the plane for the very reasons that relate to long-haul and short-stay travel;
- the European Union should introduce an exemplary policy on the subject that would allow a double benefit: reducing energy consumption and emissions and offering wider democratic access to the Commission's and Parliament's activities. A carbon assessment of the European Commission's entire activity should be made as a preliminary;
- developing telecommunications, the Internet, GPS and mobile telephony in order to:
  - co-ordinate initiatives such as Car Pooling and Car Sharing by facilitating real-time access to a vehicle or a service;
  - facilitate direct access to congestion information in order to optimise travel routes and times;
  - encourage intermodality in particular by real-time knowledge of the intermodal connection possibilities;
  - encourage the compatibility of the European information systems, in order to make them easier to understand for everyone.

8.3. Ranking Priorities For Passenger and Goods Transport

Before addressing the question of the instruments, it is essential to reveal the actions concerning these two kinds of transports, whose scope will be the most decisive and that will therefore have to play a central part in the scenarios representing possible futures.

Before going into detail, one must keep in mind the following distinction concerning motorisation trends:

- short-distance vehicles that will be able to switch to electricity if the production of the latter manages to reduce greenhouse gas emissions and avoid recourse to nuclear energy;
- long-distance vehicles that will for a very a long time remain dependent on liquid fuels, with hydrocarbons, agrofuels and hydrogen as the only alternatives.

8.4. Orientations for Passenger Transport

Alongside the essential mobility control policies presented above, one should evolve towards a major transformation of transport modes, starting with the car, in order to improve their energy and environmental performances.

The car manufacturers have not reached the emission reduction objectives.Consequently, to respect the European commitments relating to the reduction of emissions by the deadline of 2020, in conformity with the "Soft Mobility Paper", maximum emissions values for road traffic and for the consumption of fossil fuels should be fixed.

The main channels to achieve such an improvement are:

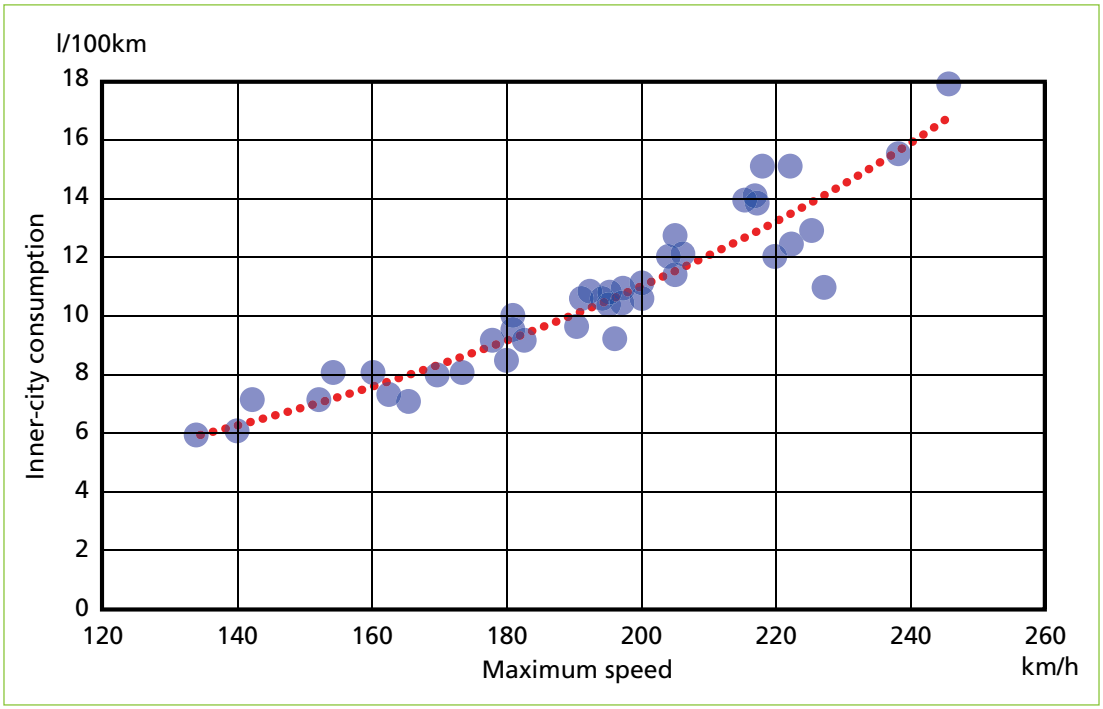
→ Redimensioning Vehicles In Consistency With Their Use

Some basic data should first be recalled here. Car occupancy rate is around 1.3 persons per vehicle. The most common speed used is 50 kph (city boulevard), which also corresponds to the average speed achieved over a mixed route (inner-city travel, city-countryside, city to city and motorway). These actual conditions of use have nothing to do with the performances suggested by the manufacturers.

Generalising Speed Limits

Speed limits should therefore be generalised at the European level and the sale, on the European market, of vehicles with excessive speed capacities should be dissuaded and then prohibited (within a laid-down period). This would require serious negotiations with the car manufacturers. This option would however offer the latter great advantages in the long term: it would enable them to develop vehicles that would be less energy-consuming, less polluting, that would emit less greenhouse gases and be more accessible to populations from developing countries as a result of their lower price.

Figure 4: Maximum Speed and Urban Consumption



Source: INRETS

The above graph shows that inner-city fuel consumption varies from single to double between a vehicle whose top speed is somewhere around the speed limits in force in the majority of the countries (for example, a SMART limited to 140 kph) and a vehicle with a possible top speed of 220 kph. We see here the extent of the financial and energy wastage that the up-selling of the car stock has constituted for about thirty years. Furthermore, a moderate speed reduces the risk of accidents and allows the traffic to be more fluid as a result of a less turbulent flow.

In recent years, fatal road accidents have considerably decreased. Their number fell from 162 to 87 deaths per million inhabitants between 1990 and 2006. This underlines a decrease in road accidents falling at an average annual rate of 3.5% whereas the population of the UE-27 has increased each year by an average of 0.3%. This progress, which is still insufficient, has been obtained along with some perverse effects: an increased vehicle weight because of the incorporated safety devices, which has increased fuel consumption and therefore environmental impacts. The benefits of the road safety policies should be retained but with a reduction of the practised speeds and a dimensioning of the vehicles in relation to their actual use.

Deciding On A Power-Down

The principle put forward here is to favour the everyday use of vehicles dimensioned in relation to their most frequent uses and to transfer a much as possible the situations requiring higher-capacity vehicles on other practices. This option must have as a corollary the facilitated access to vehicles with a capacity that best corresponds to more exceptional uses (going off on holiday...) whether via car sharing or via renting.

The European automobile industry should embark upon a power-down process. This would produce a considerable optimisation margin and would actually be the main option for optimising the use of the car in parallel with the simultaneous development of the alternatives, especially through public transports and active modes.We shall see later the instruments mobilised to achieve this.

This option has obvious advantages:

- fewer accidents;
- lower vehicles costs and therefore easier access for less well-off people, for whom the use of a car often conditions their access to employment;
- fuel savings;
- reduced operating costs (fuel, insurance and repairs);

• less pollution and fewer greenhouse gas emissions;
• and above all, a greatly reduced general weight on the European economy (in terms of the captured part of household income), which would be able to enable other aspects of the transport policy to be financed.

→ Developing Car Access Modes Other Than Individual Ownership

Car Sharing

Car Sharing constitutes an innovative consumption mode. It is facilitated by the development of the means of communication. It is a question of a new form of organisation combining different traditional transport modes, with on the one hand the private vehicle and on the other, public transports (Prettenthaler & Steininger, 1999). Car Sharing systems are particularly suitable for episodical use or long journeys, infrequent travel and on routes that are poorly served by public transports. Car Sharing constitutes a good complement to public transport, because the latter is especially effective in dense areas, for daily and regular travel.

Car Pooling

In fact, four factors determine Car Pooling's effectiveness and relevance: regularity, accessibility, waiting capacity and relational preferences.
Both of these solutions help to reduce congestion, with equivalent service.

→ Developing Other Motorisation Modes

Switching to Short-Distance Electricity

The technological option that has the power to succeed is now known. It consists of moving to electricity for short-distance transport: for cars and delivery vans. It involves manufacturers offering strictly electric or hybrid vehicles allowing frequent middle-distance runs.

Until now, the handicap of electric vehicles has been the short duration of the batteries and especially their lengthy recharge time. There has been small but appreciable progress in the duration and the lightening of the batteries with the arrival of lithium-metal-polymer batteries.

Moreover, a simple solution has been found to solve the recharge problem: exchanging the battery service stations (where they can be recharged). But it must be clear that the development of the electric vehicle initially presupposes renouncing the performance level of the current vehicles (especially in terms of acceleration and weight) if we want a mass-produced, accessible economic vehicle.

This option requires careful deliberation on the electricity generation aspect in order to avoid simply transposing greenhouse gas emissions and inducing the development of nuclear energy. The electricity recharge development would have the advantage of calling essentially on electricity generation outside of the peak consumption periods.

This option would mainly require:

• a massive exploitation of renewable energies;
• energy efficiency advances in electricity generation and the generalisation of cogeneration;
• a development of intelligent electricity grids for better recharge management (which does not have to occur in real time and which can avoid moments of peak consumption or production shortfalls);
• most probably, the recourse to the sequestration of carbon, in order to avoid greenhouse gas emission, for the electricity part that would still be using fossil fuels.

The Case of Long Distance Transport

The move to electricity cannot apply to long-distance travel (except for rail) by air and sea or to trucks and coaches. These will therefore continue to depend on liquid fuels. A reduction of greenhouse gas emissions and oil dependency could be obtained by the partial integration of agrofuels. But it must be clear that this type of transport will most probably remain dependent on kerosene and diesel throughout this entire century. This means that agrofuels should especially not be used for short-haul transport.

→ Reducing Air-Conditioning-Related Fluorinated Gas Emissions

The reduction of the fluorinated gas emissions relating to vehicle air-conditioning is based on an improvement of the currently inferior qualities of the air-conditioning systems that generate significant losses of refrigerating fluid (about 15% per annum). The actual use of air-conditioning, which often absorbs the equivalent of one litre per 100 kilometres, should also be moderated.

→ Developing "Active" Transport Modes

When having to choose between the terms "soft mode" or "active mode" to refer to bicycles, roller skates and very short distance walking, by experience of their practice, we prefer the term "active mode".

The self-service bicycle systems developed a few years ago have had the effect of strongly relaunching the practice of cycling in dense city areas and of significantly relieving urban congestion – for modest investments. These systems have met a major success in just a few years.Over one hundred European cities currently dispose of such systems.

The local authorities' current financial problems are probably heading in the direction of developing these transport modes in order to reduce congestion instead of creating expensive new roads.

Their generalisation also implies introducing an inner-city "Highway Code" in order to improve road safety in the light of the co-existence in the same space of slow and vulnerable users and automobile traffic.

→ Developing Urban Public Transport

Public transport must acquire additional quality and diversity through:

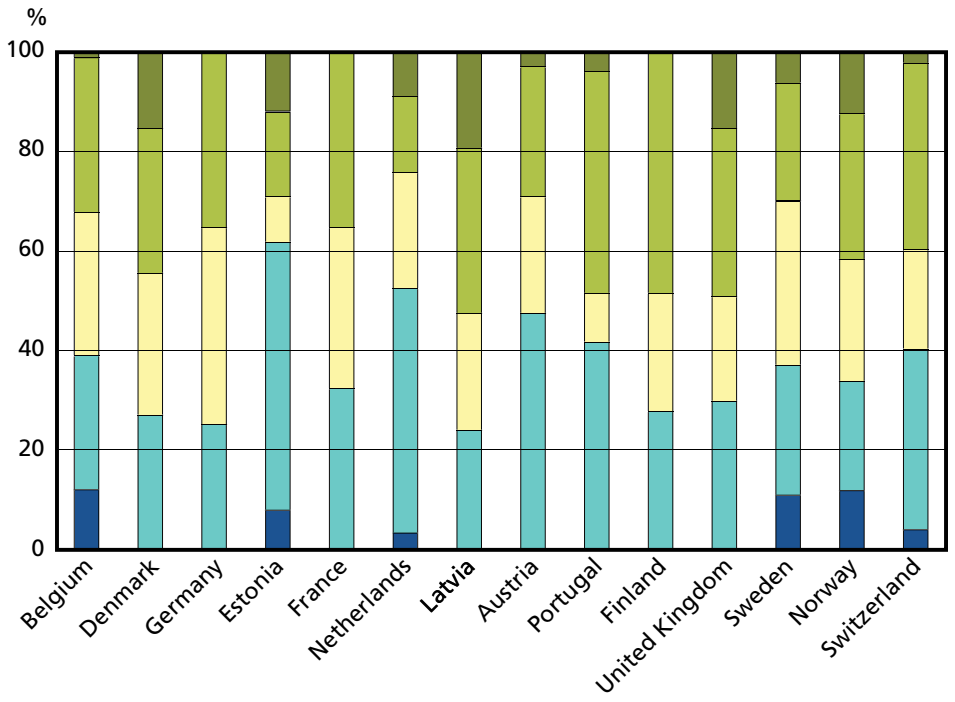
- quality urban transport with a sufficient mesh and affordable pricing. In practice, it turns out that in the majority of cities, the best performances are achieved by a dense network of trams that are well co-ordinated with the railway and bus networks. The improvement of the quality of surface tramways makes them a more interesting public transport mode than the far more expensive underground railway systems;
- public and on-demand transport modes for areas of lesser density, since it is now possible to easily coordinate an even weak demand for transport with adapted modes, thanks to the new communication technologies.

→ Facilitating Intermodality

This would involve:

- encouraging the interconnection between transports modes in order to reduce the discontinuity effects and to make the choice of the mode easier. Better articulation between urban transport and long distance transport should in particular enable long distance travel by means of door-to-door public transport;
- ensuring better transport mode predictability, in particular in the event of a change of transport mode, which the combination of Internet, mobile phones and GPS access now allows. This also supposes dedicated sites in conglomerations as well as the usual communications tools, in particular maps in which all transport facilities would be illustrated, namely: public transport, taxi ranks, car parks, self-service bicycle stations, car-sharing, taxis and so on... In order to enable each person to determinate the easiest way to get from A to B;
- greatly reducing the importance of air on short distances in favour of high-speed rail on the European Union's territory.

Figure 5: Reasons for Travel in Some European Countries



Data source: EC, 2007

8.5. Orientations for the Transportation of Goods

The dependency on oil fuels is even stronger for goods transportation than for passenger transport, with the obvious exception of rail freight. This dependency points to a particularly acute problem the cities since city deliveries contribute heavily to air pollution.

The future policy will have to:

Harmonize regulations and optimise the use of rolling stock

Different barriers can be erased to allow for a better management of European rail, therefore increasing its competitiveness.

- Uniformity of size, technical norms and dimensions (rail gauge, wagon size);
- allow the use of the rolling stock over the entire territory of the Union;
- determine the conditions of procurement contracts for the routes of European interest, particularly the rail corridors.

Develop Alternatives To Road: Rail, Waterway and Cabotage

In practice, it is observed that few countries manage a strong development of rail for passenger and goods transport simultaneously (this is however the case in Germany). Their performance levels, their routes, their timetables, their destinations and their management styles strongly differ. This implies developing a specific European plan in favour of rail freight and in particular developing by-path city railway infrastructures in order to reduce bottlenecks.[5]

The cabotage margins of development on the Atlantic, North Sea and Mediterranean coasts are considerable. Cabotage in particular constitutes a means for avoiding having to cross the Alps or the Pyrenees.

Orienting Non-Urgent Transport Towards These Modes

The policy must favour a relocation of the economy for certain products, especially for agricultural and for heavy products, by reducing supply

5 This option is being considered in the White Book (II&90)

chains and optimising the location of subcontractors. The lengthening of supply chains weakens the European economy making it vulnerable to any rise in transport prices and all transport paralysis, especially in cases of bad weather, congestion, and accidents, ... The tendering rules should take into account this need to reduce the vulnerability of supply chains.

It should encourage, through incentives, the shippers (producers of semi-finished products and of manufactured products and food processing) and the ordering party (supermarket chains) to use an alternative to road for the transport related to their activities.

As can be seen in the table below, raw materials and construction materials represent approximately half of the total quantity of goods transported in the EU. This is also by far the most important category using inland waterways. As they are slower than the other modes, inland waterways generally transport low value goods in bulk, but it is clear that this still only represents a very small percentage of this market. There are four categories of products for which road transport is not justified, and which can be transported by waterways or by cabotage: non-perishable foodstuffs and animal fodder, coarse minerals, construction materials, machines, transport equipment and waste.

- Developing a relocation of the economy for certain productions, agricultural ones and weight cargo in particular.

Developing Alternatives to Oil

- It is necessary to seek alternatives to oil, for long-distance transport in particular. In order to achieve this, the main way consists in using uppermost agrofuels for goods transport.
- It cannot be excluded that certain long-distance transport modes might in the long term be able to use hydrogen as fuel (trucks, boats), this hydrogen could be produced by renewable energy when their production is higher than the immediate needs of the electricity network.

Developing Intermodality

The development of intermodality as a means of favouring the alternative modes to road for long distances (waterway, cabotage, rail) requires the creation of a network of multimodal platforms all over the territory of the Union.

Improving City Delivery Efficiency

Some progress has been achieved, but there is still great potential for:

- improving the haulage load factor, especially for city deliveries;
- facilitating deliveries into the heart of cities through rail and waterway;
- using the new communication technologies for optimising delivery rounds and grouping loads for several products and several customers;

Goods Transport (National And Intra-EU) Per Food Groups (In Millions Of Tons)

	Animal Products	Food Products & Fodder	Solid Mineral Fuels	Oil Products	Metal Ores & Waste	Metal Products	Coarse Minerals & Construction Material	Fertilisers	Chemical Products	Machines, Transport Equipment, Miscellaneous Products	Total (%)
Road	758	1,081	65	396	132	330	4,904	133	517	1,903	10,221 (91%)
Rail	33	15	67	39	54	94	74	10	35	115	535 (5%)
Waterways	16	25	49	80	51	16	143	11	34	43	469 (4%)
Total (%)	**807 (7.2%)**	**1,121 (10.0%)**	**182 (1.6%)**	**514 (4.6%)**	**238 (2.1%)**	**440 (3.9%)**	**5,121 (45.6%)**	**154 (1.4%)**	**586 (5.2%)**	**2,062 (18.4%)**	**11,225 (100%)**

Source: Eurostat Data, 2004

- developing light solutions for city deliveries over the last kilometre, for example, reserved parking zones with staff to carry out deliveries within the zone using hand trolleys.

Although GPS and mobile phone use has been generalised within companies for the purpose of rationalising deliveries, there remains great potential from certain collective organisation processes: such as grouping deliveries between shopkeepers of the same street (integration by recipient) or between consignors of good (integration according to load origin).

8.6. The Specific Question of Energy Production

The Transport Policy should address this question if it turns out that electricity is required to take a central place for short-haul transport and, through rail, for long-haul. In 2005, about half of the railway lines had been electrified and this proportion has since then increased.

→ Electricity Generation

The Three Possible Electricity Generation Strategies

There are today three possible electricity generation strategies in existence:

- the continued recourse to fossil fuels (natural gas and coal, in particular, by recovery of the hydrocarbons in line with their enrichment). This option implies developing high-output solutions and resorting, probably around 2030, to the sequestration of carbon in depleted gas and oil pools and of deep aquifers offering the necessary sealing guarantees.;
- the development of nuclear energy with recourse, in about the middle of the century, to fast breeder reactors, here too in order to hedge the limitations in ore resources;
- the development of the various renewable channels by associating intermittent channels (wind, photovoltaic) and more regular channels or channels that enable a storage of the resources (wood, waste, methanisation, lake hydraulics, and marine energies).

Determining a Priority for the Greens

First comment: these three strategies avoid the emission into the atmosphere of the essence of the carbon gas currently associated with electricity generation.

Second comment: the strategies currently differ according to the situations of the various countries in the world.Within the European Union there will be a transitional stage where there will be complementarity between several of these options as long as renewable energies are unable to cover basic needs.

Third comment: only the last strategy contributes to the reduction of Europe's vulnerability in terms of its external procurement.

The preferred way is therefore the exploitation of renewable energies with a transition using the carbon sequestration for the remaining part of electricity generation from fossil fuels.

The Search for a Maximum Energy Efficiency

This move to electricity must also be interpreted from the point of view of its relative energy efficiency.

- Consequently, when one takes into account both a power-down and a matching of the electric vehicle' performance to its use (less power), one can conclude that an electric vehicle whose electricity would be generated from fossil fuels would consume less of those fuels than a vehicle directly using an oil fuel (especially in city traffic).
- As the electric mix will grant more room to renewable energies or as the carbon will be captured in big generation power plants, the assessment will become increasingly favourable for electricity and it will see its level of greenhouse gas emissions gradually decrease.
- The technical option which emerges will combine a night-time recharge (at service stations or parking terminals) and a battery swap at service stations. The corollary of this logistic will be a battery recharge outside the peak hours of electricity consumption and mostly concentrated in the midst of the night. Thus, in a first stage, the development of the electric vehicle should not lead to the construction of additional electricity generation facilities but to the use over a longer life of the existing production means (base-load power stations and renewable energies).
- A significant part of the charging of these batteries could be carried out by renewable energies once the immediate requirements of the electricity network have been met.This production could call on wind power (onshore or offshore, solar power or biomass productions).

- This option implies an attentive organisation of the recycling of the batteries, whose components are either toxic or rare.
- The hybrid vehicle constitutes an all the more intelligent solution as it can be progressive (as technology improves and thus the relief of fuel by electricity increases). The development of the hybrid vehicle nevertheless should not serve to guarantee the maintenance of a market of oversize vehicles.
- The development of rail for passenger transport coincides more closely with the peak electricity demand.

→ The Use of Hydrogen as Vector

The development of hydrogen as an energy vector has given rise to a great deal of hope, because it enables a complete liberation from any direct greenhouse gas emission. However, this option encounters great difficulties:

- initially, no free hydrogen exists in nature. It can be extracted either from water (electrolysis) or from natural gas. In the first case the output is very poor: in the second, the reaction releases carbon gas and raises the question of the greenhouse effect (if carbon capture is not associated with it);
- electrolysis can be assured either from nuclear reactors, or from renewable energies;
- hydrogen, which is very light, is difficult to transport and store and involves a considerable risk of explosion;
- its use by combustible accumulator requires very sophisticated, rare and expensive materials (platinum);
- the costs are therefore too high for application to individual vehicle and even more so if energy consumption dropped following a downgrading and as a result of progresses in energy efficiency.

It consequently emerges that the hydrogen vector presents technical, energy efficiency, logistic and especially economic difficulties, undoubtedly insurmountable for the equipment of cars.

The use of hydrogen will be able to find niches other than spatial travel, for long-distance transports such as fishing and sea transport. For such applications, production from electricity generation plants, using the surplus from renewable energies, will probably suffice.

9. Policy Instruments in the Transport Sector

9.1. A New Institutional and Legal Foundation

Setting up a new European Transport Policy requires the developed priorities to be articulated with the EU competition rules governing procurement procedures. This implies rethinking the legal modes of applying competition.

This is the central question surrounding the reorientation of the EU transport policy, which must reconcile:

- the progress achieved by an integrated European Transport Policy;
- the need for equity as well as economic performance enabled by full and free competition; and
- the taking into account of two limits, namely the decline of oil resources and the need to reduce greenhouse gas emissions.

It must however be recognized that the last two considerations are in contradiction with one another, as the way the market functions does not allow it to take into account the effects of overall, overriding limits. One solution to this problem could consist in a strong increase in prices through taxation to reflect the negative externalities of transports and curb current trends to reflect the limits posed by energy and climate considerations.

But this would have two devastating effects:

- firstly on a social level, with unacceptable effects on people with modest incomes, particularly rural populations dependent on the car;
- then on an economic level, with a strong negative impact on trade, therefore deepening the inequalities between regions on the basis of their geographical position and levels of transport services.

The EU Transport Policy must therefore reconcile European integration, competition and a reduction in energy consumption and greenhouse gas emissions in a way that reduces its negative side effects. The relationship between these three considerations must be carefully considered.

→ Balancing the Public Interest and the Priority Given to Competition Rules

The preoccupation with opening the European market to companies of all Member States in public tenders and competition has had the following effects:

- increasing traveling distances, especially for freight transport;
- insufficiently taking into account the impacts of transports given that prices underestimate transport's social and environmental external effects and do not incorporate future rises in fuel prices;
- ignoring the future consequences of a rise in traffic levels, in particular through further demand for investment in public infrastructures and the spending this would entail;
- an inability to directly integrate commitments to reduce global greenhouse gas emissions.

However, it is clear that the continued increase in traffic poses two types of difficulties:

- firstly, it brings about an increase in greenhouse gas emissions and an increasing draining of rare resources. In these circumstances, it may be argued that the increase in traffic is in contradiction with the public interest, which requires at its very least a stability of living conditions on earth, especially regarding climate;
- it also raises the question of whether this evolution is favorable to economic efficiency. Indeed, it is clear that different societies of equivalent living standards and human development indices can have very different transport policies and highly variable levels of economic efficiency. The Transport Policy should thus operate in a way to optimize the displacements of people and goods.

→ Establish Transport Policy on the Basis of a Clear Definition of the Public Interest

Here we will explore the ways in which the concept of "public interest" may be formulated as applied to the field of transport. We will also consider how the objectives presented above may be incorporated into a directive, and be forced upon the application of the rules of competition, whenever it seems that they diverge from their goal which is economic efficiency.

This is a key legal issue concerning the underlying political principles that underlie the draft White Paper.

Concepts of Law, Roman Law and Common Law

In ancient forms of law, and especially Roman law (and all the legal systems it has given rise to), the dominant principle is that of the respect for the authority of the State and the other subsidiary institutional levels. The Individual's Rights then developed complementarily, via habeas corpus in common law systems and the Universal declaration of human rights. The law must clearly draw a compromise between these two major levels of legal principles.

Competition law then grew in force little by little, particularly since the 1980s, especially within the European Union. It was not introduced so much as a legal principle, but rather operated as an economic instrument to oblige companies to compete against each other. As such, competition law was not primarily concerned with protecting competitors, but rather enhancing the macro-economic functioning of the market to optimize economic efficiency. Economy efficiency is understood as maximizing the consumers' satisfaction taking into account the scarcity of the community's overall resources.

As we can see, this is less a case of basic principles of law rather than general criteria for economic efficiency.

In addition, if a systematic application of competition law to procurement procedures results in a loss of economic efficiency, it can thus be seen to be in contradiction with its founding principle. It cannot therefore be a principle that is applied systematically.

As a result, it is imperative to precisely determine when a literal application of competition law results in a loss of economic efficiency, in which case regulatory instruments may legitimately be used to correct the inefficiencies. This arises when opening the market gives rise to oligopolies or private monopolies, dumping or other predatory pricing practices that are used to eliminate competitors, or when it induces a deterioration in services that harms people and communities. Fees and taxes alone are clearly insufficient to remedy such situations.

It is, for that matter, a surprising feature of this principle, that it discourages competition between modes of transport, which is the same as giving a vested right to the dominant mode of transport, which already benefits mostly freely from public infrastructures.

Community policy must therefore clearly formulate the factors that contribute to economic efficiency in the area of transport and determine the conditions of application of competition law, especially in relation to public procurement.

The White Paper should lead to the drafting of a directive, which should, in its first articles determine the criteria for economic efficiency to be retained.

A Two Level Concept of Law Should be Adopted:
On the one hand, references to the common interest which must be reformulated:

- equal access by all, to means of transportation
- optimizing energy resources given Europe's dependency on imports;
- stabilizing the climate within the framework of international treaties;
- meeting social and economic needs and ensuring the quality of access to different services by optimizing the use of transports (reducing traveling distances in particular);
- respect social rights;
- integration of externalities.

And on the other hand, the implementation of the rules of competition:

- European harmonization of modes;
- access to information and transparency of prices and offers;
- the economic optimization of choices.

9.2. Launching a Strong Regulatory Platform

The White Paper should suggest regulatory mechanisms for the transport sector taking into account the legal and political principles set out above.

They would be grounded in the following bases:

→ Resolving the Problem of the Unsustainability of Transport Policies

It is clear from the above observations that the current transport policy does not live up to the principles of sustainable development.

The EU transport policies should be rethought in line with the main principles of sustainable development:

Environmental Constraints
The conditions have been clearly set out: a reduction by at least 80% of greenhouse gas emissions and a severance of our dependence on oil. To achieve this we will have to follow several paths: technological progress, urban planning, behavioral change and fare setting.

Social Equity Concerns
The difficulty is that if prices are the primary tool used to reduce energy consumption and hence travel, social inequalities will be further aggravated. The problem is all the more serious given that the geographical concentration of activities in city centers in recent decades has pushed modest income populations to the peripheries of large cities, far from shops and many other basic services. This aspect of the situation means that it would be impossible to use any measure that involves constraint to change behaviors (alternate bans on traffic, quota systems for driving with individual limits). To do so would be at odds with the principles of social equality.

Economic Efficiency
A drastic increase in the price of transportation would throw companies and services into disarray and severe economic difficulties, especially those not having the best access to public transports. An increase in the price of transports could only, therefore, be concurrent with an improvement in the variety of the offer. This is a condition for the successful introduction of urban tolls.

Democratic Vitality
Citizens' support for any reorientation of the transport policy confronted by the permanent pressure of marketing forces can only be obtained by revitalizing democratic processes, essentially at the local level. Solely using economic instruments and sticking to the current supremacy of competition law will clearly not stimulate widespread public support for reform.

→ The Need for a Regulation That Uses Several Kinds of Levers

Using prices as a lever is a fundamental component of regulation, but it must be used gradually to avoid generating social disturbances and economic difficulties. It must be accompanied by clear announcements of changes in the short and medium term so people may prepare themselves gradually.

As a consequence, political policies will need to be introduced at all territorial levels to develop alternative means of transport: active forms of transport, collective transports, strengthening of railway systems, etc. This public funding will initially need to be entirely redirected to financing public investment in these areas. While one can criticize the principle of targeted taxation, one must recognize that it is easier to generate support for a tax when it is clear that it will serve to improve the quality of transports.

All this can only be achieved after a huge effort to communicate the facts related to the current situation, the possible trajectories and the way of taking into account very different. The decisions will need to be made through the active participation of all the different kinds of actors at the local level. A profound change in attitudes will have to be encouraged to ensure a maximum of voluntary transformations.

Other direct regulatory instruments will then be necessary to give off the necessary signals and influence behavior: speed limits, limits on the top speeds of vehicles, limits on parking spaces, etc.

Taking Into Account Different Time Horizons

The difficulty of such a mutation lies in its programming. Whilst a rise in taxes has a general and immediate effect, the construction of new infrastructure for public transport can take close to 10 years. It is therefore essential for an improvement in the alternative modes of transportation to be programmed to progress in step with the transition of a new transport policy.

→ The progression of regulation in the shift towards more modest car models

The shift towards the production of more modest car models could be achieved through the following process:

- reinforcing research programmes for light and efficient vehicles;
- generalizing of speed limits to 100 to 110km/h on motorways, 90km/h on national roads and 50km/h in cities;
- implementing at the EU level a carrot-and-stick (aka bonus-malus) system to encourage buyers to purchase the most efficient vehicle, or the vehicle that is the most suited to their needs (this point will be elaborated upon later);
- eventually, through an EU directive, forbidding the sale of cars whose top speeds are higher than the speed limits enforced. Exceptions will need to be made for certain economic and agricultural activities which require more powerful vehicles.

The generalization of speed limits and the implementation of a bonus-malus system could be achieved by all EU Member States by the end of 2012. It should be pointed out that the draft White Paper foresees such a speed limit (III&169).

The separation of the functions of infrastructure managers and users (unbundling)

- The power to decide to build infrastructures (organizational authorities) lies with the States and subsidiary local governments.
- The operational construction of these infrastructures can then be directly conferred through a public concession contract.
- Over more than a decade, EU directives have separated the management of infrastructures from their use by transport companies. It is now well-established that transport services are provided by the private sector in a competitive environment (commercial airlines, train companies, public transport companies, port companies, etc.) or, in the case of low profitability, by public services.

Set up of a status for major infrastructure's of European interest

Certain infrastructures, beyond national considerations, are of importance at a European level, and their contribution to public interest objectives should be considered. This concerns the management of the Rhine and Danube basins, the major crossing tunnels in the Alps and the Pyrenees, and perhaps also certain high-speed international train lines which are not fully economically viable, particularly in the early stages of their operations.

Different legal formulations could be used:

- a public service status for these infrastructures, adopted by an EU directive, based on a list of specifications (conditions of development, of access, compensation for populations affected by these infrastructures, etc.);
- a contractual framework adopted by an EU directive setting out the operating conditions for public or private operators (without creating a specific legal status).

According to the situation, both solutions are applicable.

The principle of a regular review of contracts in light of common interest objectives

One of the major advances of competition law consists in setting out specific dates in contractual documents, whether relating to delegations of public services or public service concessions. This type of regular revision of the objectives and of the modalities may be applicable to situations where there is direct state control. This ensures the setting of periodical reviews of the objectives following a reassessment of the stakes and issues and an analysis of the resources required, both human and financial, to allow for a renegotiation of the contractual conditions between the public authority and the service provider. This constitutes a step forward in terms of a democratic mode of regulation.

The term "contract" is used broadly here to designate any document negotiated between a public authority and a public or private operator which sets out the conditions and objectives of the operation for a fixed period of time. The contract may include terms setting out specific environmental objectives corresponding to the common interest objectives developed above. It is clear that these kinds of agreements may take relatively different forms.

Setting up a European regulator guaranteeing the quality of the objectives and contracts

These objectives and contracts should respect priorities and objectives determined at the European level. A regulatory body at the European level, with the support of national regulatory bodies, should therefore be put in charge of ensuring that this is in fact the case. It is crucial for national regulators to have all modes of transports in their purview and share a common base of European doctrine.

Improved integration of national and European policy

Successive European Green Papers have clearly pointed to the need for coherency between transport policies at European, national and local levels, but they remain insufficiently interlinked. However, they clearly need to be better integrated, especially in relation to:

- forecasting evolutions in traffic;
- research and technology choices;
- contractual rules;
- working conditions, especially for activities subject to direct competition;
- the rights of transport users;
- transport fare systems.

As constraints in terms of energy and climate concern all Member States, it is in everyone's interest that policies converge to reach the greatest possible level of efficiency.

The elimination of barriers and opening up to competition where it is deemed effective.

This need to improve competitiveness especially concerns the management of ports where dominant position abuses have been reported in certain countries.

Recognition of local public transport services and formation of a "Covenant of Mayors" for transports

Local governments, in particular at the level of large towns and cities, are also concerned by these matters.[6]

Other issues are particularly relevant at their level:

- engaging in local democratic debate on the goals of transport, on a local as well as a broader national and European level; only local governments have the capacity to engage citizens in a direct dialogue;
- organizing and drafting documents relating to town and regional planning;
- drafting urban transport plans;[7]
- drafting transport plans on the level of companies and administrations;

6 This option is considered in the Commission's draft White Paper (III&354).
7 The Commission's draft White Paper accepts this proposal for cities of more than 100.000 (III&339).

- engaging with other economic players (in particular transport companies);
- the articulation of different modes of transport and intermodality;
- improving individual behaviors.

The EU transport policy should support local and regional policies, especially those in large towns and cities. The manner in which policy coordination is to be achieved is yet to be determined. One way would be to integrate transport-related objectives into the Covenant of Mayors, initially constituted to energize local governments in the fight against climate change.

Setting minimum public service standards for unprofitable routes

The fact that private companies naturally favor operating services that are sufficiently profitable means that the question of the quality of service for uneconomical routes must be addressed. Forms of transportation such as passenger and freight trains, plane routes to islands and urban public transport in less dense areas may be concerned.

It is necessary, however, to ensure that several features are maintained:

- a dense train network in rural areas;
- an interlinkage of various transport modes, including in areas of low population density (complementarity between different forms of transports on demand, e.g. train, bus, taxi...);
- a subsidized fare system, without which inequitable access to transportation would further deepen, to the detriment of people living in rural areas and those without a car (n the context of an ageing of the population);
- high levels of service to peri-urban areas (urban fringes) – tram, bus.

There are three possible ways of addressing this question:

- transferring a part of the receipts from the profitable lines to share the burden of financing the operational costs of less favorable lines;
- imposing on companies an obligation to operate services on certain uneconomic lines in addition to profitable lines;
- returning to public authorities the responsibility for the direct operation of lines after unsuccessful invitations to tender.

Each of these methods presents real difficulties and biases: weak incentives to ensure the quality of operations if losses are compensated for in advance, asymmetry in the allocations of the efforts to be made between companies and non-respect of competition rules, either by conferring the operation of a line on a company without its prior consent or through direct operation by a public body.

The Commission's draft White Paper here makes the difference between "competition for the market" (with in this case clear public service obligations) and "competition in the market" which operates without any fixed objectives.

A tricky issue: abandoning national monopolies in order to completely open the market of passenger rail services?

The complete opening of the market of passenger rail services continues to meet stiff opposition, from transport users who fear a deterioration in the quality of service as well as from unions and politicians.

This option should only be considered if all the operators share the effort between them to meet public service objectives (in accordance with the previous point).

Building infrastructure clearly remains a de facto (physical) monopoly and therefore remains the responsibility of public authorities, even if public finance is leveraged in the process.

There is a wider choice of options when it comes to the operation of railway lines. However, one cannot ignore the fact that the primary objective of EU transport policy in this area is not to transfer the operation of railway lines to the private sector but to build an integrated European railway network, and not a juxtaposition of national networks which are often incompatible with each other. The difficulties involved with having multiple operators and the need to maintain a quality of service on unprofitable routes (without which the areas that they serve would no longer have any alternative means of transport) thus seem to discount the likelihood of an opening of the market of passenger rail services.

As such, a legal framework and the terms of transport regulation at a EU level need to be defined. Two possible options are therefore available :

- continuing the current process of competition between operators in the private sector;
- setting up an EU-wide legal framework for the public sector that could take charge of railway operations.

The Commission's new draft White Paper suggests to carry out an evaluation of the merits of competition in 2011 and to submit, if appropriate, a directive for the opening up of the market in 2012 (III%11).

The priority must be given to a guarantee of frequency and quality of service.In the case where this cannot be assured by the private sector due to a lack of economic guarantees, the current public framework should be conserved. This is even more important given that one of the principal objectives of the new transport policy is a strong development of rail transport.

9.3. The Financial Needs of a New Transport Policy

→ The Transport Sector Is Very far From an Economic Optimum

A transport policy should, on the economic front, start by reducing the inefficiencies resulting from a trend of ever lower transport costs over the course of a century, due to technological advances and low oil prices, apart from the oil crises in the 1970s and in recent times since 2003.

There is a considerable margin for efficiency gains in the transport sector; full use should be made of them to allow for the necessary reorientation of the EU transport policy.

As a first step, the following areas may be identified as offering potential to reduce costs:

- general oversizing of road vehicles;
- setting of suboptimal prices for certain modes of transports, which also results in a net transfer of costs to public authorities (air pollution, noise pollution and other local pollutions);
- irrational lengthening of supply chains and industrial structures (especially in the use of subcontractors);
- current weaknesses in town planning, with, in particular, a strong trend in the last 50 years towards urban sprawl and an increase in distances travelled to and from work;
- redundancies between highway and railway infrastructures and, sometimes, their oversizing;
- inefficient organization of the final stage of goods delivery in urban areas, with many transporters circulating on low loads.

It would be useful to push the European Commission to undertake a detailed study with a number of partners in order to estimate the extra costs, their distribution, their effects and possible future changes, the possible progress in reducing them, their rhythm and the way in which they may be redirected to support a new transport policy.

Indeed, it can be observed that the existence of competition is not enough to reduce this wastefulness.To reduce it, notably with the goal of releasing financial resources to allocate to new transport policies, means having recourse to other means of regulation and more involvement of local authorities and users

→ Building the Priority European Infrastructures

On the other hand, a new transport policy that seeks to offer attractive alternatives to road transport, with high levels of service and frequency, requires significant levels of investment:

- extending the network of high-speed passenger trains, in particular to discourage the use of aviation over short distances;
- putting into place a network of high-speed freight trains for rapid access and better delivery times than road transport;
- link the river systems of the large basins to develop inland waterways for goods transportation without strong time constraints (heavy raw materials, waste, agricultural products, ...).

Distribution of European Subsidies by Mode of Transport in 2007

This will require important changes in the priorities of financial support compared to the current situation:

- **road:** 125 billion €, essentially directed to financing infrastructure (110 billion €);
- **rail :** 73 billion €, including 37 billion for infrastructure;
- **air :** between 27 and 35 billion €, in the form of fiscal exemptions or subsidies for fuel costs;
- **inland waterways :** 14 to 30 billion €, essentially for infrastructures;

- **subsidies for multiple modes:** around 30 billion €.

A reversal of priorities in the budgets of a number of countries from road to railways and urban public transports can nevertheless be observed.

→ Develop Dense Urban Public Transport Systems Of High Quality Service

Strengthened cooperation on a financial level between the different territorial levels (EU, Member States, regional and local governments) is needed to make up for the delay accumulated in developing urban public transport systems. The White Paper should include quantified goals on this matter (in terms of increased capacity, investments to be made, modal shift, etc.).

A European-level plan with clear goals and deadlines should be drafted (with the participation of Member States and governments at subsidiary levels) to address this. Such a process would be useful for local governments in drafting their local planning documents and undertaking their investments, for companies in choosing where to conduct their activities, for transport operators in programming their objectives and investments and for individuals in choosing their modes of transport, their vehicles and in encouraging them to change their behaviors.

→ Assisting the Automobile Industry in Shifting Its Production Capacities in the Direction of More Modest Car Models

A mutation of the European automobile industry is absolutely necessary given the following future evolutions:

- the emergence of constructors from emerging countries producing vehicles at low cost and capturing emerging markets (in their own countries and all developing countries);
- technological mutations triggered by the long-term increases in oil prices and environmental and security concerns.

It is advisable to support the mutation of this sector, which represents 3 million jobs in Europe. The future policies that will contribute to facilitating this mutation are:

- support for research to develop low fuel consumption vehicles;
- a shift towards more modest car models, simultaneously reorienting offer and demand, through a carrot-and-stick kind of device (aka bonus-malus) enabling to tax more heavily for higher consumption vehicles and provide a bonus for purchasing more economic vehicles;
- diversification of the constructors' activities, in particular towards producing vehicles used in collective transport.

9.4. The Instruments of a New Transport Policy

Transport policies involve defining instruments in such a way that certain dynamics may be reinforced or certain goals attained, without excessive negative impacts on other areas. Debate on policy instruments tends to be somewhat limited in scope to one instrument at a time. Some argue for technological solutions to resolve problems, others argue for investment, for market instruments, for direct regulatory mechanisms or for changes in behavior. A complete transport policy must obviously address all these instruments, given that the main actors in play (companies, States, local governments, families, etc.) can have very different reaction times.

THE FRAME OF FISCAL AND FEE-SETTING POLICIES

→ Specificities Arising from European Treaties

European treaties impose real difficulties due to the impossibility of instituting taxes without gathering unanimity from Member States. This still leaves certain other significant possibilities:

- the ability to impose excises (additional taxation on fuel which are already practiced by all countries, axle taxes or any tax corresponding to the use of infrastructure, carbon taxes);
- the possibility of setting up fiscally neutral mechanisms, such as a "bonus-malus" system.

On the other hand, it is not possible to change in any specific way the rates of VAT.

Priority will have to be given to implementing these instruments so long as the requirement of unanimity to implement fiscal policies remains in place.

→ Difficulties Arising from Differences in Member States' Situations

The further away countries are from the EU's centre of gravity, the more they insist on low fuel prices and transport tariffs to avoid being disadvantaged.

On the contrary, countries confronted with transport bottlenecks ask for a tariff-based taking in charge to cover their infrastructure expenditures. They also support a reduction in traffic volumes (e.g. routes crossing the Alps and Pyrenees).

Until now, this situation has obstructed any possible rises in transport tariffs, even in order to simply reflect the negative social and environmental externalities. Peripheral EU countries must therefore be compensated for the necessary rise in transport costs by, for example, support for the building of certain items of infrastructure.

→ The Necessity to Internalize Social and Environmental Costs and the Generalization of Calculation Methods for Overall Costs in the Transport Sector

The first step consists of coming to an agreement on the general principles of accounting practices to be adopted in order to allow for social and environmental costs to be accurately reflected in prices.

So long as these costs are not seriously internalized, current accounting practices will remain both dishonest and unserious, and the distortion of competition will continue.

To adequately compare the various options in the transport choices of individuals and companies, a decision must be made at the European level, and subsequently at national and local levels, to evaluate the overall costs of transport and to price transport to reflect all direct and indirect costs, i.e. from "well-to-wheel" after an analysis of the life cycle.

This internalization requires the following elements:

- agreement on social and environmental costs of each mode, according to their context, based on serious expert research;
- agreement on the social rules applied by every country, most specifically in road freight transport;
- determining tariffs on transports based on their overall costs;
- putting a price on carbon and raising it progressively in coming years;
- agreement on baseline scenarios for the evolution of energy prices in coming years; such baseline scenarios produced with experts should be regularly revised.

→ The Limitations of Internalisation and the Price Effect

Internalisation Is a Vital Measure in the Elimination of Economic Distortions

Internalisation means we can include, in the price of transport, the costs associated with it.Up to now these costs have been borne by the local authorities (or individuals). Doing this, sooner or later, will place the citizens once again in the shoes of economic players in a situation where they must make choices. It implies so that the citizens have the information necessary to identify where their interest and the common interest lie.[8] An optimal internalisation consequently leads to the application of the principles of polluter pays and user pays (concerning the wear and tear on infrastructure, their management and their renovation).

Nevertheless, this optimization is very difficult to operate while the values attributed to social and environmental externalities are so difficult to comprehend. What is the price of a human life?

Besides, we cannot expect that a fair internalisation of external costs will be enough to reorient transport policy. Indeed, the usual added value of internalisation, gauged by the studies made in that field, are relatively modest.

To follow this reasoning, we have to add the overheads that correspond to anticipations of costs (evolutions in the price of energy, worsening impacts of climate change, the value of carbon). The calculation of such values is even more subjective, in particular those concerning climate change, taking into account the current weak price of carbon.

8 The Commission adopted in 2008 a document defining the methodological basis for strategies for the internalisation of external costs.

So, a price of 40 € per tonne of CO_2[9] corresponds to just 10 cents per litre of fuel. Applying the current value of carbon on the European market at 15 €/tCO_2 would mean a rise of hardly 3.75 cents per litre.[10] These values are imperceptible to the user. What value should then be considered?

The Limits of the Price Effect

If we reversed this thought process and wanted to set price levels by taxation in order to radically change individual and economic behaviour, beyond just the internalisation of social and environmental costs, this would have very negative effects on a social level. The populations hit by a steep rise in transport costs would be pell-mell: poorer populations, rural populations, heavy industries, and peripheral countries of the Union. Economic sectors strongly exposed to international competition would be unbalanced.

The Need for Strategic Leadership of the Transport Economy

If the internalisation of costs is to be introduced as rapidly as possible, an incremental increase in transport fares and fuel tax should be organised over a long period to allow the economic actors some certainty about the future. This gradual regulation of prices should not cancel the economic priority classification that comes from internalisation of costs.

Two characteristics render this leadership essential:

- the variations in the price of oil, of very considerable amplitude, greatly deform economic conditions, depriving economic actors of all certainty and paralysing their capacities to plan for the future; these strong variations discourage proactive investment;
- future moves to substitute energy (electrification of cars) and progress in energy efficiency will translate into a steep revenue fall from tax on transports.

→ A Voluntary Harmonisation of Fiscal Conditions Between Member States

The above changes open the door to harmonizing fiscal regimes between Member States. Under current European law, this can only occur on a voluntary basis through the use of excises, since using the VAT would require unanimous agreement.

The end of 2012, the beginning of the second engagement period of the Kyoto Protocol, should be set as a deadline for this stage.

→ Reform of Fuel Taxes

Member States should agree on the two following changes:

- firstly to abolish the difference in taxation between petrol and diesel, which originated in times when diesel had only professional uses. Duties remained unchanged when the first diesel-powered vehicles were set up because diesel was more environmentally damaging due to SO2 and particulate emissions. This situation should be re-evaluated today, as the generalization of particle filters has reduced the handicap in terms of pollution, whereas diesel-powered vehicles offer better performance, with average consumption around 1L/100 km lower than petrol-powered vehicles;
- taxation duties on diesel should be differentiated on the basis of personal and professional uses. This can be achieved simply through limiting a reduced level of taxation to holders of company payment cards.

The current situation – different levels of taxation for the same service on the basis of a slight technical variation – is an anomaly without any real equivalent in other sectors.

→ Undertake an Analysis of the Obstacles to Optimizing Transport Uses

The European Commission will undertake a study on the limits encountered by the calls to competition, since:

- calls for competition have succeeded in removing significant barriers to market access (situations of dominant position abuses);
- but as competition has also limited cooperation, other barriers to intermodal transport systems have also been hardened.

9 This value is the central value for 2020, from IMPACT – Draft White Paper (III&84).

10 The High Level Group on the funding of the fight against climate change with the United Nations takes as a value for 2020 the range of 20-25 dollars tCO_2. This corresponds to 4.1 c€ tCO_2.

DEVELOPING PUBLIC POLICY INSTRUMENTS

The main financial decisions to be taken on an EU level should involve:

→ Putting Into Place of a Fiscal "Bonus-Malus" System at the European Level in Order to Shift Towards More Modest Vehicle Models

This involves giving a bonus to the purchasers of fuel efficient vehicles (or for example emitting less than 120g of CO_2) and taxing vehicles with excessive consumption levels. The principle is to do this in a way that makes this device fiscally neutral, the bonuses being funded by taxation.

This mechanism has proved its effectiveness with:

- a rapid and spontaneous shift in the market towards more efficient vehicles;
- a transformation of the market which encourages constructors to reconsider rapidly their models and production apparatus;
- a flexibility in the system to allow for year-by-year shifting in the performance levels or a gradual increase in the gap between bonuses and taxes.

The fiscally neutral nature of this system would make its adoption possible in all European countries without leading to budgetary difficulties.

→ Formulating Various Regulatory Mechanisms to Improve the Market's Rationality and Practices

Significant progress is possible on a regulatory level using the advantages afforded by information technology (simplification of administrative procedures for freight, integration of logistic procedures, and respect for social and environmental regulations).

There are several historically-inherited measures that constitute tax incentives that turn out to be totally counterproductive in today's conditions as they contribute to the oversizing of vehicles. Fiscal conditions for company vehicles should thus be realigned with those for personal vehicles.

→ Equalising the Fiscal and Fee Structures Between Transport Modes

There is a lot to be addressed in this area in coming years. This can be achieved in three main ways:

- firstly, harmonizing rules between transport modes. This will only be possible after a detailed study on the internationalization of external costs to generalize calculation methods based on overall costs has been completed;
- then, merging the ticket systems by using communication technologies to offer the user the possibility of combining several modes and several companies on the same ticket, with a single price;
- finally, reconsidering the question of adjusting tariffs to avoid disadvantaging rural areas and peripheral Member States.

A target to achieve complete and harmonized reform of tariff and fiscal structures should be set for the end of 2014.

→ Progressively Increase Fuel Taxes in Proportion with Their External Impacts

An Increase in Fuel Taxes Compatible With The Need for Public Support

A progressive increase in fuel taxes will need to be programmed on the basis of the points explained above. All evidence point towards a progressive increase to avoid several undesirable side effects:

- putting the most disadvantaged populations in difficulty, especially in rural areas where the car remains an indispensible form of transportation;
- the slowness with which town planning policies operate to bring about a better distribution of activities and services to reduce travel needs;
- the need for all economic actors to reorganize their production tools, relations with subcontractors, supply chains and all the other functions of storage, logistics and distribution;
- marginalization of countries on the periphery of the EU.

A decade will be needed to successfully effect such a profound mutation, which should be implemented through a "transport-energy-climate" package in relation with the Cancún Accords.

Public opinion will inevitably massively reject the new transport policy if these considerations are not adequately addressed.

Fuel Taxes Operating Countercyclically in Relation to Oil Prices

It is also essential for fuel taxes to act countercyclically in regards to oil prices, given the huge variations the latter can experience, with potentially devastating consequences. Fuel taxes operate in such a way to avoid further hiking prices which have already reached a high enough level to have devastating social and economic impacts.

- Taxes should be reduced when prices are high (above US$120 per barrel) since no supplementary price signal is necessary.
- On the contrary, when oil prices are unusually low, and totally contradictory with long-term trends, States have a duty to increase taxes to maintain a steady and coherent price signal to not endanger efforts in favor of energy efficiency, alternatives to oil-based fuels and reducing greenhouse gas emissions. Taxes should be increased until oil prices reach $100/barrel, the threshold at which many alternatives to oil become viable.

This option is preferable to the introduction of a very sophisticated vehicle usage tax system based on satellite positioning.It is important, at this point to warn of the dangers of a centralization of information on the global positioning of individuals from a personal liberty point of view.

→ Incentives to Intermodality

As multimodality is proving to be a double optimization in terms of the economy and the environment, it is necessary to introduce incentives to accelerate its adoption. These incentives could be of two types:

- support for particularly innovative occasional operations;
- introduction of forms of partnership with companies, accompanied by objectives for results.

Such supports can be justified, during a transition period to be defined, because of the need for a profound transformation of knowledge and the need to organize the interfaces between modes. These systems should be put in place in a concerted fashion between the European Commission and the Member States.

→ Integrating Aviation Into the EU ETS Mechanism

It is necessary to integrate aviation into the EU emissions trading scheme as well as to integrate all of the construction and operational costs of airports into the price of airplane tickets regardless of any national or local subsidies, with exception made for travel to destinations for public service reasons and when there is no adequate alternative means of transport.

The current negotiation climate renders it rather improbable that in coming years kerosene will be taxed on an international level.The same is true for maritime fuel.

→ The Limitations of Carbon Finance

The announcement by President Barak Obama of the abandonment of the American project for the organization of a unified carbon market for the country will have one unfortunate consequence, namely that the European ETS system is going to remain the only significant market that is a buyer of reductions in greenhouse gas emissions.This, at a time when offer should increase considerably with the introduction of projects and plans to reduce emissions (NAMAs) and of actions against deforestation and the degradation of forests (REDD+) by developing countries in accordance with the Cancún Accords. It should result in a very weak value for carbon in the coming years. From now, the carbon market cannot constitute an indicator of the value of carbon which can be taken as a reference for calculating the internalisation of external costs of climate change.

→ Adopting an Multi-Partner Investment Plan for 2012-2020

The White Paper should set out the basis for a Europe-wide investment plan between both public and private stakeholders at various territorial levels (European Commission, Member States, regional and local governments).

This investment plan would be financed by progressive rises in fuel taxes or the introduction of a carbon tax at the European level.

This could be complemented by according loans to ensure that there is adequate investment to provide alternative modes of transport in order to prevent the most disadvantaged households and fragile sectors of the economy to be hit by price increases without a backup plan.

Figure 6: Chronology of the EU-ETS

October 23, 2001: directive establishing a greenhouse gas emissions trading system in the European Community (COM 2001-581 final).

2005-2007: first trading period of the EU ETS.

December 2006: the European Commission adopts a legislative proposal (COM(2006) 818 final) to integrate the aviation sector into the emissions trading scheme. An impact study conducted in 2005 concluded that this would be the most efficient solution on both an environmental and an economic level. The main differences between airplane companies are the length of routes, the age of the airplane fleet and the volumes transported. As a result, companies operating on shorter routes, older planes or transporting lower volumes of persons or freight would be harder hit compared to more efficient companies. The directive specified that there would be no significant effects on competition between airports for tourist flights. These effects would be further reduced if the system included all flights leaving and entering Europe.

2008-2012: second trading period (coinciding with the end of the first engagement period of the Kyoto Protocol), with a European-level limit of 2.08 megatonnes of CO_2.

January 23, 2008: the European Commission unveils its proposal to revise the EU ETS for the third trading period from 2013 onwards. This legislative proposal forms part of a wider package on renewable energy and climate change.

April 3, 2008: publication of information on industry CO_2 emissions in 2007, which have increased slightly on the previous year.

October 7, 2008: vote by the European Parliament Environment Committee on the proposed revision of the EU ETS.

December 21, 2009: deadline for the European Commission's publication of the list of sectors considered to be exposed to a significant risk of carbon leakage.

July 2010: the European Commission publishes information on the European quotas for 2013. In 2013, the emissions ceiling for some 11,000 industrial sites regulated by the ETS was set at slightly under 1.93 megatonnes of CO_2. Over the 2008-2012 period, this ceiling was set at slightly over 2 megatonnes of CO_2 per year.

The aviation sector is not concerned by this ceiling and will be subject to a separate decision of the European Commission.

Before December 2010: the European Commission will publish an estimate of the amount of emissions allowances to be auctioned.

2013: the revised system will enter into operation.

10. A profound Transformation in Individual and Professional Behaviour

10.1. Psychological and Sociological Inertia

Access to mobility was undoubtedly one of the greatest conquests of the 20th century and this has helped to build up the present-day imagery linking freedom of movement, possession of a car, the level of sophistication of the car and social status. These social values are closely tied to the way in which we perceive how accessible potential destinations are. It is clear that this historical symbolism must give way to a search for an optimization in performances, by bringing capabilities down to reflect the real use of car transport, in the aim of rationalizing the use of resources and reduce greenhouse gas emissions.

The draft White Paper offers the chance to open the debate and set in motion processes which will progressively shape behaviors, whether it relates to the purchasing of cars, to their use and to the driving practices of individuals and employees, and ultimately the choice of whether to use them at all.

It is worth mentioning that decision-makers in political and economic affairs, who tend to travel long distances every year and a have a particular demand for speed of transport, are the ones who are the most entangled in this symbolism. Decision-makers thus tend, as a general rule, to transpose their personal preferences and their addiction to speed onto the expectations of the rest of the population. As such, we will need to reflect on how we can influence this particular group of people to reconsider its priorities.

10.2. The conditions of a profound Transformation in Behaviours

The discourse on the relationship with transport, which has dominated throughout the 20th century, must be inversed. As a result, the EU transport policy must also incorporate a strong cultural dimension. The only way of reorienting and optimizing transport policy is to invest in humans' capacity to change their behavior and in democratic processes.

The conditions for a social adhesion to a reorientation of transport policy are the following:

→ Educational Efforts Targeted at People from All Age Groups

It is significant that the only generalized educational process related to transport consists in learning

to drive. However, it now appears just as crucial to develop a global vision of transport to enable us to satisfy our personal desires whilst taking into account the public interest, in each of our daily actions.

This function can only be based on a close level of proximity. It should thus be organized by local governments in an approach beginning in the school years and continued in training throughout people's lives.

→ Launch Extensive Communication Campaigns

Public authorities should launch extensive communication campaigns to raise awareness of the importance of energy and climate-related issues as well as the kinds of behavior which will be essential to safeguard traveling freedoms and ensure that people from all social classes can have access to transportation.

The organization of these communication campaigns must be prepared with psychologists to modify people's perceptions and encourage them to change their behavior, whilst ensuring that the largest possible number of people remain personally engaged.

→ Halve the Number of People Killed in Road Accidents by 2020

A significant reduction in the number of deaths caused by road accidents was achieved in the 1970s because of the putting in place of speed limits in a number of Member States, and then again in the 2000s by an improvement in the protection of people in vehicles. New progress should be made now both through a reduction in the power of vehicles, the generalization of speed limits and an improvement in the behavior of road user (drivers, cyclists, pedestrians).

→ Develop Future Long-Term Scenarios

Today, there is no shared vision of the long-term outlook for transportation. The first step is to:

- inform ourselves of the issues, the trends, the limits and possible evolutions;
- undertake serious work to forecast future scenarios with all stakeholders;
- engage citizens in active debate on these matters, essentially at a local level but integrated into a larger dynamic on a European level.

This is what local mobility plans or urban transport plans set out to achieve (the names vary according to the country).

→ Draw Up Scenarios Which Display the Trade-Offs to Be Made Under Social Constraints and Energy and CO_2 Limits

On the basis of the results of the debate set out above, the next step is to draw up clear scenarios of the outlook for the future.

To achieve this, fundamental principles will need to be determined, such as:

- determining transport policy on the basis of the public interest;
- optimizing vehicle performance to ensure access to mobility for all;
- managing mobility to improve living conditions and reduce environmental pressures;
- raising prices to regulate and reduce road and air traffic;
- redefining the conditions of equitable access and competition for transport.

→ Move From an Ownership-Based to a Service-Based Vehicle Economy

One of the inevitable transitions will be to select the mode of transport best suited to each use, rather than the constant use of one's personal vehicle. Huge cultural progress in individuals' understanding of the quality of choice will be necessary. This will also only be possible through the widespread use of new information and communication technologies (mobile telephone, GPS, etc.) to help each person in his or her selection.

Easy and rapid access is a priority. Innovations in our relationship with cars and this mode of transportation will play a determining role through the development of car-sharing, car-pooling and car rental services.

→ Encourage Transport Companies and Decision-Makers to Optimize the Use of Transportation

These efforts also concern the behavior of companies; especially transport companies, large retail companies and supermarket chains.

Political Conclusions

By Isabelle Durant

"A Sustainable Future for Transport" was the rather promising title of the Communication published by the Commission in June 2009[11], as a support for the consultation process within the framework of a new White Paper on the future of Transport.[12] This title, as well as the extremely clairvoyant observations laid down by the Commission in the aforementioned Communication, predicted a radical reorientation of the priorities of the Commission's transport policies.

For many years, the European Transport Policy was based on the desire to integrate the Union's territories by encouraging the freedom of movement of citizens and goods alike, and to apply the major principles of the single market to the transport sector, as Pierre Radanne so rightly reminds us in this book. New challenges were to be addressed and especially the extreme dependency of our motorized transport on fossil fuels, their impact on climate disorder, and the negative effects on our health of air pollution and noise nuisance attributable to certain modes of transport.

It is clear that unlike the Communication that preceded it, the Commission's new White Paper, finally entitled "Road Map for a Unique European Transport Area", gives us as many reasons to continue to hope as to doubt.

The observations are certainly very clear: as much as 96% of energy consumed by our transport comes from oil and its by-products. The world's oil resources are diminishing, which will lead to more frequent and striking tensions on the affected markets, and if nothing is done, this could undermine the mobility capacities of future generations. GHG transport emissions have increased by about a third since 1990 and will not fall unless there is a radical change of course; the cost of road congestion infrastructure is evaluated at 1% of GDP, not to mention its impact on the quality of life in many European cities.

With regard to the principles and conceivable actions that must be undertaken in order to respond to these challenges, this White Paper is also coherent. Many of its recommendations are also to be found, in one form or another, in the present study : internalisation of external costs, optimisation of the multimodal logistic chains, consolidation of the fluxes and modal shift in favour of more environmentally friendly modes of transport on medium and long distances, full exploitation of the possibilities offered by information technology regarding the optimization of traffic, online follow-up of freight, passenger information and integration of different modes in organising complex transport journeys, urban and town planning taking into account the transport system and demand management; consolidation of sea ports and an administrative simplification which would encourage using waterways and sea transport for the intra-European shipping of goods, etc. In many respects, the options defended by the Commission testify to the diversity of the challenges that must be overcome, as well as to the complexity of the arbitration they require.

One would expect from the above-mentioned observations and others, that a series of clear and verifiable commitments, matched by concrete and rapid solutions to the identified problems, would be adopted. But this White Paper, in spite of the interesting principles expressed and the methods it lists, falls short, in our opinion, of the ambition required in several areas. For example, certain adjustments and arbitrations, undoubtedly sensitive with regard to GHG emissions, are postponed to 2030 or even 2050, long after the implementation period of this "Road Map". It is indeed important, in a sector where investments can prove to be particularly crucial for the future, to make long-term scenarios. But it is equally essential to take immediate ambitious measures to reduce GHG emissions; otherwise we will be imposing truly insurmountable reduction efforts on future generations.

In our opinion, it is essential to have restrictive quantifiable objectives, matched by explicit intermediate deadlines, including short-term commitments, not only in terms of reducing GHG emissions, but also in terms of energy dependency and the impact on ecosystems. In the absence

11 Communication of the Commission of June 17 2009 "A Sustainable Future for Transport: Towards an Integrated, User-Friendly and Technology-Based System".
12 "A White Paper that will define the strategic measures to be adopted in the course of the 2010-2020 period"

of such objectives, it is unlikely, in the short term, that there will be a new and positive approach to mobility, a new status and position of transport in our societies, or real support for initiatives leading to a more economical use of individual motorized vehicles, etc.

However, as Pierre Radanne reminds us, there are plenty of opportunities to reduce at low cost, the GHG emissions of our transport system. For example, with regard to the limitation of GHG emissions of road vehicles, the debate has been focused at the European level for too long on the issue of the technological progress needed to achieve such and such a level of emissions. The author states that it would suffice to reduce the power and top speed of vehicles on the market in order to drastically cut the GHG emissions of most vehicles without the need for any technological revolution or additional cost.

Moreover, it is not the first time that we can hope for a change of paradigm in urban transport, or that the Commission commits itself to encouraging the Union to adopt a more systematic internalization of the external costs of transport. However, it is obvious that much remains to be done in these matters, and the current inter and intra institutional discussions, at the European level or otherwise, on the re-evaluation of the Eurovignette Directive and the discussions on installing urban tolls, demonstrate the difficulties in reaching a consensus on this type of issue.

By calling for new infrastructures as a response to road and airport congestion, does not the Commission itself implicitly acknowledge that it no longer believes in the possibility of implementing the principle of "user pays" and "polluter pays" in the short-term? While maintaining that the most efficient vehicles and "cleaner" fuels will not suffice to limit GHG emissions and will not solve the congestion problem, and at the same time recommending the consolidation of fluxes of passengers and goods in view of transportation over long-distances, the Commission does indeed give the impression that it believes the increase in transport to be inevitable. And this, of course, bears directly on the difficulty in controlling their environmental impact.

This is clear in the case of air traffic which, according to the Commission, will more than double between now and 2050, requiring considerable investment and absorbing a significant part of alternative fuels that will be available on the market. As abovementioned, the climate and energy stakes are high; therefore, would it not make sense to put into practice the main principles of controlling the demand and nuisances mentioned in the White Paper, before considering an increase in infrastructure, equipment and facilities that is only made necessary by under-optimal pricing of certain services?

In cities where congestion immobilises many travellers and deliverymen, no-one disputes the fact that the best way to restore transport fluidity, while increasing mobility, is to reduce the number of individual cars. The answer to congestion problems is not in constructing new infrastructures but in the need to rely on price-setting policies and the need to coherently divide space between the different modes of transport.

In other areas, the Commission can show great determination. This goes for the liberalisation of railways; the new White Paper expresses the hope for a clearer separation between infrastructure management and train exploitation in the future, in spite of the various disadvantages of such a project.

In this respect, it is especially important to take into account the specificities of the railway sector, in comparison to other network companies which have been liberalized for a number of years; for example, electricity and air transport. Furthermore, it is essential to fully understand that freight and passenger transport have different characteristics and requirements. Whereas freight transport for the most part revolves around a limited amount of relatively independent connections from one location to another, passenger transport, like the railway network itself, has all the characteristics of a real network, made up of connections interrelated economically and operationally.

This is the reason why we must stop considering competition on all transport markets as an absolute ideal, the "Holy Grail" of transport policies. We must acknowledge that some modes or transport services present economies of density, which make them natural monopolies, from infrastructure to operations, and that they require a high level of vertical coordination to function validly, which justifies an excessively cautious approach and the implementation of major safeguards in case of an opening up to competition.

More generally, it is time to rethink in many ways our relationship with mobility and the role played by transport in our daily lives. Firstly, we must give ourselves the means to better adapt our transport modes to the mobility they are supposed to serve, an attitude which is not encouraged by the possession of a car. Hence, the interest to promote the development of car-sharing, car-pooling, taxi services and other alternatives, not only in cities but also outside of urban areas. Secondly, we must be aware of the considerable time we spend in "taking charge" of our own transports, instead of leaving it to the different professionals of transport, logistics and distribution.

In this respect, it is important to point out that, contrary to the general belief, transport avoidance does not necessarily lead to a decrease in mobility and even less to fewer jobs. If a reduction in transport actually results from the optimization of journeys, resorting to modes of transport which require less space or parking-space per transported person (public transport, taxis, car-sharing and soft mobility), from the optimization of delivery rounds and the development of home-delivery, from the decentralization of certain functions necessitating excessive transport modes (proximity services and businesses) or from a rationalization of logistic chains through an increased professionalization of household supplying, it can result in creating added value and jobs.

To conclude, I would like to insist once again that it is from today that we need to start implementing the most important measures and stipulations expressed in the White Paper and in this book. So it was not by chance that while looking for a title for this work, the following variation of the title of the 2009 Communication was an evident choice: "A Sustainable Future for Transport- Now!"

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Biography

Pierre Radanne is an expert in energy policies aiming to reduce climate change. He developed a vision of the evolution of energy issues with regard to the ecological challenges at a very early stage and in 1997 he worked as co-director of Dominique Voynet's office at the Ministry of the Environment and Land Planning in France.

He has participated in numerous conferences on international negotiations for climate change. He participated in founding the International Regime for Climate Protection and in 1997 actively collaborated as one of the team leaders for the ratification of the Kyoto Protocol by France. His expertise on energy issues led him to the Presidency of the ADEME, which he held from 1998 to 2003.

In 2003, within the framework of the Interdepartmental Mission on the Greenhouse Effect (IMGE), he conducted a long-term prospective study. This two-year mission led to realising "Factor 4" scenarios for France, and to writing a report on which the 2005 POPE law was based (Program defining the Orientations of Energy Policies), securing the commitment to divide by 4 France's greenhouse gas emissions.

In 2004, he set up the *Futur Facteur 4* company, specialising in energy policies and offering technical and political expertise to French-speaking African negotiators, to French Territorial Collectivities, as well as to major private companies wishing to adapt their strategy to the new climate challenge.

Pierre Radanne works alongside local populations, through awareness raising workshops, as well as with national and international decision-makers. With the help of his team, he contributes to the translation of complex elements, comprehensible to all, related to the fight against climate change. A million issues of the decoding note that *Futur Facteur 4* published in French and in English for the preparation of the Copenhagen Conference for the International Organization of French-Speaking Communities were distributed.

Transport touches on all aspects of our lives – our economy, how we work, how we build communities and how we enjoy our leisure time. As a result, the decisions we make about investment and regulation in transport impact everyone. At a time of scarce resources and conflicting priorities, these decisions taken at European level will have a lasting impact.

One area of potential conflict of priorities is the need to drastically and quickly reduce our carbon emissions from this sector, which account for one third of all emissions, while at the same time building a transport network capable of ensuring Europe has the infrastructure essential for a 21st century economy. Can we achieve both goals?

This study shows how a Green vision on transport in Europe can do both: develop a modern, low-carbon transport infrastructure and bring Europe and its people ever closer together.

French transport specialist Pierre Radanne and his team outline both the immediate measures that the EU and its Member States can take, but also a long term vision needed to transform Europe's transport system. Beyond reducing emissions, it also discusses how transport isn't just about getting from A to B, but how it is central to building communities and fairer societies.

The Green European Foundation publishes this study of the Greens/EFA Group in the European Parliament as part of a series of GEF publications on the Green New Deal.

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