

motion

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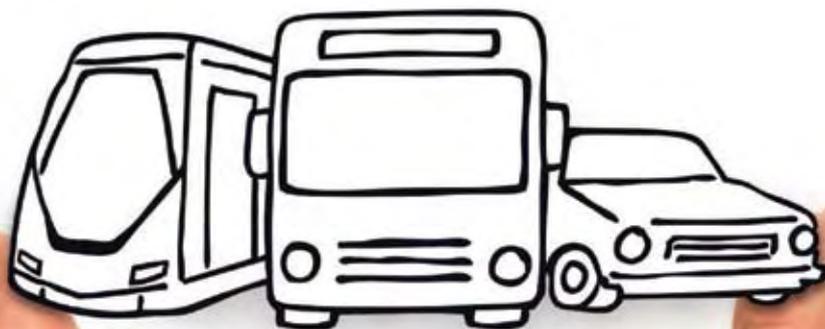
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Welcome to *motion*, the magazine of the International Transport Forum. Our mission is to provide sound policy advice on global transport issues, based on serious research

and evidence-based analysis. But we also strive to open up the debate to a wide audience beyond the specialists of the sector. Transport questions permeate many societal debates, and raising the public profile of transport was a prime driver for the creation of the International Transport Forum in 2006 – with *motion* we now take another step on that path.

This issue explores “Transport for Society”, the theme of our 2011 summit, held on 25-27 May 2011 in Leipzig, Germany. Transport is often taken for granted by the public, and it is equally often poorly understood. Is transport doing enough to put people first? Where and how can transport increase the greater good for our societies as a whole?

That is not an academic question. Transport is central to the way our societies function. It provides access to jobs, to education and to leisure activities. It drives trade and growth. But the key is whether we can deliver these benefits in a cleaner, safer and more efficient way. And how can we ensure that everyone around the world can share in these benefits?

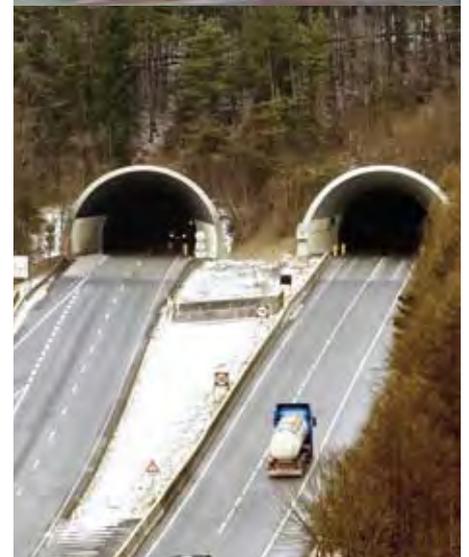
There are few easy answers. Getting our ever more complex transport systems to meet changing needs, cope with increasing demand and find ways to find the money necessary to do all this will require hard thinking, broad dialogue and well-organised co-ordination between the different actors, increasingly on an international, even global level. With our research publications, our statistics and our analytical policy work, we want to contribute to that process. And we hope that *motion*, in its own way, will also help to advance the debate about how transport can better serve us all. I hope you enjoy it.

*Jack Short, Secretary General
International Transport Forum*

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Cover Image: Raul Arboleda/AFP/Getty Images



Listen to the feedback

Urban planning legend Jaime Lerner on how he made the city of Curitiba livable and why too much time is wasted on trying to get everything right.

Motion: You became famous for revolutionising public transport in Curitiba, one of Brazil's big cities with 3.2 million people. The Bus Rapid Transit system you introduced was copied the world over. How was that visionary project born?

Jaime Lerner: My involvement with Curitiba started in the early 1960s, when I was mayor there. By 1964/65, the town had exceeded one million inhabitants, and the common view at the time was that a city of this size should consider having a subway. So we started to study what we should do. We wanted something fast, reliable and with good service frequency. But we did not have the money for a subway. And we could not get a loan either. So we started thinking about cheaper solutions, using what we already had. I thought 'Why not do something above the ground instead of below the ground? Let's use the infrastructure that is already available!'

And how did that work in practice?

We refined the idea by creating a network of main arteries, and then smaller feeder routes. The emphasis was to make the arteries into high-frequency lines serving the most important city parts. In 1974, we opened the first Bus Rapid Transit, or BRT, line. It handled 25,000 passengers per day. Today Curitiba's BRT is moving up to 2.3 million passengers every day - which is not bad when you consider that the London Tube handles 2.9 million passengers. And the BRT system has never been subsidised. It has always paid for itself, which has left the city budget available for other purposes, such as education, health or culture.

Sounds fairly straightforward. What difficulties did you have to overcome?

The lack of funding was the main hurdle. We had to be creative in terms of finding solutions. The BRT solution had two

financial advantages. The city paid only for the infrastructure costs, which were limited to the creation of the two middle lanes on the main arteries, the bus stops - which we called "boarding stations", since they are more sophisticated - and the terminals at the route ends. The bus fleet was paid for by the operating companies, which had to invest about \$250 million. The city then paid the bus companies on a per-kilometre-travelled basis. We even sold our old buses to help pay for the new ones.

Were there obstacles than funding other?

To have our own buses designed. As passenger volume grew, we went from simple buses to articulated buses, to double-articulated buses that can hold 250 passengers. These had to be created from scratch in cooperation with Volvo; they were tested after midnight on the main arteries.

A last difficulty that should be mentioned is general resistance to change. Transport planners spend years analysing concepts and that prevents "quick and dirty" experimentation which often succeeds. When we launched our vision of BRT in Curitiba we planned for five main arteries that would have buses passing at very high frequencies - roughly every 30 seconds. That was not easy to sell.

"Taking public transport should be mandatory"

What can today's city officials and transport planners learn from the Curitiba experience?

There are many lessons. First of all: Things are possible. Do it fast. Don't try to have all the answers - no planner can be so



pre-potent. Another lesson is that you need to leave space for users. Listen to their feedback. This may sound shocking, but do not over-research. Spend less time on fancy origin-destination analyses. Why spend so much time on analysis of demand? Instead of projecting existing tendencies, spend more time understanding the options that are available. Being fast is important, and sometimes just stop the planning and get to action.

What makes a city liveable in your view?

Cities need to be accessible to all my needs, my dreams. They need to offer me opportunities. Cities can give me answers. They can give me good quality of life. As for mobility, there also have to be answers and options. The ideal city needs good diversity, social diversity, co-existence, and tolerance. Cities should not separate or segregate, either by age or by function or by class. There needs to be a mix of urban functions, of ages, of ethnic groups in order to make cities liveable.

The current trend of mass urbanisation seems hardly sustainable - how can we continue to meet the needs of so many city dwellers?

Three-quarters of carbon emissions come from urban areas. This has to be dealt with. For me the answer is sustainability, which is an equation involving savings and wastage. Savings have to be increased, Waste has to be decreased. My recipe is simple: First, use your car less. Second, separate your garbage.



Foto: Instituto Jaime Lerner

Passengers boarding at a Bus Rapid Transit station in Curitiba.

Third, live closer to work or work closer to home. Here I rely on my metaphor of the turtle. The turtle lives and works in the same spot. If you take the shell away, the turtle is unhappy.

What are some of the major innovations you see on the horizon that will change the future of urban transport?

One big change regards personal itineraries. It should be mandatory to take public transport. Since that is not possible, we need to have individual transport without

ownership. The prototype vehicle that we are developing, called the Dock Dock (see box on next page) is an example. We are now preparing to build the vehicle. For things to move fast, we need a paradigm shift for personal transport in cities. People should use non-owned cars for short trips. This would make the city more liveable. It is not enough to switch from internal combustion engine to battery-electric vehicles. You need to change the behaviour, not just the engine or technology. For me, the secret of good mobility is not trying to

prove which system is the best. The different options on the table are complementary, and should be integrated one with another.

What is your advice to policy makers?

What we need are more intelligent systems: smart buses, subways, taxis, and so forth. A smart subway would cut some stops so trains go faster and people can take surface buses for the short distance. Smart taxis can be like the London cabs. Vehicles should be smaller. People need to understand that the car is not the only perspective. For policy makers, the innovation should be not thinking about annual budgets. If programmes have to be cut because of tight budgets, then one needs to find a good equation of co-responsibility. For example, in Curitiba we could not afford the investment in a new bus fleet - so we struck a deal with nine private operators so that they would invest. If you want creativity, cut one zero from the budget envelope. If you want sustainability, cut three zeros.

Are there any cities or projects that you consider to be models?

Today, there are eighty-one cities that have adopted BRT solutions such as the one we developed in Curitiba - so that is certainly one model. One other example comes from a teacher I encountered in Taiwan. When I asked him what mobility solutions Taiwan recommended, he replied: BMW. But he wasn't referring to a car, for him this stood for "Bus, Metro, Walking". ■

To see Jaime Lerner speak go to: http://www.ted.com/talks/jaime_lerner_sings_of_the_city.html

Jaime Lerner

... is an architect and urban planner and founder of the Instituto Jaime Lerner. *Time* magazine named him among the 25 most influential thinkers of the world in 2010. As a three-time mayor of Curitiba, he led the urban revolution that made the city renowned for urban planning in public transport, the environment and social programmes. He served as governor where he was at the forefront of another economic and social transformation.

His work has been honoured with the United Nation Environmental Award (1990), UNICEF's Child And Peace Award (1996), the World Technology Award for Transportation (2001) and the Sir Robert Mathew Prize for the Improvement of Quality of Human Settlements" (2002). This year, Jaime Lerner is the first recipient of the International Transport Forum's Leadership in Transport Award.



Foto: Instituto Jaime Lerner

Everybody's car-ling

The Dock Dock is the world's smallest car. And it will be free to use by everyone. Yet Jaime Lerner's tiny e-vehicle is not a flight of fancy but the fulfillment of decades of rigorous thinking about sustainable mobility.

One of the greatest challenges to the quality of life in cities is to address the mobility issues. Even cities with an extensive and diversified network of public transportation suffer from increasing congestion.

On the other hand, the urban car – apart from also being a status symbol - enables several daily displacements that are part of the routine on millions of people and families.

So within the limited urban space it is necessary to find a way to reconcile the commutes that can be done by public transport and the individual expectations that derive from ingrained habits.

As his contribution to the solving of the mobility equation, Jaime Lerner conceived the Dock Dock, an individual vehicle with shared ridership. Dock Dock, thought up jointly with designer Emilio Mendonça and architect Fernando Canalli is an electrical car that aims to occupy the minimum amount of space, yet remain safe and show off a differentiated design. Its batteries will be charged with electricity at "docking" stations, just the way it is done with a cell phone.

Intended as a vehicle of shared ridership, similar to the Velib bicycles in Paris, Dock Dock will be available for users after payment of fees proportional to the time it is used. The pick up/drop off stations will be located at

strategic locations such as public transportation terminals and commercial, cultural and service poles. After use, the vehicle can be returned to any docking station within the system. Dock Dock will be able to reach a speed of 20 km/h and has an autonomy of 40 kilometers.

The presented prototype is 1.4 m in height, 0.82 m wide and 1.6 m long, only half the size of the Smart car, and six times smaller than the average urban car. The estimated cost per vehicle for large-scale operations is circa \$2,300, which could fall, as the use increase and economies of scale kick in.

Dock Dock seeks to embrace sustainability principles, feeding from a clean energy source and using recycled materials in its manufacturing. Part of its sustainability is its comfortable coexistence with pedestrians and bicycles. It is an individual car conceived to circulate in areas where the presence of regular cars would be restricted. This vehicle without private ownership is part of an urban mobility system based mostly of public transport.

Dock Dock is the smallest car in the world, but it is the fruit of Jaime Lerner's decades of urban planning conception - and it will hopefully spawn a movement far larger than its Lilliputian dimensions. *CF* ■



Jaime Lerner with the initial Dock Dock prototype.

Instituto Jaime Lerner

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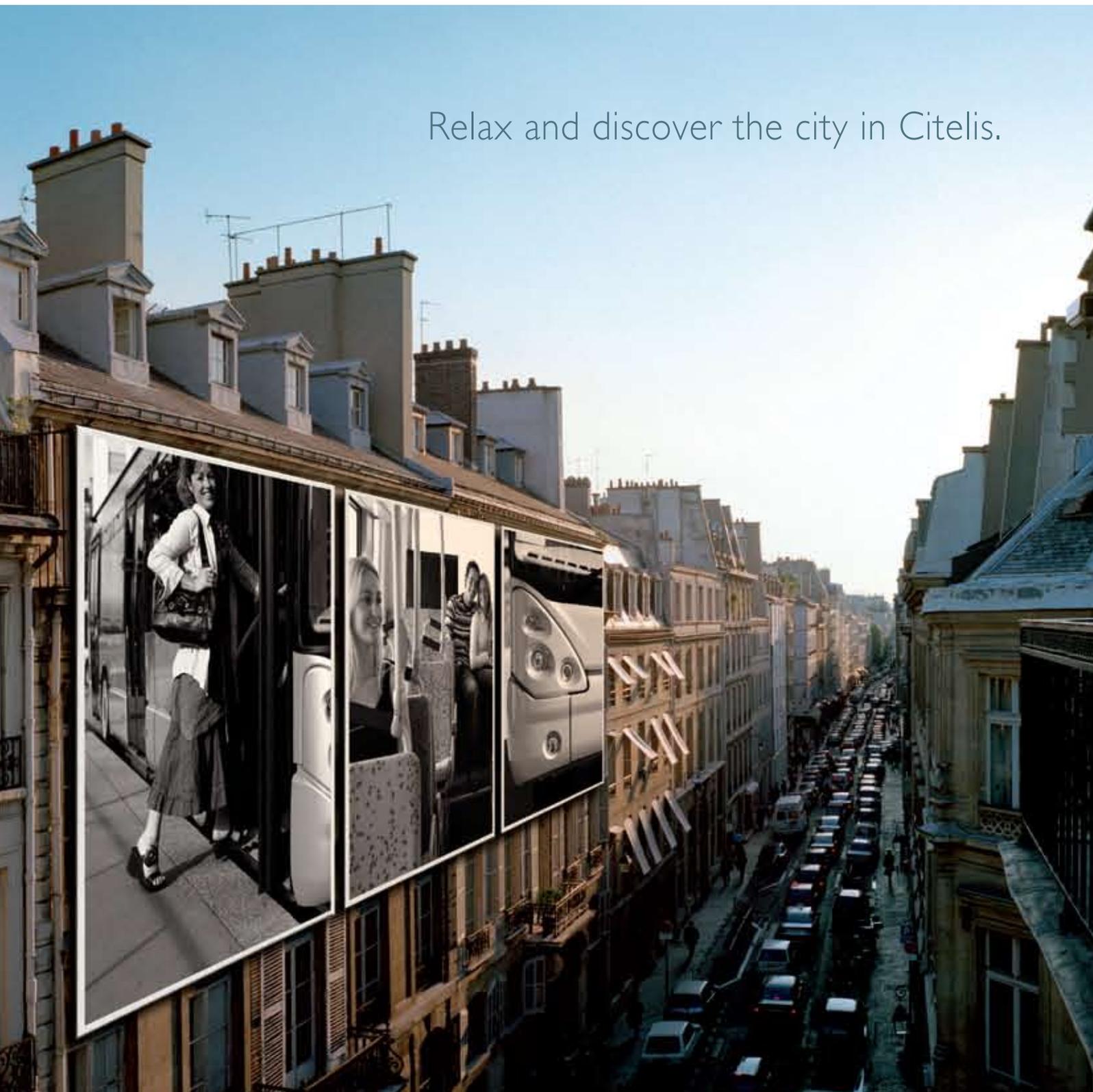


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Total quality road safety

Traffic has become much safer in rich countries, but road deaths are rising dramatically in the developing world. Now at 1.3 million per year, they could reach 1.9 million by 2020. How can the carnage be stopped?

Driving down a busy stretch of Italian autostrada recently, David Ward, director general of the FIA Foundation, witnessed an impressive carambolage of vehicles on the opposite lanes. Several cars had piled up onto each other at high speed. Bent metal and the characteristic white of deployed airbags dominated the frightening scene. Stunned drivers and passengers stood next to the mêlée - clearly shocked, but uninjured. "Crashes that were previously fatal are not any longer", says Ward.

The positive impact of improved car safety technology, among other things, is clearly visible in the crash statistics. According to data collected by the International Transport Forum's Traffic Safety Data and Analysis Group (IRTAD) countries like Portugal, Spain or France were able to roughly halve the number of road fatalities since 2000, coming closer to the best in the class, Sweden and the Netherlands. Other developed countries achieved similar successes, making the first ten years of the 21st Century "a record decade for road safety", as Jack Short, Secretary General of the International Transport Forum, puts it.

This progress towards "Vision Zero", the ultimate objective of eliminating road accidents as a cause of death, is only one

part of the picture. Of the 1.3 million road deaths recorded every year, 9 of 10 occur in the developing world. There, increasing incomes are spurring motorisation and exposing more people to the risks of road traffic, often with lethal consequences. And the level of deaths is still unacceptable even in the best performing countries. According to projections by the World Health Organisation (WHO), the global death toll from road accidents will reach 1.9 million by 2020. Also, serious injuries have remained stubbornly at historic levels.

Decade of Action

So there are serious challenges to be addressed in all parts of the world: The rise of the smartphone, for instance, is making distracted driving a growing cause of crashes. With people expected to multitask in almost all other environments, it is becoming a major concern to educate drivers to focus their attention entirely on steering their vehicle. Drugs and driving is another area that is undergoing a rethink. While alcohol use in driving is relatively straightforward to regulate and enforce, drug use - encompassing legal pharmaceuticals as well as illicit stimulants - involves much more complex issues of detection and enforcement. Few users of medicines that affect



vigilance and responsiveness realise that their driving ability is seriously impaired.

Increasing numbers of urban motorcyclists, the number one risk group for road fatalities, adds to policy makers' worries. And electric vehicles, while making transport more sustainable, also raise a new road safety issue: because they are silent, people will have to learn that traffic risk is not necessarily associated with an engine howl.

Against this backdrop, the United Nations have declared 2011 to 2020 the Decade of Action for Road Safety, with a view to stabilising and eventually reducing the number of road deaths globally. But what policies from the toolbox - or from the laboratory - should be put to work? "The most effective measure will be to organise the transfer of knowledge", says Véronique

Keep your mind on the road: A methodology for strategic thinking about road safety



Source: International Transport Forum "Towards Zero" (2008)



Two wheels meet four wheels in Jakarta

Feypell-de la Beaumelle, road safety expert at the International Transport Forum. “The professionals dealing with road safety in countries that now face a surge in road deaths need support in adopting best practice proven effective elsewhere.”

“Successful countries have set ambitious targets”

Thinking, Acting, Monitoring

Some simple and easy-to-implement measures can prove highly efficient - for instance removing roadside obstacles, making seatbelt and helmet wearing compulsory. But even such straightforward measures ought to be part of a well thought-out, holistic approach that sandwiches enforcement between a conceptual phase - defining the parameters of action across infrastructure, drivers and vehicles under an effective management systems with clear lines of political accountability - and thorough monitoring as a basis for effective targets.

The policy menu for total quality road safety will have to contain the right mix from four main areas: Regulating driving speeds and enforcing speed limits is an obvious starting point. Vehicle speeds

show a direct correlation with the number of road fatalities. Research results support a simple “rule of thumb” according to which a 1 per cent reduction in average speed is associated with a 4 per cent reduction in the number of road deaths - a link that the French government recently advertised widely to raise acceptance for its speed monitoring policy.

Vehicle safety regulation is another important area. Setting and enforcing minimum technical standards for vehicles goes a long way to ensuring the safety of drivers and passengers - from minimum tread depth of tyres to safety belts, head rests and airbags to obligatory technical controls at regular intervals. And like the vehicles that use it, the road system itself needs to be adapted to minimise risks and maximise safety. This starts with road layout, surface marking and signposting via regular maintenance to emergency services infrastructure like SOS phones or even rescue helicopter networks.

“Click it or ticket”

Finally, good policy will promote safe road use by targeting user behaviour. Encouraging responsible behaviour may be a “soft” policy objective, requiring policy makers to allow time for a campaign to seep in to the users’ minds and awareness. But it can work: the seat belt campaigns in the United Kingdom changed attitudes through repeated publicity waves with

catchy slogans from “Clunk-click every trip” to “Click it or ticket” persuading first drivers and now back seat passengers to use seatbelts. Many other countries have used the same tactic including a recent highly successful seat belt campaign in Costa Rica.

And the policy mix should be driven by feeding the monitoring results back in - if enforcement appears to yield lower results, more emphasis may have to be placed on improving infrastructure or adapting vehicle standards. Feypell-de la Beaumelle stresses: “Strongly prioritising just one tool is no solution. New enforcement techniques, for instance, need support through public information campaigns to improve acceptance.”

For example, France in the 1990s and early 2000s complemented an enhanced enforcement involving roadside cameras and more active policing with a large-scale public information blitz drawing attention to the objectives of the campaign. Increasingly the biggest improvements are to be found when the road, vehicle and driver are treated as a system and measures are taken in concert to improve infrastructure, technology and behaviour in synergy.

Need for Vision

Regardless of the specific road safety objectives, one fundamental requirement is to clearly define the vision. “Successful countries have set targets, and set them in an ambitious manner,” says the FIA Foundation’s David Ward: “Then they garner high level political support.” In the late 1990s, then French president Jacques Chirac publicly committed his administration to drastically reduce road fatalities. The programmes, executed by Chirac’s Minister of the Interior, Nicolas Sarkozy, delivered results and developed a strong positive political connotation.

Starting with Sweden in 1997, several counties have proclaimed “Vision Zero” road safety strategies with the very ambitious, but also very clearly stated aim of creating a traffic system that does not cause fatalities or serious injuries. Dissatisfied with a one-third drop in annual fatalities from 2000 to 2006, the government of Norway felt that an additional halving of fatalities and serious injuries was possible - leading to the implementation of a new road safety program including over twenty measures. “For Total Quality Road Safety policy makers should re-examine their assumptions every year”, says Véronique Feypell-de la Beaumelle. “We must benchmark, and then review successes and failures on a regular basis, and on a global level.” CF ■

“We can do even better”

Catharina Elmsäter-Svärd, Sweden’s Minister for Infrastructure, explains her country’s successful road safety policies.

Sweden’s road safety record is the best in the world. Last year, 270 people died on our roads. By international comparison, this means we have the lowest number of road deaths per capita, which is a record we are proud of. Yet 270 deaths are still far too many, and the Government is now continuing with major steps towards increased safety and security on our roads.

Compared with levels of 800 to 900 deaths per year in the 1980s, we have come a fair way towards the target adopted by the Riksdag, Sweden’s parliament, in 1997 – Vision Zero. The long-term ambition of Vision Zero – zero road deaths and injuries – naturally requires continued coordinated measures on the part of a range of actors in society. In 2009, the Riksdag adopted an interim target under vision zero: in 2020, the number of road deaths must not exceed 220, half the number recorded in 2007. I am happy to say we are making great strides towards that goal. And this is in spite of the sharp increase in the number of vehicles on the roads.

We have been particularly fortunate and successful in a number of areas.

Our work on road safety rests on three pillars. First, there is the design of our roads and speed limits. Second, the technology and innovations in modern cars are an important component in increasing safety. Last, but not least, the education and training of drivers is having an impact on attitudes and on the inclination of drivers to take risks on the road.

Safe roads, our pillar number one, builds on compliance with speed limits, 2+1 roads, more central barriers, etc. The Government is working actively in this area and one of the responsibilities of the Swedish Transport Administration is to continuously evaluate and analyse where roads should be rebuilt to make them safer. Every year since 2000, the Swedish Transport Administration has built 200 km of 2+1 roads – i.e., roads that alternate one and two lanes in each direction, separated by a central barrier.

The Swedish Transport Administration is also investing in 90 individual projects in the period until 2021, in which important factors for success are bringing roads up to a good standard, removing visibility obstructions and setting speed limits that suit the standard of the road. But the single most important factor for improving road safety is to

reduce speed limit violations and lower average speeds. Both have decreased steadily in recent years.

Safe vehicles are pillar number two, with a focus on research, innovation, use of new technology, IT-based support systems, ranging from weather services to automatic braking and increased opportunities to make contact with other vehicles. In recent years, we have seen how the development of modern technical aids saves lives. Swedish insurance companies confirm this picture: the risk of suffering a fatal injury decreases by 90 per cent if a person is travelling in a modern car compared with a car from the early 1980s.

Safe drivers are the third pillar, with a focus on risk education and individual awareness of your own inclination to take risks. From a historical perspective, one of the most important factors behind the development we see today has been the increased use of safety belts. There is a great awareness that safety belts save lives and in Sweden belting up goes without saying. Swedish driver education has shifted its focus from knowledge about vehicles to attitudes, judgement and understanding. It has become more insight-oriented and individual.

Finally, the **Traffic Police** have played a role in reducing the number of fatal accidents. These days they take many targeted actions against drivers under the influence of drugs or alcohol. The number of car drivers in fatal accidents who have alcohol in their blood has been nearly halved since 2003. Next year, the trials involving alcohol ignition interlocks as an alternative to withdrawing a person’s driving licence in cases of drink-driving will be given permanent status. The project allows drivers convicted of drink-driving to choose to install an alcohol ignition interlock in their cars so as to make it easier for them to retain their jobs and social life. The trials had a number of teething problems initially, as outdated technology was used, giving inaccurate results, but in the permanent programme only new technology will be used.

Sweden has historically given high priority to road safety, and we are now continuing our efforts to reduce the number of accidents on our roads. New technology combined with better roads and increased insight among drivers has brought us far and our ambition is for the trend to continue in the right direction. ■





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Automotive technology, naturally



Moving cities

Four mayors from around the world share some of their concerns and some of their solutions for improving mobility in cities.



Michael Bloomberg

Kristen Antz

1. How are you using solutions to improve the livability and quality of life in your city?

2. What is the transport innovation that your city has seen in recent years?

Michael Bloomberg Mayor of New York City

“For us, it’s all about creating choices and actively expanding transport options for New Yorkers”

For New York, it’s all about creating choices. Actively expanding transport options for New Yorkers with new additions such as bus rapid transit, ferry service, car sharing, expansion of subway line 7, and bike lanes. Projects for new plazas and other public areas for more open space in all neighbourhoods. New bike paths double as transport network and recreational assets. A strong set of safety programmes has reduced fatal traffic crashes to historic lows.

The Green Light for Midtown project solved an age-old congestion problem in the heart of the city. By closing parts of Broadway to through-traffic in 2009, we simplified major intersections along 6th and 7th Avenues, improving traffic operations. Pedestrian plazas created on Broadway in Times and Herald Squares have become major attractions. Foot traffic has increased 11% in Times Square, which has also seen a doubling of retail rents and the opening of a set of new flagship stores.

Burkhard Jung Mayor of Leipzig

“I like the idea of Leipzig leapfrogging in its development and learning from other cities.”

Our strategic Transport Masterplan addresses the challenges of developing a healthy environment for living through the rising use of environmentally-friendly modes of transport: walking, cycling and public transport. Bicycle use has almost tripled since 1990. Walking has also risen. Annual trips by bus and tram have grown from under 100 million to almost 130 million from 2000 to now. As a result, the central city has seen about 50.000 new inhabitants in ten years.

We have created new ways of segregating motorised and other vehicles safely within lanes. That improves driver communication and road safety. A new type of tram stop allows easy boarding for disabled travellers, and safe passing for cyclists without crossing tram tracks. Small innovations, but they show care for the user and they help to improve the transport climate. Other technical innovations include easyGo for public transport information on the Internet or on highways.

Eduardo Paes Mayor of Rio de Janeiro

“This reduced the transport budget for lower-income cariocas, without any subsidy from the city government.”

Despite the favourable modal split in Rio, with public transport accounting for 63% of total trips, cars are increasing rapidly so congestion is becoming more critical. To improve transport, we have opted for a relatively low investment solution: bus rapid transit (BRT) corridors. Our BRT network includes four corridors, with a total length of 14.5 kms to be completed by 2015. We expect 2.1 million passengers per day. The first BRT corridor will open in 2012.

Last year Rio implemented the single ticket for the bus system, responsible for 60% of the trips made by public transport. It allows passengers to take two buses within a two-hour period. This measure had a significant impact, enabling lower-income population to reduce their transport budgets, without any subsidy from the city government. We are now on the way to extend this benefit to other means of transport, including urban rail, subway and vans.

Ulla Hamilton Vice-mayor of Stockholm

“Integrated planning helps reduce the bottlenecks that our islands and bridges generate”

Information systems are key here. With up-to-date information, commuters can make informed decisions, both for immediate and future trips: a traffic accident may mean choosing the bicycle; summer road work may mean a different combination of transport. Together with traffic and transport authorities, we have created a homepage that gathers all traffic information. This travel planner compares different modes (public transport, cars, cycling and walking), and calculates financial cost as well as the CO₂ emissions.

A congestion charge system was initiated for the inner city in 2006. The system is large and technically advanced and succeeded in reducing car congestion by approximately 15%. Stockholm also has a smart and well functioning system for bus priority at traffic signals. The system employs a combination of GPS and radio technology to give public transport buses priority at different traffic signals. The system works well and helps keep inner city buses a competitive transport option.



Burkhard Jung



Eduardo Paes



Ulla Hamilton

3. What transport innovation in another city or region are you most envious of?

High speed rail. High speed trains have reduced travel delays, generated tourism, raised property values, and increased economic competitiveness in regions around the world. A bullet train running from Washington to New York to Boston would be a boon for our region and for our country, reducing congestion and pollution while increasing productivity and economic activity.

4. How is your administration handling urbanization trends?

NYC continues to attract people: more than one million people over the last 25 years, to a record level of about 8.4 million. Another 900,000 in the next 20 years. The good news is that public transportation has met the growth needs: use increased 43% from 1990 to 2010. Our planning efforts have meant that 80% of new housing units in the past decade are within walking distance of a subway rapid bus line station or stop.

5. What stroke of genius has your team had to increase use of public transportation?

Nearly 3 million New Yorkers use our bus system, but the buses are too slow. The new "Select Bus" routes include bus lanes with camera enforcement, fare payment at the bus stop not on-vehicle (speeds boarding), and traffic signals that prioritise bus movement through intersections. Results are strong: on Fordham Road in the Bronx, travel times are 19% faster; 32% more riders. To build on this success, we are planning many further routes.

We are not envious of other cities. We realise it takes time for changes to happen in Leipzig and in other cities. I like the idea of Leipzig leapfrogging in its development and learning from developments in other cities. So we stay in contact and cooperate with many cities for exchange of knowledge and experience. This two-way street, for learning from each other, helps us avoid timely and costly mistakes in urban development.

In the early to mid 90s Leipzig lost about 100,000 people. Suburbanisation also meant new business and commercial zones set up outside the city. We reversed this process by restructuring downtown and a housing renovation programme. Re-urbanisation is now bringing people back into the city. The revitalisation of the city centre and special programmes for children and families helped. Today Leipzig is attractive for living, learning, working and new enterprise.

One key to our success is the investment in our trams. Leipzig has the second biggest tram network in Germany (after Berlin) and by giving it priority in traffic and in financial investment, even in very difficult financial situations, we gave a clear signal on the importance of public transport. The 2006 Soccer World Cup relied on our tram service, and spectators reached their destinations despite this exceptional traffic situation.

The huge mass transit network of some large cities is something that I would like to have already in Rio. The reason why we don't have one is lack of investment on public transport during the past thirty years. We are now working hard to change this reality, with the bus BRT network, the first investment on transport infrastructure ever made by the city (urban rail and subway are handled by the state), for an amount of \$2.6 billion.

The site where the port of Rio is, next to downtown, has been abandoned for decades, with many unoccupied buildings and warehouses and degraded areas. Its revitalisation is the most important urban project for us. Last year we signed a PPP (public-private partnership) to make improvements in this area that involves investment on infrastructure and real estate, with bonds launched in the market for the financing.

In addition to BRT, we also have a BRS (bus rapid service) project. On streets requiring large numbers of buses but with very scarce space, we remodeled an old concept of bus lanes into a new concept, consisting of an optimisation of lines and alternate stops and a preferred lane for buses and taxis with a strict electronic enforcement system to avoid intruders. The extension of the mass public transport network is our main goal.

The city of Gothenburg has succeeded in creating an interesting system for parking information in conjunction with large concerts or events. When approaching Gothenburg on main highways, information signs name the event and indicate where to drive to find parking. This helps lead traffic more efficiently and reduces the congestion created in conjunction with large events. At the moment is Stockholm building a new arena and we have taken this thinking to heart and hope to implement a similar system for event parking.

Integrated planning. The space available for roads is limited since our city is built on islands. The restricted number of bridges creates bottleneck situations at many key traffic nodes. As the city of Stockholm grows, our administration is handling this by building new housing areas around the city and at the same time building the transport systems necessary to integrate these new areas into the existing city space. We take account of future traffic flows which may create bottlenecks.

Public transport in Stockholm is generally efficient, on time and relatively cheap. As an effective alternative at a good price, many Stockholm citizens use public transport daily. Combining new housing and proximity to good public transportation together with a high frequency of departures as well as high reliability has resulted in approximately 80% of commuters using public transport during peak hours.

One owner, many users

Car sharing pioneer Robin Chase charts new ways to organise individual travel and argues for the need to overhaul the regulatory framework.

Motion: Your path-breaking concepts for car sharing have made you a renowned transport innovator. What made you focus on this particular form of mobility?

Robin Chase: There are two reasons:

First, in the transport world, there is basically one major focus for how we are going to deal with a future that requires fewer CO₂ emissions: fuel-efficient cars and different kinds of cars. That's the number one answer globally.

But the pace of climate change is not compatible with the 25 years it takes to turn over a worldwide fleet. After ten years in the US, the Toyota Prius had about a 2% penetration rate. That's not a fast-paced response to anything. So if we are only going to rely on alternative cars and new vehicles, it will take an incredibly long time before you see any kind of real impact. Changing people's behaviour offers a dramatically faster response than changing hard infrastructure, assets, and fuel sources (which we also need to do).

Secondly, when we think about the world to come, we see increased urbanisation, higher cost of parking, the cost of congestion and an aging population. All of those things are incompatible with a car-dependent or car-centric transport system.

The solution that is being heralded as our future is alternative fuels and electric vehicles. But this solution does not address the problems associated with cost, aging and space when people move to cities. Car sharing responds to those problems.

What do you see as the greatest benefits of car sharing?

Car sharing can change behaviour. What we learned from Zipcar, the company I co-founded in the US in 2000, is that each

shared vehicle replaces fifteen cars because 40 percent of the users realise they do not need to own a car and sell it or don't buy one. And when you reduce that number of cars you also reduce by a factor of three the number of parking spaces required to support them. Because on average each car you introduce into a city requires three parking spots - at work, at school and for shopping.

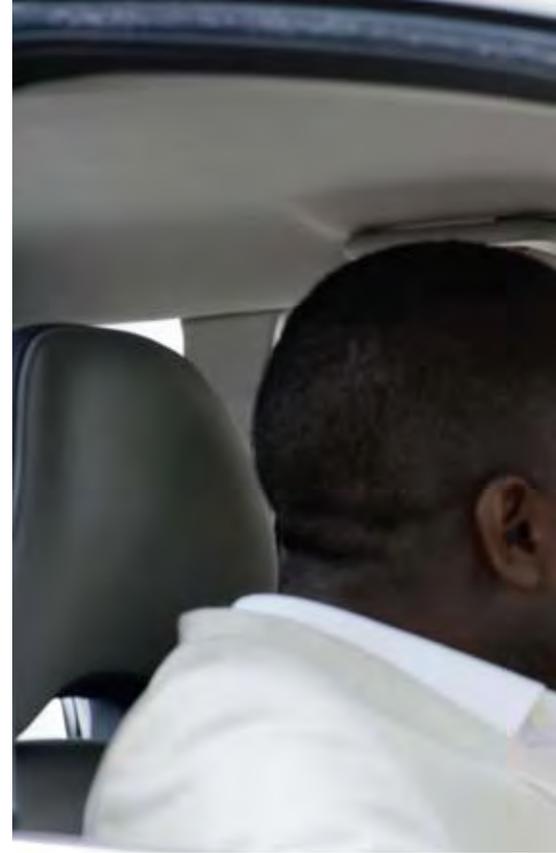
But the most important environmental and local benefit with car sharing is that people drive less. Zipcar is quoting 40% fewer miles driven, and I think it's closer to 80%. When people have to pay for a car by the hour or by the day - instead of using their own car - they drive less. If it's going to cost you \$10 for the hour it'll take you to drive to buy an ice cream, you're not going to do it. With your own car you'll go out to buy an ice cream without even thinking about the transport cost.

“Insurance is one of the biggest issues car sharing faces”

Car sharing forces people to put their car use into rational economic contexts against their other mode choices. Car sharing means people make financially rational choices about what is the right mode of transport for a particular errand.

What do you see as the biggest challenges today to innovation in transport?

The challenges are related to the status quo business and regulatory environment. Insurance is one the biggest issues. I am



confronted with this issue now while I build my new company, Buzzcar, in France. Buzzcar enables car sharing between individuals. In other words, it is about people renting their own cars to other people.

Today, insurance is bought and sold by the year, with one owner per car. We are trying to separate out the liability and the insurance from me as a driver to me who owns a car. This is a significant issue for the insurance companies, and the law in certain places. In some countries it is illegal to make money with your own personal car, which means you cannot rent your own car or accept money for ridesharing, or drive someone someplace in exchange for money. We have disabled the ability of people to create their own small-scale, local, and customised transport solutions.

Why is there a separation in insurance policies between the owner and car user?

In the old fashioned days, we thought there would be one owner or driver for one car or one owner per family. If you think of the risk, however, it is not different in any way. I am the same driver I always was, but now I want to drive different cars instead of just one the one I own. And, I only want to pay when I drive - not a yearly amount.

That is very hard for insurance companies to get their heads around. There are laws that were written 50 years ago to distinguish commercial and personal vehicles, but they are no longer relevant.

What are the other barriers that you face?
Parking and zoning laws. It is a similar



Sharing cars boosts transport's efficiency.

to the insurance issue in that today cities envision each car as being used by only one owner or family. Parking is provided for free or at a very low cost to residents. In fact, we are subsidising the status quo of one person with one car that is parked and idle on the street 22 hours a day. We need to think about the possibility of "public" private cars. A company (or individual) that wants to maximise use of that car and that parking space by letting many, many people make use of it, does not fit into the picture. There are no parking permits or parking spaces set aside for this kind of use.

To remove that barrier, we need to distinguish ownership from use. This will have broad implications - from how we park cars to how we think about who can get into my car and how to make that easy (right now,

all cars are manufactured with this same idea that there is a very small number of people who will use a car, and they need a physical key to drive). All of these challenges stem from the fundamental (and incorrect) idea that the owner of the vehicle is the only one who uses it.

We need to recognise that it is reasonable and desirable to let drivers accept money when they carpool, or lend their car to someone. This should not be a grey market that invalidates insurance. On the other hand, does this mean these transactions are on par with buses that transport thousands of passengers and should abide by those regulations? I believe this is something different, and that small scale that should not be regulated like large companies that transport people. Every country needs to

examine what is on their books and how it prevents small-scale solutions to our major transportation problems. Governments need to make it possible for people to use their own personal cars to solve small, local needs, and get money for it.

Why did you decide to launch your new company Buzzcar in France?

I chose France, and more broadly Europe, because I think Europe is closer than the US to where the future of transport is going to stabilise. The US is wholly car-dependent, whereas Europe is less so. The way things are going, people are going to be using many different transport modes in the day. That is possible in Europe but not at all in the US. The cost of owning and operating a car is more expensive in Europe and therefore the interest in sharing the costs and/or not owning a car is higher than it is in the US. I also think individual cities and states are moving to remove car subsidies, such as free parking and no congestion fees as they attempt to balance budgets and improve urban life.

Developing countries which don't have robust public transport alternatives and whose populations do not own cars are at another end of the spectrum. They have to build up both public transport networks and highway networks, while at the same time being careful not to disable the small-scale location solutions that work now.

Regardless of the country, we all need a wide diversity of ways to get around, depending on our needs for each specific trip. For example, what I need when I am sixteen looks different than what I need at 45 with three kids, or when I am 75 and by myself again.

What we really need is a more flexible system that takes into account different incomes and different capacities at different ages. Car sharing gives a flexible and dynamic pay-as-you-need use of the car, in stark contrast to the old model where you owned one or you didn't.

What do you see as the next step in car sharing?

The traditional car sharing model, where the car sharing company owns the vehicles, is constrained by its requirement for a return on investment. This means that it will not fit niche markets or take any risks in its expansion. Cars will only be placed where there is a guarantee that they will be heavily used.

With Buzzcar, we are using the excess capacity of existing vehicles. We do not add

Robin Chase

...is founder and CEO of Buzzcar, a service that brings together car owners and drivers in a carsharing marketplace. Buzzcar.com empowers individuals to take control of their mobility. Robin is also founder and former CEO of Zipcar, the largest carsharing company in the world, and GoLoco, an online ridesharing community.

She is on the Board of the World Resources Institute, the National

Advisory Council for Innovation and Entrepreneurship for the US Department of Commerce, and the Intelligent Transportation Systems Program Advisory Committee for the US Department for Transportation. She also served on the Massachusetts Governor's Transportation Transition Working Group, and the Boston Mayor's Wireless Task Force.



Different business models: Comparison of Zipcar and Buzzcar

	Year of creation	Business model	Members	Rates	Cars available	Locations
Zipcar	2000	Offers car rentals by the hour or day from their fleet of vehicles, parked in and around members neighbourhoods. Members card allows them to unlock cars.	560,000, known as "Zipsters."	In the US, start at \$8.50/hour and \$66/day, with gas, parking, insurance, up to 180 miles of driving per day, maintenance and roadside assistance included.	Over 8,000	Over 60 cities in the U.S., Canada and the U.K
Buzzcar	2011	Car owners rent their own cars via the Buzzcar platform. Buzzcar receives the payment online, and takes a commission on car owners earning (see rates column). Buzzcar handles the transaction and insurance.	Site still in Beta.	Price set by car owner (Buzzcar provides tool to calculate fair price). Commission of 11-16%, broken out as follows: • 1% for the environment • 10% for Buzzcar • 5% for marketing costs	Site still in Beta.	Anywhere in France where someone wants to share their car and someone wants to use it

Source: Company websites

vehicles to the streets. If you are living in a rural area and you rent your car out twice a year, you're happy because you're making some money on a car you already had; a car sharing programme would not set up in those places. Buzzcar is a way to pick up all possible car sharing demand in every geographical location and every population density - big towns, small towns, rural towns.

This is the next step in car sharing. I also think it reflects a trend in many sectors of moving towards resource efficiency and end users contributing their own assets. EBay, Google, Wikipedia, Flickr and Facebook are all examples of companies that are common platforms where individuals place their own belongings. These companies are able to scale quickly and to equally distribute and accommodate. It is a different economic model.

What's hindering innovation in the transport sector is this concept that transport is only giant infrastructure projects. They are very expensive and massive undertakings.

What I'm trying to demonstrate with Buzzcar is that we can transform transport with what I think of as 'collaboratively financed' and 'collaboratively built' infrastructure. The same is true of successful ride sharing programmes, which are few and far between. There is one good example in France, called www.covoiturage.fr. It is like a collaborative public transport. This new trend, which Buzzcar is part of, is enabled by technology: the Internet and wireless data transmission. The smart phone revolution makes all of this easy and accessible while we are on the move.

What policies would you like to see developed to advance innovation in transport?
I would like to see two policy changes that I realise are politically very difficult. The

greatest improvement would be if governments could ensure that the true costs are charged, including the cost of carbon emissions and of parking and driving a car in dense urban areas. There are innumerable ways in which we subsidise cars.

Less politically difficult, but equally effective is to move car expenses from being fixed and forgotten, to being overt and variable. So any way that we can move from yearly payments to hourly and monthly payments for car parking, car insurance, car ownership, car depreciation and car taxes will dramatically change the way car expenses are perceived. It will make people think actively about the cost of owning and driving a car, which is very high.

If we can charge city residents monthly for parking permits, that is great and if we can get it down to daily, better yet. If we can encourage insurance companies to offer pay-as-you-drive insurance and not just on a yearly basis, all the better.

“Imagine if I could download applications and data on my car”

And the second policy change you are dreaming of?

I have been talking to policy makers in Washington about opening up systems to facilitate innovation. To give you an example: Car manufacturers have the ability to track much of our car usage. When your car is inspected, car manufacturers plug in to an Onboard Diagnostic Instrument, which tells them what is happening in the car. Now If I could personally get that information in real time, I could analyse the data and use

it to improve my driving. I might learn that I have a lead foot or that I do not drive as efficiently as my spouse. I could learn that I should leave at 7:45 a.m. for my commute instead of 8:10 and thereby cut my trip by 20 minutes. I could even find out whether I should take another mode of transport because it would be faster and cheaper. If I had access to that information, all of those things could come very easily. The data could also help me decide which car I should buy - a hybrid or an electric vehicle. Car manufacturers do not want to share this information because they think their competition might learn something from it.

How would that work in practice?

Think of an after-market device that I could install in my car, much like a stereo system, that gives me access to my personal car data. Today I can add all kinds of applications on my iPhone or Google phone and give these applications access to my personal data in all sorts of ways that prove useful to me. Imagine if I could download applications and outside data (from the Internet) on my car. I could programme the car to find the best route to my destination, or to not open the car to my young teen driver when it's dark, or to tell me that I am a bad driver. Right now technology is closed on all cars because car companies haven't opened it up.

Unlike my mobile phone, once I have purchased a car I cannot change the technology. We need to have open access cars (or boxes that can be added to existing cars) so that we can start putting applications on them. There are an infinite number of things we could do if the car became an open device, with 10,000 clever people out there coming up with new ideas all the time. It's that aspect of openness that is so critical to innovation. MJ ■

Carpooling catches on

With one million members, French website covoiturage.fr thrives on entrepreneurship, technology and high fuel prices

The name Frédéric Mazzella may not mean anything to most people today. But this young Frenchman is one of the new generation entrepreneurs worth keeping eyes on.

With Mazzella's background, one might have thought that he would pursue a career in research. He has a diploma in physics from the prestigious French school, Ecole Normale Supérieure, which typically produces the country's scientists and public officers. But Mazzella, born in France in 1976, then went on to get a masters degree in computer science from Stanford University in the US, and after a few years working for NASA, decided to explore the world of start-ups.

And that's when he discovered his niche.

Returning to his native France in 2001, Mazzella had a vision. Unable to find carpool information online in France so that he could get to his vacation destination at the last minute (the trains were full), he came up with the idea of Covoiturage.fr. A true believer in the power of the Internet, he launched the site on a small scale in 2004 and, while continuing to grow the site on the side, pursued his studies at INSEAD, the leading French business school, receiving his MBA in 2008.

Cross-Company Carpooling

Then, in April 2010, a hitherto little known volcano exploded in Iceland, its ash cloud grounding European air traffic. Within twenty-four hours, Covoiturage.fr doubled the number of passenger requests to 60,000. In April 2011, the site had one million registered users, was offering 10,000 rides a day via its Spanish site, comuto.es, and planning the launch of a website for the UK market.

Unlike most other carpooling sites, covoiturage.fr was designed taking into account the needs of both individuals and businesses, making the site very user-friendly for both. The site makes every effort of keeping up with the ever-evolving user realities, focusing on innovating through technology. One of Covoiturage.fr's smart phone applications, for instance, has won several awards.

Companies such as Swedish furniture giant IKEA, for whom Mazzella and his team build platforms to facilitate carpooling among employees, count among the clients of covoiturage.fr. Mazzella also creates platforms for groups of companies in the same geographic region that come together to facilitate carpooling among their employees. To set up such a site, Covoiturage.fr charges companies anywhere from €5,000 to €40,000, plus an additional annual fee of €2 to €5 per employee.

Halve costs with an extra passenger

While the site's revenues come exclusively from these company deals, it is through a growing community of individual users - who can access the site for free - that Covoiturage.fr is building its reputation. With the increasing cost of fuel,



Frédéric Mazzella

most users come to Covoiturage.fr to reduce their travel costs. A car trip from Paris to Lyon will cost a lone driver up to €90 in fuel and tolls alone, but with a fellow passenger on board sharing costs, expenses are cut in half.

But there are stumbling blocks, some of them regulatory. For instance, carpoolers cannot get receipts for their expenses - which means they cannot get reimbursed by their company if the trip was for business, or deduct the expense from their taxes if they are self-employed.

Asked what could be done to inspire more people to carpool, Frédéric Mazzella has a few ideas to offer: "Governments and policy makers can encourage this sustainable trend of carpooling by increasing the number of carpool lanes on congested roads", he suggests. "They can also facilitate the fiscal aspects of carpooling: Governments need to clearly indicate in their legislation that sharing costs for carpooling will not be taxed." MJ ■

Facts and figures: Covoiturage.fr

Date of creation:	2004
Parent Company:	Comuto, established in 2006
Founder:	Frédéric Mazzella
Employees:	15
French members:	1 million (April 2011)
Carpools organised to date:	5 million
Average carpools per month:	180,000
New ads per day:	440,000
Pages viewed per month:	15 million
Annual growth:	150%
Mobile phone application:	"Comuto" for iPhone and Android
Other countries:	Spain, UK (planned)
Fuel and CO₂ economies:	40 million litres of fuel and 200,000 tonnes of CO ₂ according to the company's calculations

The sky's the limit



Air traffic controller in Maastricht.

A single European airspace promises major improvements in flight movement efficiencies. But many actors are involved.

Air traffic within and over Europe seems on an unstoppable growth path. With additional regional airports opening, new low-cost airlines taking to the skies and emerging economies discovering air travel, the pool of air passengers is constantly expanding (see chart).

For Rainer Ohler, Senior Vice President Public Affairs and Communications at Airbus, the system is beginning to creak at its seams. "We feel the urgency for further streamlining of pan-European air operations", he says. "Just the other day a senior airline manager complained to us about wasting one million litres of kerosene every year because of sub-optimal air routes and holding patterns."

For Eurocontrol, the agency that coordinates air traffic management (ATM) in 39 EU and affiliated skies, new issues have thus appeared on the radar screens. Whereas safety remains the top priority, the emphasis now also includes environmental and economic considerations. Future flight routes will have to make it more efficient for airlines to connect the dots. To make better use of expensive fuel, old administrative boundaries need to be rethought. "We have abolished the frontiers on the ground, but as soon as you are one metre up in the air, Europe is divided like on those old

maps", as then Lufthansa CEO Wolfgang Mayrhuber pointed out at the International Transport Forum's 2010 summit.

Towards less fragmentation

This new phase of pan-European coordination requires some new authority. The fact that the European Commission has teamed up with Eurocontrol to set new efficiency targets is seen by many as a positive sign. However, a plethora of actors have their say in the coordination process: national governments, both civil and military air navigation service providers, trade unions and professional associations, international partners, European entities, airlines, airports, equipment suppliers, and others.

The fragmentation of the European skies has progressively lessened over the years. Luc Tytgat, Director Single Sky at Eurocontrol explains: "A first attempt at more efficient routing was the 1972 creation of MUAC, a project that unified Benelux and northwest German airspaces. The establishment of nine Functional Airspace Blocks (FABs) by 2012 will be the next key step towards de-fragmentation of European airspace. Four FABs already exist and five more are under construction."

If routing sounds relatively straightforward, consider some of the other obstacles Eurocontrol faces. Technology is one concern.

Although the EU and Eurocontrol signed a binding agreement on equipment procurement in 1993, this stipulated a need for compatibility between national systems, but did not entail a diktat on what to purchase.

Yet coordination is critical to the centralised processing of flight plans, a key first step toward a Single European Sky. And for industry, speed is crucial. Rainer Ohler believes that engineers should not dally on developing a gold-plated technological panacea, but should be satisfied with a "good enough" solution that would ensure safety, environmental improvements, and more cost-efficient operations: "If we want to meet our climate targets, we must replace old equipment and processes with state-of-the-art ATM and thus be able to generate about 10% fuel savings."

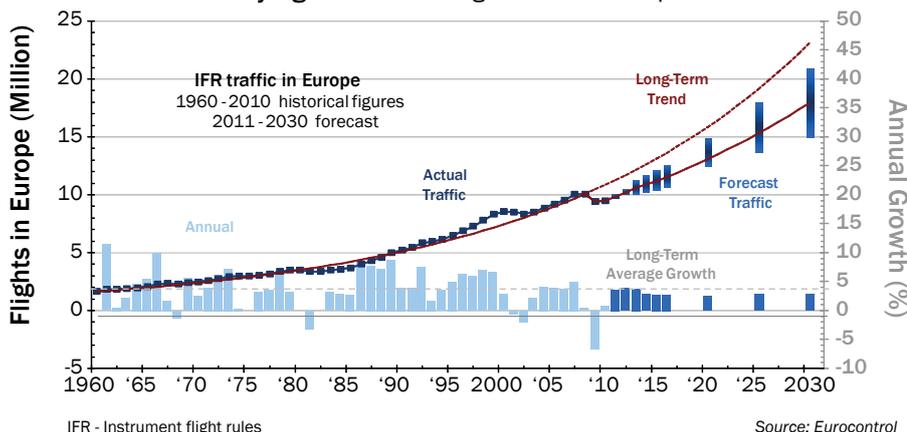
Increase capacity please

Participants agree on one point: no matter what system is put in place, it must have the ability to increase capacity in Europe. Backed by the European Commission, Eurocontrol has set aggressive targets for 2020. "For the environment," says Luc Tytgat, "we plan a 10% reduction in CO₂ emissions. For the airlines, we envisage a 50% reduction of average per-flight ATM charges, from the current average of €840. Overall, changes could make a doubling of capacity by 2020 possible."

But such an enormous increase in the number of planes and passengers also means further operational efficiencies, including reduced separation distances between aircraft, better on-ground handling, and behavioural changes such as data links replacing voice links between pilots and control towers.

Eurocontrol has one trump card: it can "incentivise" its 39 member countries through its performance scheme. In this case, the carrot is a stick: national airspace control authorities will not receive the same payments from airlines unless the higher operating standards are met. This is one way for all the actors in the air arena to pull in the same direction, for the greater good of air passengers. ■

No fear of flying: Evolution of flight traffic in Europe since 1960



Interview with the Spanish transport minister

Spain is facing some significant challenges in the form of structural reforms. How do you think other members of the Forum might benefit from Spain's experience?

Firstly, it is an honour for me to assume the presidency of the ITF. It is a pleasure to see the results of the efforts of its working groups to develop strategies for ensuring that transport serves society.

Spain has made a great effort in recent years to modernize its transport infrastructures. We can now say that we have one of the most advanced networks in the OECD. The time has come to consolidate, and institute new management systems that ensure the sustainable use of transport.

In addition, overcoming the inherent inflexibility of transport networks, which are almost always diverse, sometimes disjointed and always complex, is a task that requires constant planning and, above all, adaptation. Spain's experience has been exactly that, as in recent years we have worked hard to promote true intermodality and to connect our hubs to Europe, and South America.

How is the global economic situation affecting transport in Spain?

The fact is that the Spanish economy has just experienced a turning point, and the figures for the last months of the year give us cause to be optimistic while still remaining cautious. Spain is capable of restoring growth and finding new growth drivers in a changing environment. The government's commitment to structural reforms, together with the efforts of the country's



H.E. Jose Blanco, Minister of public works and transport

citizens as a whole, will enable us to close out 2011 with 5.4 million more air passengers, 2.3 million more train passengers, 1.5 million more tonnes of rail freight and 26 million more tonnes of sea freight compared to 2010.

Rail seems to be receiving most attention – from no high-speed lines in 1991 to the world's third-longest network (after China and Japan) is quite an achievement.

It's no secret that rail is this government's investment priority. Six of every ten euros invested by the Ministry go toward this sustainable and efficient mode of public transport. However, high speed is only one facet of Spanish rail, which is experiencing not just one, but several simultaneous revolutions.

What are your plans for conventional rail transport (suburban trains, freight...)?

We are also investing tens of billions

of euros in improving the conventional network, with hundreds of initiatives of all kinds and in all areas. They are less well known, but just as important. They include eliminating bottlenecks, removing level crossings, building new dual-use high-speed lines, extending the suburban network and separating its flows from other types of rail traffic, expanding sidings for freight trains, introducing the international gauge, creating new intermodal logistics platforms and interconnections with ports, and more.

The truth is that we are revamping the entire Spanish rail network from top to bottom. High-speed projects are only one aspect, but there are many others.

Tell us more about Spain's plans to increase efficiency by allowing a certain amount of private investment in public transport companies.

The formulas we have proposed provide for the minority participation of private capital in some public companies, but never full privatization. For air transport, we have created a corporation known as Aena Aeropuertos, which is the first step toward bringing in private capital. Separately, this initiates the process to call for tenders in coming months for the management concession for airports such as Madrid and Barcelona. This is related to our efforts to reduce air travel charges through such actions as the deregulation of the control towers at 13 airports and the labour agreement with air traffic control employees, which ensures stability.

With regard to Renfe, our intention is to divide the rail freight area into highly specialized, publicly owned divisions, in which private capital would be allowed to participate.

There has also been talk of launching formulas for public-private partnerships.

Yes, last year we activated a plan to attract the private sector with a joint financing model that will enable us to maintain and even accelerate the rate of infrastructure construction. Further details are given in the last page of this dossier. ■

Spanish transport - Key facts and factors

- €100 billion invested from 2004 to 2010
- Spain has longest network of motorways and limited-access roads
- AENA has become world's leading airport operator
- Algeciras and Valencia harbours are among Europe's top ten
- Number three high-speed rail network in the world (number 1 in Europe)
- Investment helped create model Spanish transport companies
- Prior pace of investment no longer sustainable
- Change in approach: rely more on public-private financing
- €17 billion program over period 2011 – 2012



When a train happens to pass,

 **adif** | **renfe**

Movement is life. Movement is advancement. Movement is Evolution. Which is why every time we move we should give a thought to our surroundings. Transportation represents 33% of total energy consumption.



nothing happens at all.

Using the railway instead of other means of transport reduces energy consumption and CO₂ emissions. In Spain, for example, the railway is the only means of transportation that uses significant levels of renewable energy resources. Movement is life. And if we move by train it will stay that way for a long time.



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Freight challenge looms ahead

After two decades of unparalleled investment in high-speed passenger transport, Spain turns its attention to freight.



The current international economic and geopolitical context, with a clear upward trend in crude oil prices in futures markets, has highlighted the wisdom of Spain's commitment to developing the rail system, because it is the most competitive and efficient means of transport from both an economic and an environmental standpoint.

Therefore, investment in high-speed and suburban railways and rail freight services is a priority for Spain and is a key project among measures aimed at increasing the productivity of the Spanish economy and setting it on the path to growth and progress in equality.

Investment in railways will account for over 60% of the Ministry of Public Works and Transport budget this year at €7.7 billion. Approximately 70% of this sum will be earmarked for high-speed corridors, both those used exclusively for passenger transport as well as those for both passengers and freight.

When the Madrid-Valencia high-speed line opened in late December of last year, Spain became the country

with the third-longest network of this type, ranking only behind China and Japan. Spain's objective is to ensure that 90% of the Spanish population will live within 50 kilometres of a high-speed station by 2020.

The first stage of the AVE [Spanish high speed] line in Galicia is expected to be operational this year, from Ourense to A Coruña via Santiago de Compostela. By 2012, high-speed trains will run from Barcelona to Figueres, and from Madrid to Alicante, Cádiz and León.

The true challenge facing the Spanish railway system, however, is that of restoring freight transport to its former leadership position. To this end, the Spanish government has designed a strategic plan to boost rail freight services, whose objective is to increase this type of goods transport by improving its competitiveness and quality. The ultimate goal is to reach a market share of between 8 and 10% (in millions of tonnes per kilometre) by 2020, compared to the present figure of 4.1%.

Three main strategies have been established for this purpose. The first calls for a new management model

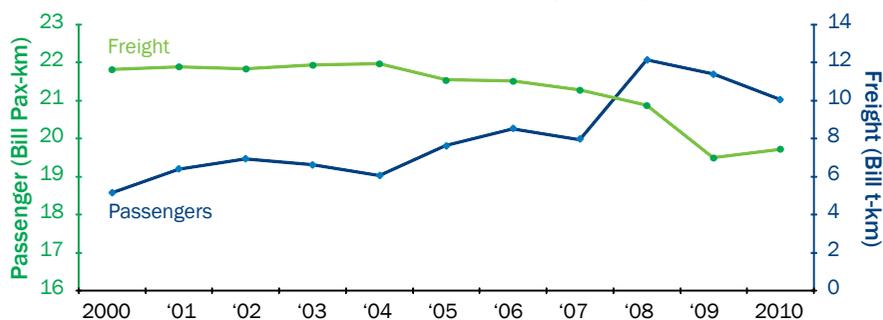
for Renfe Operadora, which will be broken down into several commercial enterprises specialising in the various markets, all of which will be open to private investment from the outset. Furthermore, train operation will be re-organized with regard to both line and hub infrastructures. Lastly, existing rail infrastructures, many of which have excess capacity because passenger traffic has mostly shifted to the high-speed network, will be improved. A basic freight network will be defined, which will encompass both line infrastructures and intermodal logistics terminals.

The amount expected to be invested under this strategic plan totals €7.5 billion, most of which will go toward improving rail infrastructures (€7.1 billion), while €300 million will be earmarked for the development of the new management model and €100 million for improving reliability and quality of service, primarily through the funding of R&D+i projects.

The country's medium-distance and suburban passenger services are used by tens of millions of travellers every year. As an additional incentive to use these trains as an alternative to cars, especially in the context of rising crude oil prices, the Spanish government decided to lower fares by 5% in February of this year. These services will also benefit from a new financing model, which ensures the provision of a quality essential public service in compliance with European legislation. Coordination with local and regional governments will also be enhanced, so that more and more urban centres will have integrated fare structures for greater passenger convenience. ■

Cargo needs a boost

Annual evolution of rail transport in Spain



Source: Ministerio de Fomento



More road links

The key focus for Spanish road investment is on intermodality, making roadways link to sea and rail transport in more efficient, potentially seamless ways.

At a time when the length of Spain's high-capacity road network (motorways and limited-access roads) is greater than that of any other European Union country, its road sector is poised to embark on a consolidation phase in which both passenger and goods transport services will be heading in the same direction: intermodality.

Together with the promotion of efficiency and sustainability, this will be the main challenge for a mature, strategic market that has been flexible enough to adapt to temporary circumstances like the ones that led to the reduction of the speed limit on motorways and limited-access roads in order to foster the rational use and reduced consumption of hydrocarbons.

Spain is working to increase the competitiveness of its road haulage and non-scheduled bus transport sectors by professionalising the companies offering these services and optimising their size.

With regard to regular passenger transport services, the country's aims are to bolster the current concession system and increase the stability of the sector by reinforcing free competition and providing sufficient government resources to deal appropriately with the renewal process for numerous concessions that will take place starting in 2012.

To this end, there is a need for a reform of the land transport regulations, and one is already underway. This will also make it possible to adapt the regulatory regime for this sector to the European Union's latest recommendations, such as Regulation (EC) 1370/2007, which lays out certain rules relating to the imposition of

public service obligations on passenger land transport.

As part of these efforts to improve the industry, the Spanish government arranged loan/lease transactions last year totalling €256 million in the context of the 2009-10 VIVE Plan for Buses [VIVE is the Spanish acronym for Innovative Vehicles, Environmentally-Friendly Vehicles], aimed at promoting the renewal and modernisation of the current stock of buses.

A total of 1,307 such transactions were processed through the state-owned lending institution Instituto de Crédito Oficial (ICO) under this plan, which was designed to encourage the replacement of buses and thus make the sector more competitive, while also increasing road safety and reducing greenhouse gas emissions.

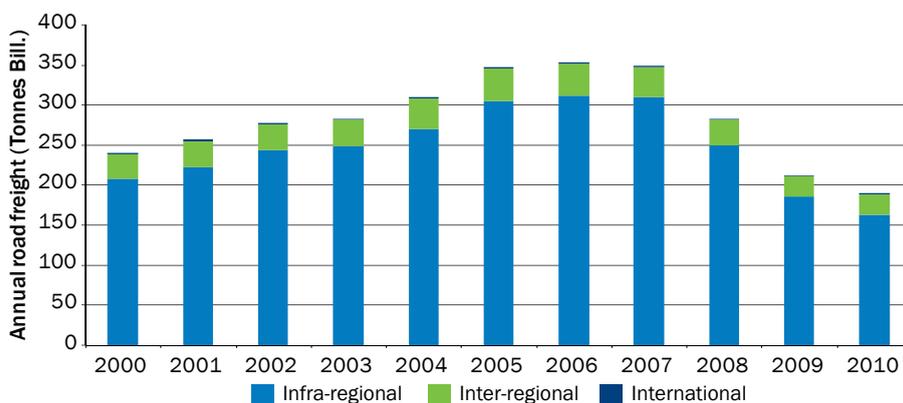
In the area of road haulage, which is clearly the dominant form of goods transport, Spain is facing the challenge of spreading deliveries evenly to make the system more efficient. In this new design, intermodal connections with other means of transport are key.

The ambitious projects to build logistics platforms able to generate added value in transport, with special attention to road and rail accesses and to the internal design of the platforms to reduce handling and extra operational costs, must be viewed in this context.

The projects underway to establish "motorways of the sea", such as the one linking the ports of Gijón in Spain and Nantes-Saint Nazaire in France since September 2010, pursue this same objective. Lorries and their loads can now be transferred from the roads to this sea lane, thus freeing up the roads that cross the Pyrenees Mountains and reducing the environmental impact of goods transport, in particular CO2 emissions.

This route will help even out the burden on the different modes of goods transport, relieve road congestion and decrease total energy consumption and greenhouse gas emissions while affording the road transport sector new business opportunities. ■

Roadway freight on the downhill
Annual evolution of freight transported by road in Spain



Source: Ministerio de Fomento

Active Spanish waters

Sea transport continues its relentless growth, boosted by cruising tourists and the increased attractiveness of Spanish freight harbours - and this despite lagging economic growth in 2009.



With over 7,800 kilometres of coastline, Spain is a strategic hub for sea transport on a continental scale through its main ports. Its location also provides a role of great responsibility in maritime traffic safety and the fight against pollution.

Since 2005, the Ministry of Public Works and Transport has undertaken an ambitious program to improve, update and reinforce the resources aimed at combating pollution and ensuring maritime safety. From 2009 until 2018 a budget of nearly €1.7 billion euros has been allocated.

Thanks to these initiatives, the organization responsible for SAR activities in Spain, Salvamento Marítimo, participated in 5,264 operations in 2010 in which 12,336 people were aided, including rescues, searches and assistance. The Ministry of Public Works and Transport has also developed a system to facilitate critical decision-making regarding vessels in distress in coastal areas.

The key role of the maritime rescue services and the fight against marine pollution are a logical result of Spain's geographic position, which makes it a thoroughfare for a large part of the world's sea traffic. However, Spanish ports also contribute greatly to this traffic.

Their importance is evident in light of the latest published freight and passenger traffic statistics, which highlight the sound performance of the state-owned port system and confirm the gradual recovery of the Spanish economy in 2010.

The success of the decentralization process initiated by the Spanish government has had a lot to do

with this recovery, as it gives ports greater autonomy and improves their management. The new Harbors Act, which was passed with support from the entire political spectrum, will enable them to be even more efficient.

The total traffic handled in 2010 by the 46 ports of general interest managed by the Spanish government was the fifth-highest since record-keeping began in 1992. The over 430 million tons of freight represented an increase of 4.4% over 2009, after traffic had dropped nearly 13% in the latter year.

Furthermore, these figures represent a gross increase of 27.5% in the decade from 2000-2010, rising from 338.1 million tons in 2000 to the current 431 tons. Apart from 2008-2009, yearly increases in this period were greater than 4%, well above Spain's GDP.

With regard to cruise ships, vessels carrying around 7.1 million passengers called at Spanish ports in 2010. This figure is a record for the sector and underscores the rise of Spain's ports in the global context.

Barcelona, the Canary and Balearic Islands, Malaga, Valencia and Vigo are touchstones for the principal cruise companies, that account for nearly

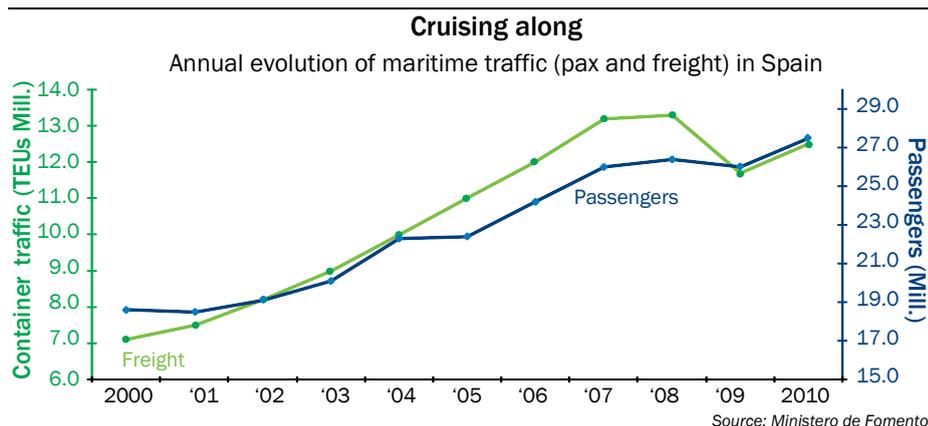
12.5% of the 52.6 million international tourists who visited in 2010.

In just a decade, cruise passenger traffic through Spanish ports has tripled, increasing from a little over 2 million travellers in 2000 to over 7.1 million in 2010. This growth has intensified in the last two years, showing a rise of 17.7% in the last fiscal year.

However, Spain's efforts to boost sea transport have not been limited to the coastline. Inland, the government is implementing an ambitious plan to bolster rail freight services in order to consolidate this recovery.

This plan defines the actions necessary to improve infrastructures for rail access to the ports connected to the future basic freight network, as well as those necessary in the rail system itself, in order to promote intermodality in freight transport involving maritime shipping.

Under this program, the ports will be efficiently connected to the basic freight network, and the inland rail system will be adapted for port access through an investment of over €1.8 billion. This will multiply Spain's transport capabilities, opening new intermodal channels toward the rest of Europe. ■



Giving itself airs

Spanish air transport relies on growth from two main sources: tourists and Latin American travelers. Measures to increase efficiency are also helping growth, by reducing costs and increasing service levels.



Spain's airspace is unique to the global transport system. Its geo-strategic location makes it an exceptional platform for Trans-Atlantic connections, especially those involving Latin America. Also, its outstanding network of airports makes it an interconnection hub, a position strengthened by Spain's large tourism market: seven of every ten tourists entering the country arrive by air.

This position enables Spain to compete globally. This explains why Spanish air traffic consolidated its recovery in 2010 by rising 2.7% to reach 192 million passengers. This success results from some visionary investments which increased the capacity of the main airport terminals, thus ensuring their viability and profitability for decades to come. Spain's major airports can cope with further increases in demand, giving them a competitive advantage over airports suffering from congestion and bottlenecks.

This also results from a clear policy to deeply reform the aviation system. This policy includes a coherent set of actions aimed at improving safety while achieving greater deregulation, modernization, economic efficiency and cost reductions in air navigation

and airport management.

Spain was the only country of the EU's five major air navigation service providers to lower its en-route charges in 2010 – fully by 7.8%. Furthermore, according to data published by Euro-control, it no longer has the highest en-route charges in Europe.

The measures implemented will enable a continued downward trend in the next fiscal year. The country's en-route charges will then be in the middle range among these five service providers by 2013. Therefore, Spain will be in line with the objectives of the Single European Sky for 2014. The application of these decreased en-route charges will mean lower costs for airlines, enabling them to save €125 million in these two fiscal years.

The now-lower costs in the Spanish airport system mean more opportunities for aircraft operators, and ultimately improved services and greater mobility for passengers, the primary objective. However, the changes do not stop here.

To continue advancing in this direction, the government has undertaken extensive structural reforms in the system, which have already begun to be implemented.

Spain will split airport management functions off from air navigation responsibilities, both handled by AENA until now. This change should improve efficiency of the airport system. The new state-owned airport company will be structured in such a way as to allow the participation of private capital, up to a maximum capital share of 49%.

Each airport will be independently managed, based on the criteria of efficiency, profitability and social benefit. This will take place in three ways: directly by Aena Aeropuertos (the same system previously used); through specialized subsidiaries with local partners; or through a management concession to an experienced airport operator. The latter formula will be used for the Madrid and Barcelona airports starting this year.

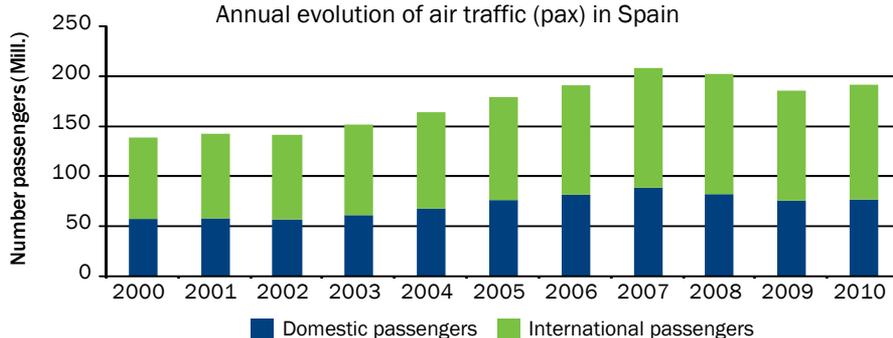
Furthermore, control tower services may now be performed by any certified service provider. In this regard, the deregulation of the management of thirteen control towers is now underway. At the same time, social stability in the relations between the air traffic control public service provider and the controllers has been ensured.

Spain has actively participated in recent months in the implementation of the Single European Sky. Furthermore, when it held the rotating presidency of the EU, it facilitated the signing of the second stage of the 'open skies' agreement with the United States and expedited the coordinated response to the crisis triggered on the continent after the volcanic eruption in Iceland.

In short, Spain is developing an air transport model on new foundations that will play a decisive role in the country's economic recovery and that will foster sustainability at every level. ■

Slight turbulence

Annual evolution of air traffic (pax) in Spain



Source: Ministerio de Fomento

Mixed investment sources

For its €17 billion transport infrastructure program, Spain is counting on mixed financing sources.



Just like every developed market economy, the financial crisis of 2008-2009 did not spare Spain. Facing unprecedented economic conditions, an ambitious programme of structural reforms – designed to significantly improve productivity – should lead to a model that is more sustainable from an economic, social and environmental standpoint. To this end, the development and modernization of infrastructures play a decisive role and should have a positive influence.

In this context, Spain has been investing heavily in transport infrastructures since the late 1980s. In recent years, transport investment has represented around 1.5% of annual GDP. As a result, Spain now boasts the longest network of motorways and limited-access roads in Europe, many of which are operated through public-private partnership models. In the area of high-speed rail, the Spanish system is a worldwide benchmark, as demonstrated by the 2,665 km of lines in operation.

These infrastructures have been, are and will be an important factor for the competitiveness of Spain's economy, and the Spanish government recently reaffirmed its commitment to continue investing in them as one of the keys to improving this competitiveness and to counteract the effects of the current situation. However, for this improvement to be effective and beneficial in net terms, the executive power of the Spanish government has taken a number of steps to reduce the cost of public works by over 20% and to reallocate investment priorities.

Perhaps the most noteworthy measure of all of those implemented is the launch of a major public-private partnership plan. Its aim is to ensure the upkeep and maintenance of existing infrastructures by facilitating balanced government accounts, and to enable Spain to continue concentrating on rail as the linchpin of the transport system, also contributing to the kick-start the economy and boost employment.

This plan will entail investments of €17 billion, the vast majority of which will come from the private sector. This will make it possible to channel more resources toward productive long-term investment in priority infrastructures and achieve greater efficiencies in construction, management and operation.

The plan is a joint effort of the government, financial institutions and businesses in the sector to revive the economy and employment, with the participation of the state-owned lending institution Instituto de Crédito Oficial, the European Investment Bank and the Spanish banking system. With emphasis on environmentally sustainable transport system, the plan advocates strengthening Spain's commitment to rail transport. Fully 70 percent of the investments will be earmarked for rail.

Regarding its mechanics, the plan includes a one-time fee that pays for the investment, the upkeep and maintenance of the infrastructures it finances, as well as payment to the concessionaire for its own and third-party resources used in the construction of the infrastructure; the concessionaire will be responsible for financing at least 20% of each project.

Thus, it is an innovative solution for the creation of a stable framework for investment, with clearly defined, transparent rules for investors and financial backers that will find acceptance in the market. This system may interest companies of different sizes, and will stimulate competition, modernize the concession model in Spain, benefit the transport system by introducing private management, subject to public control, and open up new investment opportunities with solid foundations and a bright outlook for the future. ■



Isaías Táboas,
State Secretary
for Transport

The transport sector in Spain is currently in the midst of a second round of profound changes. Following our great effort to provide first-class infrastructure, the time has come to adopt initiatives and regulations necessary to develop their full potential for society.

Firstly, Spain is determined to increase deregulation in the transport sector, improving competitiveness by eliminating administrative hurdles. Despite the current context of austerity, we need to ensure that transport services meet the needs of businesses and citizens as much as possible.

In the area of air transport, the reforms involve a structural reorganization of the Spanish aviation system. Deregulation and modernization of air navigation and airport management will improve safety, competitiveness and economic efficiency, and allow

participation of the autonomous communities.

In road transport, Spain hopes to increase the competitiveness of its road haulage and non-scheduled bus transport sectors by professionalising the companies offering these services.

In the rail sector, we are working to ensure that Renfe is able to adapt to the changing regulatory and competitive scene. Efforts are also being made to boost rail freight service by improving its management, quality of service and efficiency.

Lastly, in the area of maritime transport, one of our primary aims is to achieve a cleaner, safer sea. This is being accomplished through stepped-up measures to prevent pollution and unsafe conditions, as well as appropriate planning and a solid response system to deal with accidents on the coasts.

In short, Spain's aim is to optimise the contribution of transport to the general economy and to facilitate economic recovery by improving competitiveness and productivity.

Transport statistics

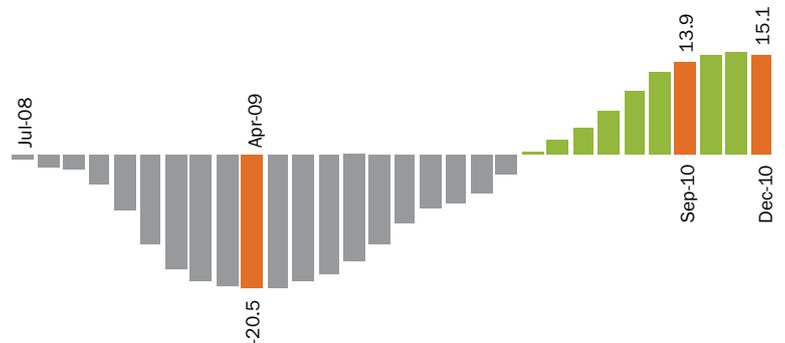
from the International Transport Forum

Air cargo cruising along

Air cargo has fully recovered from the crisis and total external trade is well above pre-crisis levels measured in tonnes goods moved. However, both the EU27 and the United States' external trade by air shows slower growth or declines in the last quarter 2010 compared with growth in the previous quarter.

International Transport Forum Statistics Briefs on Global Trade and Transport available at:

www.internationaltransportforum.org/statistics/shortterm



EU 27 External trade, percentage change
(Tonnes, monthly trend, seasonally adjusted)

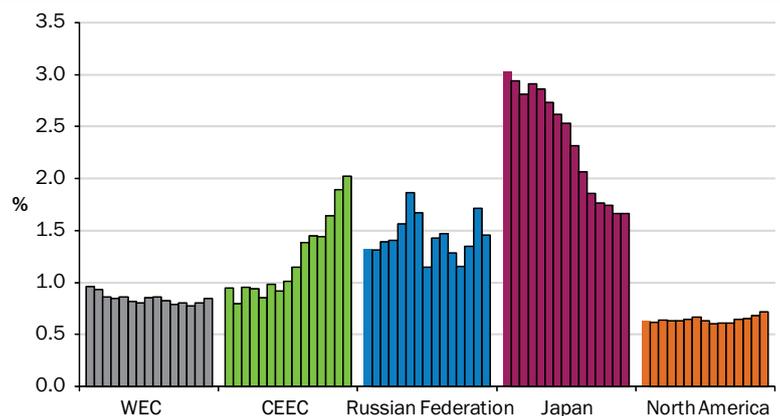
Source: International Transport Forum

Central Europe builds transport

Investment as a percentage of Gross Domestic Product (GDP) in Western European countries (WEC) and North America has remained at around 0.6%-0.8% since 1995. In Central and Eastern European countries (CEEC) the investment share of GDP has grown sharply since 2003.

More on International Transport Forum statistics on transport infrastructure investment and maintenance available at:

www.internationaltransportforum.org/statistics/shortterm



Investment in inland transport infrastructure
(1995-2009, as % GDP, at current prices)

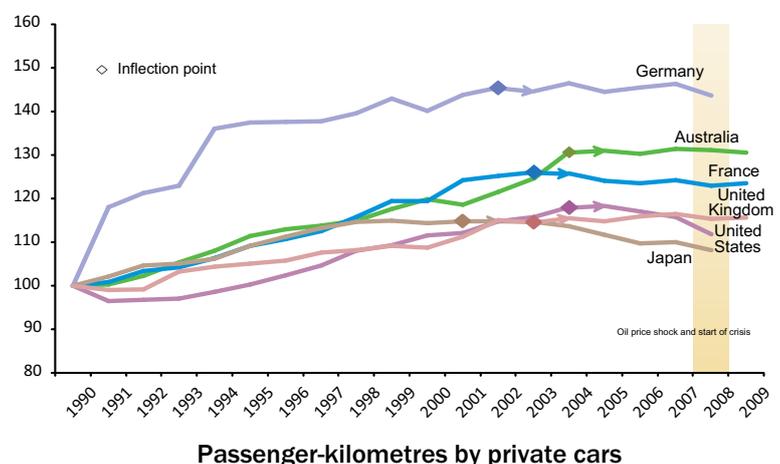
Source: International Transport Forum

Is the car losing appeal?

Some studies have suggested a saturation of passenger travel by car in some developed countries. Recent data on passenger-kilometers by private car suggest that some levelling off of car travel has taken place. As shown in the figure, growth rates decline over time and reduce to zero or even negative values in some cases and years in selected developed economies.

International Transport Forum annual data on transport trends available at:

www.internationaltransportforum.org/statistics/investment



Passenger-kilometres by private cars

Source: International Transport Forum

Public-private pragmatism

In tougher financial times, investment in transport via Public-Private Partnerships is changing. Risk sharing is shifting, and both sides at the negotiating table have had to rethink their expectations.

The financial crisis that started in October 2008 with the fall of Lehman Brothers did not spare the financing of transport projects. The exact quantitative impact of the financial crisis is difficult to track, since no single database follows PPP investing in transport projects. Yet consensus among industry experts is that the crisis had a twin impact. On the one hand the volume of deals dropped – with the figure varying from 20% to 50% depending on the expert asked.

On the other hand, the structure of project financing also changed. The most significant changes here include the review of risk-sharing, the change in profile of “bankable” projects, and a flight to quality projects.

According to the Asian Development Bank, in emerging markets the financial crisis has definitely had an impact on the use of sovereign guarantees. “We have seen government guarantee becoming important for the bankability of projects. This coverage reassures the private partners,” explains Jamie Leather of the ADB.

Since many transport PPPs are structured on underlying usage assumptions, and since the financial crisis sometimes had a severe impact of travel demand, many of the PPP deals came under financial duress. Korea was very quick to renegotiate its existing PPP agreements so that its private partners would not be hit by lower-than-expected consumer usage.

There has also been a flight to quality projects, which means that the pipeline of PPPs has a reduced flow when compared to the early 2000s. In India, according to the ADB, many developers of road projects now favour bidding for annuity projects which do not carry traffic risk, over toll projects with traffic risk. This reassuring

financial scheme has meant no lack of projects in the country.

Might the crisis be a blessing in disguise? The financial crisis seems also to have exacerbated the government’s focus on social infrastructure such as hospitals, schools or prisons. Transport infrastructure is seen as an area where partnerships with the private sector have distinct benefits, namely since private partners can contribute know-how and technical knowledge.

Although the situation has been worrying for many banks that still have to deal with long-term projects signed before the crisis, there is still plenty of room for further growth. The ADB has started seeing contractors submitting unsolicited bids for projects that they see as worthwhile. The days of the government master plan may not be over altogether, but some emerging

“This is not the first backlash against PPPs”

markets – India to name but one – have started developing pipelines of projects for public-private consideration.

Why such interest in capital-intensive, long-term investments? According to Kurt van Dender, chief economist at the OECD’s International Transport Forum, transport projects often provide very stable cash flows that attract conservative investors such as pension funds, who also see the positive ethical side of transport in aiding economic development.

Another impact of the financial crisis has been to make project financing more complex. According to the World Bank, there is



an increasing number of club deals, especially for larger projects. These club deals gather more people around the table, since the concessionaire has become a group of parties, typically including infrastructure operators, several financing entities, and often a government agency specialising in PPP deals.

The progressive development of these government-backed competence centres is notable. They provide the various government ministries (e.g. transport, health, education) with ongoing advice on how to lay the proper groundwork for the efficient conception and development of PPPs.

For example, in Germany, the VIFG was set up in 2003 in order to provide that support, as explains Torsten Boeger, CEO of the organization: “The three-tier German political system – Federal, State and Local – meant that we needed to synchronize decision-making across all three levels, for various transport modes: road, rail and waterways. Because our road projects are linked to the truck toll that was introduced in 2005, we have had a series of successful PPPs, namely for tunnels and existing roadway expansion. VIFG played a key role, namely in helping define the project terms of reference, demand forecasting, and financial parameters.”

But perhaps the most significant change in one of attitudes. “Smart governments have come to realize that to rely on a PPP for purely financial reasons is a bad reason,” says professor Gomez-Ibanez of Harvard’s JFK School of Government. As a method to raise funds, PPPs often run into the trap



Construction project in India.

of so-called asset monetisation, whereby a government offloads onto a private partner the operation and maintenance of a transport asset simply in order to raise cash for immediate use or balance sheet embellishment.

To illustrate this financial pitfall, professor Gomez-Ibanez points to the recent 99-year lease of the Chicago Skyway express road

to a private consortium for \$1.8 billion. Although the deal certainly carries benefits such as good roadway maintenance expertise, it also raises the fundamental issue of passing on the financial buck to the next generation.

Key success factors

For a PPP to be successful, it has to be a win-win proposition for both the

government and its private counterpart. “Co-benefits are critical,” explains International Transport Forum’s Kurt van Dender. For a PPP deal to make sense, it has to provide value for the private partners. Governments need to watch for policy myopia or tunnel vision, and have to engage the private side in order to create a bankable project.

Another success factor for PPPs is that governments find private partners that do more than just bring bagloads of money to the table. In particular the private partner needs to contribute more than money, since public sector borrowing is cheaper than its private counterpart. Among the things that the private sector can contribute are better control costs, real efficiency gains, better operational knowledge, and greater flexibility in operational aspects.

For Torsten Boeger of VIFG, a sound PPP outlook for a government is to move from a public-oriented perspective to a more economic-oriented view. “Governments need to analyse how to get better value for their money. They also have to bridge the gap between long project lists and tight financial needs. It is a delicate balancing act.”

Another pitfall for governments to avoid is an ad hoc approach. Governments need a strong political will to make PPPs happen. In particular they need to identify strong internal champions to make them happen. This commitment will help avoid shifting priorities and ensure continuity. This public sector commitment is also important to help coordinate the disparate public sector agents involved: Ministries of Transport or Equipment, financial experts from the Ministry of Economics, legal experts from other agencies, and so forth. PPPs can quickly lose steam if the different team members are all of a sudden pulled away to their previous responsibilities.

“Remember that this is not the first time that there is a backlash against PPPs,” alerts Professor Jose Gomez-Ibanez. “In the late 1990s, there was a significant public uprising against PPPs in the water utility area, namely in Argentina. The silver lining is that crises do not last forever.”

“No PPP is unblemished,” warns professor Jose Gomez-Ibanez. “All have pluses and minuses. But as long as governments do not approach a PPP simply as a way of raising funds, then they can be successful.” CF ■

Spanish structuring

With twenty-eight projects ongoing worldwide, and many of them in transport, Spanish construction and project management giant Acciona is no stranger to public-private partnerships. “Highways, railroads and ports are our main focus,” explains Gerardo Mochales, Marketing Director, “with activities in Spain, South America, Canada and Australia.”

Acciona has seen changes in financing since the 2008 crisis hit. Whereas it was not uncommon previously to have projects 100% funded by private sources, governments are now expected to pay at least 30% of capital-intensive projects. “Without government funding, transport projects are not bankable,” explains Borja Gari, Acciona’s director of international business development. “In fact the gearing (i.e. mix of public-to-private funds in project financing) has shifted to emphasize public funds. A government will typically be expected to fund at minimum 30% of construction costs upfront or as-incurred.”

For its tramway project in Zaragoza, Acciona’s director Juan Samos explains that financing required six different sources: “First, upfront subsidies from the municipal authorities; second, equity via a mixed-ownership company (SPV); third, passenger tickets; fourth, subsidies in case of below-than-expected average ticket revenue; fifth, know-how fee paid to the SPV for its expertise; and last, commercial incomes from such things as advertising in stations and tram sidings.”

For this complex project to have seen the light, Juan Samos emphasises the importance of good government advisors, of properly conceived terms of reference, and of not taking demand risk into account. Borja Gari adds the importance of good procurement procedures. “Having those various components makes a project bankable from its outset,” the two directors conclude.

The proof is in the pudding: Acciona managed to line up the \$1.8 billion financing for a highway project in the middle of the financial storm and its credit crunch. CF ■

“You cannot sell a second-hand road”

Andrew Briggs of British law firm Hogan Lovells

explains legal aspects of ever more complex transport project funding.

Motion: What changes have you seen in public-private financing recently?

Andrew Briggs: Public-private partnerships (P3) is quite a broad church that includes many different types of projects. Those projects that have direct payment components, such as UK roads or social infrastructure schemes, have not suffered as much: indeed the long-term commitments to asset maintenance that are an integral feature of a P3 scheme have protected these assets from cost-cutting to a greater extent than other parts of public service assets.

And who was hit hardest?

Projects that have a direct link to GDP (exposed to risk of revenue or demand for services, such as ports and transportation) have come under greater stress as usage has declined. There were many of these projects that closed in the favourable financing climate of 2006 and 2007. In purely financial terms the ratios of net-debt-to-EBITDA* that these schemes can deliver have changed. Many of these projects were financed on the basis of forecasts premised on 3%+ annual usage growth – which has not materialised. After two or three years of demand declines, there is resulting in a need to refinance, and often under “stress financing” terms, which can be significantly different from the initial lending terms.

of certain projects, since there is no market to sell a second-hand road! For example, in the case of the M25 motorway financing in the UK and of road financings in the CEE region, this has resulted in a partial underpinning of senior debt upon termination.

Tell us more about how to carry out successful negotiations.

Hogan Lovells has represented all sides in different financing deals, and it is important to understand the needs of all parties in order to build a solid deal. You are dealing with a three-legged stool (see chart). It helps to see all perspectives to make things happen. We are currently representing the governments of Estonia and Latvia on road projects. Part of our role is to dispel common misconceptions. A P3 is not free money for the government, neither is it selling off family jewels to private partners, nor is it mortgaging off assets that the next generation will have to pay for.

How would you define a Public-Private Partnership?

For us, a P3 transport project is a procurement tool that allows the government to manage the risk of delivering and maintaining a social infrastructure asset of its useful life and spread the cost to taxpayers over the lifetime of the project.

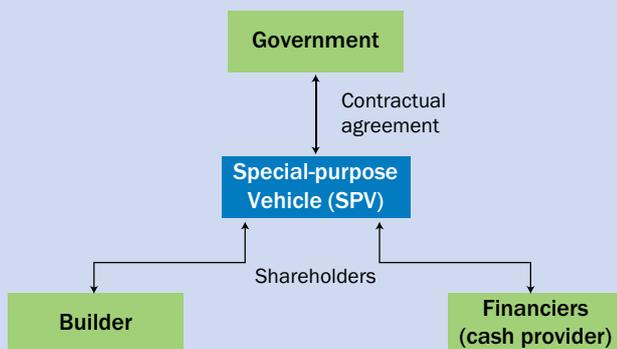
Another acronym that often appears in the context of transport project financing is SPV, for Special Purpose Vehicles. What exactly is that?

There is often confusion over the use of SPV's but they are nothing more than a vehicle to allow the risk associated with building and operating a social infrastructure asset to be contained and managed in a transparent way. For investors, an SPV insulates the cost and risk of delivering, say, a new road from its other business activities. For financiers, it provides a remote way of lending to a project that cannot be affected by corporate exposure elsewhere. Lastly, for the public sector, it delivers a clear mechanism to ensure service continuity and control over essential assets.

How do you approach public vs. private financing shares?

There needs to be an equilibrium between lower-cost public funds and higher-cost private funds. Whole life costing is a critical component of the analysis: because the lower annual cost that is delivered by appropriate whole life responsibility will typically outweigh any small increases in finance cost. Governments often focus too much – sometimes even solely – on the up-front capital cost, and neglect the annual maintenance costs. By looking at the twenty-year picture, governments can reap long-term efficiencies. **CF** ■

Three legged stool: The usual parties in a PPP

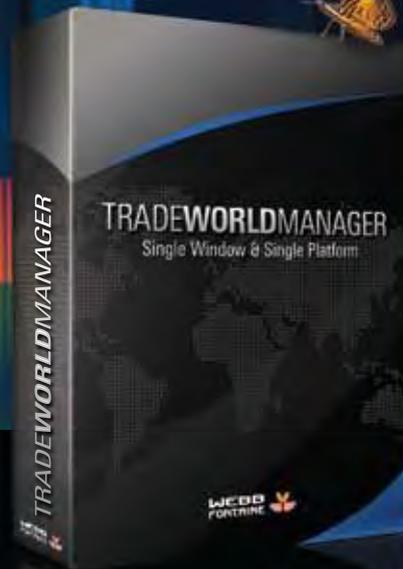


Source: Hogan Lovells

What else has changed in the PPP market since the crisis?

One other change has been in the termination clauses, namely those that manage the risk that banks or financiers are exposed to if a project fails completely. The market has become more conservative as the level of loss it is prepared to contemplate, and Governments across Europe have recognised this and moved to provide a greater degree of protection for financial investors. This has been effective in preserving bankability

* EBITDA: Earnings before interest, tax, depreciation and amortisation (a measure of free cash flow).



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Electrifying idea

Cutting carbon emissions to combat climate change has given a boost to e-mobility. But creating the conditions where it can thrive could be costly. Should we kick-start the electric future?

It's almost as if someone has turned off the sound in a movie: Noiselessly, cars and delivery vans are gliding along busy streets or climbing overpasses against a backdrop of urban high-rise architecture, accelerating at traffic lights or smoothly coming to a halt to give right of way. Motorcycles and scooters whiz by, overtaking slower vehicles and slaloming through the busy traffic. It's the archetypal city scene – but without the constant buzz of motor engines that became its hallmark in the 20th Century. Here, only a slight whizzing sound alerts the crowds in the sidewalks to vehicles shooting by.

This is what the most talked-about scenario for the future of mobility would look – and sound – like: Electric vehicles taking over our streets – noiseless, emissions-free, non-polluting and a few other things, too. It is truly an electrifying idea. Not exactly a new one perhaps; the technology has been with us for over a century. Around 1900 the vast majority of New York City's taxis were electric vehicles, and the world

speed record of that time was held by an electric vehicle, built by Frenchman Camille Jenatzy, who baptised his cigar-shaped e-machine “La Jamais Contente” – never satisfied.

But cheap petroleum and the perennial battery problem finally won the day for Carl Benz, Rudolph Diesel and the internal combustion engine early in the 1900s. Now, however, after decades in niche markets for golf carts or indoor forklifts, the electric vehicle seems poised to take over our streets in what could be the comeback of the Century. Its resurgence is driven by the pervasive need to tackle transport's dependency on oil – and simultaneously by the prospect of imminent technological advances that will help to solve the drawbacks of e-mobility through lighter materials and, most of all, better batteries.

A neck-and-neck race

The anything but trivial decision that policy makers face is, literally, where to



put their money at this critical juncture. Transport can no longer count on a seemingly endless supply of inexpensive oil, that much is clear. Yet the posse of electric – and other – technologies that position themselves as alternatives, eager to snap up their slice of oil's near 100% market share, is hardly out of the starting boxes. How to pick the winning horse in a neck-and-neck race without clear frontrunner is not an enviable task if the future of your economy may well depend on it.

Will electric mobility come out on top this time? Or could it be fuel cells, bio fuels, hybrid technologies? Will another, single dominant source of energy replace oil, or will fuelling transport become a truly diversified business? Who will set the industry standards that define the new market – and who will be in the VHS,

“Support public transport”

Henri Li of Chinese car maker BYD on the future of future of electric vehicles



Motion: What are BYD's plans for the non-Chinese markets?

Henri Li: We just announced at the Geneva car show that we will introduce our electric car in the European market at the end of 2012. We will launch in selected countries with the most favourable policy and financing conditions. Those are our target markets.

In your view, what is the greatest barrier to getting consumers to purchase an electric vehicle?

Range anxiety is the most negative factor involved in the purchase decision. For private users, the plug-in hybrid, which we see as an electric vehicle, may be the best option today. Pure electric vehicles today are for users that only need to drive 50 km per day. If they drive longer distances, the hybrid is a better option.

Who will buy these cars?

For the private purchaser, the first adopters will be environmentally conscious consumers, as well as those who do not really drive long distances. The electric car could, for example, be purchased as a family's second car. Today, the electric cars that go longer distances are more expensive.



Recharging an electric vehicle.

who in the Betamax camp, to draw an analogy with the famous battle for video cassette standards that played out in the 1970s and in which it is now widely agreed that the superior technology lost out to sheer marketing prowess? A look at current government initiatives around the globe points to a gravitational pull towards e-mobility as the perceived best bet. China has set up an ambitious programme to create an electric vehicle industry; the United States, Britain, France and Germany have stepped up their efforts in boosting e-mobility, too.

A certain dynamic appears to be developing in which the case for government e-mobility programmes is argued on two counts: First, there is the infant industry argument: Electric mobility is a paradigm change waiting to happen. It is sure to fly,

and those who get off the ground first will be able to reap the benefits that pertain to the early bird. Second, the save-the-planet argument: Combating climate change requires immediate action. Four decades after the first oil shock, transport is still 97% dependent on fossil fuels, and everything that helps to decarbonise it is worth supporting in order to achieve a paradigm shift.

“Electric mobility is a paradigm change to happen”

Costly incentives

The main obstacle for the marketability of battery-powered electric cars is their price. Even without their batteries, electric cars are considerably more expensive than their conventional equivalents. In a number of models of European car makers, marketed both in electric and standard versions, the total lifetime usage cost for the e-cars was roughly €5000 higher for all examined models, according to a study by Philippe Crist of the International Transport Forum - and this already includes a €5000 subsidy at purchase. To create real incentives here will be very costly. To be sure, the gap will narrow as more e-vehicles are produced and economies of scale can be realised in the production process - the traditional argument for artificially pushing sales volumes.

More critical than the vehicle itself is the battery question. Batteries providing a “useable” range of around 150 km remain very expensive for the time being. Scientific progress to improve battery technology has been unexpectedly slow. And even if battery prices come down with rising demand and advances that may yet come, the good old internal combustion engine is hard to beat in terms of providing superior range at lower cost.

And traditional motor cars will get a whole lot better as technology advances here, too. This trend was highlighted in a recent progress report by the Global Fuel Economy Initiative (GFEI), a partnership consisting of the United Nations Environment Program (UNEP), the International Energy Agency (IEA), the International Transport Forum and the FIA Foundation promoting a reduction in global fuel consumption of at least 50% for the world’s light duty vehicle fleet by 2050. According to the GFEI report, the 2005 average

Some of our cars can go up to 300 km, but the end price, which varies depending on tax rates, could in some countries be 50% to 100% higher than diesel cars. That is why government subsidies are so important. In Denmark for example, traditional fuel cars are heavily taxed, but not electric vehicles.

How can policy makers and governments facilitate the introduction of electric vehicles?

The first step should be lending support to the public transport system. Mileage is much higher for public transport vehicles than it is for private cars. A diesel bus emits 40% more CO₂ than a private car. The situation is similar with taxis. The mileage and fuel consumption of taxis are ten times those of a private car. So if we change public transport vehicles first, there will be a greater impact on fuel efficiency in a shorter time frame. The other

advantage of starting with public transport vehicles is that it sets an example and becomes an incentive for private buyers.

Do you see that happening?

Take China as an example. There is a project plan underway in 25 cities for new energy vehicles, including plug-in and hybrid vehicles, subsidised by the government. And there are already six cities in China where electric vehicles are available to private buyers for plug-in and hybrid. Use has grown more quickly in the public sector, but electric vehicles are gaining momentum in the private sector as well. Outside of China, BYD is working on several pilot projects for buses, in countries including Israel and Denmark. We are currently negotiating with several cities and I expect we will soon come to agreements on those projects. MJ ■

global new vehicle fuel economy level of about 8 L/100km can probably be reduced to close to 4 L/100km even by 2030 in most countries – if they set their vehicle regulations accordingly.

“Displaced emissions”

So will people buy electric cars because they want to “go green”, accepting higher costs and less performance for the greater good of fighting climate change? Even those thus inclined may have to rethink. Contrary to a widely held view in the public, electric cars are not so much “zero emission” vehicles, but, in a phrase coined by Crist, “displaced emission” vehicles: In most cases, driving an electric car will still mean CO₂ and other pollutants are being pumped into the atmosphere- only by the power station that produces electricity, rather than by the electric car itself.

E-cars charged on typical electric power do emit a little less CO₂ than conventional cars, but until the generating mix shifts markedly to nuclear power or renewable energy they won’t make a radical difference. Betting on this shift anytime soon may prove an expensive gamble. Many world regions where coal-based electricity generation is the norm are considering or actively pursuing the deployment of battery-powered electric vehicles, but here subsidising or otherwise promoting electric vehicles should be considered with particular care: In some use scenarios that Crist and his colleagues at the International Transport Forum looked at, electric cars in fact produce more emissions than conventional vehicles. Subsidising



Shanghai bus at a recharging station.

e-mobility in fact becomes outright counterproductive under such circumstances - money spent on increasing CO₂ emissions is hardly what taxpayers or governments want.

On the other hand, some car use patterns suit electric vehicles, which may be cheaper to run than a competing diesel even without financial incentives. Once costs become clear, some buyers ought to flock to showrooms without any further prodding: “Under certain baseline assumptions, a battery-powered van will cost a buyer almost €4000 less than an equivalent van with an internal combustion engine over its life-time”, says Crist.

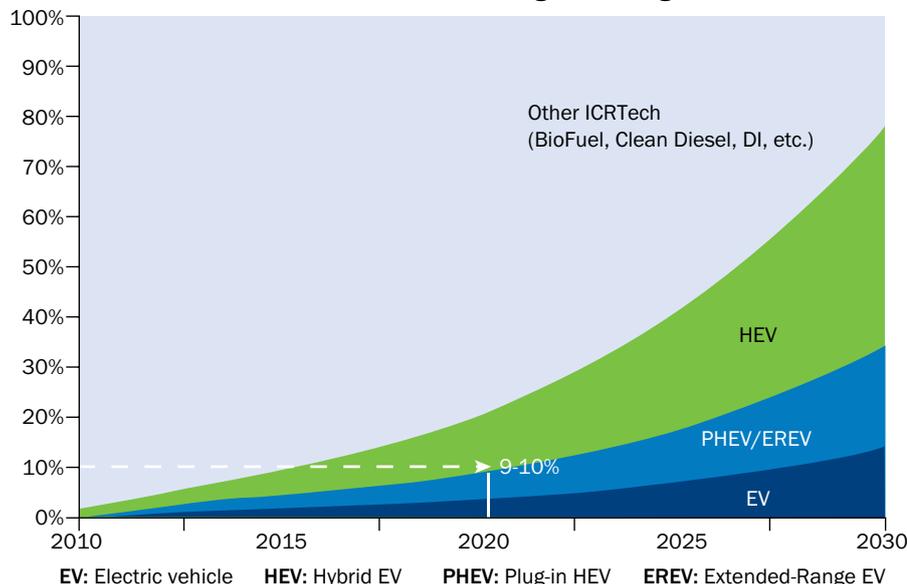
“The savings from using electricity instead of fuel outweigh battery and vehicle costs at high mileages.”

A real market

For a battery-powered sedan with a taxi use profile for instance, travelling 150 kilometres a day on average for 365 days per year, the savings over vehicle lifetime to the consumer and society amount to €15,000 and €713 respectively. This calculation does not include the cost of rapid battery swapping stations probably needed for this kind of use. But for intensively used vehicles, both consumers and society can already save money if they chose a battery-powered electric car over one driven by an internal combustion engine. So in certain regions, from society’s perspective, there is a good case to be made for using battery-powered vehicles. The eye opener is that, at least in this instance, savings are made even without any subsidy

The conclusion is as simple as it is striking: In certain segments, a real market for battery-powered vehicles probably already exists - for delivery vans, for example. Procurement schemes that favour the creation of electric fleets for urban use may therefore prove to be a powerful tool to promote e-mobility - and make urban areas more liveable by reducing noise and pollution. Soon, electric taxis may once again zip through cities, as they did 110 years ago. And this time postal cars, city buses, garbage trucks and grocery vans could join them. MJ ■

Forecast mix of vehicle technologies through 2030



Source: Provided by World Bank/Beijing Transport Agency

“We cannot afford a race between countries”

Peter Ramsauer, Germany’s Federal Minister for Transport, Construction and Urban Development, explains why promoting e-mobility needs international co-ordination

One hundred and twenty-five years after the invention of the automobile in Germany, we are at an important crossroads. Traffic growth, climate change and the finite supply of energy resources present us with new challenges, especially for our automotive industry. To continue providing affordable mobility in the future, traffic flows must be organised efficiently and sustainably.

Part of the requirement is a shift away from fossil fuels in the medium to long-term. I have great hopes for technological developments in vehicles, especially in new engines. In the short-term, this applies particularly to the internal combustion engine. According to the automotive industry, further increases in efficiency of 25 percent are achievable by 2020.

Yet in the long term I also see great opportunities for electric vehicles operating with batteries or fuel cells. In Germany we have set ourselves the objective of putting one million electric vehicles on our roads by 2020. To reach that benchmark, we encourage research, development and testing of these technologies. Quite deliberately, we remain open to different technological paths. In urban areas and for short distance, I see big potential for battery electric vehicles. For longer distances or utility vehicles, electric vehicles with fuel cells offer an interesting option.

Creating the right framework

Another priority for us has been to demonstrate the marketability and practical usefulness of the e-options. After all, the acceptance among users will decide about the success of electric mobility. We need vehicles that inspire consumers with their appeal, comfort and ingenuity.

However, we must not only develop new vehicles, but also the conceptual frameworks – be it in public transport, in commercial vehicle-sharing systems or interconnected mobility, for instance between rail and car. Policy makers can ensure that the framework is attractive - for example through special parking facilities or dedicated traffic lanes. In Germany, we have created eight pilot regions for electric mobility, where we are already working on all these issues. It is here that we are testing electric mobility in everyday conditions. Thanks to these pilot projects, we are building the necessary acceptance for this new technology.

By the way, the city of Leipzig is also involved, since the hybrid buses which ferry the participants of the International Transport Forum to and from the different venues are part of the Saxony pilot region. These buses are helping us to test, among other things, fast-charging systems under a regular use scenario. Together, more than 200 different projects are up and running in the eight pilot regions - from delivery vans, to waste collection vehicles, to car rental systems. We are testing the full range of possible applications.



German Transport Minister Peter Ramsauer.

In Berlin, we are going one step further still: this year will see the completion of a so-called energy-plus house, which produces double the amount of energy it consumes. This liveable prototype is intended to demonstrate that it is possible for a family household to produce enough excess domestic energy to cover the inhabitants’ mobility needs. The house literally refuels the vehicle at its door.

Energy is everywhere - we just have to be creative enough to use it efficiently.

Work together to avoid distortions

We face both the challenge and the opportunity: to give a decisive boost to electric mobility and prove its commercial viability. In this crucial phase of preparing the market we must work together to avoid distortions or aberrations. For that purpose, co-ordination in particular among the major European car manufacturing nations is essential. There is no doubt that electric mobility must be encouraged. Together with the private sector, Germany is investing billions in research and development.

What we cannot afford is a race between countries to offer purchase premiums. I advocate better coordination at European level for funding programmes. The goal should be a commitment by EU member states not to engage in a subsidy race. In these times of tight budgets, no one in Europe can afford to give away costly purchase premiums. In Germany we are currently testing incentives other than subsidies, such as the use of special electric vehicle lanes. I prefer to invest my budget in the maintenance our infrastructure. This, too, is part of a sustainable transport policy. I expect of the private sector to bring attractive and efficient cars to market soon. Together, we can then confidently look to the next 125 years of the automotive sector. ■

The state of freight

To better serve people, freight transport needs to tackle bottlenecks and invest in infrastructure - and get greener and safer at the same time. It's a big circle to square.

Few things symbolise the power of trade and of transport like the bustle of the world's big ports. In Singapore and Hamburg, Shanghai and Los Angeles, Busan and Rotterdam ever more gigantic cargo ships load and unload countless containers that contain everything from diapers to dream cars. And while the imagery of these global hubs is overwhelming, freight transport as such - be it road, rail, sea or air - is largely taken for granted and retains little of the exoticism evoked by harbor scenes.

Yet the future of freight transport faces important challenges: Managing the ever increasing demand for transport. Providing costly infrastructure and capacities. Improving efficiency. And freight forwarders need to be ever more mindful of the environmental impact of transport and of the many safety and security issues. At the same time, they have to offer transport services at a price that makes it possible for all economies and companies to participate in global trade, not only those from the developed world and the emerging markets. In our "Transportation & Logistics 2030" programme, we have taken a thorough look at the challenges for the transportation and logistics industry.

Today, the US, China, Japan some European economic powers dominate global trade. But important sales and supply markets are evolving, in which emerging economies but also least developed countries are playing a major role. China will overtake the US and be the number one in global trade by 2030. Our forecast of the top 25 bilateral trade pairs also shows some 'newcomers', such as India, Nigeria, Indonesia and Malaysia (see figure 1). These developments will lead to the creation of new transport corridors, especially between Asia and Africa, Asia and South America as well as between Asian countries.

Shift to the East

Logistics suppliers will be facing new challenges and opportunities: Carrying out complex cross-border transactions in unfamiliar countries will require the ability to obtain majority management control of a target and operating under different legal jurisdictions - which can limit the ability to manage risk and achieve full integration. They will have to consider new approaches to recruiting and retaining key people and be aware of potential skills shortages in new markets. Mitigating corruption risks



and understanding the local tax environment represent two other key issues.

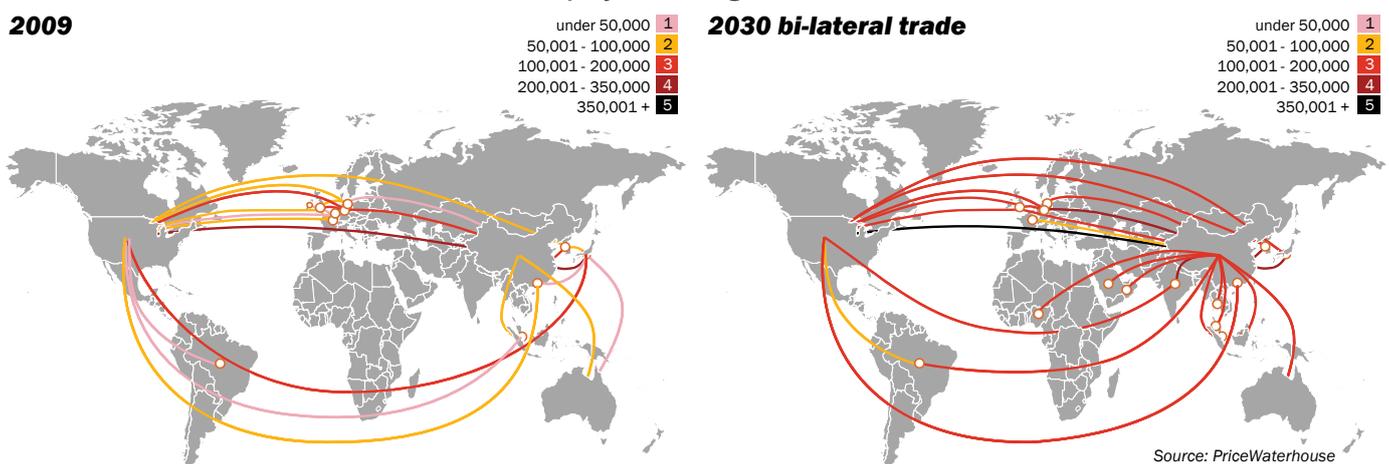
New transport corridors also require new transport infrastructure. We will see massive investments in transport, but they will still be insufficient to close all infrastructure bottlenecks. By 2030, an estimated \$41 trillion will be required on a global level for infrastructure development and maintenance over the next two decades.

A drop in the ocean

Most emerging economies as India, China and Brazil must develop new infrastructure to meet basic requirements. The more mature and developed economies need to refurbish and replace existing transport systems. In order to meet rising demand, investments will need to pick up the pace in coming years. Our research suggests that the demand for transport infrastructure is unlikely to be fully met until 2030.

Governments are aware of the need to build a strong infrastructure foundation. Yet many are facing enormous difficulties in devoting sufficient capital resources even to important projects. In many cases, funding by private investors will be required - but governments, despite strong

Current and projected freight flows worldwide



Source: PriceWaterhouse



Container ships crossing at sea.

financial pressures, cannot completely shift transport infrastructure investments to the private sector. Instead, public authorities and private investors will need to investigate options for sharing responsibility and risk. Private investments, for instance in the form of Public-Private Partnerships, can help transport infrastructure operators and governments to raise capital for transport infrastructure projects, but are no panacea.

Maintaining existing transport infrastructure is also vitally important, and funding models thus need to take into account maintenance expenditures. Generally, governments will need to focus on lifetime performance rather than purely on upfront costs and ensure whole life funding for infrastructure.

“The transport sector needs to benchmark greenhouse gas exposure”

Governments will also need to take a closer look at ways to manage demand, including user financing schemes such as road tolls or congestion charges. Such regulation has certain drawbacks, and political opposition may be fierce. But they potentially offer significant benefits, both in terms of reducing traffic volumes and by generating funds to re-invest in transport infrastructure. Efficient pricing based on external cost matches supply and demand at its most efficient point, leading to direct economic benefits by reducing externalities - for instance congestion or pollution - to the optimum level. We expect large-scale implementation of road pricing, and users should be prepared to pay more for using transport infrastructure in the future.

Oil prices will increase and so will the use of alternative fuels. Neither of these factors

is likely to revolutionise transport and logistics over the next two decades, however. Forecasts vary widely in the extent to which they expect oil prices to rise and as to when supplies will no longer be adequate. Yet even the most pessimistic estimate only places the oil price at around US\$200 per barrel in 2030. While such a development would place an additional strain on the cost side of transport, it would most likely not keep trucks from driving and aircraft from flying. And replacing fossil fuels by renewable energy sources will not be an option for global freight transport in the foreseeable future.

Keeping pace with customers

Rather than the supply of energy, emission reduction may become a greater challenge for operators. Transport today already accounts for more than 13 percent of CO₂ emissions worldwide. Emissions in absolute quantities continue to grow, with road freight transport representing the largest share. Pressure on the sector is not only coming from governments, though. Customers are increasingly demanding that their transport and logistics providers track, document and disclose their transport emissions. The sooner the sector learns to assess and benchmark its greenhouse gas exposure, the better it will be equipped to aid decision-making by both policymakers and customers.

Klaus-Dieter Ruske is Global Transportation & Logistics Industry Leader at PwC, **Peter Kauschke** is Programme Director for PwC's 'Transportation & Logistics 2030' studies series. They have provided this article exclusively for motion magazine. The Transportation and Logistics (T&L) practice at PwC is composed of a global network of approximately 4,900 industry professionals, providing advisory, assurance or tax services to airlines and

And consumers? How will their behaviour influence freight transport? Over the past years, the trend towards home deliveries has raised people's awareness of freight transport - and increased the level of demand. Speed, timeliness and reliability of deliveries are paramount, but the carbon footprint caused by shipments is also gaining attention. We even see weak signals of a trend towards the preference for local products, avoiding long-haul transport.

In the future, consumers will exert a greater level of personal influence on the logistics process and actively intervene in last-mile delivery, for example by changing or redirecting the route of their deliveries real-time. To keep pace with customers, transport operators will need to develop highly sophisticated technical infrastructure requiring investments in hard- and software as well as a skilled workforce.

Supply chain security

Consumers are also becoming more aware of global freight transport as they are exposed to media stories about acts of terrorism and piracy. We expect that the number of man-made attacks on supply chains will increase. Transport systems will become preferred targets for future attacks - be it to harm people, as in the case of parcel bombs in the belly freight of passenger aircraft, or to paralyse trade and cause economic losses. Logistics providers should focus on security management systems and invest in operational, personnel and ICT security. They should also find a smart balance of implementing preventive measures and developing response readiness. Supply chain security is yet another future challenge for transport.

So can the circle be squared? Can the logistics sector improve performance, meet rising demand while at the same time reducing external costs and ensure safety and security? Probably, it can. But enormous efforts will have to be undertaken. Most of all, it will take close collaboration between all actors involved - industry, policy makers, authorities, standard setters and academia - on this long journey. ■

airports, logistics and postal operators, road transport and railway companies, shipping companies and ports. PwC's research programme "Transportation & Logistics 2030" comprises a series of studies on some of the key challenges the industry will be facing. The first three volumes can be downloaded at www.pwc.com/tl2030. Volume 4 will be released in June 2011. For more see www.pwc.com/tl2030

The Short moment

For 26 years, Jack Short has pushed the envelope of transport policy in a career that took him to the helm of the International Transport Forum.

Good policy makers, like poets, tend to be wordsmiths: They are enamoured of the power of words and relish crafting language that draws in listeners and readers, coalescing peoples' thoughts around great ideas. Jack Short, who this summer steps down as the Secretary General of the International Transport Forum - an organisation he helped to create from the previous European Conference of Ministers of Transport (ECMT) and steered through the first half-decade of its existence with great strategic vision - could perhaps be described as the poet of international transport policy.

With charismatic verve helped by a soft Irish lilt, Jack Short can make a lecture about the importance of regulatory innovation, the challenges of reducing greenhouse gas emissions or the beauty of a properly conceived infrastructure project almost lyrical.

Drawing from his compatriots W. B. Yeats, Oscar Wilde and Seamus Heaney, he enlivened meetings with interventions punctuated by the rhymes and reasons of famous poets. It was mostly Yeats, but not always. The story is told how he once bid a departing Japanese colleague farewell with a Haiku he had composed himself, thus baffling, and quite intentionally it has to be said, the recipient of the poem.

"A passion for transport"

Only two things rival Jack Short's love for a good poem. One is competitive past-times: chess, football, rugby. And, most of all, cricket: Short was a professional cricketer, before turning his attention to transport full-time. In "Ireland's 100 Cricket Greats", he is profiled as "an aggressive, yet stylish, opening batsman" notable for "his desire to dominate the bowling from the first, and, in his belief that a batsman's first duty was to hit the ball." In the course

of his cricket career, Short captained the national teams of two different countries, Ireland and France. Once, he led France to victory over the English - a feat that is still talked about.

But what grabbed Short's imagination more than anything else was transport. How does it work? And what can be done to make it work better? When in 1984 Short joined the then European Conference of Ministers of Transport (ECMT) as a Principal Administrator, he threw himself at the challenge of advancing knowledge in the areas of transport and environment, urban transport, transport for disabled and older people, and he worked particularly hard to promote road safety policies.

To these issues he applies the same dedication and will to succeed as to cricket. "He has a true passion for transport", says Mary Crass, Head of Policy and Forum Preparation, who was part of the team that helped transition the ECMT into its new, global era as the International Transport Forum after 2006. "Jack is driven by an unwavering fascination with the dynamics of the sector. And it's his profound knowledge of the field that makes him so effective."

Shared vision

This assessment is echoed by Stephen Perkins, Head of Research and also a long-time collaborator: "He knows the dossiers inside-out. And he always puts his finger on the weak point of an argument. In this way he turns what you thought was a wonderful finished report into something much better."

Certainly Short's analytical astuteness helped propel the graduate of University College, Cork, and Trinity College, Dublin (where he completed a Masters degree in Mathematics and Statistics), from the ranks of the Irish Finance and the Transport Ministries to the top job at an



Diplomat in action.

intergovernmental organisation: In 1993, he became Deputy Secretary General of the ECMT and then, in 2001, its Secretary General.

In this role it has fallen to Short to shepherd the organisation through major transformations. He oversaw the fusion of the OECD's Road Transport Research Committee with the ECMT's research activities in 2004. And he was instrumental in guiding the complex process of creating the International Transport Forum in 2006.

Short shares the vision the Ministers of Transport set out in their Dublin Declaration of 2006, working tirelessly on establishing the new organisation as a leading global transport policy think tank for all modes, with the annual summit in Leipzig as its show-case platform for international dialogue on policy issues. He hasn't cut any corners: Pushing ahead with a plethora of new ideas, Short has not relinquished his insistence that substance and careful analysis must be the basis of what the International Transport Forum does.

Permanent Revolution

For his staff, it has thus been a permanent revolution since 2006, and he acknowledges as much. But it has been a revolution with a human face: Not one among Short's longtime collaborators fails to point to his singular qualities as a leader - his affable and unpretentious demeanor with a streak for self-deprecating humour and above all his ability to "see the human side in difficult situations", as one colleague puts it.

Jack Short has truly shaped the International Transport Forum, and has done much to influence global transport policy. He has inspired people and advanced thinking on global mobility. With due poetic licence, his more than a quarter-century of service to transport has been a long Short moment. ■



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Age of accessibility

As the world population grows older, access to mobility is becoming a mainstream concern. Ann Frye examines how to handle the issue.

The changing age profile of our populations across the world – and the link with loss of mobility that this change brings – is becoming increasingly apparent. The number of old and very old people is growing significantly in both developed and developing countries.

Whether the link between age and disability will continue in the future or whether improvements in health care will make a difference is under debate. A 2007 OECD study cautioned against making assumptions that there would be fewer disabled people in the future. The focus should instead be on increasing longevity and growing numbers of older people.

There are strong economic and social reasons to ensure that older and disabled people can remain as independent as possible for as long as possible. Thus, the way that urban and rural environments are planned and maintained, and the way that transport services are designed and operated will have a profound impact on how well mobility goals are achieved.

The driving forces behind accessibility

Progress in recognising accessibility needs and delivering solutions to them has been slow in many parts of the world and remains patchy even in some major cities in developed countries. In much of the developing world there is still little in place to make it possible for disabled and older people to live independent lives, and the links between disability and poverty are strong.

Yet, there have been improvements. Many urban areas in developed countries now feature audible and tactile aids to help blind and partially sighted people navigate street crossings safely. Buses are increasingly designed with low floors and

wheelchair access. Transport interchanges include clear information and guidance as well as level access.

Behind the progress that is being made, are a number of driving forces. The 2006 UN Convention on the Rights of Persons with Disabilities, for instance, is a key catalyst for change. It places an obligation on signatories to provide access to the physical environment and to transport. The Conven-

“Be creative to overcome lack of funding”

tion has been signed by 147 countries, and ratified by nearly 100. In some developing countries where little attention had been paid to these issues, the Convention is providing leverage for disability organisations to increase political pressure for action to improve access.

A second key driver is legislation at national or regional levels. Some of these initiatives date back to the 1970s, notably the first of many access related laws introduced in the United States in response to campaigning by people with disabilities. This led to the introduction of wheelchair accessible buses. In much of Europe legislation followed in the 1980s and 1990s, bringing either civil rights or technical legislation into place to require access improvements to the pedestrian environment, rolling stock and vehicles. The Disability Discrimination Act 1995 in the UK set a timetable for all public transport to meet technical standards for accessibility.

A third driving force for change has been in the recognition that designing for disabled and older people results in

transport systems that better meet the needs of all travellers. This changes the economic perspective of accessibility from a costly add-on to a mainstream solution and increases passenger numbers across the board. The low floor bus is one key example. First developed for use at airports where almost everyone travels with bags on wheels, the concept was soon picked up for public transport use, first in Germany and progressively across Europe, providing universal benefit.

In many countries recognition of the tourism potential among older and disabled people is also a key factor. Barbados is one among many countries that has seen the emerging market among North Americans and Europeans with disabilities and is targeting accessible tourism as a key economic sector.

This interest in accessible tourism is being further stimulated by air travel legislation on accessibility which extends beyond national boundaries. The US Air Carriers Access Act sets accessibility standards for non-US carriers flying into the USA or on code shares with them anywhere in the world. Similar air access legislation in Europe means that more older and disabled people are travelling by air and expecting to find good levels of accessible transport and accommodation at their destinations.

Current situation

How far have countries come in addressing the needs of disabled and older people? Not surprisingly the picture is very mixed. In some parts of the developed world, investment over more than thirty years has included accessibility as a matter of course in urban areas. Independent mobility is a





Senior citizen in bus terminal.

day-to-day reality for many disabled and older people.

In rural areas, even in the most developed countries, the picture is far less bright. A general absence of public transport and pedestrian infrastructure combined with scarce resources to support investment mean that many older and disabled people face the choice of either becoming isolated or else dependent on others for their mobility.

In many developing countries there are also significant problems and mobility is seldom seen as a legislative or economic priority. For most disabled people in these regions, poverty is inextricably linked with loss of mobility because there is no possibility to get around even on a local basis to find work or to support a family.

What remains to be done?

In spite of the wide differences in levels of progress and attention paid to mobility issues, there are some clear common threads that can be pulled together to set the scene for future progress.

One is standardisation. Although there have been moves to standardise technical solutions for mobility, for example in rolling stock design or tactile surfaces, there remain wide differences in the solutions that have been adopted. This means that disabled and older people are often reluctant to make a journey that crosses

“Accessibility requires a holistic approach”

borders because they cannot be confident that they will find an equivalent standard of facilities and services to meet their needs. Further work on common standards, based on research and engagement with disabled and older people, will surely help develop common standards.

The concept of universal design which

provides more cost-effective solutions for the population as a whole provides a strong base for approaching design standards.

But standardisation is not only relevant to vehicles and infrastructure. Training of front line staff working in the transport industries is also a key factor in enabling disabled and older people to travel with confidence. Currently levels of training in issues such as disability awareness vary widely and in many areas (both the developed and developing world) are simply non-existent.

Another aspect concerns liveable communities. This concept entails enabling older and disabled people to live independently within their own neighbourhoods. It brings together urban design, community facilities and services and, importantly, mobility options. Similar initiatives with labels such as “ageing in place” and “age-friendly cities” are helping to identify the features that older and disabled people need for them to remain self-sufficient for as long as possible. The solutions are often simple low cost interventions such as keeping icy streets clear and putting more seats into pedestrian areas.

The growing recognition of the need to enable ageing populations to remain in their home areas has a largely common agenda with the environmental goals of reducing traffic speed, giving priority to pedestrians and re-creating neighbourhoods to replace out of town shopping malls.

A third item for the to do list is the need for better evaluation. A lack of evaluation of the real life benefits of initiatives adds both to costs and frustration. This is linked in part to a continuing perception that accessibility is about welfare and is therefore outside normal economic scrutiny. It means that money is often spent in the wrong place or on the wrong initiative, so that disabled and older people could get on the accessible bus - if only there was a barrier-free route to the bus stop. Cities which have engaged in systematic dialogue with disabled and older people and have followed their advice on prioritising improvements have shown much more positive results. Shanghai, among others, has demonstrated the benefits of such an approach.

Finally, accessibility requires a holistic approach. One common issue in delivering accessibility is the fragmented approach

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Disabled metro user.

then be put in place to provide for them.

What is less clear is who pays for the changes that are needed to ensure that mobility is available for all. In some countries, governments recognise the social aspects of transport through subsidies to vehicle manufacturers or operators to invest in accessible vehicles. Some international funding bodies, such as the World Bank and the European Commission, often make accessibility a condition of funding. In other areas transport providers are expected to meet the costs of accessibility imposed by law without financial help. It could be argued that the increased ridership that has been demonstrated by universal design approaches, such as the low floor bus for instance, make subsidy unnecessary. Without either carrot or stick, progress is likely to be slow and patchy.

Where funds are scarce it may also be legitimate to question whether the widespread practice of giving free or reduced price fares to people on grounds of age and disability (regardless of income) is the best way to make progress. For those in rural areas a free bus ride is academic because there are no buses, or the only stop is beyond their reach.

The link between cost and benefit

The ageing of the baby boomers means that governments of OECD countries will increasingly be analysing the options. The global trend towards urbanisation means that the number of older people in many towns and cities is growing and policy agendas such as “liveability” and “age-friendly cities” are pushing authorities towards greater engagement with what older and disabled people want. At the same time, those in rural areas, particularly in developing countries, face equally severe but very different problems that are not yet fully recognised.

The clear link between spending on improved access to public transport and the built environment and the benefits to health and other support networks are seldom recognised. As a result, accessibility is often regarded as a luxury that cannot be afforded.

But we need to break out of these spending silos and to see the bigger picture. We need to recognise, across the world, that loss of mobility has a huge cost attached to it. We also need to find a way to reflect this fact both in the political attention paid to access and mobility and to the level of investment in it. Unless we can achieve this paradigm shift we will find that the economic and social cost of our ageing societies is very great indeed. ■

The price of living longer

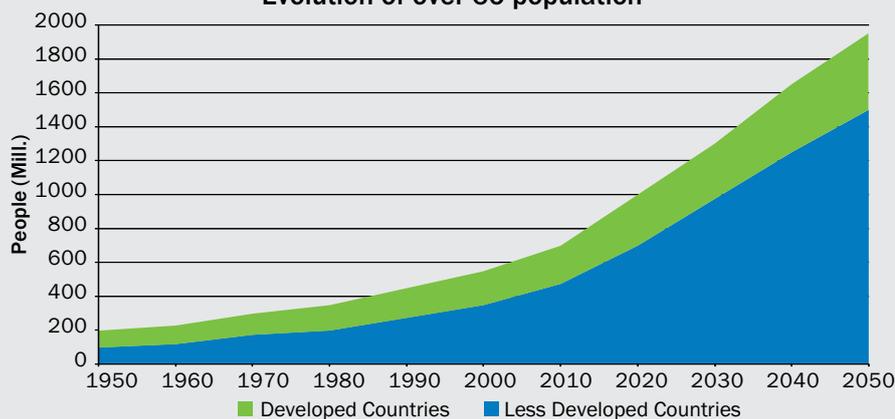
Demographic trends worldwide indicate significant increases in the number of older people in the coming years. According to United Nations data, over 11 percent of worldwide population is over sixty. By 2050, this age group will make up two billion people, or 22 percent of world population.

In terms of the distribution between developed and emerging countries, the balance is shifting towards the latter. These already represent 64 percent of over-sixties, and this dominance will jump to 80 percent by 2050. This will

put an even greater burden on poorer nations that are often ill-equipped to handle the concomitant requirements.

These will be considerable, since there is a close link between age and disability: the longer people live the more likely they are to become disabled to some degree. Disability takes many forms: some are physical or sensory. Others are psychological, such as cognitive impairment, dementia or other neurological conditions. All potentially affect people’s ability to go out and about independently.

Evolution of over-60 population



Source: Ann Frye/HelpAge Int'l

taken by stakeholders. The best results in improving accessibility have been seen, not surprisingly, where operators and authorities have worked together to assess and prioritise improvements and where this “joined up” approach has extended beyond the vehicles and infrastructure to issues of information, signage and, – above all – training.

Who Pays?

It is clear that accessible public transport and pedestrian environments are vital in enabling disabled and older people to be both independent and self-sufficient. It is equally clear that the loss of self-sufficiency brings with it heavy cost both to the individual and to the state in terms of the levels of support (in developed countries) that must



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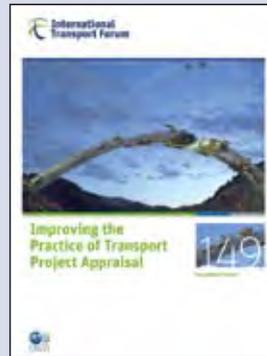
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This report identifies potential improvements in terms of more effective safety and environmental regulation for trucks, backed by better systems of enforcement, and identifies opportunities for greater efficiency and higher productivity.

The report presents the results of a comprehensive benchmarking study of 39 truck configurations in operation around the world

Title: Moving Freight with Better Trucks:
Improving Safety, Productivity and Sustainability
ISBN: 978-92-821-0293-0
Number of pages: 351
Price: €75

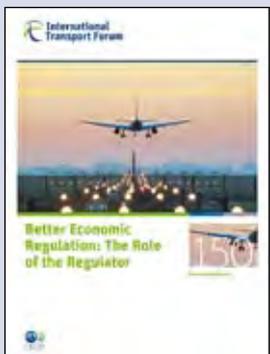


Cost-benefit analysis (CBA) is indispensable for making good decisions on what transport projects to fund. It essentially aims to figure out which projects offer the best value for money.

However, the practical relevance of CBA does not always live up to its appeal in principle.

This report examines issues such as what should be included in CBA, equity and distributional impacts, agglomeration benefits and external costs.

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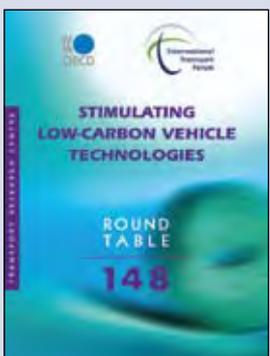
Efficient provision of transport infrastructure is critical to economic growth. The long asset lives of much transport infrastructure indicates governance through regulation, rather than through contract or public ownership. The discussion reflected in this Roundtable Report focusses on how to achieve efficient independent regulation and how to reconcile independence with the legitimate control of policy by the executive part of government.

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Number of pages: 117
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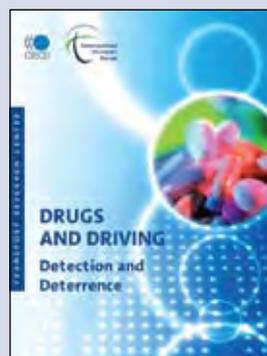
Walking is the most natural form of mobility, but the needs of pedestrians and walking has in many cases been neglected in the development of transport systems. Improving the pedestrian environment can contribute significantly to meeting the challenges of climate change, air pollution and health. This report aims to present hard evidence on the important place of walking in transport policies and provide guidelines for developing a safe environment conducive to walking.

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ISBN: 978-92-821-0364-7
Number of pages: 90
Price: n.a.



Governments around the world are increasingly intervening in automobile markets to improve fuel economy and reduce emissions of CO₂ from new vehicles. This report reviews the rationale for such intervention and examines measures for maximum effectiveness and minimum cost.

Title: Stimulating Low-Carbon Vehicle Technologies
ISBN: 978-92-821-0291-6
Number of pages: 154
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Driving while impaired by drugs - whether licit or illicit - has emerged as an important road safety issue. This report provides a state-of-the-art review of the role and impact of drugs in road accident risk.

It reviews the legislation, deterrence and roadside detection practices in member countries as well as preventive measures to combat drug use while driving.

Title: Drugs and Driving: Detection and Deterrence
ISBN: 978-92-821-0275-6
Number of pages: 110
Price: €35

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