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M A G A Z I N E

 International
Transport Forum

Seamless Transport: Making Connections

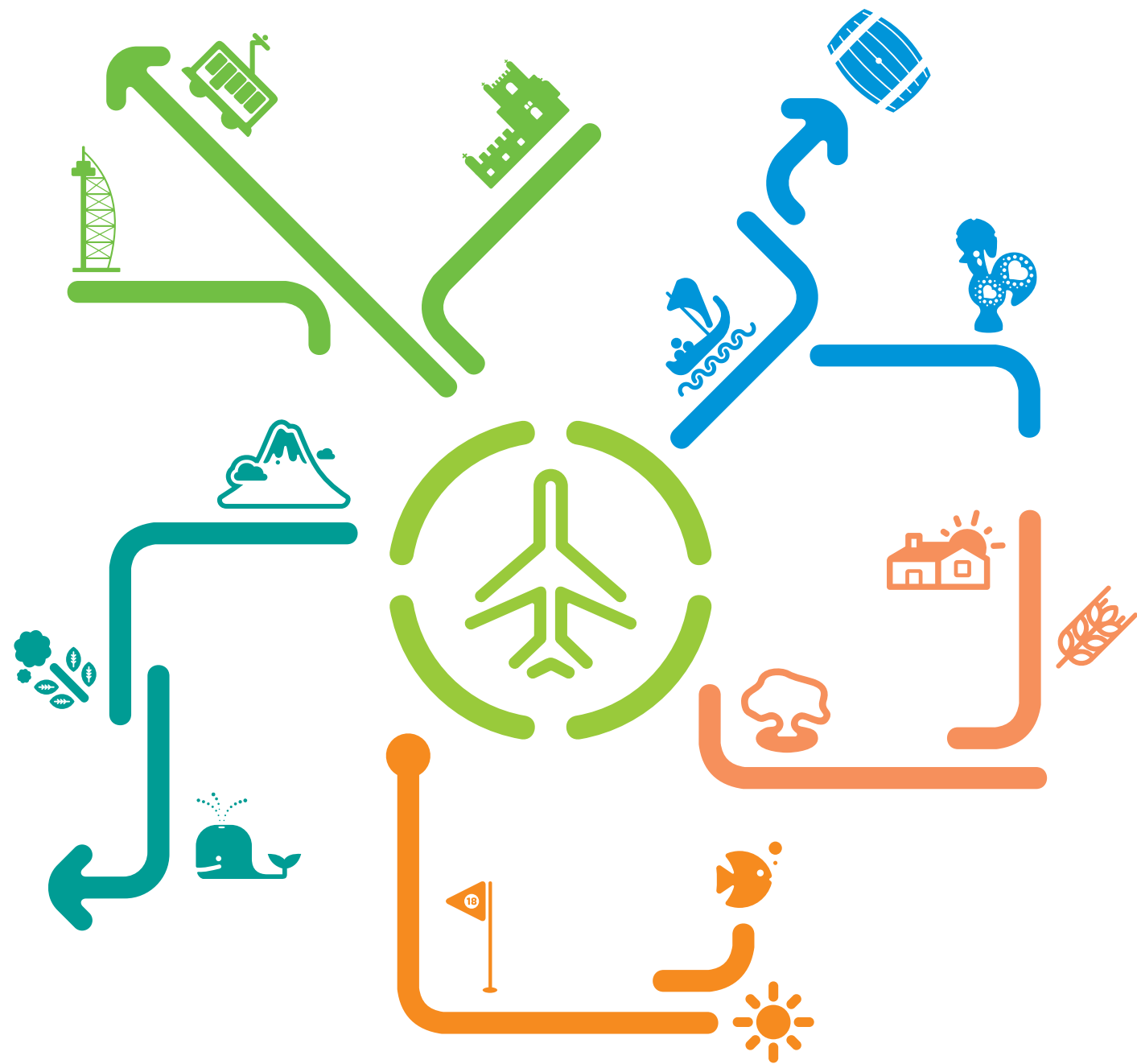
SPECIAL SECTION
Transport in Japan

Mobility:

On the (digital) move

Urban logistics:

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M A G A Z I N E



Welcome to motion, the magazine of the International Transport Forum. This issue shines a spotlight on connectivity. Digital technology has given a whole new meaning to the concept, but creating and ensuring physical connections – be it transporting passengers or moving freight – remains the backbone of trade, contributes to economic growth and improves millions of people's lives every day. One way to think about better connectivity in transport is in terms of “seamlessness”. To reduce the frictions inherent to our transport systems as much as possible is a powerful vision, and also an ambitious one. Transport systems combine different modes, they have a heterogeneous ownership structure and operate under different jurisdictions. Not least, they often cross national boundaries, highlighting the need for international co-operation. Facilitating exchange about these issues and help advance the transport policy agenda for the 21st century is at the heart of the International Transport Forum's mission – and the reason why we have chosen “Seamless Transport: Making Connections” as the theme of our 2012 Summit, held on 2-4 May 2012 in Leipzig, Germany. This issue of motion explores some of the questions (though by no means all of them) that are on the agenda of ministers of Transport, business leaders and transport experts from around the world at the 2012 Summit. I hope you find motion a good read. If you have any comments on this issue, please write to me: michael.kloth@oecd.org. Sincerely,

Hans Michael Kloth

Hans Michael Kloth
Acting Secretary-General



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From here to seamlessness

The digital revolution creates a new paradigm for transport.
But technology is not the whole story / by Jean-Michel Claude

Throughout human history, transport has been The Great Connector, bringing together people and facilitating exchange. To overcome the distance that separated them, men have devised ever more sophisticated means to travel faster, to move more goods and to make journeys less arduous. Engineers *avant la lettre* invented the wheel and the sail; merchant-adventurers created trading routes that spanned the known world – the Silk Routes linked the Eastern and the Western world from Indonesia and China to Africa and Europe more than 2000 years ago. Transport is among the oldest industries around. And for millennia, it also held a very special monopoly: as the sole provider of what today we call connectivity.

The advent of the digital era is now challenging that. Ask any twenty-year old what "connectivity" evokes for him and you are likely to hear about smart phones and tablet computers, social media and instant messaging, less about cars, planes or trains.

At the beginning of the 21st century, digital links are omnipresent – and the new technology is changing perceptions of what connectivity actually means. Chris Anderson, editor-in-chief of the US edition of the technology magazine *Wired* has noted that every part of the sentence / *drove my car to work* "will be ridiculous to my children": the notion of car ownership, the notion that vehicles need to be driven, and that we go to a particular location to work. All three changes are a direct or indirect result of the new digital dimension of connectivity.

A big shift

So, as the first cohorts of true "digital natives" that have grown up with laptop and Twitter enter adulthood, a more complex view of connectivity, in which displacement is only one dimension, is becoming the new normal. This generation will be used to linking up with their peers at the push of a button – effortlessly, instantaneously and at unbeatable prices. The emerging culture of instant gratification in terms of getting connected will probably

also shape expectations regarding physical travel: I want it, I want it my way, and I want it now.

A big shift

Thus transport may find itself in a dilemma: For obvious reasons, it is considerably more complex and difficult to ensure smooth modal transfers at an airport hub or ship car parts from a factory in Europe to an assembly plant in China, than sending an email around the globe. Transport invariably involves real people, and thus performance standards need to be exacting. If a computer screen freezes during a video call that is annoying; if the same happened in a plane it would be utterly unacceptable because people might die.

Invoking complexity and high standards is unlikely to make 21st century transport users accept services they find inflexible, however. Tomorrow's customers will not waste time giving operators kudos for the technical or regulatory intricacies they have to deal with; they just want to get from A to C via B – quickly, and without hassle. Thinking of transport in terms of user experiences – and not in terms of what hardware would be nice to have – is thus a key lesson for today's transport planners. For an industry notoriously fascinated by the technically feasible, it is a big shift.

Steel and concrete, bits and bytes

But the new world of transport holds as many opportunities as challenges. New business models are emerging, in particular "at the seams". Innovative products and services help develop new markets for mobility solutions. And links between transport and other sectors – notably energy – are being redefined.

At the heart of these developments is a paradigm change in transport itself: the convergence of traditional transport infrastructure with the world of information technology. While 19th and 20th century transport was built on concrete, steel and oil, transport for the 21st century will be driven by bits and bytes. To grasp the implications could be another big

shift for an industry profoundly shaped by tangibles. But already, countless software applications for smart phones provide travel information that makes the journey of millions of commuters, business travelers or freight containers more efficient and seamless. Research and investment in Intelligent Transport System (ITS) technology is at an all-time high, spawning ideas from cars that park themselves to providing drivers with augmented reality projections of real-time travel information.

"Big Data" stands to become the raw material of a new transport era that could see many of today's dreams, from reducing oil-dependency to driverless cars, come within reach. The world's capacity to store information doubles about every three years – so today's Big Data is tomorrow's ridiculously small data, implying continuously expanding opportunities for transport providers that learn to tap into this resource.

Tricky funding

Already today, crowd-generated data, picked up via mobile sensors, enable totally new insights into mobility patterns and transport uses. The limiting factor for breakthroughs, more often than not, is a reluctance to share data with others.

Funding is also a tricky issue: Reducing complexity for users increases complexity on the operational side and can drive up costs. Yet users are often unwilling to pay for additional services, such as apps with travel information. Here, transport operators feel the effects of the "freebie culture" engendered by the Web, though to a lesser extent than the media or the music industry.

On another level, cooperation between operators requires functioning revenue-sharing models – not always the easiest issue to resolve in the face of a rapidly evolving market. Finally, with revenue streams sometimes unclear, investors can remain cautious, reducing the sector's ability to invest in innovative transport solutions.

"A state of mind"

At the end of the day, improving connectivity for users hinges on seamless co-operation between the players: seamlessness is a state of mind as much as it is a technical concept. If developments of recent years are any indicator,

the time-honoured antagonisms between transport modes are more or less a thing of the past.

These days, the focus is on exploiting comparative advantages and creating synergies with other modes – such as code-sharing agreements between airlines and railway companies, or auto manufacturers moving into the car-sharing business.

Policy makers have a lot to contribute here, as it is for them to provide the framework that ensures competition while encouraging co-operation where gains can be made. As new products and services for more seamless transport solutions are being rolled out, they must balance the positive impact of innovative ideas against the danger of fragmentation and its potentially negative consequences.

Setting the context and encouraging the timely adoption of common standards without throttling the best ideas too early is the gold standard for transport policy here.

Across the border(s)

In freight transport, the digital revolution has reshaped the sector at a faster pace than on the passenger side. Highly sophisticated supply chain management techniques have been in use in the logistics sector for some time. Here, the most palpable seams in the system are often simple lines drawn on a map: border crossings. Lack of co-ordination between authorities, antiquated customs procedures, time-consuming security checks and also corruption are routinely evoked by logistics sector representatives as the factors that hamper cross-border transport and trade.

Experts estimate that a 10% increase in global trade could be achieved if all countries would reduce bottlenecks at borders by introducing current best practices in logistics infrastructure and customs performance – which could translate into an increase in global GDP of USD 400 million.

Jean-Michel Claude thinks and writes about transport. He lives in Paris.

“This is the future”

Luca di Montezemolo likes to travel fast. Now, the chairman of legendary sports-car maker Ferrari has discovered his passion for high-speed rail.

motion **Mr di Montezemolo, what is your vision of the future of connectivity in European transport?**

Mr di Montezemolo I firmly believe that the future of transport in Europe belongs to high speed railways, because the train offers the better answer in terms of economic efficiency, respect for the environment and safety for passengers. It is fast, comfortable, affordable for all and it offers the advantage of bringing people directly from city centre to city centre. The high-speed connections Madrid-Seville, Paris-Lyon and Paris-London prove that, for these kind of distances, high-speed trains can successfully compete with aviation. The development of international railway connections between countries is a key element for the economic growth of Europe, both in the passengers sector and in the freight sector.



Brand-new Italo trains await the start of operations

m **You are starting a new high-speed rail service, the Italo, in your home country. What were the main difficulties to establish your company, NTV, as the first private operator of high-speed trains in Italy?**

► Breaking up a monopoly is a very demanding challenge. This is particularly true in the case of railways, probably the most ancient monopoly in Italy. But it is a thrilling adventure, too.

It holds enormous opportunity for the development of this sector and for the modernization of Italy. Competition is good. Competition immediately pushes all players to provide better services to customers. And at the end of the day, is all about travellers and their satisfaction: finally they can make a choice.

m **What do you hope to achieve?**

► If NTV proves successful, this experience may pave the way for other private operators, who will follow our example. And this would be very healthy for the Italian economy, because we need more competition in every field. NTV was founded by a group of entrepreneurs with an entirely private, massive investment of €1 billion without a single Euro of state funds. We built a €90 million plant in Nola, close to Naples, for the maintenance of our fleet and we have created 2000 new jobs.

We started from scratch and had to overcome many hurdles, mainly because the company that manages the railway infrastructure, RFI, and our market competitor, Trenitalia, belong to the same group. I usually refer to this situation with a metaphor: it is as if, in a football match, the referee were the coach of the team we play against. That is why we asked the Italian government to immediately separate the company in charge of the infrastructure from the railway operator.

m **What does the Italo train offer that your competitors do not?**

► We are very proud of introducing the most modern trains in Europe. Travelling with Italo offers a new experience in terms of comfort, technology and respect for the environment. On board there is more space for passengers, no annoying vibrations, more silence and wider windows. Everything is conceived as to provide passengers with a relaxing and pleasant trip, whether they travel for pleasure or for business. Thanks to Wi-fi and satellite antennae, Italo guarantees high quality internet connection and an on-board portal with a wide range of entertainment choices, among them a live TV channel. The train has a cinema coach, too, where passengers may watch the latest movies.

m **How does NTV provide tickets and timetable information to passengers?**

► On our internet sites www.ntvspa.it and www.italotreno.it we provide very clear and transparent information on



“The future of transport in Europe belongs to high speed railways, because the train offers the better answer in terms of economic efficiency, respect for the environment and safety for passengers.”

timetables and tickets. We also conceived an information system that takes care of our passengers along the whole trip with constant information via text messages and email. We believe that travelers on Italo must always be able to get in touch with our staff for information

or help if needed. Facing a travel problem, like a delay, and not knowing who to refer to can be very frustrating. That is why in every station we have opened a Casa Italo, a modern service centre where our staff provide assistance and hospitality. We have also created a modern call centre in the South of Italy with the highest standards of efficiency. It can always be reached by phone by our customers.

m **You became famous as the president of Ferrari, the legendary sports car maker. Where do we stand a better chance of coming across you: on an Italo train or in a red Ferrari on the autostrada?**

► To travel by train in Italy, especially on board of an Italo, is the top: Italian food, great movies, relax and, if you take a look outside the window, the unique beauty of an amazing landscape. This is the future. But my twenty years with Ferrari can't be forgotten. Let's put this way: if train is passion, Ferrari is love.

Technicians assemble a new Italo train



MOBILITY

On the (digital) move

Electronic travel cards and smart phones are tearing down barriers to transit efficiency / *by John Borland*

Everyone has a transit horror story. Waiting endlessly for a bus or a train. Getting stuck in a rush-hour ticket queue. Missed connections, overpacked trains, unexpected service disruptions. For regular passengers – those who don't defect to their automobiles – these annoyances are simply part of transport's reality.

But a wave of new technologies sweeping through public transit systems worldwide offers hope of easing, or even eliminating, many of these issues. Ever-smarter smart cards, increasingly flexible electronic ticketing and real-time information feeds via smart phones are making transit faster, cheaper and more efficient for both passengers and operators.

In narrow terms, the advances break down into two categories: Rendering ticketing and payment as simple as possible, and putting ever-richer, up-to-the-second information at passengers' fingertips. But in a broader sense, digitizing tickets and sharing data is allowing transport companies to forge links to other groups that loom large in passengers' daily lives -- banks, mobile phone operators, and software app developers, among others. Connections between these complementary services are multiplying, and with them is being born a travel experience that is increasingly more than the sum of its parts.

Evolving smart cards

The most obvious shift in transit systems today is the ongoing move to smart-card ticketing. First invented in Germany in the late 1960s, smart cards have been filtering into transit systems for more than a decade: Hong Kong launched its Octopus Card in 1997, for example, Japan Railways its Suica in 2001, and London its Oyster card in 2003.

Benefits have been obvious. Customers can add value to cards online, or connect them directly to bank accounts, eliminating ticket queues. Operators save money by closing ticket kiosks. Tapped quickly on readers, the cards help crowd flow through platform entry gates. Transport for London (TfL), which operates the London Underground, found that its Oyster card made crowd flow so much more efficiently that it was able to forgo hugely expensive platform facilities upgrades.

Smart card use also creates a detailed digital record of passenger travel. In theory, analyzing this data could give operators unprecedented insight into their customers' behavior, enabling them to deploy their own resources in order to meet demand more

efficiently. Other, less obvious benefits are also possible – learning a particular train line's passenger demographics could enable better targeting of onboard advertisements, for example.

The challenge of Big Data

Yet operators and researchers for the most part say these goals remain tantalizingly out of reach today. The problem is the sheer volume of data created – in Montreal, for example, around 1.8 million records are produced every day. But a small community of researchers worldwide is working closely with major operators to make this analysis practical.

"This will help operators increase the quality of service, and they know it, but there are still data-processing issues," says Polytechnique Montreal Associate Professor Catherine Morency. "The scale of the data set is changing the way we look at processing, and the way we develop our models."

Interoperability of cards has been a key goal. Japan Railways' Suica card is interchangeable with Tokyo's PASMO and several other regional cards. Denmark and the Netherlands are creating systems in which a single card can be used on all public transport services around each country. The detailed customer travel data created enables revenue to be shared precisely between operators, says Gregors Mogensen, director of systems at Rejsekort, Denmark's e-ticketing company.

Cross-border mobility cards

Smart cards also increasingly incorporate a broader mobility mix than just public transport. In Hannover, Germany, a card system that includes taxis and also car-sharing options has been in operation since 2004 – the first such comprehensive urban mobility package, according to the operator HANNOVERmobil. The idea is certainly catching on: India launched a National Common Mobility Card (NCMC) in July 2011 to encourage public transport use and fight congestion. The card will allow customers to seamlessly transit between railways, metro lines and buses, but it can also be used to pay taxis – as well as road tolls or parking fees, if travelers decide to use the car.

Ambitious efforts to make smart cards interoperable across borders are also underway. Several competing standards for smart cards exist, but a European Union-level group called the EU Interoperable Fare Management (EU-IFM) project has developed a set of technology specifications that would allow a single card to host multiple ticketing systems.

The idea would be to allow passengers to use a single card on a journey that – for example – might start on the Frankfurt metro system, involve a train to Paris, and finish with the Paris metro. Under the EU-IFM plan, passengers would download



Electronic ticketing integrates with other services

national ticketing applications onto their card (or smart phone) from a web-based portal, but would still have to pay each operator separately. The working group has already tested prototype cards that host British, German and French payment systems, and the main members are in the process of creating a Europe-wide alliance to develop the needed infrastructure.

Headaches for operators

But if interoperability makes transit cards smarter, a number of operators are looking at getting out of smart cards altogether. Despite their benefits, smart-card ticketing systems entail headaches for operators. Perhaps chief among these is security. The encryption on one of the world's most widely used smart card systems was broken in early 2008; the necessity to respond convinced many operators to look for alternatives.

Some, including TfL, are shifting instead to contactless bank cards – credit cards that can be waved over a reader to purchase a ticket, just as operator-issued smart cards are today. Operators like this because it shifts responsibility for security and payment processing to the banks, which have considerably more experience in this area. TfL is in the midst of a massive project to reengineer its back-end systems to allow this mode of payment, ultimately intended to replace its successful Oyster card.

"There's massive benefit there," says John Elliott, head of public sector for Consult Hyperion, a consultant on the project. "Now people beyond just Londoners are going to have a card in their pocket that will work."

Watching closely

A new card standard under discussion would make this even easier, by including a small section of memory usable by transit operators – a so-called transit data area – on the card itself. This could store records created as passengers check in and out of multi-leg journeys, for

example, making it easier for transit operators to bill and share revenue. The use of smart phones as all-in-one ticketing and travel-information devices is the natural next step. Because technology continues to change so rapidly in this arena, most transit operators have been cautious before investing in any particular platform or technology. But all are watching closely. Intermediate ticketing steps are already in place, such as using SMS to send 2D bar codes to phones, which can then be scanned by electronic readers. However, the broader industry is moving toward a technology called near field communication (NFC), a short-range wireless signal that allows mobile phones to be tapped easily against readers just as contactless smart cards are today.

A dispute over standards has slowed the technology's spread, but early versions are in place. In China, for example, China Telecom offers an NFC SIM card usable with almost any standard mobile phone, which millions of customers already use to make bus payments in Beijing, Shanghai and other cities. The Google Wallet system, a payment mechanism using NFC-enabled Android smart phones, was recently adopted by New Jersey Transit in the United States.

Ready for the mass market?

Most transit operators in the West are moving more slowly, however. Analysts say adoption is likely to be gradual – research firm Gartner projects that "mass-market" adoption of NFC as a payment option in developed countries is still three to four years away. Juniper Research has estimated that just one in five smart phones will have NFC capabilities by 2014. That gives transit operators time.

"We are watching what everyone is doing, speaking to colleagues, but we are holding our breaths for the time being," says Rejsekort's Mogensen. Even once the technology is settled, striking secure service agreements with phone operators will remain a complex process, he notes. Where smart phones have already become indispensable, however, is as a vital conduit for schedule information, complementing operators' web-based services. A growing number of transit agencies are participating in the comparatively young open-data movement, freely releasing real-time information online on aspects of their service such as bus or train locations, maintenance updates, traffic status, and even details such as availability of rental bicycles.

In cities such as London, Stockholm, New York or Portland, Oregon (one of the early leaders in the movement), innovative developers are blending these real-time data streams with city maps, travel guides, GPS information and more. A huge range of creative travel apps has resulted, often providing a far broader range of information than operators' own journey planners – nearby restaurant reviews or sightseeing tips, for example, or interfaces better suited to younger, tech-savvy users. To some extent, these outside developers pose a risk to operators. "Operators are in the process of losing control of their channels of communications," says Jonathan Raper, managing director of Placr, an open-data consultant and advocacy firm in London. "There are lots of people competing here, and there's going to be a really interesting collision in the middle."

And indeed, outside the taxpayer-funded public transit agencies, few transit companies have been forthcoming with their real-time service data, despite its potential for creative use. Public sector agencies that have taken the plunge say it is worth the effort, however.

"The advantage is that we get wider range of products," says TfL spokesman Ruben Govinden. "On a practical level, this is about giving the public what they need."

John Borland. After a decade chronicling the evolution of the Internet economy, John Borland currently writes about technology, science and politics for a variety of publications in the U.S. and Europe. He is based in Berlin.

Digital
check-in





RAIL FREIGHT

Ant trail of globalisation

Four borders, eight time zones: A new daily link between Germany and China takes land-based freight logistics to a new level. Others are following the lead / *by Andrew Curry*

On the outskirts of Leipzig, not far from the eastern German city's gleaming new convention centre that every year plays host to the meeting of the world's transport ministers, a sprawling, 63 000 square meter logistics centre operated by Deutsche Bahn's DB Schenker teems with trucks, shipping containers, cranes and hundreds of workers moving, packing and loading goods onto trains.

the containers must be lifted onto wider-gauge wagons for the journey across Russia; in Manzhouli, on the Chinese-Russian border, they're switched back to 1435 millimeter rails. With a regular service every working day, more than 20 trains carrying well over 1 000 containers are en route at any given time – a true ant trail of globalisation.

"It saves us a lot of time"

For BMW, the decision to ship by rail was motivated by convenience. BMW has a major manufacturing plant in Leipzig, just a few kilometers from DB Schenker's logistics centre. "They're a very well-known and well-established logistics partner, and they offered to give us the use of the centre in Leipzig for shipping and packing," says Jochen Müller, the spokesman for BMW's Leipzig facility. "It saves us a lot of time in comparison with ships."

In fact, the train – which is laden with parts and bodies bound for BMW's assembly plant in Shenyang – takes just 23 days to make it from the factory door in Leipzig to the factory floor in the Middle Empire. "We had test trains that only needed 18 days to make it almost 12 000 kilometers – through multiple countries, several climate zones and two rail gauges," says DB Schenker Rail manager Axel Marschall, DB Schenker's board member for sales since February 2012. "That's almost twice as fast as a container ship."

It's also almost twice as expensive. Sea-borne container shipping rates are at an all-time low and many of the China-bound containers return empty. But experts say that while train transport will never grab a major part of the shipping market, for certain products trains make a lot of sense.

Bureaucracy and security concerns

As the world recovers from the recent economic crisis, logistics experts are looking for the best bargains. With fuel prices becoming a bigger and bigger part of the supply chain

calculus, transit times in maritime transport are actually going up as vessels cut their speed and "slow steam" to maximize fuel efficiency. For high-value products like cars or high-end electronics in particular, every day spent locked in a container at sea is money lost in potential sales. And DB Schenker's Marschall suggests that the speed of train transport could also pay off in industries like fashion, where styles change so fast that getting clothes from factory floor to showroom floor in a hurry can mean the difference between staying on top of trends and looking out-of-touch.

"It won't be the target of the railway to get all the containers away from shipping lines," says Michael Bartsch, rail business development manager for global logistics giant Kuehne + Nagel. "But it has many advantages that have led people to think, 'Oh, what can we do in the near future to create our own product?'"

BMW isn't the only manufacturer shifting some of its freight from waves to rails: An international electronics manufacturer, recently began running trains from Chongqing, a city in western China, to Germany's Duisburg and on to Antwerp, facilitated by a logistics company called Far East Land Bridge. The journey, shorter than that of the BMW train, runs along a southern route that adds Kazakhstan to the itinerary. Presently, every extra border to cross means time lost on additional customs formalities and bureaucratic red tape. Electronic waybills that would facilitate border crossings are still unheard of in many transit countries and in some places corruption can be endemic. There are also security concerns to pay attention to, and Marschall says armed guards accompany the trains for at least part of the eastward voyage.

Increasing interest

But so far, BMW spokesman Müller says, the move to cargo trains is paying off. China is now the performance car manufacturer's third-largest market, accounting with more than 10% of sales and more than 200 000 cars sold each year. As the Chinese car market boomed over the last decade, BMW made the decision to locate some manufacturing in Asia. "You can avoid paying high import taxes when you assemble them locally, because you're creating jobs in the country," says Müller.

BMW's "knock-down" factory in Shenyang now assembles cars from several of the manufacturer's lines. Complete parts "kits" are loaded on the train in Leipzig and unloaded at the factory in Shenyang, where workers assemble them into flashy X-1 SUVs and the 1, 3 and 5 series cars.

Interest in such long-distance networks is increasing for more straightforward geographic reasons, too. China, the world's manufacturing powerhouse, is changing. While the country's manufacturing centres have long been located on or near the Pacific coast, as costs rise more and more factories are moving deep inland, to China's relatively undeveloped western interior.

"A huge cargo flow"

Moving goods to or from a factory located in western China changes the supply chain calculus completely. Take Urumqi for instance. It is China's "most inland city" – and a growing centre of industrial manufacturing. The metropolis of 2.8 million is nearly 4 000 kilometers, or a five-hour flight, from Beijing – but just a few hundred kilometers away from Russia and Kazakhstan. "It makes no sense to move things 4 000 kilometers back to port, and then to Europe or the US," says Kuehne + Nagel's Bartsch. "In the future you're going to see a huge cargo flow between China and Russia and China and Kazakhstan."

As Chinese manufacturing centres spread out, the country is investing heavily in rail lines. In the last year alone, Bartsch says, the amount of cargo China moved by rail increased 25%. Connections to Kazakhstan and Russia – and possibilities for traffic to and from Europe – are increasing as well. And in terms of economic benefits, the Leipzig-China rail-link is not a one-way street: The Leipzig logistics hub has hired more than 500 new employees within a matter of months.

The Shenyang-bound train is an experiment, DB Schenker's Marschall admits, but also a statement. "Freight transport between Asia and Europe via the Eurasian land bridge has a future," Marschall says. "And we're showing once again that we can bring rail into play."

Andrew Curry covers science, culture and politics for a variety of magazines. He lives in Leipzig and Berlin.



Loading containers at the Leipzig rail terminal

Amid the hundreds of nearly-identical shipping containers, it's hard to distinguish which are bound for local destinations and which have a bit further to go. But one of the trains being loaded

here has a special journey ahead of it. Since September 2011, DB Schenker and German auto-maker BMW have been running what may be the world's longest regularly scheduled train transport: A freight train carrying 50 containers full of high-end car parts from Leipzig to Shenyang in northeast China.

The nearly 12 000 kilometer journey takes the train across four borders and eight time zones. On the Belarusian frontier,

CANADA'S LOGISTICS STRATEGY

Gateway to prosperity

As trade among Pacific Rim countries explodes, Canada gears up to better link Asian and North American markets.

When Forbes Magazine compiled a list of “best countries for business” in 2011, Canada grabbed the top spot. And for those who view media rankings with scepticism, the World Bank in 2010 placed the world's second-largest country as one of the globe's best logistics performers, ahead of several G20 nations. As a trading nation, Canada generates more than a third of its gross domestic product from exports. While Canada's number one trading partner is still the US, China is now its second, with exports to that country having more than tripled between 2001 and 2010. Positioning Canada as the bridge between the emerging economies of Asia and the North American marketplace is therefore a key strategic opportunity.

Early on, Canada's private sector recognized that increasing trade with Asia would require enhancements at Canada's West Coast ports and major airports. It also called for improving the trade corridor comprised of road and rail connections that stretch across western Canada and south to the United States.

Improved connections

Building on the efforts by the private sector, the Government of Canada launched a national strategy in 2006 to advance its competitiveness on the global stage. Known as the Asia-Pacific Gateway and Corridor Initiative (APGCI), the objective was threefold: to boost Canada's trade with the Asia-Pacific region; to increase the Gateway's share of North American-bound container imports from Asia; and to improve the Gateway's efficiency and reliability for Canadian and North American exports.

With the support of all levels of government and strong Public-Private Partnerships, the federal government invested over CA\$1.4 billion in strategic infrastructure projects, valued at more than CA\$3.5 billion. Private-sector investments in projects aligned with these are expected to reach CA\$13.3 billion by 2014. Many of these projects are underway or have been realized, resulting in fewer bottlenecks, improved multimodal connections

and enhanced competitiveness. But the strategy for linking Canada with the Asia-Pacific region goes beyond infrastructure. It addresses policy, governance and outreach imperatives to attract private investments, build partnerships and increase the overall efficiency and reliability of the Asian-Pacific Gateway.

“Our ambitious pro-trade plan to help Canadian businesses expand and succeed in priority Asia-Pacific markets is helping create and protect jobs and prosperity for Canadian workers, businesses and families,” says Edward Fast, Canada's Minister for International Trade and Minister for the Asia-Pacific Gateway. “Canadian exports are arriving in Asia-Pacific markets in record quantities, thanks in part to our government's support for building the Asia-Pacific Gateway and our ambitious plan to diversify Canada's export markets. These investments are positioning Canada as the gateway of choice for North America and the Asia-Pacific area, where a large part of Canada's economic future lies.”

Access to key markets

Consider the example of small Canadian seafood exporters: With huge demand in China for salmon and other seafood from the western province of British Columbia, delivery time is paramount for such perishables. Canada's Blue Sky Policy enables airlines to access key markets faster, and in 2011 a new air-cargo service from Canada to China was launched: China Southern Airlines now transports products such as berries, salmon and other seafood products from Vancouver to Shanghai. Electronic equipment and new clothing lines come the other way.

“The Vancouver Airport Authority will continue to focus on developing YVR as the gateway of choice for trade and travel between North America and the Asia Pacific,” says Larry Berg, president and CEO of Vancouver Airport Authority. The airport is investing CA\$1.8 billion in infrastructure to ensure it continues to be a strong economic generator for province and country. “With Asia and China in particular fuelling the growth in the global economy, we have a unique opportunity to expand both passenger and cargo air services to and from Asia, creating jobs and economic benefits for our community,” says Berg.

Strategic investments

Minister Fast also underlines the very real benefits the Asia-Pacific Gateway and Corridor Initiative generates at all levels and across the country: “One in five Canadian jobs is directly or indirectly related to trade and to exports, and trade represents close to 60% of our gross domestic product.” Thanks to the strategic investments made in the West Coast transport network and integrated, forward-looking policies, Canada stands to prosper from diversified trade with Pacific Rim countries.

This article was contributed by **Transport Canada**

Setting the pace for seamless logistics

Peter Ramsauer, Germany's Federal Minister of Transport, Building and Urban Development, explains his country's success in smoothing the supply chain.

Freight transport and logistics are essential for every business location. They ensure that products and goods are delivered in the right amount, the right condition, at the right time and to the right place. Prosperity, growth and employment also depend on them. This is even truer for an export-driven country like Germany.

But logistics is more. It is an important, independent economic sector in Germany which is only surpassed by the automotive industry and the wholesale and retail trade. It provides jobs for millions of people who contribute a great deal of commitment and skills. The plethora of sometimes highly specialized solutions and services offered by German logistics enterprises are in demand worldwide.

Reliability and punctuality

Today, logistics covers various levels and processes in a value-added chain and has thus assumed a key cross-cutting function. State-of-the art infrastructure and efficient logistics systems are particularly important for Germany due to its geographical position in the heart of Europe. For enterprises and business locations they represent a crucial factor for success in national and international competition. Innovative systems of seamless logistics ensure that our highly professional enterprises are able to offer a unique range of services.

"Every mode needs to be placed in the transport chain where it can deploy its inherent strengths in the best way possible."

Germany is internationally recognized as a centre for logistics. “Logistics made in Germany” stands for highly qualified business locations and state-of-the-art services. This is why in 2010 Germany was leading the World Bank's “Logistics Performance Index” (LPI) and since then has rightly been calling itself the world logistics champion. Germany scores particularly well in the fields of reliability and punctuality and also with its customs clearance procedure. But first and foremost we score with our outstanding infrastructure.

Our success is based on a broad awareness that it is essential to have an efficient infrastructure network that also takes into account aspects of environmental protection and climate change. In addition to maintenance, upgrading and new construction of public transport infrastructure, our attention is mainly focused on efficient use of the existing transport infrastructure and a sustainable transport operation.

Complementary modes

Considering the forecast traffic growth, it becomes even clearer that we need an efficient, intelligent and green transport and logistics system in which each mode of transport can deploy its inherent strengths and the individual modes are dovetailed in an optimum manner. Wherever it is possible and sensible, we combine the various modes of transport.

In doing so, the individual modes are not competing with each other. I rather see them complementing each other in the future even more than today. Every mode needs to be placed within the transport chain where it can deploy its inherent strengths in the best way possible. Only then can we create smooth and efficient transport processes, which are the basis for seamless logistics, setting the highest standards for service, safety and security, speed and reliability.

This article was contributed by Minister Ramsauer exclusively for motion

TOP 5 countries

Global Logistics Performance Ranking

	LPI*	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
1 Germany	4.11	4.00	4.34	3.66	4.14	4.18	4.48
2 Singapore	4.09	4.02	4.22	3.86	4.12	4.15	4.23
3 Sweden	4.08	3.88	4.03	3.83	4.22	4.22	4.32
4 Netherlands	4.07	3.98	4.25	3.61	4.15	4.12	4.41
5 Luxembourg	3.98	4.04	4.06	3.67	3.67	3.92	4.58

* LPI: Logistics Performance Index

DATA FOCUS

Air cargo is loaded at Vancouver airport.

Rethinking the Last Mile

How can freight delivery in urban areas become less burdensome on citizens? Prominent city leaders from London, Seoul, Mexico City, New Delhi and Chicago explain their strategies.

How has the volume of urban freight transport developed in your city centre over the past years?

Boris Johnson
Mayor of **London**, UK

Over the last decade the volume of freight travelling through London has steadily increased. Goods here are not only moved by road, but also water, rail, and air. Nevertheless, almost 90% of London's freight is currently moved by road and while we are encouraging the use of the river and other means where appropriate, it is on the roads that we have seen the majority of the increase in recent years.

Park Won-soon
Mayor of **Seoul**, Korea

The volume of freight transport coming in and out of Seoul has decreased 20% over the past four years from 295 million tonnes in 2006 to 237 million tonnes in 2009. This drop can be attributed to the recent sluggishness in the economy. However, we expect urban freight transport volume to consistently increase by 2% annually when the economy recovers.

What challenges have been created by increased freight traffic in your city?



Boris Johnson
Mayor of **London**, UK

Congestion on London's roads costs our economy an estimated £2bn every year, which we are tackling by reducing disruptive roadworks and modernising signals to maximise efficiency. Safeguarding the environment is another challenge, so we have pioneered the world's largest Low Emission Zone to limit damaging pollutants and provide cleaner air for London. The safety of pedestrians and cyclists is a particular concern. We are addressing this through educational programmes for both drivers and cyclists and an independent review of the design and operation of construction vehicles, which is being carried out this year. We also run a Freight Operators Recognition Scheme (FORS), which works to raise standards within the industry through safety measures and delivering noise and CO₂ emission reductions.



Park Won-soon
Mayor of **Seoul**, Korea

Going forward, freight traffic will occur in small batches with the development of home shopping and e-commerce, thus we expect freight traffic within the city to increase continuously. This will result in increased traffic congestion and urban air pollution levels. To address these challenges, it will be important to increase the freight-load factor through joint logistics and the minimisation of travel distance.



Marcelo Ebrard,
Head of Government of the Federal District of **Mexico**

Freight traffic has increased in downtown Mexico City as economic activity has remained strong and competitive. The total vehicle fleet in greater Mexico City is now around 4.5 million. Freight transport represents 7%, with an estimated 341 000 vehicles. Of this, only around 40% are registered in Mexico City. The majority have been licensed by the nation's federal government. Heavy-duty vehicles (over three tonnes) are not allowed to enter the downtown area. With the exception of a few hybrid buses and a growing fleet of natural gas buses being progressively introduced by the Mexico City government, all private-sector cargo lorries run on gasoline or diesel.



Arvinder Singh Lovely
Minister of Transport, National Capital Territory of **Delhi**, India

Delhi has emerged as a major wholesale trade centre for north India. It is estimated that 78% of fruit and vegetables, 49% of fuel, 44% of iron and steel and 47% of grain traded in Delhi are destined for states across India. Moreover, five national highways bring vehicles transporting goods from other states into Delhi. This situation aggravates traffic congestion, particularly on the Ring Road, Outer Ring Road and other city thoroughfares.

Rahm Emanuel
Mayor of **Chicago**, USA

Over the past two decades, Chicago's Central Business District (CBD) has transformed from a strictly office and business environment to include significantly more residential development and evening/weekend activity. At the same time, the volume and variety of freight transport to the CBD has continued to increase, and has placed additional demands on a fixed-surface street transport infrastructure.



Marcelo Ebrard,
Head of Government of the Federal District of **Mexico**

We are working at designing project objectives that reinforce each other. For example, our vehicle emissions control measures aim to both reduce air pollution and improve cargo traffic efficiency. Many measures have been taken to modernise the cargo fleet, such as subsidising the purchase of new vehicles. This has resulted in 70% of gasoline vehicles now having catalytic converters. However, 30% of the fleet is over 20 years old. Freight transport contributes 7% of greenhouse gases in the metropolitan area. We have also decided to promote a voluntary "Self Regulation Program" for diesel vehicles, where transport companies comply voluntarily with emission standards 40% lower than the Mexican norm. Around 4 500 vehicles currently participate in the programme.

Arvinder Singh Lovely
Minister of Transport, National Capital Territory of **Delhi**, India

Presently, certain restrictions have been imposed on the entry of goods vehicles during peak traffic hours. Generally, they are allowed to enter the city between late evening and early morning, when the volume of traffic on city roads is comparatively low.



Rahm Emanuel
Mayor of **Chicago**, USA

Congestion in the CBD has grown and impacts the cost of goods and service delivery. Truck routes to the CBD are extremely busy, often resulting in bottlenecks and congestion around major activity centres. As a result, there can be intense competition for limited on-street parking spaces, loading zones, and building dock access. Access to buildings can also be an issue, as many buildings do not allow delivery via passenger elevators, and may not have off-street loading access. Increased safety and security procedures within buildings also incrementally increase delivery times.

Rethinking the Last Mile

City leaders explain their strategies for urban freight delivery

Are you considering new approaches to integrate urban logistics more seamlessly into city life?

Boris Johnson

Mayor of **London**, UK

Hosting this year's Olympic Games has presented a fantastic opportunity to investigate and trial new approaches in conjunction with industry, businesses and local councils. We are looking at local consolidation, flexible delivery to make use of the hours when the roads are less congested, ways to make nighttime deliveries quieter, hotspot mapping and a freight journey planner. We are making use of postcode data and working with SAT NAV companies. We have also been working with other major cities such as Paris and Barcelona to share best practices.

Park Won-soon

Mayor of **Seoul**, Korea

We plan to build a 'joint logistics system'. To this end, we will develop a joint collection and delivery system based around a logistics centre or logistics terminal located just outside of Seoul. We will also develop an efficient freight routing system to decrease freight traffic and minimize logistics costs.

What is your vision for how goods will be delivered in your city in the future?

Boris Johnson

Mayor of **London**, UK

Thanks to the fantastic legacy of the London 2012 Games, we envisage a future in which we continue to build on our current innovations: overnight deliveries, reduced congestion, safer vehicles fitted out with the most up-to-date sensors and cameras, and cleaner and greener vehicles. We are also working with transport authorities to encourage the use of our waterways to transport goods (including waste), as it is more environmentally friendly and can help ease congestion on the road network. All this together should significantly improve the quality of life in London.

Park Won-soon

Mayor of **Seoul**, Korea

We envision an environmentally friendly and highly efficient logistics and transportation system for Seoul. As stated above, we will develop a joint collection and delivery system and freight routing system to increase the load factor and decrease traffic. We will also ensure that this efficient logistics system emits minimum levels of carbon dioxide and is environmentally friendly. In the end, this will all contribute to building a business-friendly city, with happy residents.



Marcelo Ebrard,

Head of Government of the Federal District of **Mexico**

This is an ongoing process. We have been successful at getting businesses and governmental agencies to work together on many different programs, such as security or street cleaning. In terms of better integrating urban logistics, the Mexico City government routinely evaluates and redesigns congested areas to reduce traffic jams. In addition, freight trucks of over than 3.5 tonnes have been banned from the downtown area, and heavy vehicles can only deliver their goods after 9 pm. Moreover, to avoid congestion in historic downtown streets, electric vehicles similar to golf carts are used to distribute small amounts of cargo.

Arvinder Singh Lovely

Minister of Transport, National Capital Territory of **Delhi**, India

The Delhi government has decided to shift some of the wholesale trade to the outskirts of the city so that goods vehicles do not need to enter the congested areas. For example, the chemicals and plastics trade is being shifted to West Delhi and the wholesale paper trade is being shifted to East Delhi. The business hubs for these trades, however, have been moved to the vicinity of Delhi so as to decongest vehicle traffic in the city.

Rahm Emanuel

Mayor of **Chicago**, USA

A recent City study assessed freight delivery issues in the CBD and developed recommendations to address related problems. This study included surveys of building managers and shippers, best practices in freight management, and a field survey of the CBD. Based on its recommendations, Chicago has increased curbside loading-zone permit fees to encourage more efficient use of curb space resources. The City is also assessing potential future strategies, including more effective management and pricing of the use of loading zones in public spaces, as well as design standards for on- and off-street loading areas.

Marcelo Ebrard,

Head of Government of the Federal District of **Mexico**

In the future, city residents will pick up the phone and call the store of their choice and charge their purchases to a credit or debit card. Anything they request will be delivered to their doorstep. Purchases will be decentralised and people will no longer need to come to the city centre for goods they can obtain in their neighbourhood. We feel the future is already upon us. A large part of our economic activity is decentralised and located throughout the city. Cities are living organisms. Change happens every day. We need to be ready to guide the change towards sustainable goals.

Arvinder Singh Lovely

Minister of Transport, National Capital Territory of **Delhi**, India

The Western Peripheral Expressway (WPE) and the Eastern Peripheral Expressway (EPE) are being built to relieve traffic congestion. The total cost of land acquisition for these two expressways is about Rs. 1.3 billion. The goal of the two expressways is to prevent interstate vehicles that are not bound for Delhi passing through Delhi. The WPE and the EPE each total about 135 km.

Rahm Emanuel

Mayor of **Chicago**, USA

In the future, goods delivery within Chicago's CBD should be efficient and support economic development with minimal negative effect on street traffic congestion and pedestrian activity. The City of Chicago strives to involve each entity affected by the freight delivery process to address all related concerns.

Interviews by
Richard Venturi

"The art of seamlessness"

Better transport solutions can help drive growth and increase human well-being, argues OECD Secretary-General **Angel Gurría** – and points to parallels between transport and haute couture.

motion Transport ministers from around the world will meet in Germany in May to discuss how transport can be made more seamless. How does the theme “Seamless transport: Making Connections” speak to current OECD preoccupations?

Angel Gurría The theme highlights the core function of transport systems – providing connections that enable the physical movement of people and goods. Seamlessness is about performance, interconnections and quality of service – about better transport policies for better lives. It is about transport’s vital contribution to welfare and growth in the global economy. In particular, in the current difficult economic times, improving connectivity deserves extra attention.

m Can you pinpoint one or two concrete issues where improving connectivity could help drive growth?

► Just take cross-border connectivity. A lot of time is still lost at borders – passengers waiting at airport security checks, freight being held up for customs clearance. Sometimes the reasons

are technical, such as different rail track widths. More often issues of standardization, regulation or slow implementation of existing rules are at the core. Advances have to be balanced against other concerns of course, but reductions of waiting times at borders are efficiency gains waiting to happen.

m You stress the role of transport in creating growth and welfare. But transport often makes news because of negative side effects. How do you see the relation between societal benefits and costs?

► Saying that economic growth is crucial should in no way be taken to mean that environmental impact and climate change are now of lesser concern. They are as important as ever. Let’s leave the either/or view behind us – better transport and more growth does not necessarily mean lower environmental quality given

technological possibilities and innovation. We see ample opportunity to boost growth by pursuing green objectives. This is at the core of the OECD’s Green Growth Strategy. With the right policies, the “greening” of transport can drive growth.

m What does Green Growth mean for transport specifically?

► The transport sector is a case in point. It boasts all the difficulties and the opportunities policy makers can encounter in their pursuit of Green Growth. To be frank: Transport emissions are an important part of the problem – but there are solutions in modern, “greener” transport policies.

m How is that?

► Transport represents 30% of man-made CO₂-emissions in OECD countries. Globally, the percentage is 23%. In contrast to other sectors, transport has not reduced its reliance on fossil fuels in the past 30 to 40 years. Transport still relies for 96% on fossil fuels. If transport activity is to grow in line with global economic development, then CO₂ emissions will rise sharply unless there is a shift toward less carbon-intensive transport energies.

This will even be the case if transport grows considerably more slowly than global GDP. In a business-as-usual scenario global CO₂ emissions could be two-and-a-half to three times as high as they are today, and they would represent a much bigger share of total CO₂ emissions than today.

m Can electric mobility be a game changer?

► Electric vehicles can be part of the answer in places where low carbon electricity is available. They are relatively expensive at present and there is uncertainty as to their future costs and consumer acceptance – especially as replacements for energy-efficient conventional vehicles.

I would not be surprised to see electric mobility spur new types of mobility services based on smaller, purpose built, urban vehicles. Services like the new Autolib’ car sharing system in Paris provide a new model that capitalises on the electric car’s strengths.

Ultimately, what is needed – from research and development to production and market development – is innovation. The policy recommendations from our OECD Innovation Strategy also apply to transport. You need a comprehensive strategy with the right framework and investment in skills and education.



"In many advanced economies, creating seamlessness is increasingly about building an information infrastructure, less about new roads or rail lines."

m Returning to the notion of seamlessness, which you earlier connected to service quality: What is the added value of focusing on seamless transport?

► Let’s think about haute couture for a moment. The true art for a tailor is to turn cloth into a garment. He will select the best cloth, cut it into the perfect shape, then sew it together with strong yarn. There will inevitably be seams – but the less visible and the stronger they are, the better the garment. To make strong yet invisible seams one needs knowledge and effort. Much the same applies to transport. But we need systems that suit everybody.

m Now, could you apply your metaphor...?

► A high-quality transport system appears seamless to users. In reality there are seams of course, including interchanges between modes and within modes – getting out of the car and onto the train, catching a connecting flight in a hub airport and so on. The true art of seamlessness in transport is no longer so much a matter of providing fast and comfortable trains or planes or cars. Instead, big payoffs can be had from improving the interconnections and interchanges: railway stations, airports, bus terminals, parking garages. And of course the ease of access to transport information is boosted by smart deployment of digital technology. In many advanced economies, creating seamlessness is increasingly about building an information infrastructure, less about new roads or rail lines. In emerging-market economies and developing countries such smart solutions can support the necessary infrastructure investment.

m So the future of transport lies with the smart phone, not the car?

► Yes and no. We see evidence that some young people value smart phones and internet access more than the car. Perhaps the main reason is that young people are staying home longer, have fewer steady job opportunities and less disposable income than before. In this context, a smart phone remains an affordable and useful technology, a car less so. And of course smart phones make the use of mobility services easier, while simultaneously texting and chatting. Real-time

travel guidance for bus, metro, taxi, train, parking, bike-share, traffic information and also payment will soon be the norm. Governments have a role to play here – freeing up data for instance, that can encourage the development of mobility solutions.

m That was the “yes”. What about the “no”?

► Phones aren’t the only things getting smarter. Car-manufacturers are making sure their products also change with the times. A world of seamless transport will include cars, but they are likely to be quite different. I am an optimist – I believe that diversity, quality and seamless integration will describe daily travel in the future.

m That is the future. Today, seamless transport is not always a reality. Can we really expect major advances soon, given the current economic climate?

► There are lots of opportunities to do better. Smart moves toward better connectivity need not be very costly and can easily be worth it – important in any context but in particular in the wake of the economic crisis.

m But if there is low hanging fruit to be picked, how come it has not already been harvested? Is there money left on the table?

► Solutions often depend more on coordination and governance than on large engineering and project work. Fragmentation in multi-level governance and local autonomy often exists for good reasons, including competition and specialisation. Here lies the true challenge of this year’s debate in Leipzig: identifying an appropriate balance for feasible and worthwhile ways of establishing increasingly seamless transport systems.

Interview by **Kurt Van Dender**, Chief Economist of the International Transport Forum

9.7%

World Bank estimate of rise in world trade as result of an increase in the global trade-facilitation capacity by half

DATA FOCUS

\$40 billion

OECD-estimate of welfare gains from a 1% global reduction of trade-related of transaction costs.



Some cargo bikes can carry a 250 kilo payload

CYCLE LOGISTICS

Counting on the cargo bike

Green entrepreneurship and improved technology are turning the bicycle into an alternative for urban goods distribution.

Most goods reach their final destination in city centres in motorized cars, vans and lorries. Even light goods are often moved by heavy vehicles and over very short distances, exacerbating pollution, noise and congestion.

A surprising element of a new approach for sustainable urban logistics could turn out to be – the bicycle. “25% of all urban freight trips could be shifted from motorized vehicles towards cycling-related solutions,” explains Dr. Randy Rzewnicki, Project Manager of the EU funded Cycle Logistics project, which is investigating the use of bicycle-related solutions in urban logistics. “These trips could be done cheaper, faster and CO₂ emission-free by bike.”

And not only for delivering pizza. Bicycle delivery companies are appearing in numbers across Europe, proving that even small to medium-size firms can deliver high volumes of goods in cities. In France, La Petite Reine, a company founded in 2001, moves over one million packages annually with 60 cargo bicycles in Paris, Bordeaux, Rouen, Lyon and also Geneva in Switzerland. And France's national railway company, SNCF, has invested €500 000 in a company called Urban-Cab to provide a green and cost-effective solution to the last mile dilemma.

Across the channel in Great Britain, Cambridge-based company Outspoken Delivery sees approximately 70 deliveries being made a day with nine couriers. Prices for such services are generally lower and delivery faster than their motorized competitors. “Over 85% of our deliveries consist of papers, small packages and boxes,” says Rob King, co-founder of Outspoken Delivery:

“The remaining 15% covers everything from antibodies in test tube vials to pharmacy prescriptions, legal papers, laptops, flowers, and lunchtime food deliveries.” King's firm even offers a multi-modal delivery service from Cambridge to London using a folding bicycle for collection and delivery at each end. “This is by far the quickest way into central London,” says King: “On Friday afternoon, at peak congestion, we can deliver in just 90 minutes. Not even a motorbike can get close to this.”

Innovative bicycle designs help to make delivery by bike economically viable and less of a grind for the drivers. Today's transport bikes, for instance the “Cargocycle”, use ultra-light materials, better transmissions and also electric support engines. Some of the bikes used by “Outspoken Delivery” can carry up to 250 kg of freight, and there are even “Frigocycles” that can deliver refrigerated goods.

With such progress, bicycle logistics can potentially reshape downtown deliveries. According to research undertaken in the Netherlands by fietsdiensten.nl, a 10% shift in urban delivery from trucks to cycle couriers would create 10 000 jobs, cut motor vehicle kilometers by one million, save 85 000 litres in fuel and cut 21 000 tons of CO₂ emissions per year. Little wonder policy-makers are also starting to see potential value in cycle logistics. In Belgium, Flemish Mobility Minister Hilde Crevits called for more bike couriers this year: “There is real growth potential for bicycle couriers... they offer all sorts of advantages because they are a simple, quick and environmentally friendly way of getting around.” **JF**

www.lapetitereine.fr
www.outspokendelivery.co.uk
www.urban-cab.com

JAPAN

Special section

on the occasion of Japan's 2012 presidency of the International Transport Forum



“I would like us to share good things”

Takeshi Maeda, Minister of Land, Infrastructure, Transport and Tourism on reconstruction after the March 2011 earthquake and Japan's future role among Asian economies

motion Japan holds the Presidency of the International Transport Forum this year. What does that mean to you?

Takeshi Maeda I see Japan's presidency and the trust given to us as a great honour. I look forward to serving as the Ministerial Chair at the 2012 Summit and to exchanging views on that occasion in a frank manner with colleague ministers and executives from all over the world.

m Since your inauguration as Japan's minister of Land, Infrastructure, Transport and Tourism you have been advocating “realizing a sustainable society”. What is your main message?

► We are experiencing a sharp decline and accelerated ageing of the population in Japan. We would still like to continue enjoying our affluent life and hand it over to the next generation. In order to do so, we need to build a sustainable society, environmentally, socially and economically. To achieve that, state-of-the-art environmental technologies should, for example, be immediately applied to buildings, transport systems and other public facilities that constitute our living space, without waiting for the revision of standards and regulations to reflect these technologies.

I would like to build a town with the most advanced technologies, a town that saves energy, generates and stores electricity.

m And in transport more specifically?

▶ When it comes to transport, there are many things we should do: improving public transport, promoting eco-friendly vehicles such as electric cars, expanding special tax treatment for such vehicles, taking measures for smoothing traffic flow on the road and putting liquefied natural gas-fuelled ships into practical use.

Special attention should be given to rural areas, where our population is ageing with unprecedented speed. I would like to offer an environment in which young couples can raise children comfortably, and at the same time senior citizens can enjoy a safe, healthy and comfortable life. The public transport network should be the core of transport in the community; the mobility experience there should be safe and comfortable. What I have in mind as our objective is a liveable community where necessary functions for people's lives are located within reasonable distance. By implementing ambitious measures and applying new technology in a comprehensive and organised way, I would like to achieve a sustainable economy, sustainable employment and a sustainable country.

m In March 2011, Japan was hit by an earthquake and a subsequent tsunami. What are the lessons from this difficult experience?

▶ First of all, I would like to express my appreciation for the kind words and support that we received from people and governments around the world after the disaster. The traces of the catastrophe, which deprived so many people of a secure and happy life, can still be found here and there in the affected area. As a nation, we are determined to accelerate the recovery and reconstruction of the affected area. We are making great efforts to rebuild the infrastructure and transport systems in the area in a way that can survive future natural disasters. I believe this will help people to resume their normal lives as soon as possible and feel safe and secure.

Because of its geographical situation, the Japanese islands are exposed to risks from all kinds of natural disasters: earthquakes, tsunamis, volcanic eruptions, winds, floods and snow. The last earthquake taught us that there is no limit to the magnitude of a natural disaster and that, in order to protect our people and their livelihoods, we should design and build infrastructure on the assumption that rare but large-scale disasters do occur.

Transport infrastructure, too, should be made disaster resistant. But that is not enough. In addition, a network of multiple routes, which can substitute for each other in case of emergency, is highly critical in ensuring availability of transport routes immediately after a disaster. Transport networks needs to be thought of in a comprehensive manner: Each mode of land, air and maritime transport should be functionally interrelated in flexible ways. We should have an emergency logistics system ready in case of a natural disaster. Each transport company should have a workable Business Contingency Plan.

m What else are you planning to improve safety for the people?

▶ While disaster prevention is critical, traffic safety is also important for protecting people's lives. The number of road fatalities has been decreasing for more than ten years in Japan, and fell to 4 611 in 2011. We are continuing our efforts to prevent traffic accidents, recently with particular emphasis on human error. The government is trying to encourage and help transport operators to establish a safety management system in their corporate institutions. Investigation and analysis of causes of traffic accidents is also important to improve the safety level.

Looking beyond our borders, piracy is one of our major concerns. Since our economy is dependent on foreign trade, we have to be sensitive to safety and security on the sea routes.

m In the economies crisis, what can transport do to revitalize the economy?

▶ Japan faces the global economic difficulties as well as its own structural problems as a result of the decreasing productive population. In order to keep our economy growing under such conditions, demand-side policies will be effective. Promoting consumption by encouraging transfer of wealth from older generations to child-raising generations is one example. Efforts to participate in the growth of overseas markets would be another. Investment for the construction or maintenance of transport infrastructure is still necessary. This infrastructure supports the national economy and people's lives. However, we expect that more public expenditure will be required for the maintenance or the replacement of the existing infrastructure. Therefore, opening this area to the expertise, the human resources and the money of the private sector through PPP or PFI programmes will become extremely important for constructing and maintaining the needed infrastructure effectively. We are currently trying to channel private-sector money, people and know-how into airport management.

There are also many things transport can do to revitalize local economies. It is particularly important to improve the mobility of the people by building, maintaining and improving regional public transport systems, and to connect distant regions by constructing missing links in the road networks or expanding the high-speed rail network. Improvement of urban transport, enhancement of efficiency in logistics to remote islands, and reinforcement of ports on the west coast can give a strong impetus to local economies.

m Asia is regarded as an engine of the world economy, and international transport is at the heart of this success. What role is Japan going to play?

▶ In a globalised economic environment, I think it is necessary for us to capture the growing demand in emerging markets in Asia and to reinvent Japan as an attractive country for foreign investment. We expect our big cities to be the bases of international business and to lead the growth of our country by attracting people, goods and capital from all over the world. We want regional core cities to lead the local economies by re-positioning themselves based on their strengths and merits and by opening their doors to the world.

We are reorganizing international container ports and bulk cargo ports, and we are reinforcing major international airports. They are our international gateways. Also important are further advances in the open sky policy, encouraging the market-entry of low-cost containers, and securing safe operation of our international shipping fleet. Emphasis should also be placed on connecting major cities by railway and with high quality roads, linking city centres and nearby ports and airports efficiently, constructing ring roads in major cities to secure smooth traffic flows and thus completing a seamless transport network which covers both the domestic and international transport market. With these policies we can guarantee the seamless moving of passengers and goods within or across our borders.

Not least, it is our policy to encourage our competitive transport industries and infrastructure-related industries to expand into foreign markets. There are many things in transport which were developed by Japanese and that people have been using and loving for years, from high speed trains to local bus services. I believe there must be things among them which other nations will find good and convenient. I would like us to share those good things with other friendly nations. I would be happy if our way of life can contribute to improving their lives and growing their economy. That is what I would like to see. ■

TRANSPORT IN JAPAN Rail



MagLev train

From Shinkansen to MagLev

The latest addition to Japan's world-renowned high-speed rail network was opened in March 2011 on the southwestern island of Kyushu. Only a day after the earthquake and tsunami devastated the East coast, the new 130 km-long Kyushu Shinkansen Line between Hakata and Shin-Yatsushiro commenced operation, now finally linking Kagoshima in the very Southwest of Japan with the country's other main cities.

Japan continues to promote the construction of new Shinkansen lines, which dramatically reduce travel time and have great impact on regional development, revitalizing local economies. But the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is also looking at still more advanced high-speed rail technology – such as the Gauge Change Train that can operate freely in different gauges, for example on the Shinkansen lines (using 1435 mm gauge) and conventional lines (operating on 1067 mm).

In terms of high-end technology, the Superconducting Magnetically Levitated Train – or MagLev, for Short – is regarded as the way forward for creating the super high-speed and high-capacity transport system of the future.

Developing Urban Rail

Rail transport is also a key element in the strategy to mitigate the severe transport congestion in the metropolitan areas. One of the measures that Japan is implementing is the construction of new high-speed subway lines. Another involves the remodeling of dedicated freight lines into dual-purpose freight and passenger lines in order

to absorb higher demand for commuter transport along such lines. Not least, new airport access railways are foreseen to ensure seamless passenger flows between airports and city centres.

The Urban Railways Improvement Law mandates MLIT Japan with implementing the construction of connecting lines and shortcut lines to reduce the burden of changing trains for passengers. Another objective is an integrated development of stations and their surroundings for greater convenience of users.

Revitalizing regions, improving safety

Good rail services are not least ensured through intensive support for indebted local railway operators, for example through support for facility investment that improves safety or spurs more frequent use. Support for “Public-owned Privatization” in the form of collaboration between local governments and railway operators is another aspect. To foster revitalization in the context of urban development, support is for instance provided for the development of barrier-free facilities in railway stations and the Light Rail Transit (LRT). In a local context, the development of Dual-Mode Vehicles (DMV), which are interoperable on both railway and road, provide interesting possibilities.

Safety is paramount in operating railway systems. Preventing accidents at level crossings and on platforms in train stations are a priority, as these account for about half of rail-related accidents in Japan. In response to a serious derailment accident that occurred on the Fukuchiyama Line near Osaka in April 2005, the Railway Enterprise Law was revised to improve transport safety, providing a new basis for the continuous efforts to improve rail safety.



Dual-Mode Vehicles

A380

Love at first flight.

TRANSPORT IN JAPAN Road and automotive



Stepless bus

Heading down new highways

Traffic congestion is causing serious dysfunctions in urban areas of Japan, as it does elsewhere. To address this, high-standard highway networks are being built to improve the reliability of expressway services in terms of on-time travel. Additionally, road networks that meet international logistics needs are being established for better access to airports and ports with a view to strengthening the international competitiveness of Japan and promoting economic development in the country.

In three major metropolitan areas, new ring roads have been developed, with the purpose of securing routes for evacuation, aid, and logistics in the event of an inland earthquake. They will also facilitate prompt and smooth freight transport, thus mitigating congestion and enhancing Japan's international competitiveness. To strengthen competitiveness, access roads to Japan's major airports and harbors have also been developed to allow better access to Japan's expressway network.

Tackling environmental problems

The prevention of air pollution is still a pressing issue in Japan, and various efforts are being undertaken to mitigate this. In October 2009, Japan implemented the world's highest standard for Post New Long-term Emissions, which sets emission levels that must be met as a type approval limit as well as a production average.

With the Kyoto Protocol in mind, Japan is also aggressively promoting measures to counter global warming. For instance, "green" taxation reduces the tax burden on the acquisition and possession of low-emission vehicles thus helping to control CO₂ emissions from vehicles. Japan has also set target standard values for fuel economy. In fact, in 2006, Japan was the first country in the world to introduce fuel-efficiency standards for heavy-weight vehicles. In 2007, new standards for passenger vehicles were also introduced.

At the same time, Japan is supporting the development of next-generation Environment Friendly Vehicles (EFVs) in cooperation with manufacturers and research institutions. The Japanese government is engaged in close international co-operation with other countries regarding the development and popularization of EFVs through the EFV International Conference.

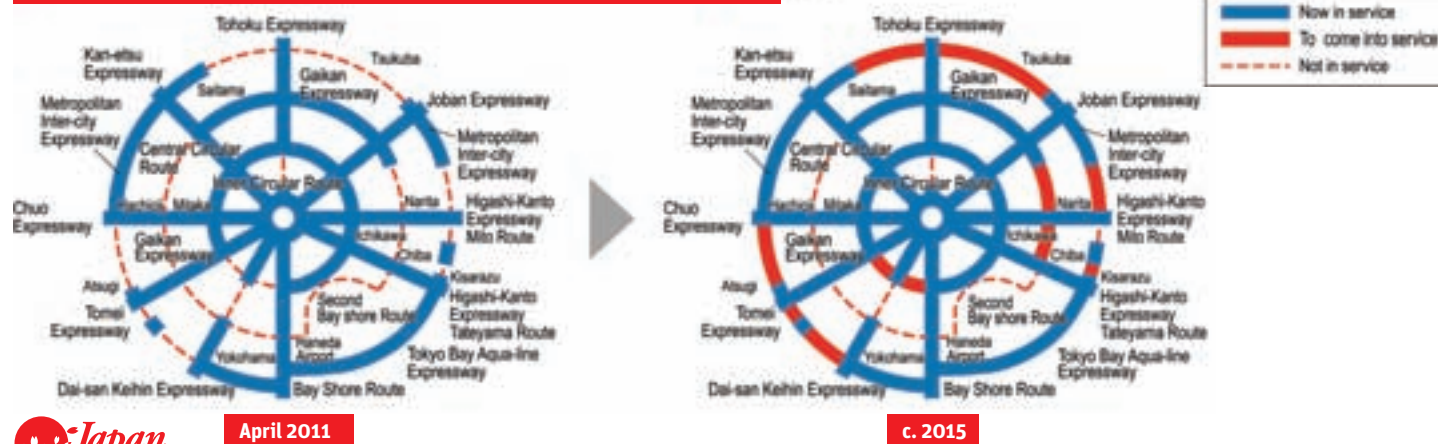
Safe and user-friendly

Safety remains a key area of concern with regard to road transport. Japan is promoting safe vehicles through various means, such as the Advanced Safety Vehicle (ASV) project, which focuses on the development of innovative and safety technologies, and the New Car Assessment Program, which evaluates the safety performance of vehicles. The operators of buses, trucks, and other heavy vehicles are subject to safety check-ups and inspections implemented by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

In reaction to environmental problems and an aging society, Japan is continuously working to enhance the appeal of mass transit systems and actively promotes their usage. In this context, Japan aims to adopt modern barrier-free technologies. For instance, we aim to provide stepless buses for about 70% of domestic bus services by 2020.

A final issue of importance concerning road transport and the automotive sector is the international harmonization of vehicle regulations and the mutual recognition of certification. Here, Japan is an active participant in the World Forum for the Harmonization of Vehicle Regulations (WP29) and promotes the harmonization of vehicle regulations and certification systems.

Access roads to airports and and harbours



TRANSPORT IN JAPAN Aviation



Aerial view of Haneda airport with new D runway (foreground)

In pursuit of open skies

In the era of globalisation, aviation connects people around the world like no other transport mode. In order to foster the development of international airline networks, the Japanese government is pursuing several initiatives. Based on Japan's New Growth Strategy, one aims at expanding the capacity of Narita and Haneda airports serving the Greater Tokyo area, and another focuses on building the framework of "Open Skies" agreements. As of February 2012, Japan had concluded "Open Skies" agreements with 14 countries or regions, and the government will continue to expand this framework to include more countries in Asia, Europe and other regions.

Low-cost carriers are relatively new to Japan, but are now actively entering the aviation market and are expected to expand their activities considerably. On the premise that newcomers adhere to safety standards, the government supports this development through deregulation measures that help reduce costs for airlines and through negotiating Open Skies agreements.

A jet from Japan

Japan makes considerable efforts to promote business jet services. A passenger terminal for business jets equipped with Customs, Immigration and Quarantine (CIQ) facilities was opened at Tokyo's Narita airport in March 2012. Since October 2010, Haneda airport has been open for business jets during daytime in addition to night flights. Osaka's Kansai International Airport and Chubu International Airport in central Japan are already available 24 hours a day, seven days a week for business jets.

On the hardware side of aviation, the Ministry for Land, Infrastructure, Transport and Tourism (MLIT) is currently in the process of type certification for the new Mitsubishi Regional Jet (MRJ). This next-generation aircraft, which will offer top-class operational economical and cabin comfort by featuring various innovative technologies, is being developed in Japan in close co-operation with several international partners.

New safety management

Total focus on safety is paramount in civil aviation. In order to prevent potential accidents, MLIT, as the responsible agency, aims to shift to a comprehensive safety management approach. This will not only monitor compliance with existing safety regulations, but also evaluate safety performance on a continuous basis, in order to further improve the overall safety record of aviation.

In order to ensure the functioning of airports in the case of natural disasters such as earthquakes or floods, MLIT Japan has introduced reinforcements against seismic shocks at airport facilities and has ensured fire-fighting and rescue capabilities. In close collaboration with the international community, MLIT is also addressing the growing and increasingly diversified threat of terrorism through various kinds of security measures that aim at achieving safe and secure flights for all passengers.

Promoting Eco-Airports

Air Traffic Management is an area that provides scope for enhancing the safety as well as the efficiency of aircraft operation. MLIT therefore promotes Performance Based Navigation (PBN) based on the standards of the International Civil Aviation Organization (ICAO), in order to help increase airspace capacity and reduce fuel consumption of aircrafts.

Since 2003, Japan has championed environmentally-friendly airports, or "Eco-airports", in various ways. The airport administrators organise the Eco-Airport Council that includes all stakeholders. Also, a cyclical ten-year Airport Environmental Plan is prepared, implemented, evaluated and then adapted to reflect necessary changes. Not least, the Japanese government provides funds to support private companies wishing to introduce environmentally friendly facilities at Japan's airports.



Ocean shipping is a lifeline of Japan's economy

Steaming ahead

Maritime transport is indispensable to Japan. As an island nation, it constitutes an important lifeline for the Japanese economy, both for international and of domestic freight traffic. The share of maritime transport of Japan's imports and exports is more than 99% by weight. Of domestic cargo volume, measured in ton-kilometers, about one third is moved by ship.



Electric transfer crane at Hakata port

In the light of these facts, Japan makes great efforts to ensure a free and fair market environment in the maritime sector and to enhance the competitiveness of Japanese ocean-going fleet in international shipping. At the same time, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) also strives to revitalize maritime transport as an eco-friendly solution for domestic transport. For instance, MLIT promotes the introduction of eco-friendly ships for cargo transport. Improving and promoting regional maritime routes for passenger transportation, for instance between remote islands and the mainland, is another example.

Japan's shipbuilding and ship machinery industry produces about 25% of the world's ships and ship equipment. MLIT works to further develop this sector, not least by supporting the development of new technologies, for instance in the production of leisure boats made in Japan.

Fighting shipping emissions

Global warming is of concern also to the maritime industry. Japan's "Marine Environment Initiative" aims to help establishing an international framework to reduce CO₂ emission from ships. In parallel, the government supports innovative R&D projects to ensure the availability of energy efficient vessels. Some fruits of this have been innovations such as a high-efficiency propeller and a method of air lubrication.

Research for a ship fuelled by liquefied natural gas (LNG) and a floating wind turbine are other examples. Setting strict standards and managing inspections of ships is another aspect of the efforts MLIT undertakes to protect the environment and to ensure maritime safety and security more generally.

A comprehensive approach for the reduction of greenhouse gases from activities in ports and harbours has also been introduced. It includes the utilization of renewable energy and expansion of CO₂ sinks as well as a number of other specific measures that will be implemented in ports and harbours around Japan: introduction of electric transfer cranes, power saving container facilities and side power supply for moored ships, precision of wind-generated power and the development of green fields, seaweed beds and tidal flats.

Eyes on the Seafarer

Maritime transport relies on the availability of able seafarers and other staff. As the aging of Japanese society results in increased reliance on foreign seafarers, it is extremely important for the Japanese maritime industry to recruit and keep on board able seafarers and other staff to ensure an adequate "human infrastructure". To facilitate this, MLIT Japan is involved in recruitment drives for younger seafarers, cooperation with maritime stakeholders, and improving seafarers' working environment including accident prevention. Recently, a focus has been to raise and secure Japanese seafarers and to train foreign seafarers through international cooperation.

As part of a drive to improve regional disaster-prevention facilities, MLIT Japan has built several aseismic reinforced quays and access roads. In the event of a disaster, these will help to secure logistics and provide an operating base for the Japanese Self Defense Force. Additionally, a logistics backup system is being created to strengthen capacities in case of disasters. Business Contingency Plans for ports and harbours are under discussion to continue local economic activity as much as possible in the event of disaster.

TRANSPORT APPS

Power in your pocket

How did we ever manage without them? Transport apps for smart phones empower users in new ways – motion presents some highlights / by David Knight

Transport apps are among the most popular tools for smart phone users. On Apple's iTunes store, more than 10,000 apps are currently available in the Travel and Navigation categories; Google's Android Market lists more than 1300 apps (1000 of which are free) under

"Transportation" and "Travel and Local". The convenient little helpers in your pocket help make everything from planning, booking, ticketing, navigating and transiting smoother, more relaxed – and often more fun. Some highlights:



LeBonWagon is a nifty iPhone app that solves a small but often critical transit issue for public transport users: It shows you on which wagon of any given Metro line in Paris you need to get for the perfect transit. Follow the advice, and you will hop off the train just opposite the passageway that takes you to your connecting line. In a city where platforms are notoriously overcrowded and underground pedestrian connections often resemble labyrinths, Le Bon Wagon helps you to avoid transit stress and cut travel time by between five and ten precious minutes. The app also works on tram lines 2 and 3. (www.lebonwagon.fr)



Waze is a "social transport app" that uses crowd-sourcing to gather and update real-time road intelligence. Waze collates live maps and accident and traffic reports, but also enlists members to contribute info on bottlenecks, accidents, police speeding traps, weather hazards or cheap petrol. Creator Ehud Shabtai developed Waze because he was disappointed that traditional GPS-based navigation software did not reflect the dynamic changes in road conditions. Waze can be used anywhere, with around a dozen countries including the US, Israel and the UK having full base maps. (www.waze.com)



Hootroot takes the carbon offset discussion a step further. A winner in the US Environmental Protection Agency's "Apps for the Environment" Challenge, Hootroot combines directions for a given route within the US – whether by car, plane, mass transit, on foot or by bicycle – with information of the carbon footprint of the chosen option for that route. Making this data available will "empower individuals, companies and governments to make smarter decisions", hopes Andy Rossmessl, co-founder of the app's creator Brighter Planet. (hootroot.com)



Chromaroma is pioneering a whole new approach to experiencing public transport – by making a game out of it. Chromaroma is an online community of London public transport users who add a virtual dimension to their routine transport experiences. Players use their Oyster Card – the city's electronic ticketing service – to record their movements and location as they enter and exit Tube stations, board buses or hire "Boris bikes", London's bike-sharing system. Depending on the stations and journeys users complete, they are awarded points. The more venturesome users are, the more points they can collect – thus encouraging people to make new journeys and use public transport in new ways. (www.chromaroma.com)



Gares 360 provides assistance with another underrated seam in the transport chain: Getting from your point of arrival at the train station to the right platform. Picture by picture, the app (created for French railway operator SNCF) takes you from the taxi stand, the metro exit or any other location you enter to your train – a virtual tour that is particularly valuable for persons with reduced mobility. Currently, more than 60 stations in France are available (www.gare360.fr)



The **London Tube app**, launched in June 2011, uses augmented reality to make life for users easier. Dubbed 'Your New Eye', the application superimposes information on nearby points of interest (POI) over an iPhone camera's live view, providing users with information in categories such as Attractions, Accommodation or Food & Drink. Of course, the London Tube app is also a comprehensive on- and offline guide to travelling through the city. (www.presselite.com/iphone/londontube)



Carpooling.com operates at the seam between public and private transport. Enter starting point, destination and travel date; then browse a list of drivers offering a ride for a small price. Available in 5000 cities in 45 countries, the platform brokered 12 million ride-shares in 2011. "When people think of mobility, they look for the best way to get from A to B," says CEO Markus Barnikel. "Unlocking the idle capacity of cars is a simple solution with enormous benefits." (www.carpooling.com)

David Knight is editor-in-chief of Berlin-based tech website SiliconAllee.com

Powering transport's future

E-mobility needs seamless delivery of electricity. Ideas to make grids smarter abound, but implementing them will take time / by Jason Walsh

Smart grids are deceptively simple idea. Instead of simply distributing power, a smart grid uses digital monitoring technologies to efficiently deliver electricity where and when it is needed. In the process, it makes intermittent renewable sources like solar and wind more viable. The key is making consumption follow production, rather than matching demand. The problem is having enough energy on tap to meet demand.

One surprising solution? Cars. Widespread adoption of e-mobility will lead to greater electricity consumption, thus demanding a rethink of electricity supply in order to avoid increased reliance on fossil fuel for power generation. Vehicle-to-grid transmission is one solution. "There are two sides to it," says Sebastian Wittke of Germany Trade and Invest, the country's economic development agency. "One is feeding excess energy into the batteries to store. The other, a little bit further into the future, is to feed it back into the grid."

In the shorter term, power stored in the car could be used to run household appliances, reducing demand on the grid at times of peak load. "The question here is: what is the business case, as the increased load cycle harms the batteries," says Wittke.

"The industry is facing some great challenges," says Sandra Courant of the German Association of the Automotive Industry. "We need batteries that are lightweight and demonstrate great cycle stability, high power density, good discharge/charge efficiency, a high level of safety and a long lifetime — that is, they simply have to be 'right for vehicles.' And furthermore, all this should come at affordable prices."

Promoting zero emissions

The uptake of electric vehicles may just have received a considerable boost. In January, California pushed for e-mobility by mandating greater availability of "zero-emissions" vehicles. By 2050 the state will require 87% of all cars on the road to be "zero-emissions" vehicles. By 2025, 15% of all cars sold must be electric, plug-in hybrid or hydrogen fuel cell-powered. Lawmakers elsewhere have been promoting zero-emissions mobility, too.

Eamon Ryan, leader of the Irish Green party and former environment Minister, says the country's target to have 10% of road vehicles electrified by 2020 will create benefits when



Recharging an electric car

combined with smart grids. "You could be looking at a 400 megawatts saving in [Ireland's] 4 gigawatt electricity demand every day, meaning you don't have to turn on another gas plant," he says. Off-peak and in appropriate conditions, Ireland already generates up to 50% of its electricity from wind. Expansion into peak times requires a means to control storage and demand. "You need these sorts of demand management systems to regulate variable power," says Ryan.

My home is a powerplant

Germany's commitment to renewable energy — 80% of energy must be produced from renewable sources by 2050 — makes it an EU leader in both smart grids and e-mobility. "Germany now has 20% renewables in its energy mix," says Thomas Grigoleit of Germany Trade and Invest. "We are coming to a point where we need a smart grid. The more fluctuation there is in the supply, the more we need it," he says. "The general idea is you want to be able to control supply of baseload as much as you can now."

One idea gaining traction is the energy positive house, or Plus-Energiehaus. Passive houses, which consume as little energy as possible are already well known. Positive energy houses take the idea and run with it, generating more energy through renewable micro-generation than they consume in heating, cooling and lighting.

Excess energy could be fed into the grid — or it could be used to power electric vehicles, thus creating genuinely zero emissions mobility: Commuters would just plug their car into their house for overnight recharging. Pilot schemes based on designs pioneered by the Technical University of Darmstadt are underway in Germany under the aegis of the Federal Ministry of Transport, Building and Urban Development. France aims to have all new buildings meet the standard by 2020, and elsewhere projects are also in the works.

Potential breakthrough

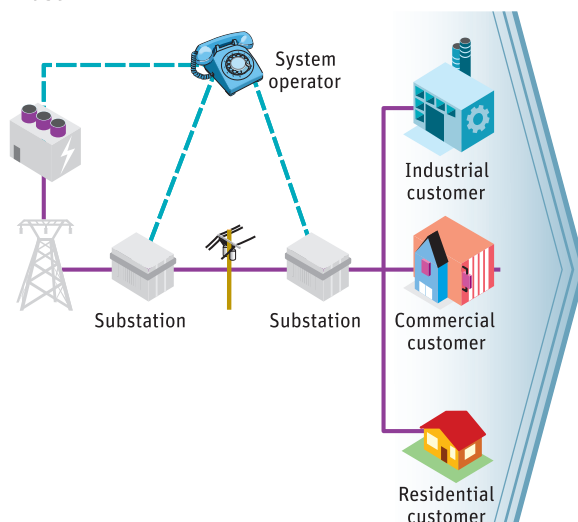
Jeff Colley of Ireland's Environmental and Sustainable Construction Association says positive energy houses are achievable: "At the moment it's for enthusiasts, but as the capital cost of building comes down and energy costs rise it will make it viable. It makes sense at least to build a [low energy] house that's ready for photovoltaic solar integration." Colley says energy positive houses charging cars represents a potential breakthrough in terms of meeting emissions reductions cost-effectively: "Even given capital costs, it's still going to be cheaper than running a petrol car."

While energy-producing houses could certainly help the up-take of electric mobility, they would only go so far. After all, car users will not want to have their radius of travel limited by having to return to home-base for every recharging. Creating a comprehensive recharging infrastructure is therefore the major challenge and intimately linked to the question of intelligent distribution of electric power.

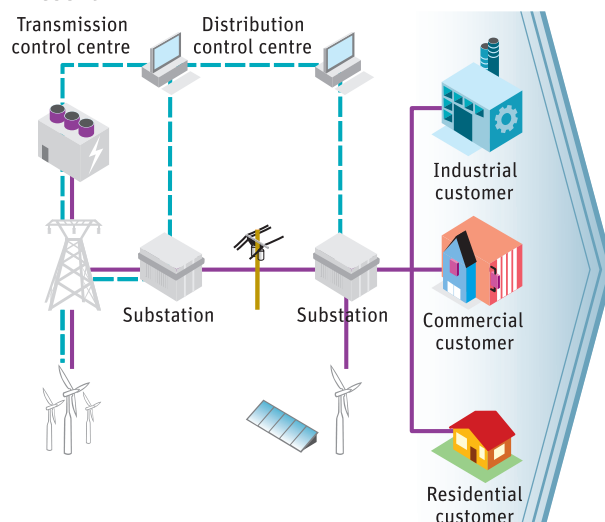
The challenge is already spawning some new thinking among traditional transport players and newcomers alike. Some railway companies for example are discovering that they are not only providers of train rides, but also expert distributors of electricity — and that there may be a business case for what they have so far seen as a support function.

TOWARDS SMART GRIDS

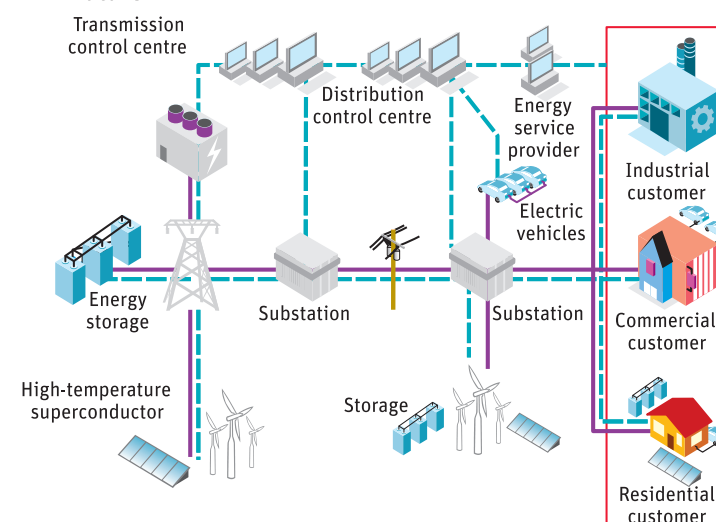
Past



Present



Future



— Electrical infrastructure

- - - Communications

Technology Roadmap — Smart Grids © OECD/IEA 2011



Smart grids rely on more landlines

For instance, German rail operator Deutsche Bahn, which powers over 90% of its rail services by electric current, is adding another 50 metres or so of cable from its third rail to selected station car-parks to feed recharging stations for electric vehicles, creating a potential new revenue source. Additionally, these recharging stations will power a nation-wide e-vehicle sharing pilot scheme for which Deutsche Bahn signed an agreement with French carmaker Peugeot in October 2011.

Other e-car sharing schemes have had to create their energy infrastructure from scratch, usually limiting such endeavours to urban areas. Even there, the necessary investments are huge. In Paris, the Autolib' car-sharing scheme was unveiled by Mayor Bertrand Delanoë in December 2011. Based on the successful model of Paris's bike-share scheme Vélib', a fleet of 2 000 specially designed and built electric vehicles has made its appearance in the City of Lights.

Magnetic cities

The price tag for getting charging stations – which also sell electricity to privately owned e-vehicles cars and support infrastructure in place – is estimated at €100 million, plus another €100 million annual operating costs. The city hopes to save 20 000 tonnes of carbon dioxide emissions annually and reduce congestion by encouraging Parisians to not purchase private cars.

Not everyone is sure about e-mobility, however. Martin Rocholl of the European Climate Foundation (ECF) wants to see investment in alternative propulsion, but says no country should put all of its eggs in the electric basket. A study the ECF conducted with the U.S. Environmental Protection Agency, he says, showed the extra costs to make a traditional

car dramatically more efficient is in a cost range where the consumer would win. "What we are in danger of is massive subsidies for electric cars," Rocholl fears. Because then "all we'll get is wealthy families getting a third car to salve their consciences."

Ozzie Zehner, author of "Green Illusions" and visiting scholar at the University of California, even argues e-mobility won't work. "Live grid electricity costs you about 10US cent per kilowatt hour. Once you store that in a battery and regurgitate it, it's 30, 40 cent, maybe even a dollar per kilowatt hour." Zehner's alternative is to reconfigure infrastructure away from private transport as far as is possible: "We need to create cities and villages that are alluring, that are magnetic and that people want to live in."

Jason Walsh is Ireland correspondent for the Christian Science Monitor and writes regularly for PressEurop.eu. He also contributes to the Irish Times, The Guardian, The Independent, and USA Today, among others.



A Copenhagen S-Train with flexi compartment

to hire bicycles. Also, Vélib' offers the only 24 hour public form of transport in the French capital. While many cities need to subsidize Public Transport, the City of Paris makes €14m a year from Vélib' subscriptions and other services.

Technology is helping to marry bicycles and public transport, as Web-based journey planners are beginning to include cycling. An explosion in the number of smart-phone applications allow users to know how many spaces are left at specific bike-sharing stations and avoid frustrating user experiences. In cities which

CYCLING FOR SEAMLESSNESS

Connecting the Dots

The bicycle offers enormous potential to enable true door-to-door transport solutions / by Julian Ferguson

Chloé, a 21st century woman, wakes up ready for her daily commute. A shower and a coffee later she is on her bicycle, making her way to the metro station. She leaves her bike in secure underground parking and hops on the train into the city. A look at her smart-phone assures her five free public bicycles are available at the station. Using her metro card to pick one up, she arrives at her office ready for work at the time she had planned. The trip has taken a total of 30 minutes. Only four minutes were spent changing transport modes.

"If the main arteries of seamless transport are public transit, then there's little doubt that bicycles keep the blood flowing," says Bernhard Ensink of the European Cyclists' Federation (ECF). According to numerous studies, cycling effectively makes the catchment area of public transport stops 9 to 16 times larger than walking.

Bike-share schemes have been at the forefront of this change in thinking. In 2001, only a few systems were in operation throughout Europe. Today that number exceeds 400. There are signs of growth in Asia, with 33 Chinese cities operating such schemes. Indeed, as a recent United Nations report notes, bike sharing has gone from "interesting experiments in urban mobility to mainstream public transport options in cities as large and complex as Paris and London".

Low cost and convenient

The Vélib' system in Paris has been at the forefront of an idea now emulated in London, Dublin, Barcelona, Changwon in Korea and soon New York. Launched with a fleet of 7 000 bicycles in 2007, it had more than 20 000 bikes in February 2012, with more than 105 million rentals since its inception. Low cost and convenient, the Vélib' project has helped to turn Parisians into avid cyclists. And there is Vélib's connectivity with public transport: Users can use their metro subscription

lack bicycle networks, mobile applications allow bike-friendly routes to be plotted out, helping cyclists to find quieter, safer routes to transport hubs such as train stations and bus stops. One conundrum transport planners are faced with is whether bicycles should be allowed on public transport or not. Two strategies are being tested: Either allow bicycles to travel on public transport – or provide good bicycle parking infrastructure.

High-quality bicycle parking

In January 2010, the city of Copenhagen in Denmark opened up their "S-trains" to bicycles to encourage seamless commuting. On these trains, "flexi compartments" allow multiple bicycles on board at no extra cost. These compartments also cater for wheelchairs, strollers and large luggage. "It's a great idea", says Sidsel Birk Hjuler, a Copenhagen resident. "However, pretty quickly I have noticed that it's really difficult to cater for the growing demand."

While bikes on trains should be encouraged, demand sooner or later exceeds supply. In the Netherlands, another approach is being tested: Here, people pay to put bikes on trains, but high-quality parking and bicycle sharing are provided at stations. In fact, the national railway company owns the bike-share scheme "OV-fiets", ensuring effective integration. As a result, for 146 of the 365 million annual train trips in the Netherlands travelers cycled to and from train stations – helped, no doubt, by an excellent network of bicycle routes that incorporates public transport nodes.

In the evening, Chloé, our 21st century woman, makes her journey back home after work, switching easily between bicycles and metro. To her, and to millions more, cycling is in effect the missing link that makes possible what no high-speed train, tram or bus alone can provide: connecting the dots to enable true door-to-door transport.

Julian Ferguson works for the European Cyclists Federation in Brussels.



"Parking your car one kilometre away from the air terminal is not ideal when going on holiday with the family."

"A framework for innovative transport"

Siim Kallas, Vice-President of the European Commission and responsible for Transport, on initiatives for seamless mobility in Europe

motion The European Commission published its long-awaited White Paper on Transport last year. What are the key initiatives that will make transport in Europe more seamless?

Siim Kallas Seamless transport is basically about making it easy to combine different means of transport and to make the transport system as a whole more flexible, sustainable and resilient. Operators within sea transport, air transport, rail transport and bus transport all have a vital interest in making access to their transport system or line of business as smooth as possible. The same goes for road hauliers and owners of private cars. Parking your car one kilometre away from the air terminal is not ideal when going on holiday with the family. Improving rail and road connections to ports and other nodes in the transport system is an important, visible and costly component in a seamless system. The European Commission supports the physical integration of the European transport system through, primarily, the revised TEN-T policy and the Connecting Europe Facility.

m And how are these initiatives being implemented?

► The White Paper on Transport announces more than 40 broad initiatives to transform the vision into concrete policy. Important policy initiatives have already been launched – the airport package, the revised TEN-T guidelines and the connecting Europe facility just to mention a few. I am firmly committed to maintain the present pace and launch as many of the announced new initiatives as possible during my term as a responsible.

m The White Paper adopts very challenging targets for modal shift from road to other modes. What are the key actions the Commission can take to enable rail to take up the challenge?

► Modal shift is not a target *per se*, but in view of future challenges we will only be able to provide efficient and affordable mobility if we are capable of a more balanced exploitation of all modes. The big challenge is to enable rail to be more competitive. I think we need a combination of significant investments in developing rail infrastructure and multimodal links; the establishment of cross-border corridors that do not suffer from technical or administrative barriers; and further market opening processes to inject more competition in the system. All three elements are firmly in our policy agenda.

m What about improving connectivity through smart technology?

► Developing the soft side of modal integration is the other leg in the Commission strategy. Creating a multimodal transport information, management and payment system for public transport is an initiative which the Commission will support through an innovation and deployment strategy and by creating a regulatory framework for innovative transport.

DATA FOCUS

€215 billion

investment required until 2020 for removal of main bottlenecks in the context of the Trans-European Transport Network (TEN-T) plan

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SEAMLESS SECURITY

A price to pay

Can security checks at airports be sped up – and at what cost, in terms of money and risk? / by Mary Beth Warner

A vision for what the airport experience of the future could look like is this: Passengers, who have been pre-screened, whisk into the airport, biometric identification in hand. They scan their IDs at a checkpoint, then walk through a designated portal based on their risk level. The portal could automatically detect the presence of explosives on their bodies, scan their shoes and lower legs, and x-ray their carry-on baggage.

Passengers would breeze through such portals in 15 to 20 seconds, says Steve Hill of Morpho Detection, part of the French Safran group. If implemented, he says, it would help make the international traveller's experience easier and would allow for better threat detection. "There is precious little integration and far too little adoption of advanced technologies," Hill says of international security.

Most experts agree that aviation security is one area that can be made more seamless. It has been largely event driven, and is hampered by questions of costs and differences in national rules and regulations. But with stories about confiscated cupcakes and grandmothers being forcibly patted down at airports making waves on the Internet, security experts, manufacturers, regulators and airport operators are searching for better ways to balance security with a smooth travel experience.

Rafi Sela, president of AR Challenges, a consultancy firm, has devised a risk-based security plan that includes tracking people as they arrive at the airport, and is based on the concept used at Ben Gurion Airport in Tel Aviv. "If the target is moving, you have to move with your target," he says. "You can't stand still."

Flash images

Under the system, which Sela is developing for pilot programmes in Britain and India, the average flier would check in at an automatic ticketing kiosk, where he would answer a few questions as part of a behavioural analysis and could be faced with flash images to trigger subconscious responses. If the passenger is flagged because of the answers, he would go on to secondary screening. Crew members and frequent fliers would have less security checks because they represent a reduced risk.

In the U.S., the Transportation Security Administration (TSA) has also recently started a frequent flier pilot programme which allows pre-screened passengers easier and quicker passes through security on certain airlines at a handful of U.S. airports. Participants in the programme, for example, are not required to take off their shoes or remove their laptops from their cases. In early February, the TSA announced it would be expanding the programme to 28 additional airports.

Cogs in the wheel

The TSA is also moving in other ways to a more risk-based model, according to an agency spokesperson. A new programme to expedite screening for pilots is being tested at several airports, including Chicago's O'Hare and Washington's Dulles International.

There are also human factors that influence how seamless a passenger's journey through security is. Alan Kirschenbaum, a professor at Technion-Israel Institute of Technology, has been coordinating a study in eight major European airports, called "Behavior Modeling for Security in Airports" (BEMOSA), which looks at decision-making.

That study, in which behaviour was observed from everyone in the airport – from passengers and store clerks all the way up the chain of command – has found that most security decisions are made in groups. It also found that a large proportion of those decisions are not made according to established rules and regulations.

Kirschenbaum also noted that airports often look at passengers as cogs in a wheel, without taking into account the fact that people behave in different ways. "One of the biggest problems



Airport security checks can be a hassle for travellers

for security is not terrorists, but drunken passengers," he observes: "How can you make them into a cog?"

Video algorithms

Airports are complex organisms, and several parties play a role in security – among them the operator, police, private security services, and immigration officials. Here, the communication flow is critical. The Thales Group, a French electronics company, has devised an integrated system they say will help those different players communicate better. Working at Dubai International Airport's Terminal 3 and at Doha International, Thales is implementing a system that would use broadband data connectivity to link an airport's operational control centre with security forces on the ground. Thales has also developed advanced video surveillance technology in which video algorithms on a camera itself or on artificial servers can detect motion or specific changes in the airport, and then raise an alarm at the control centre.

More airports are now also using biometrics – such as fingerprints, iris scanning or face recognition – as a way to quickly identify passengers. Morpho Detection has developed biometric face-recognition technology that is being used at automated border controls in all eight international airports in Australia, and in three New Zealand airports. Passengers aged 16 and up with e-passports (containing digital files of their photographs stored in chips) can move through so-called "SmartGates" within 8 to 12 seconds, say company representatives. In New Zealand, where the gates are both at the arrival and departing customs checkpoints, 1.5 million passengers were processed last year.

Cargo Security

It is not just passengers and their baggage that could provide a security risk. Aviation industry and regulators have also been struggling to find ways to improve cargo security, while at the same time minimizing the disruption to the flow of commerce. A failed bomb plot in October 2010, in which explosives were found in two packages sent via UPS and FedEx from Yemen to Chicago, highlighted the need to close security loopholes.

Michael Steen, chairman of the Global Air Cargo Advisory Group (GACAG), says that for security to fit seamlessly into the air cargo supply chain, the industry needs better technology and global standards, so air cargo operators can streamline their procedures. He also argues for a risk-based approach to security.

"We believe it is important to recognize that there are many types of air cargo, and that security regimes need to reflect this, rather than imposing a one-size-fits-all approach," says Steen. "In other words, we need to be flexible."

The full Monty?

What the future of security will look like depends not only on what regulators deem is the right approach to take, but also on the bottom line. New technologies are expensive, and there is debate over who should end up paying for them – regulating agencies, airports, or the airlines and consumers.

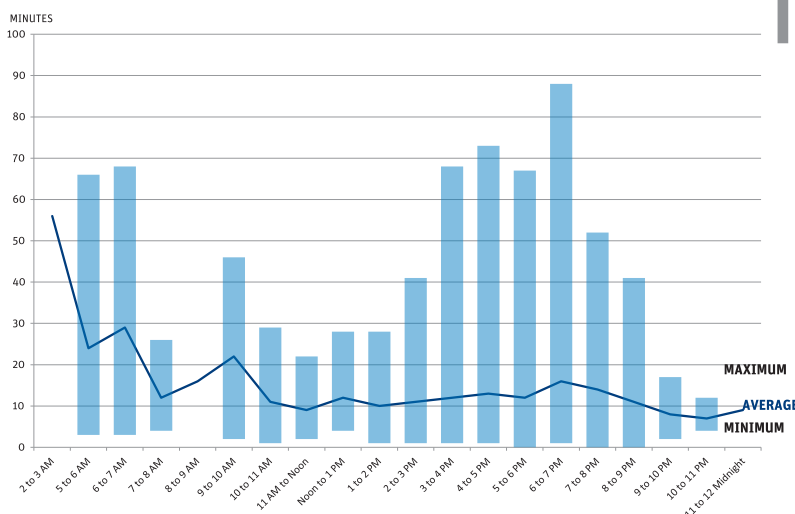
Robert Poole, Director of Transportation Policy at the Reason Foundation in the U.S., argues that airlines and passengers should pay for airline security. He notes that in the U.S., the aviation sector pays for less than half of the TSA's security costs, while in Canada, aviation pays 100% of the cost of CATSA. "If airlines and their passengers must pay for aviation security, they will have an incentive to serve as watchdogs against non-cost-effective security policies," says Poole.

While much of the technology for the checkpoints of the future is available now, or will be soon, getting regulators in different countries to approve changes to the security process is more time consuming. "Nobody believes that tomorrow or the next day we're going to deploy the Full Monty," says Morpho's Steve Hill. "It will probably be done piece by piece."

Mary Beth Warner has written for National Journal, Time, The Christian Science Monitor, The Philadelphia Inquirer and Spiegel Online International. She is a graduate of Columbia University's Graduate School of Journalism.

WAITING TIMES AT ATLANTA INTL AIRPORT (Main terminal)

January 2012





Using the Container Examination Facility

CROSS-BORDER TRANSPORT

Managing risk, facilitating trade

How Australia achieves measurable results in face of new border challenges

Over the last ten years, the Australian Customs and Border Protection Service has faced a number of significant challenges including terrorism, the move towards a global economy, increases to trade and travel volumes and advances in technology.

In response to these challenges, Customs and Border Protection has moved to an intelligence-led, risk-based framework that enables us to be more responsive to current and emerging threats. This framework is embedded in the design of new systems and programs.

To support the risk management approach, we implemented the Cargo Intervention Strategy, which enables Customs and Border Protection to balance resources across known and emerging risk areas and reduce the proportion of low risk cargo inspected. This ensures legitimate trade is not unnecessarily interrupted.

Measuring release speed

Our Integrated Cargo System (ICS) with integrated risk management capabilities is a national single window for international traders, which allows industry to connect electronically for coordinated clearance of goods crossing the Australian border. And in the traveller stream, we developed the Enhanced Passenger Assessment and Clearance (EPAC) program. This program improves the ability of border agencies to assess the risk posed by passengers before they reach Australia's border.

Every year, Customs and Border Protection undertakes a Time Release Study (TRS). The TRS is a method endorsed by the World Customs Organization for assessing a country's trade

facilitation performance at the border. It measures the average time between the arrival of goods at the border and the time permission is given for the goods to enter home consumption.

The 2010 TRS, our fourth, was published in September 2011 and confirms that border agency processes are not an impediment to Australia's import trade. The study found that the average elapsed time from arrival to release is approximately 14.5 hours for sea cargo, an improvement of 16 hours from the 2007 measurement. For air cargo, the interval is nearly five hours, an average improvement of more than two hours.

Self-service at the SmartGate

The TRS has demonstrated that early reporting supports early clearance, by enabling border agencies to complete risk assessment before the cargo has arrived. In return, early clearance provides traders with predictability and time to pre-arrange collection and inland transport. Earlier identification of high risk cargo means that legitimate trade is unimpeded.

SmartGate is another tool we have implemented to help ease cross-border passenger traffic at Australia's eight major international airports. SmartGate provides automated border processing capability that supports identity management at the border through travel document authentication and identity verification based on face recognition biometrics. More than four million travellers have used the self-service option and, as traveller numbers increase, SmartGate will enable more travellers to be processed while maintaining border security standards.

Customs and Border Protection is currently working with partner agencies to develop the 2012 Strategic Border Management Plan. This plan will set out how Australia will achieve a more integrated and seamless border management regime that is equipped to deal with border risks now and into the future.

This article was contributed by the Australian Customs and Border Protection Service

Business Brief

Sponsored by



**Performance
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Transport**
An FPInnovations Group



Interview with Yves Provencher
Director of the FPInnovations PIT Group

"We provide an original model and exceptional services to fleet managers and local councils to improve their energy efficiency"

Can you introduce the PIT group?

The PIT – Performance Innovation Transport – Group is based on experience acquired by FPInnovations in the field of road transport energy efficiency. FPInnovations is the Canadian forest industry's largest private research and development centre. PIT is a non-profit organisation whose aim is to provide its members, transport fleet managers and local councils, solutions which satisfy their needs in terms of reducing fuel consumption and greenhouse gas emissions. Our network currently has around fifty members (10,000 vehicles) in Canada and the USA. Members have access to the full range of services provided by our experts. We in fact become our members' engineering department. Suppliers of new technologies and accessories installed in vehicles to reduce fuel consumption are referred by members to PIT, which then validates the impact on fuel consumption. PIT has the tools, staff and know-how required to carry out rigorous and irrefutable checks. It also assists members in setting up and carrying out maintenance activities. In short, we propose and implement true global solutions in order to satisfy our members' needs.

Can you tell me about your R&D projects?

Part of the membership fees is paid into a common fund allowing for applied research projects to be financed. Members meet within the advisory committee to determine research orientations and priorities. We recently worked on a project to implement hybrid vehicles (diesel and electric) in municipalities. Firstly, we carried out a study aimed at establishing selection criteria for the most efficient types of vehicles. Then, we compared the

performance of both the diesel and hybrid vehicles to measure the benefits. Finally, we created and implemented a specialized training programme for hybrid vehicle drivers, which requires a different type of driving compared to traditional diesel engines to maximize the potential of the technology. This project illustrates very well the innovative aspect of our approach. Projects are determined according to members' requirements. Furthermore, the PIT team does not content itself with simply selecting a given technology or process. It endeavours to study the conditions in which they will be applied in order to ensure optimum use of gains achieved by research.

Do you have any international projects?

We are in discussion with fleets in India. Higher fuel prices are also drawing new interest in Europe for solutions in terms of energy efficiency. Our model is unique in its kind and we think that it will interest several European countries, among others. It is a formula which closely associates users and the world of research, and which works on the basis of a culture based on results in terms of energy efficiency. Plus, we've already acquired a great deal of experience since we're working with different types of fleets: road transport of goods, fleets belonging to local councils which provide people with specific services (waste collection, emergency services, etc.), buses, public services (electricity, cable, etc.). We're aware of the fact that each offer needs to be adapted to the particularities of each country. Our strength is to adapt to the needs and specificities of each and every one of our markets. We're currently studying the possibility of setting up in other countries in the very near future.

Robo, you can drive my car

That drivers are in full command of their cars is already an illusion.
Before too long, computers could replace them completely / by Jess Smee

At the 1939 World Fair in New York, people queued for hours to catch a glimpse of tomorrow. Visitors were bowled over by an installation called "Futurama," which forecast how cities would look in twenty years' time. Its vision of 1960 included widespread car-ownership, motorways and sprawling suburbs. Sponsored by General Motors, the crowd-puller also featured automated highways, where cars moved as part of a synchronised fleet – a technological leap which, at the time, looked wildly fantastical.

Now, more than seven decades on, technology is steering us firmly in that direction. Computers, sensors and cameras are increasingly common as co-drivers. Cars brake automatically to avoid a collision and are even learning to park themselves automatically. Car manufacturers are also working on systems that will prevent your car's engine from starting if you have drunk too much alcohol to drive. And driverless cars, industry analysts say, are no longer the stuff of science fiction: Sooner or later, they will be on your local streets.

In the race to the self-driving – or "autonomous" – car, internet titan Google has lapped traditional car manufacturers. Key to the project is Sebastian Thrun, a Google Fellow and artificial intelligence expert.

He and a team of engineers created a fleet of seven Toyota Prius cars which drive themselves, aided by a spinning laser on the roof of the car, which monitors the environment in all directions, as well as four radar sensors and a camera.

Different kind of road trip

"We want to improve people's lives by making driving safer, more enjoyable and more efficient," Thrun told *motion*. "Over 1.2 million people are killed in traffic worldwide every year and we think autonomous technology can significantly reduce that number." Thrun's drive to harness hi-tech to combat traffic fatalities is not least motivated by a blow of fate, the death of a friend in a road accident when he was 18.

Autonomous cars also offer hope the world's congested cities. Robot-driven vehicles could boost motorway capacity two or three-fold because the vehicles could drive closer together along narrower lanes. Google's self-driving fleet has already clocked up 200 000 kilometers, cruising through cities, along highways, across mountain roads by day and night. During all that time there was only one incident – while the car was being driven by a human.

Parallel to Google, there are a number of other self-driving prototypes. An autonomous Audi has driven to the top of Pikes Peak, a 4 000 meter-high mountain, in Colorado in the US, and a car built by a team from China's National University of Defense technology completed a 177-mile road trip.

Legal headaches

While technological developments are swift, analysts say the difficulty of creating a legal framework is likely to put the brakes on the rollout of autonomous cars. In March 2012, the State of California in the US announced new legislation to facilitate road tests of self-driving vehicles, something which is also permitted in Nevada. But allowing driverless cars en masse onto open road would constitute a risky leap of faith for lawmakers. After all, who's to blame if an autonomous car has an accident – the owner, the carmaker, the software developer?

Digital technology now allows cars to park themselves

Self-driving Google cars have logged c. 300 000 km with only occasional human intervention



"It is a political hurdle for a transport authority to accept autonomous cars in a mixed traffic environment if the public still has doubts or fears," says Philippe Crist of the International Transport Forum at the OECD. "It is a double problem: If there's an accident, there's a risk to the technology being rolled out and there's also a risk for the elected official." Given the legal headaches, industry experts do not expect driverless cars to become mainstream any time soon, instead viewing them as a long-term project.

But while most people would worry about driverless cars whizzing past them on the motorway, there is increasing consumer appetite for technology as a co-driver. Most car manufacturers' premium vehicles offer semi-autonomous features, such as blind spot alerts, automatic collision avoidance and even autopilot modes which can temporarily assume control of steering, with sensors monitoring the motorway lane and traffic.

"All car companies are hot on gadgetry right now," says a spokeswoman for Valeo, the French creator of the "Park4U" technology. "Technology is seen as a way of winning back the younger generation which is more into iPhones and iPads than driving." Park4U, which met with enormous public interest at the Frankfurt Motor Show last September, certainly caters to the video game generation: Get out of the car, press a button on your smart phone and watch your car park itself with utmost precision.

Global auto manufacturers are also facing dramatic technological and environmental shifts. With one in every two people in the world living in cities today, a figure the United Nations expects to rise to two in three by 2050, carmakers know that the classic car-advert image of an automobile accelerating down an empty road is increasingly counterfactual. During a recent speech in Barcelona, Ford Chairman Bill Ford sounded a warning that "global gridlock" would occur if the industry doesn't usher in technological improvements.

Talking cars

To avoid extreme congestion, such as the now famous 11-day traffic jam that occurred in China in 2010, the auto industry is

moving towards a future of "connected cars", whereby vehicles can communicate with each other as well as with the surrounding environment.

Vehicle-to-vehicle communication (known as v2v) enables cars to relay information to one another, for example that they are braking or that a traffic jam lies ahead. Meanwhile, the surrounding infrastructure will also interact with the vehicle of the future. The so-called v2i technology will enable a "smart" traffic light turning green to send a signal to waiting cars, allowing them to start moving simultaneously, thus speeding up traffic flow. Similarly, when the traffic light turns red, it can command the car to brake, eliminating the risk of red light violation, a key cause of road accidents.

The connected vehicle is big business, expected to be worth more than US\$70 billion by 2015, according to the consultancy Accenture. Reinhard Pfliegl, chair of the Intelligent Transport Systems (ITS) World Congress, the bi-annual meeting of ITS experts that will be held in Vienna in October, says smart cars and smart infrastructure as well as autonomous cars are the shape of things to come.

The future, now

"The future scenario has three pillars: autonomous driving, v2v and v2i communication," says Pfliegl. "A mistake we make today is focusing on just one of these three pillars, whereas, in reality, it will be a mixture of all three that works best." Pfliegl wants to bring the future a little bit nearer during the congress, which will include a demonstration of around 30 connected vehicles from different car manufacturers – even including a motorbike – circulating around Vienna's bustling motorway and city roads.

But he remains pragmatic about the Futurama-esque exhibit. "The technology is still developing. This isn't the final model for connected cars – but it is an important step towards the transport of the future."

Jess Smee covers culture and politics in Germany as a freelancer, after working as a correspondent for Reuters news agency in Frankfurt and Madrid.

4.2 billion

Man hours wasted in traffic jams in the US every year

DATA FOCUS

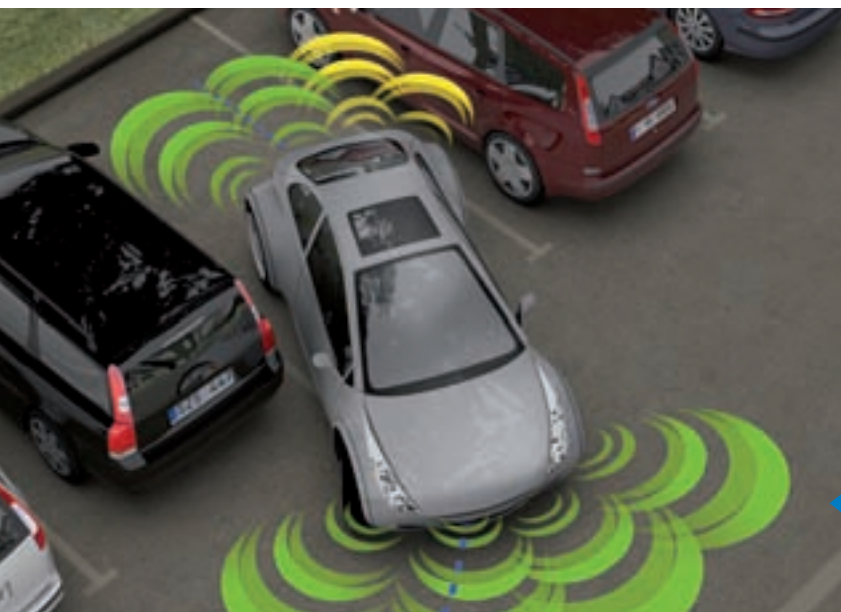
7 million

Man hours needed to build the Empire State Building

20 million

Man hours needed to build the Panama Canal

Source: Sebastian Thrun



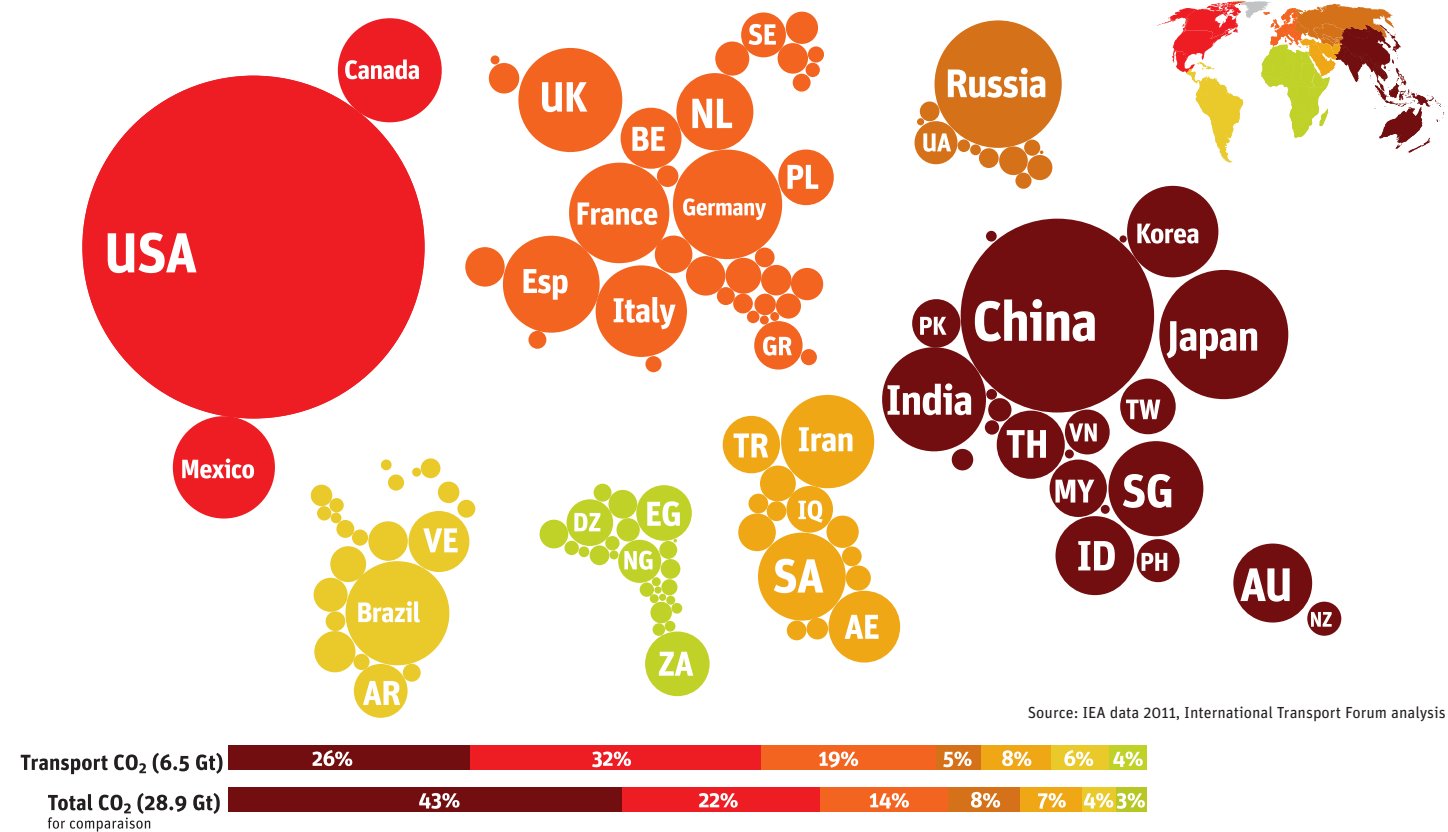
Transport Statistics

from the International Transport Forum

Global Transport CO₂ Emissions

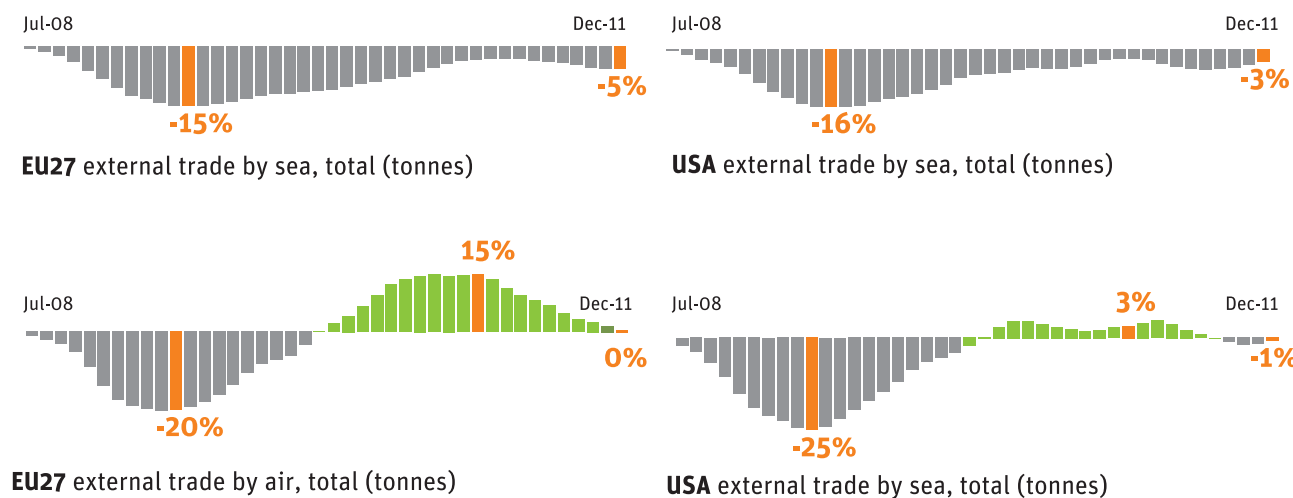
From Energy in 2009

Asia dominates global CO₂ emissions with China surpassing the United States as the world's number one emitter. Another picture emerges when looking at transport-related CO₂ emissions (below). North America and Europe still dominate with per-capita emissions of transport-related CO₂ several orders of magnitude higher than those of developing Asia. Economic growth in developing regions will likely be accompanied by a growing share of global transport CO₂ emissions from these regions.



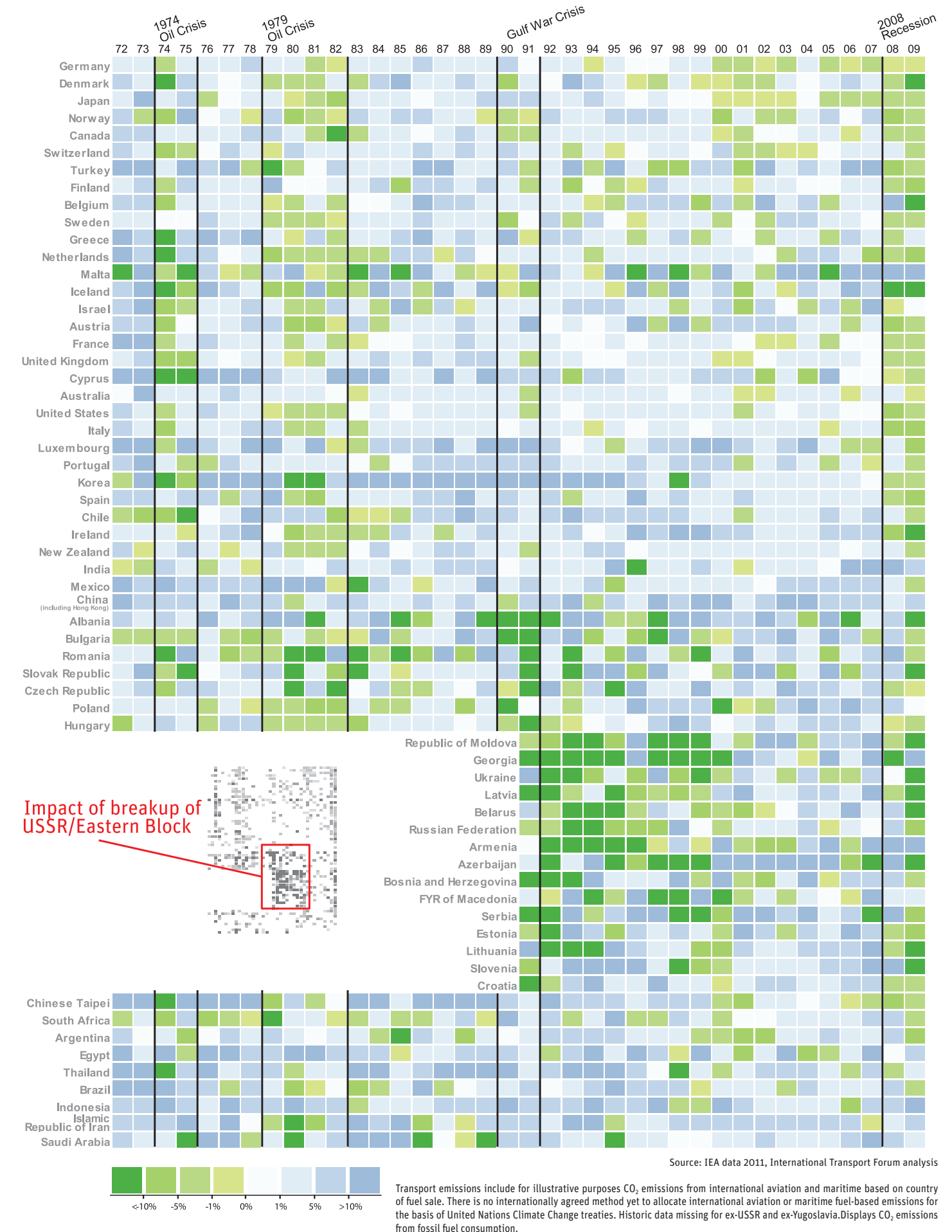
Global freight

The latest global freight data collected by the International Transport Forum at the OECD through December 2011 continue to indicate macroeconomic stagnation as volumes remain stagnant below pre-crisis (June 2008) levels



Transport CO₂ Emissions

The heatmap indicates percentage change of CO₂ emissions on previous year. GDP, Energy use and CO₂ emissions are strongly correlated as the link between decreasing emissions and economic crises illustrated here suggests. Concerted policies have had an impact as illustrated in the upper right-hand quadrant, especially in countries like Germany, Denmark and Japan.



Publications

from the International Transport Forum



Reporting on Serious Road Traffic Casualties:

Combining and using different data sources to improve understanding of non-fatal road traffic crashes

This special International Road Traffic and Accident Database (IRTAD) report was prepared by a Working Group on Linking Police and Hospital Data with a view to identify and assess methodologies for linking different sources of accident data in order to develop better estimates of the real number of road traffic casualties.

December 2011 – 108 pages; free pdf



Car Fleet Renewal Schemes: Environmental and Safety Impacts and Sustainability

Many governments have subsidised fleet renewal schemes to stimulate consumer spending on cars during economic downturns. Subsidies are often linked to the environmental performance of vehicles, but how effective is accelerated fleet renewal in reducing emissions and can schemes be designed to improve the safety of cars on the road? This report examines three of the largest programmes introduced in the wake of the 2008 financial crisis, in France, Germany and the United States.

June 2011 – 73 pages; free pdf



IRTAD annual Report 2011

The IRTAD Annual report 2011 provides an overview of road safety indicators for 2010 in 32 countries, with preliminary data for 2011. The report outlines recent safety measures adopted nationally, with detailed safety data by road user, location and age. This edition highlights contributions to the development of road safety policies by the IRTAD Group in 2011, with detailed reports for all member countries on targets and national strategies, including new strategies being developed for the UN Decade of Action for Road Safety.

March 2012; free pdf



Transport Outlook 2011

Meeting the Needs of 9 Billion People

The world's population will reach 9 billion by 2050. Meeting their transport demands will be challenging. As both population and incomes rise, global passenger mobility and global freight transport volumes may triple by 2050. The International Transport Forum's 2011 Outlook examines these trends, exploring the factors that may drive demand even higher and the limits imposed by infrastructure capacity, fuel prices and policies to accommodate or limit potentially explosive growth of car use in rapidly developing countries

May 2011 – 44 pages; free pdf
French version available

The 2012 Transport Outlook will be published in May 2012



Highlights of the International Transport Forum 2011 Transport for Society

How can transport provide even more benefits for our citizens and societies? How can all transport modes contribute to growth that is sustainable? Transport ministers and business leaders, mayors of major cities, top researchers and representatives of non-governmental organisations met together at the International Transport Forum's annual summit on 25-27 May 2011 in Leipzig, Germany, to examine these strategic issues.

This publication condenses their main findings.

October 2011 – 90 pages; free pdf German and French versions available



Pedestrian Safety, Health and Urban Space

The report documents the way pedestrians are largely overlooked in transport planning and makes recommendations on improving the environment for walking in order to promote the development of more sustainable cities that protect vulnerable road and pavement users. Walking can make a significant contribution to high level policy agendas on health, environmental protection and social cohesion.

Forthcoming 2012

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