2010
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International Transport Forum 2010

TRANSPORT AND INNOVATION
Unleashing the Potential

IN SEARCH OF INNOVATIVE POLICIES IN THE TRANSPORT SECTOR

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The views expressed here are those of the author, and should not be interpreted to represent those of the International Transport Forum or its Members.

The International Transport Forum is a strategic think tank for the transport sector. Each year, it brings together Ministers from over 50 countries, along with leading decision-makers and thinkers from the private sector, civil society and research, to address transport issues of strategic importance. An intergovernmental organisation linked to the OECD, the Forum's goal is to help shape the transport policy agenda, and ensure that it contributes to economic growth, environmental protection, social inclusion and the preservation of human life and wellbeing. The 2010 International Transport Forum, to be held on 26-28 May in Leipzig, Germany, will focus on Transport and Innovation: Unleashing the Potential.

This document was produced as background for the 2010 International Transport Forum, on 26-28 May in Leipzig, Germany, on *Transport and Innovation: Unleashing the Potential*.

For more information please see www.internationaltransportfoum.org.

ABSTRACT

The theme of Forum 2010 (Transport & Innovation) was chosen over two years ago at a time when the global economy was strong. Yet, as this paper suggests, a debate on innovation in the aftermath of the deepest recession since the 1930s is most timely. The climate that will likely prevail in the years ahead will add pressure on governments to search for innovative ideas in the transport sector and build consensus around policy decisions that will recognize new fiscal realities.

In this context, the author* offers personal insights on the issues and trends that that will shape the future of transportation systems, on alternative policy scenarios, on innovative policy instruments and best practices, and on barriers to innovation in the transport sector.

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INTRODUCTION

The International Transport Forum will be holding its third annual conference on May 26-28, 2010 in Leipzig, Germany, on the theme of Transport and Innovation. This event, which will be held under the Presidency of Canada, offers a unique opportunity to political and business leaders from around the world to both celebrate outstanding innovations that have transformed the transport sector in recent decades and to reflect on the potential offered by future innovations in government policies, business practices and technology to address the transportation challenges of the 21st Century.

The purpose of this paper, which has been commissioned by the Forum Secretariat, is twofold. First, it is to elaborate on some of the ideas shared by the author at an Experts Session held in Paris in January 2010, drawing on practical experiences in the Canadian and North American contexts, and on presentations made during the session. Second, it is to help set the stage for the Forum 2010 Session on Public Policy Leadership, for which the author will act as Moderator.

While Forum 2010 is intended to cover the full spectrum of innovations as they impact on the transport sector, this paper focuses primarily on innovation in government policies and is structured as follows:

- The “driving forces” and “irreversible trends” that will shape the future of transportation systems;
- Possible scenarios for the future of transportation;
- Innovative policy instruments and best practices that will offer opportunities to alter future transport scenarios; and
- Barriers to innovation, their relative impacts and possible means to overcome them.

DRIVING FORCES AND IRREVERSIBLE TRENDS

The Experts Session identified a long list of "drivers" of global transport demand including energy cost and scarcity, climate change, congestion, urbanisation, scarcity of available funding, the aging population in developed countries, the growing economic and demographic importance of non-OECD countries, security, safety, and possibly new technologies, particularly information and communications technologies.

The exchange that led to the identification of these drivers has been well summarized by the Secretariat Forum (1) and it is not our purpose to elaborate on each and every one of them. There are, however, at least two dimensions that have not been fully explored and which could form the basis for a discussion at the session in Leipzig on Public Policy Leadership.

The first dimension relates to the need to search for some form of consensus on the order of importance of these so-called "drivers". This is, of course, a complex debate where transport experts are likely to come up with lists of priorities that differ significantly from those drawn by business leaders and where elected officials are likely to develop their very own lists, based on broader policy perspectives. Yet, the search for a consensus on emerging drivers of transport demand is critically important in a global economy where there is increasing pressure for international alignment and synchronization of policies.

The second dimension is equally complex and relates to the need to better understand and anticipate "interrelationships among drivers" and the resulting impacts on the transport sector. As will be discussed later, the scarcity of government funding for transport infrastructure in the future will be directly linked to the growth of an aging population that will mobilize more resources for health care and social programs. More complex examples can be drawn from the web of relationships that link globalization, congestion, climate change and the rising cost of fossil fuels.

This section offers personal insights on those two dimensions.

Congestion in major cities and trade corridors

Twenty years ago, the challenge was to understand "globalization" and the debate was on whether it would become a sustainable trend. Today, there is little or no debate – globalization will dominate the first half of the 21st Century, and the challenge is to adapt to a new model which is in constant evolution in response to market forces and technological advances, and relies on Asia as its centre of gravity (2).

From a transportation perspective, it is interesting to note that globalization was built on two simple premises, namely:

- Adequate and reliable transport systems are and will continue to be available to support global production and distribution models; and

- The cost of fossil fuels will continue to be "affordable" (read: "cheap") in the years and decades ahead.

In reality, the emergence of global supply chains and the concentration of large volumes of container traffic in trade corridors are creating unprecedented levels of congestion not only at

ports of entry and final delivery sites, but at practically every intermodal connection and border crossing within those trade corridors. Gateways which are, almost by definition, located in large urban centres, are confronted with the dual challenge of ever-increasing passenger car traffic and unprecedented volumes of containerized freight traffic. The massive urban congestion that results from these combined forces is possibly the single most critical transport issue facing both developed and developing countries.

Rising cost of fossil fuels

At a time when the global economy is slowly recovering from a severe downturn, the price of oil is over US$80 per barrel (April 2010). While any predictions on oil prices are enormously risky, the Experts Session recognized that the high price levels seen prior to the crisis (i.e. US$140 per barrel) could become the norm. In fact, some economists have argued that it is not unrealistic to assume even higher levels, possibly reaching $200 per barrel in 2012.

A substantial and sustained increase in the price of oil (say, US$200 per barrel over a 10-year period) could well alter major trade patterns as we know them today. In a highly competitive market, such a rise in energy costs, combined with ever-increasing concerns for the environment, including the new trend to measure the carbon footprint of consumer goods, could lead to a re-calibration of global manufacturing models where countries like China and India have played lead roles. Such a recalibration would aim to limit the cost of transportation in manufacturing cycles by bringing the centres of production closer to consumer markets.

In this scenario, North American markets would strive to become more autonomous, countries like Mexico would likely succeed in attracting more manufacturing activities, and North-South transportation corridors in North America would stand to gain in importance.

Having said that, it is difficult to imagine future scenarios where Asian countries would lose their current dominance. What may change, however, is the current emphasis on “speed” as the central feature of global distribution systems. It is interesting to note, for example, that a number of shipping lines chose to reduce the speed of their ships during the last peak in the price of bunker fuels. In a similar vein, an increasing number of North American retailers seem to favour the use East Coast ports (instead of congested West Coast ports) to handle shipments from China. This suggests that the combined effect of port congestion and high oil prices could gradually lead to a greater emphasis on the “reliability” of supply chains rather than on the “speed” of delivery.

Perhaps the time has come for the international community of experts to engage in a new reflection on how globalization is adapting to internal and external trends and how this may impact on current transport planning assumptions, particularly with respect to infrastructure investments.

Demographic trends

It has been said that demography is the only “exact” social science. While this is debatable, there exists in developed economies a huge volume of vital and social statistics that will dictate with considerable precision the direction of our future transportation systems. Of particular interest are issues related to urbanization and an aging population.

Urbanization appears to be an irreversible trend throughout the world. Canada is no exception and, contrary to common belief, has become more urbanized than the United States. What both countries share in common is the result of poor or mostly unsuccessful integration between land use plans and transportation plans at regional and local levels. Urban sprawl continues to be allowed or tolerated, thereby perpetuating the dependency on private

automobiles, aggravating urban congestion, increasing commuting times (see table below) and imposing on all levels of government obligations to bring adjustments to highway and transit systems without the benefit of integrated planning.

Commuting Times in Selected Cities

Rank	Minutes (round trip)	Rank	Minutes (round trip)
1. Barcelona	48.4	11. Sydney	66.0
2. Dallas	53.0	12. Madrid	66.1
3. Milan	53.4	13. Calgary	67.0
4. Seattle	55.5	14. Vancouver	67.0
5. Boston	55.8	15. New York	68.1
6. Los Angeles	56.1	16. Stockholm	70.0
7. San Francisco	57.4	17. London	74.0
8. Chicago	61.4	18. Montreal	76.0
9. Berlin	63.2	19. Toronto	80.0
10. Halifax	65.0		

Data were not available for Hong Kong, Oslo, Paris, Shanghai and Tokyo.
Figures blend times for drivers and public transit users.
Commuting times in US cities may be underestimated due to boundary definitions.

Source: Toronto Board of Trade, "Toronto as a Global City: Scorecard on Prosperity", March 2010.

The corollary to urbanization is the gradual decrease of population in rural areas and the almost-inevitable decline in the level and quality of public transportation in those areas. In Canada, passenger rail services to and from rural areas have all been abandoned since the 1980s, except for those that form part of intercity or transcontinental services. The only remaining mode of public transportation consists of bus services which have also been in constant decline in the last decades.

While there is no easy fix to the transportation problems arising from urbanization, there is no doubt that the division of responsibilities among several levels of government constitutes an important barrier to the implementation of integrated solutions. In Canada, the responsibility for urban transit systems rests with municipal and provincial governments. Yet, the economic vitality and quality of life in urban areas, particularly in large cities, are critical to the national economy and international trade which in Canada, as in all other countries, are central government responsibilities. This reality is now being recognized in Canada, and significant funding commitments have been made by the federal government in recent years to support much-needed urban transit improvements. As will be discussed later, funding partnerships involving several levels of government offer opportunities to leverage innovative transportation policies.

The emergence of an aging population is another obvious trend, but its impact on transportation remains unclear. Much has been said, for example, about growing pressures from senior citizens for improvements in public transport accessibility. There are no clear signs, however, that such pressures are mounting or that public transport authorities are planning significant transformations in response to such pressures. This may be explained in part by the fact that new seniors are generally healthier than their predecessors and expect to continue to drive their private cars for as long as they wish.

This in turn raises road safety issues along with a difficult public policy debate on whether seniors should be subject to stricter licensing requirements. Most developed countries have adopted special licensing processes for teenagers and new drivers to reflect the higher risks of at-fault collision and casualties for this class of drivers. This suggests that similar practices

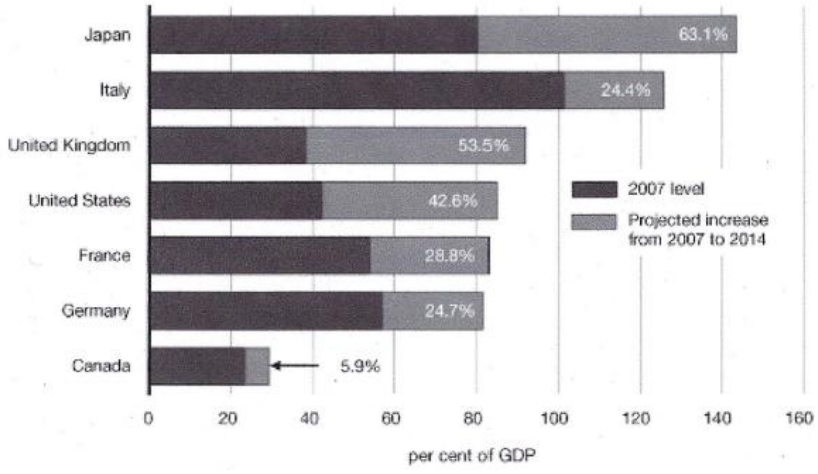
should be established for seniors above a certain age. In Canada, there is in fact growing evidence that drivers over the age of 80 present significantly higher risks of accidents than drivers aged 16 to 20.

This issue, however, pales in comparison to the "indirect" impact of an aging population on transportation. In several countries, the age pyramid confirms beyond the shadow of a doubt that future government expenditures will need to be supported by a smaller base of active workers (3). As discussed in the next section, this has major implications for the transport sector.

Scarcity of funding for transport infrastructure

The first decade of the 21st Century will be remembered for the drastic economic downturn of 2008-2009. It will also be remembered for the equally drastic response of governments which, in many countries, took the form of massive investments in public infrastructure to create and maintain jobs and stimulate national economies.

Total government net debt, G7 countries



Source: IMF, *World Economic Outlook* (October 2009).

In Canada, the acceleration of existing infrastructure programs combined with the injection of new stimulus funding by federal, provincial and municipal governments raised public infrastructure investments to an unprecedented level in Canadian history. A very significant portion of these investments was earmarked for transport infrastructure, particularly for roads, bridges, border crossings and urban transit. While the Canadian economy is well on its way to recovery, needless to say, there will be a price to pay by current and future generations. The combination of increased stimulus spending and reduced government revenues has created an expected national deficit of over $164 billion for the period between 2008-09 and 2014-15.

This situation is not unique to Canada. In fact, as shown in the following chart, Canada has by far the lowest debt-to-GDP ratio among G-7 countries, with a projected increase of less than 6 percentage points between 2007 and 2014, compared to increases between 24 and 63 percentage points for other G-7 countries (4).

In all developed countries, the long-term impact on public transport infrastructure will likely be severe. The fact that the transport sector will have been one of the primary beneficiaries of stimulus funding will help justify future government decisions to allocate scarce funding to other priorities. Among those priorities will be much-needed budget increases for health care and social programs to serve the needs of an aging population or, as the case in the United States, to establish a new health care plan at an estimated cost of $940 billion over the next 10 years.

In a context where governments will be forced to restrict program expenditures in certain sectors to contain national deficits and augment health care and social program expenditures, it is reasonable to assume that only the most strategic transport infrastructure projects will be considered for public funding. Accordingly, it is also reasonable to assume that governments will need to revert more than ever to alternative funding arrangements or public-private partnerships (PPPs) to address transport infrastructure requirements. In their search to reduce direct program spending, government will also be encouraged to explore innovative governance models. This will be discussed in more detail later in this paper.

Climate change

Much has been said and written on this topic, which indeed needs to be at the centre of any public debate on the future of transportation.

In Canada, greenhouse gas (GHG) emissions increased by 24% between 1990 and 2008. Of particular concern is the net growth in emissions from transport which rose by 36% during that period. Overall, transport represented the second largest emission-producing activity (after the energy sector), accounting for 27% of Canada's GHG emissions in 2008 (5).

The exogenous factors that contributed to the growth and dominance of transport-related emissions over the 1990 to 2008 period are numerous. They include a 20% increase in population, continued urbanization, a 60% increase in Canada's GDP, rising income and spending, and increasing domestic and international trade.

While the foregoing statistics and the range of associated factors clearly illustrate the magnitude and complexity of the problem, no one in Canada is suggesting that the contribution of the transport sector to national GHG reduction targets should be in proportion to the GHG emissions it produces. To do so would be unrealistic and disregard more cost-effective GHG reduction options in other sectors.

Yet, it would seem that current GHG trends in the transport sector are all going in the wrong direction. While greater volumes of freight should be moving by rail and ship, trucking continues to grow and remains the preferred choice for a majority of shippers. As a result, GHG emissions from heavy-duty diesel vehicles (large trucks) in Canada increased by 90% between 1990 and 2008. This trend is the main reason behind the increase in both the emissions and the emission intensity of freight transport, as moving freight by truck is one of the most emission-intensive ways of moving freight.

Trends in Canada's passenger transport sector are equally, if not more, problematic. For their travel, Canadians rely predominantly on private vehicles which, in 2008, represented approximately 85% of all ground-based passenger transport. Sustained increases are being observed in the vehicle fleet, which has grown by 42% since 1990. Of particular concern is a significant shift in the types of passenger vehicles used. Since 1990, the use of light duty gasoline trucks (sport utility vehicles, minivans, pick-up trucks) has increased by 141%, compared to 11% for automobiles. On average, light trucks emit 40% more GHG emissions per kilometre than automobiles. There is also an increase in the use of passenger air transport and all future forecasts show sustained growth in that sector.

Economists have argued for decades that the root cause of these problems lies in the absence of adequate pricing mechanisms to reflect the true cost of transportation services. But, as will be briefly discussed later, public acceptance is a serious barrier to innovation in this area.

Security

There are few roles more important for any government than ensuring the safety and security of its citizens.

In the public vernacular, “safety” and “security” are synonymous. But in reality, transport safety and security programs are fundamentally different in that they focus on very different types of risks. “Safety risks” originate from unintended failures, errors or misfortunes whereas “security risks” originate from deliberate or malicious attempts to disrupt, disable or destroy.

It is generally recognized that security was a second-tier concern in the transport sector – except in the aviation mode – before the events of September 11, 2001. Security programs were certainly in place in the other modes, but primarily to prevent or reduce vandalism, theft and other crimes. The first international counter-terrorism conventions were signed in the 1960s to deal with aviation security threats. This reflected the fact that, from the 1960s until the early 1980s, airplane hijacking and hostage-taking were almost synonymous with the term “terrorism”. But only rarely did these events touch North America.

In Canada, this all changed starting in 1985 when bombs exploded almost simultaneously on-board an Air India aircraft and at Narita airport in Japan. As inquiries later established, these events had originated in Canada. As a result, Canada became the first nation to require passenger-baggage matches on international flights and among the first to impose background checks on airport employees. This put Canada in a leadership role internationally in civil aviation security, a position that it endeavoured to maintain throughout the 1990s.

Of course, the attacks of September 11, 2001 had an undeniable aviation focus. Governments around the world immediately realized that they had to bolster aviation security to deal with previously unthinkable acts of violence. More fundamentally, they realized that the challenge was not only to detect objects (weapons, explosives) that presented security risks but also to detect passengers who, because of their backgrounds, affiliations or statements, presented risks to civil aviation.

But September 11 also prompted reviews on a global scale on how to enhance the protection of ports and waterways, rail and urban transit systems, ferries, designated trucking activities, bridges and tunnels, and so on. Looking back, it is quite remarkable how governments have managed in less than 10 years to mobilize the talents, financial resources and state-of-the art technologies that were needed to address this new and immensely complex issue without unduly hampering the efficiency of transportation systems.

Transportation security, as a new “line of business” for both governments and the private sector, has opened opportunities for innovation in a very broad range of activities, including the adoption of new legislative and regulatory frameworks, the establishment of new governance structures, the reinforcement of intelligence systems, the design and management of risk-based programs, the testing and deployment of state-of-the art technologies, and the management of critical privacy and human right issues.

The attempted attack of December 25, 2009 on-board Northwest Airlines Flight 253 is a painful but clear reminder that security risks are real and that our future transportation systems will need to continue to adapt to this reality. While much has been done to find an acceptable balance among efficiency, security and human right imperatives, there is considerable room for innovation. The Leipzig conference provides an opportunity to explore best practices and new ideas in an area that will likely remain a dominant transportation issue in the decades ahead.

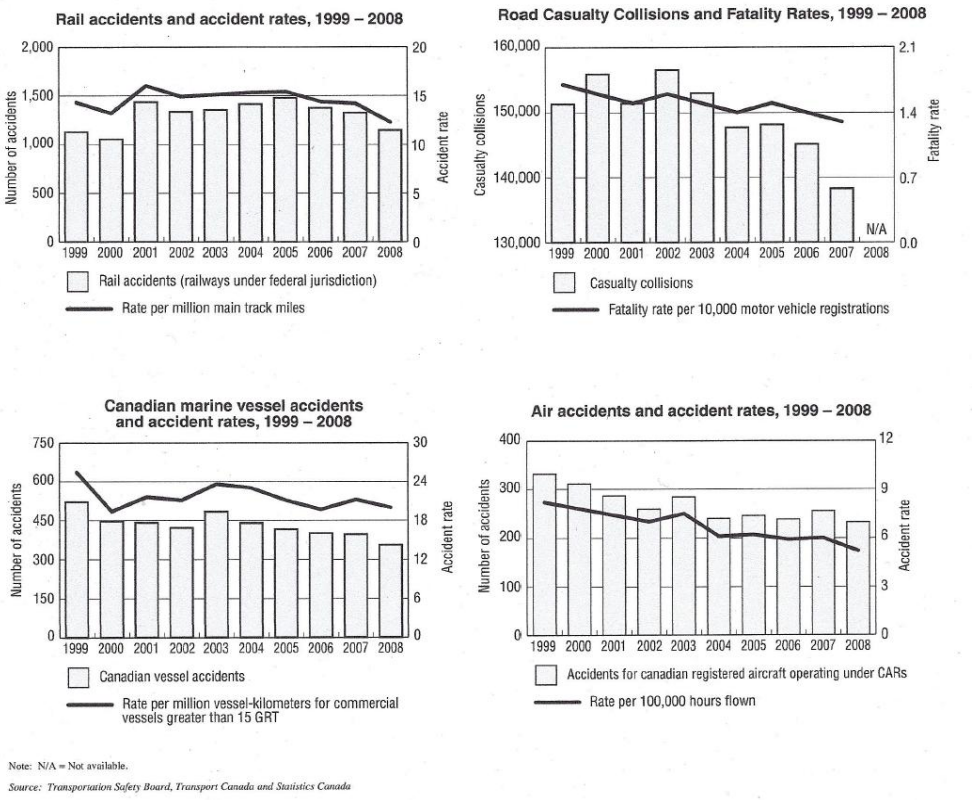
Safety

A safe transportation system has long been seen as a central objective of national transportation policy in all OECD countries. Unlike transport "security", transport "safety" can rely on well-established legislative and regulatory frameworks, a long history of enforcement practices, sophisticated data bases, targeted education programs and long-term action plans.

In many countries, including Canada, the long-standing focus on safety by both governments and industry participants has resulted in fewer accidents and fatalities despite the sustained increases in traffic that have resulted from population growth, globalization and economic prosperity.

In developed countries, there are fundamentally two issues that will call for innovative approaches in the years ahead.

The first issue relates to the challenge of continuing to preserve, and hopefully improve the level of safety that currently exists in spite of the ever-increasing growth in both passenger and freight traffic. As the following graphics show, this is a huge challenge for Canada given its exceptional safety record.



Note: N/A = Not available.

Source: Transportation Safety Board, Transport Canada and Statistics Canada

The second issue relates to the mounting pressure for the international harmonization or alignment of national safety standards to facilitate global manufacturing and trade activities. While this issue is not unique to transportation, it raises fundamental questions regarding the balance that needs to be preserved between scientifically-based regulations and standards designed to address country-specific needs and internationally driven requirements designed to facilitate global trade.

POSSIBLE SCENARIOS FOR THE FUTURE OF TRANSPORTATION

Every country in the world has a national transportation policy, whether it is formalized or not. Even countries of the size of Canada or the United States are often criticized for not having a transportation policy. This is of course unsubstantiated unless one is looking for a glossy-paper document containing a well articulated, multi-modal transport policy statement with linkages to broader government objectives and other related sectorial policies, up-to-date statistics, performance targets and so on.

Having said that, there is no doubt there exist huge differences among the various policy directions being taken around the world, when one looks at the compendium of transport-related laws and regulations, enforcement mechanisms, investment programs, ownership and organizational structures, key government decisions, day-to-day practices and other elements which, together, constitute the transportation policy of any nation.

For a debate at an international event such as Forum 2010, it may be ambitious but not unrealistic to think that a reflection could be initiated on "possible scenarios" for the future of transport based on alternative visions of what is the "right balance" among the economic, social and environmental objectives of future transportation policies. Other approaches could of course be taken but the broad "three-legged stool" concept of sustainability (economic, environmental and social) has itself become very sustainable.

It may not be productive, however, to launch a debate on future scenarios where the economic efficiency of our transport systems is subordinated to social (i.e. safety and security) or environmental imperatives. The following scenarios assume that "economic efficiency" would remain the dominant focus of any transport system in the years ahead.

Using this assumption, the following three scenarios may help to frame a discussion and allow individual countries to situate their own policies, present and future, on what could be seen as a continuum:

- **Business as usual:** This scenario is essentially a straight-line projection of existing transport policies and activities based on the maximization of system efficiencies, subject to the current safety, security and environmental constraints/regulations/obligations set by governments and international conventions.

- **Rebalancing through command-and-control:** This scenario recognizes the urgency to address environmental concerns and the need to deal with congestion and security issues. It places the onus directly on governments to set appropriate targets and regulatory instruments (standards, monitoring, penalties) to achieved desired policy outcomes.

- **Rebalancing through markets:** This scenario calls for a greater focus on environmental and congestion issues but relies primarily on market forces to achieve optimal results within new and broader policy frameworks (e.g. establishment of "cap and trade" or "carbon tax" regimes) as well as within new transport-specific frameworks (e.g. road pricing). In this scenario, safety and security concerns continue to be addressed through regulations but in closer partnerships with service and infrastructure providers (e.g. safety and security management systems).

From an “innovation” perspective, as can be seen, the second scenario is more ambitious in that it recognizes, formally and through tangible government interventions, the necessity to give much more weight to environmental considerations in decision-making by both government and the private sector.

The third scenario goes further by moving away from traditional government funding and control mechanisms. It calls for the gradual adoption of a “portfolio” of more innovative policy instruments and best practices that are briefly discussed in the next section of this paper.

INNOVATIVE POLICY INSTRUMENTS AND BEST PRACTICES

This section provides an overview of some of the more innovative policy instruments that have either been discussed or implemented over the last twenty years or so, with a particular focus on best practices in Canada.

Windows of opportunity

It is rather frustrating for policy analysts, whether in transportation or any other field, to have to recognize that bold new policy proposals have no future unless they can be championed by the right people, at the right place and at the right time.

The Canadian experience is very instructive on this point. Without risking oversimplification, it can be said that the vast majority of the transformations in the Canadian transport sector in the 1990s were driven by a decision of the government of the day to eliminate annual deficits and reduce the national debt. This is not to say that transformations occurred in the absence of a transportation vision, quite the contrary, but there is little doubt that the impetus for creative thinking, and the political determination to succeed, originated from a broader government policy which was driven, in this instance, by fiscal imperatives.

In this vein, it is also clear that such transformations could not have been achieved in the absence of majority governments. Interestingly, in Canada, transformations were initiated under the leadership of one political party while the majority of the changes were implemented by another party. This attests to the strength of the transportation vision that drove those changes.

The importance of a long-term vision cannot be overemphasized. In Canada, many of the ideas that found their “window of opportunity” in the 1990s had been debated since the early 1980s. For this reason, and also because transportation captured a significant portion of government appropriations, the transformations that were made possible in the 1990s constituted the single largest contribution to the government’s fiscal objectives at that time.

Such an achievement, of course, would not have been possible without an in-depth knowledge of the transport sector, an understanding of the funding implications of status-quo scenarios, a 5-year transition plan and a willingness to take risks.

Innovative governance

In the last two decades, many countries have changed the governance structure of their transportation organizations with varying degrees of success. The Canadian experience in this area is unique both in terms of the amplitude of the changes that were initiated concurrently and the speed at which changes were brought about. Without exception, all those changes have stood the test of time. They include:

- the creation of autonomous, not-for-profit authorities for all major ports and airports;
- the divestiture to other levels of government or the private sector of hundreds of regional and local ports and airports (as well as the closure of unused facilities);

- the sale of Canada's largest railway (CN Rail) in the mid-1990s, following the sale of Air Canada in the late 1980s:

- the privatization of Canada's air navigation system to a newly constituted not-for-profit corporation, NAV CANADA; and

- the conclusion of a long-term commercial agreement with ship owners for the management of the St. Lawrence Seaway, including financial incentives and funding mechanisms for infrastructure investments.

Innovative financing

Many similar changes in governance have occurred around the world, saving governments billions of dollars that simply could not have been funded through national budgets. In Canada, for example, all major international airports have been substantially upgraded with no financial support from the central government. All airport authorities have excellent credit ratings and have succeeded in attracting private sector funding. This is due in good part to the management autonomy that has been granted to those authorities and the absence of government regulation or control on pricing (e.g. landing fees). A similar model has also retained for Canada's port authorities.

An equally innovative approach that has been adopted worldwide, particularly for large transport infrastructure projects, consists of public-private partnerships (PPPs). Examples in Canada include the building of the 12.9 km Confederation Bridge linking Prince Edward Island to New Brunswick, the construction of several highways (e.g. Highway 407 in Toronto, Autoroute 30 in Montreal) and more recently, the completion of the Canada Line, a state-of-the art rapid transit system in the Vancouver area.

The advantages and disadvantages as well as the successes and failures of PPPs are well known and do not need further elaboration here. It is unquestionable, however, that the restrictions that will have to be placed on government budgets in the years ahead as a result of the recent recession will create a new demand for innovative funding.

Forum 2010 offers an opportunity to recognize the immense contribution that PPPs have made to date in the transport sector and to identify and build on successful models and best practices as a way forward.

Innovative regulation

There is considerable literature on the problems faced by governments in choosing the right regulatory instrument to achieve economic, social or environmental goals. Traditionally, Governments have either relied on regulations that set specific rules (rules-based regulation) or require that certain outcomes be achieved or avoided (performance-based regulation). However, a third type of regulation (called management–based regulation) has emerged. Management-based regulation does not prescribe specific rules, nor does it require specific outputs in terms of desired goals. Rather, a management-based approach requires regulated entities to engage in their own planning and internal rules-making efforts to achieve specific public goals (6).

In the transport sector, governments have traditionally adopted rules-based regulations. In this model, government officials inspect equipment (e.g. aircraft, vessels, locomotives), infrastructure (e.g. conditions of tracks and airport runways) and operations (e.g. pilot proficiency and staff training) for compliance to the letter of the law and its rules. The regulated transportation companies, for their part, focus on complying with the rules and detailed processes that govern their activities.

This approach has served countries well and, as mentioned earlier, safety records have generally improved. There is a growing view, however, that further safety performance improvements, measured as overall accident reduction, will be difficult if not impossible to achieve with traditional approaches alone during times of significant growth in the transport sector. It is argued, for example, that safety in the aviation sector would not likely improve even if there were government inspectors on each and every flight.

It is increasingly recognized worldwide that safety requirements based on individual, discrete activities enforced by governments fail to promote corporate cultures that fully embrace safety – a situation that can be successfully addressed through management-based regulation.

In the transport sector, this new form of regulation is commonly referred to as Safety Management Systems or SMS.

A safety management system is a formal framework that helps transportation companies integrate safety into their day-to-day operations. It encourages the development of a safety culture throughout all levels of an organization and ensures that safety is given due consideration in all decisions. It also helps companies comply with regulatory requirements and demonstrate their commitment to the safety of their employees. Although every company has its own SMS, key elements include the development of safety goals and performance targets, safety policies and procedures, a clear definition of responsibilities and accountabilities for safety, a risk management process and risk control strategies, and a process for monitoring and evaluation.

The gradual implementation of Safety Management Systems and of a strong safety culture within transportation companies offers governments the capacity to advance safety:

- by increasing and clarifying the accountability of companies;
- by placing a greater focus on early warning signals and preventive measures;
- by allowing the design of systems tailored to specific operations;
- by focusing on systemic causes of infractions and incidents as well as on the measurement of performance;
- by fostering continuous learning and improvement; and
- by working with companies to ensure safety rules are respected.

The gradual implementation of innovative approaches such as Safety Management Systems represents a huge challenge for governments largely because of the strong public resistance to almost any form of corporate self-policing. This challenge will only amplify in the years ahead as governments face budget restrictions. Unless more resources can be allocated to preserve and improve current safety records, the challenge for governments will be to educate the public to the advantages of management-based regulations and to build consensus around the right balance between the traditional enforcement methods and innovative SMS methods.

Innovative strategies

This section provides a brief illustration, again using Canadian examples where appropriate, of new strategies that can legitimately be qualified as “innovative”.

Gateways and Trade Corridors: In recent years, a new Canadian policy on Gateways and Trade Corridors has achieved a resounding success both in terms of creating consensus among all levels of government and key stakeholders, and more importantly, in terms of providing direction for public and private investments in strategic transportation infrastructure. Recognizing that Canada is the most trade-dependant G8 country, the strategy builds on the geographic position of key ports of entry and the presence of modern railway and highway corridors to position Canada as a critical link in global supply chains.

Intelligent Transport Systems: Advances in smart technologies, or Intelligent Transport Systems (ITS), have formed part of practically every transport policy initiative in Canada in last 15 years. Through federal as well as provincial and municipal programs, the basic foundation of ITS has been implemented across Canada. Most major cities have traffic management systems and traveller information systems. Of particular interest for a northern country like Canada is the development of a Road Weather Information System which consists of censors embedded in and below the road surface and on nearby towers to collect data on air temperature, relative humidity, wind direction and precipitation. This data is used, for example, by road maintenance authorities to forecast ice conditions.

Market-Based Solutions: The “culture of entitlement” to private automobiles that prevails throughout the world, and particularly in North America, has made it near impossible for most countries to envisage widespread applications of market-based solutions such as road pricing to mitigate urban congestion and global warming. Countries that have succeeded in introducing such solutions must be recognized for their true leadership in advancing innovation in transportation. The fight again global warming will offer many more opportunities to explore innovative market-based solutions, through “cap and trade” or “carbon pricing” mechanisms. Whether governments will be capable of adopting such solutions may well be the greatest transportation challenge in the first half of the 21st Century.

BARRIERS TO INNOVATION

Barriers to innovation in transportation are not fundamentally different than barriers to any change in established policies and programs, except perhaps for the fact that innovation, by definition, presents a higher level of risk than other forms of change. A country's decision to catch-up with fully-tested, long-established practices in the rest of the world can hardly be qualified as "bold" or "innovative".

There is extensive literature on this topic, particularly from the ECMT, which has been well summarized by Professor A D May and Dr G R Marsden from the University of Leeds, England (7). The Forum Secretariat has also prepared a summary analysis of responses to a recent country survey on innovation in transport which provides a long list of impediments as seen by government officials (8). The most common themes or categories of barriers include, in no particular order, institutional, process, political, financial, legislative and regulatory barriers; data limitations; inadequate innovation policies and incentives; poor institutional coordination; absence of public understanding and acceptance; and more generally, a natural resistance to change and risk-taking.

This section deals with only a few barriers to innovation that, from the author's perspective, may not have been fully addressed by others.

Missed opportunities

As mentioned earlier in this paper, new ideas often have to wait for their "windows of opportunity". Such windows, however, can be few and far apart and are almost invariably linked to broader government policies that require immediate, if not urgent, decisions and actions. In this context, government administrations are often pressed to design and deliver programs that are kept as simple and focused as possible to achieve the desired outcomes of broader policies. The most recent example of this situation is the creation, at least in all developed countries, of economic stimulus programs to counter the recession. In several countries, these programs consisted of unprecedented investments in transportation infrastructure projects that were selected in record times and funded through partnerships among different levels of governments. While it is unquestionable that the selected infrastructure projects have contributed to create and maintain jobs during a highly uncertain economic period, it also seems fair to say that opportunities for innovations have been "missed". In many countries, new or accelerated funding was directed to highways rather than other modes of transportation largely because highway project designs and environmental assessments were already completed or well underway. Investments in urban transit, ports and railways that may have been more strategic in terms of addressing congestion and global warning issues were not as successful in attracting stimulus funding, largely because they were not sufficiently developed.

Stimulus programs also included the opportunity for central administrations to require other levels of government to meet certain conditions within their areas of jurisdiction to help address emerging transportation challenges. Examples of such conditions include lower speed limits on highways, stricter enforcement of highway safety regulations, advanced ITS technologies, integrated land use policies and demand management programs in urban areas, and greater adherence to user pay practices. It would be interesting for an organization such as the ITF to

survey recent stimulus programs to measure the extent to which countries have used this opportunity to address emerging transportation challenges.

Lack of readiness

The foregoing observations on the state of readiness of selected projects suggest that transportation administrations at all levels should devote more time and resources not only to develop new visions and innovation policies, including priorities for R&D, but to advance the design of innovative programs and projects to a stage where implementation is within reach when opportunities arise.

Poor intermodal dialogue

Despite coordination efforts on the part of governments and the proliferation of transport stakeholders associations, there is a remarkable absence of dialogue among surface, marine and air transport policy makers and practitioners. It is not unusual, even in this age of instant communication, to find senior leaders in one mode of transport who are unaware or ill-informed of significant developments in other modes, particularly in their relationships with government (i.e. regulation, enforcement and governance). While this may be largely attributable to the high specialization of each mode, there is considerable room for improvement in this area.

CLOSING REMARKS

The absence of public understanding and acceptance is probably the single most important barrier to innovation in the transport sector. Many of the so-called innovative ideas advanced by transport experts are simply not acceptable to a majority of people in a majority of countries. To ignore this simple fact and assume that elected officials will embrace such innovative ideas is highly unrealistic. However, if history repeats itself, as it often does, future innovations in transportation will be driven by broader government imperatives and gradual shifts in public opinion on the merits of established practices compared to more progressive solutions.

As governments strive in the coming years to reduce annual deficits and contain mounting debts, there will be a growing need for public debate on transport solutions that call for highly targeted (i.e. exclusive) strategies to address capacity and congestion issues in major cities and trade corridors, for public-private partnerships to meet strategic infrastructure needs, for user-pay policies to contain program costs, for management-based regulations to improve safety, for risk-based approaches to tackle security issues, and for market-based mechanisms to address environmental issues. Forum 2010 offers a timely opportunity for such a debate.

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