

## Sustainability and transport

Richard Gilbert

Almost 20 years after the term ‘sustainable development’ was popularized in the Brundtland Report (World Commission on Environment and Development 1987), the U.S. government turned its attention towards application of the concept of sustainability to transport planning. In response to a 2003 request by the Secretary of Transportation, the Transportation Research Board (TRB) of the National Research Council established a committee to consider how sustainability could be integrated into transport planning, chiefly through holding a conference on the topic. The committee’s report concluded that “a goal of transportation planning should be to address transportation’s unsustainable impacts including depletion of nonrenewable fuels, climate change, air pollution, fatalities and injuries, congestion, noise pollution, low mobility, biological damage, and lack of equity” (TRB 2005, 5).

Until that report, the main transport sustainability focus of the U.S. government had been on technology. Notions of transport sustainability had a broader reach in the discourse of state and local governments. For example, the State of Idaho posts this definition: “Sustainable transportation is defined as a means to satisfy current transport and mobility needs without compromising the ability of future generations to meet their needs.” (Idaho 2005). It echoes that of the Brundtland Report: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987, 43).

In Canada, transport sustainability has been a stronger part of federal discourse. It began with the hosting of an Organization for Economic Cooperation and Development conference in 1996 entitled ‘Towards Sustainable Transportation’ (OECD 1997), continued through Canada’s submission *Sustainable Transportation* to the April 1997 meeting of the United Nations Commission on Sustainable Development (Canada 1997), and is maintained today by the Sustainable Development Division of Transport Canada, a department of the federal government.

The stronger discourse in Canada has not translated into evidently greater progress towards transport sustainability. Perhaps the best indicator of transport sustainability is per-capita use of energy for transport. Most of what is unsustainable about transport is the result of its combustion of fossil fuel, which comprises almost all transport energy use. Figure 1 shows that, since 1990, this indicator has risen more steeply in Canada than in the U.S., i.e., there has been more movement in Canada *away from* sustainability. U.S. per-capita consumption of transport energy remains higher (100.2 vs. 77.6 gigajoules in 2004) and its lower rate of growth may indicate a ‘plateauing’ effect.

This last possibility is supported by the plot in Figure 1 for the 15 countries that comprised the European Union (EU15) between 1990 and 2004. There, discourse about sustainability has been even stronger, but the outcome has been even more relative movement away from sustainability. Per-capita transport energy use is much lower in EU15 (35.2 gigajoules in 2004), perhaps allowing more scope for an increase in use and less likelihood that a plateau in use is near.

The TRB committee did not formally define sustainable transport. It used a working characterization that is similar to Idaho's definition: "a sustainable transportation system is one that meets the transportation and other needs of the present without compromising the ability of future generations to meet their needs" (TRB 2005, 3). At the committee's conference, participants bemoaned the lack of a uniform definition of sustainability. This, they said, with the "complexity and uncertainty of the issues," made it difficult to discuss "how to set priorities, fund programs, and establish rules to implement policy that furthers the goal of sustainable transportation" (TRB 2005, 22).

In Europe, there is a common definition of sustainable transport, also known there as sustainable mobility. This definition was developed in 1997 by Canada's Centre for Sustainable Transportation and, in a slightly modified form, was adopted unanimously as a working definition by the transport ministers of the European Union member countries (EU 2001). The EU version defines a sustainable transport system as one that:

- allows the basic access and development needs of individuals, companies and societies to be met safely and in a manner consistent with human and ecosystem health, and promotes equity within and between successive generations;
- is affordable, operates fairly and efficiently, offers choice of transport mode, and supports a competitive economy, as well as balanced regional development;
- limits emissions and waste within the planet's ability to absorb them, uses renewable resources at or below their rates of generation, and, uses non-renewable resources at or below the rates of development of renewable substitutes while minimising the impact on the use of land and the generation of noise.

According to the European arm of the Rand Corporation and several partners, this definition of sustainable transport should be favoured because it is concrete, comprehensive, and "has been reviewed by political mechanisms and received general political acceptance" (Rand Europe et al. 2003, 15). As well as its use by the EU, the Centre's definition has achieved considerable acceptance elsewhere. A U.S. report noted, "Discussions with leading transportation research institutions have highlighted a growing international acceptance of the definition of sustainable transportation developed by the Canadian Centre for Sustainable Transportation" (Hall 2002, 15).

Only one criticism of this definition has been noted. Timmermans (2004, 4) characterized it as "a typical political definition: it lacks rigor, is vague and potentially inconsistent. Regardless, it seems to be based on the notion that if we build such sustainable (transit-

oriented) systems and urban environments, people will use it. Where did we hear this before? Is there any empirical evidence to support this view?”

Another criticism of proposals to secure transport sustainability is that for the most part they focus on reducing transport’s adverse impacts rather than on ensuring that transport is effective. At first, this might sound like a typical ‘business’ argument against action: ‘we can’t reduce those emissions because it would cost an arm and a leg, people would be put out of work, and profits would plummet.’ It is actually a different argument: very high transport fuel prices are likely and if we don’t prepare for them by dramatically reducing consumption our transport will become unaffordable and thus unsustainable.

The specific threat is very high energy prices—notably for transport fuels, but also for natural gas and, not far ahead, coal—consequent on production peaks in these fossil fuel resources. The most plausible analyses suggest that North American production of oil (all petroleum liquids) peaked in 1985 (BP 2006) and world production will peak in 2011 (ASPO 2007). North American production of natural gas peaked in 2001 (BP 2006); world production will peak in about 2045 (Hughes 2006). North American and world production of coal will peak in about 2025 (Zittel & Schindler 2007).

After the peak in world production of a resource there could be a growing shortfall of supply in relation to potential demand causing massive price increases or severely depressed economic activity, or both. For oil, this could happen soon after 2011.

The TRB report listed “depletion of nonrenewable fuels” as the first “unsustainable impact” to be addressed when integrating sustainability into transport planning. This recommendation was made with no sense of urgency or its profound importance. North Americans are utterly dependent on motorized transport, not only for their movement but for their very sustenance. Fourfold or more increases in transport fuel prices during the next decade could cause unsurvivable chaos, followed by the grim kind of sustainability that would come with a winding down of what we know as civilization.

Avoidance of such a bleak outcome within a decade requires an early, progressive and substantial transition to transport systems based on electric traction powered from renewable resources.

*Richard Gilbert is a Toronto-based transport and energy consultant with clients in Asia, Europe and North America. He is co-author of the forthcoming book ‘Transport Revolutions: Moving people and freight without oil’ ([www.transportrevolutions.info](http://www.transportrevolutions.info)).*

## References

- ASPO. 2007. *Newsletter No. 75*. Ballydehob, Ireland: Association for the Study of Peak Oil and Gas [cited 13 April 2007]. Available from World Wide Web: < <https://aspo-ireland.org/newsletter/en/htm/Newsletter75.htm>>
- BP. 2006. *BP Statistical Review of World Energy*. London, UK: BP plc. [cited 13 April 2007]. Available from World Wide Web: <<http://www.bp.com/genericsection.do?categoryId=92&contentId=7005893>>
- Canada. 1997. *Sustainable Transportation*. Ottawa: Ontario, Government of Canada [cited 13 April 2007]. Available from World Wide Web: <<http://www.environmentandresources.ca/default.asp?lang=En&n=7A32551C-1&taxoid=C2BBC7A5-803A-44E3-8A6D-7C21F3888D68>>
- Canada. 2007. *National Energy Use Database*. Ottawa, Ontario: Natural Resources Canada [cited 13 April 2007]. Available from World Wide Web: <[http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data\\_e/databases.cfm?attr=0](http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data_e/databases.cfm?attr=0)>
- Davis, Stacy C. & Diegel, Susan W. 2006. *Transportation Energy Data Book 25*. Oak Ridge, Tennessee: U.S. Department of Energy, Oak Ridge National Laboratory. [cited 13 April 2007]. Available from World Wide Web: <<http://cta.ornl.gov/data/download25.shtml>>
- EU. 2001. *Minutes of the 2340th meeting of the Council of Ministers* Luxembourg, April 4-5, 2001. [cited 13 April 2007]. Available from World Wide Web: <<http://corporate.skynet.be/sustainablefreight/trans-counci-conclusion-05-04-01.htm>>
- Eurostat. 2007. *Environment and Energy*. Brussels, Belgium: European Commission [cited 13 April 2007]. Available from World Wide Web: <[http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1090,30070682,1090\\_33076576&\\_dad=portal&\\_schema=PORTAL](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL)>
- Hall, Ralph P. 2002. *Introducing the Concept of Sustainable Transportation to the U.S. DOT through the Reauthorization of TEA-21*. MS thesis, Faculty of Engineering, Massachusetts Institute of Technology.
- Hughes, J. David. 2006. *Natural gas in North America: Should we be worried?* Presentation to 'World Oil Conference' (ASPO - USA) Boston, Massachusetts, October 26, 2006 [cited 13 April 2007]. Available from World Wide Web: < [http://www.aspo-usa.com/fall2006/presentations/pdf/Hughes\\_D\\_NatGas\\_Boston\\_2006.pdf](http://www.aspo-usa.com/fall2006/presentations/pdf/Hughes_D_NatGas_Boston_2006.pdf)>
- Idaho. 2005. *Idaho Bicycle and Pedestrian Program*. Boise, Idaho: Idaho Transportation Department [cited 13 April 2007]. Available from World Wide Web: <[http://itd.idaho.gov/bike\\_ped/](http://itd.idaho.gov/bike_ped/)>

OECD. 1997. *Towards Sustainable Transportation: The Vancouver Conference*. Paris, France: Organization for Economic Cooperation and Development [cited 13 April 2007]. Available from World Wide Web: <<http://www.oecd.org/dataoecd/28/54/2396815.pdf>>

Rand Europe, Kessel & Partner, Gaia Group, Transport & Mobility Leuven, Study Group Synergo/Econcept, SUDOP PRAHA a.s., Institut für Energiewirtschaft und Rationelle Energieanwendung. 2003. *Deliverable 2 of Workpackage 1: Setting the Context for Defining Sustainable Transport and Mobility*. [cited 13 April 2007]. Available from World Wide Web: <<http://www.summa-eu.org/control/reports/SUMMA-D2-Setting-the-Context.pdf>>

Timmermans, Harry. 2004. *Transit Oriented Urban Environments Reduce Travel – A Fairytale !/?* Paper presented at an international planning symposium entitled ‘Incentives, Regulations, and Plans – The Role of States and Nation-States in Smart Growth Planning’, Annapolis, Maryland, October 2004. [cited 13 April 2007]. Available from World Wide Web:

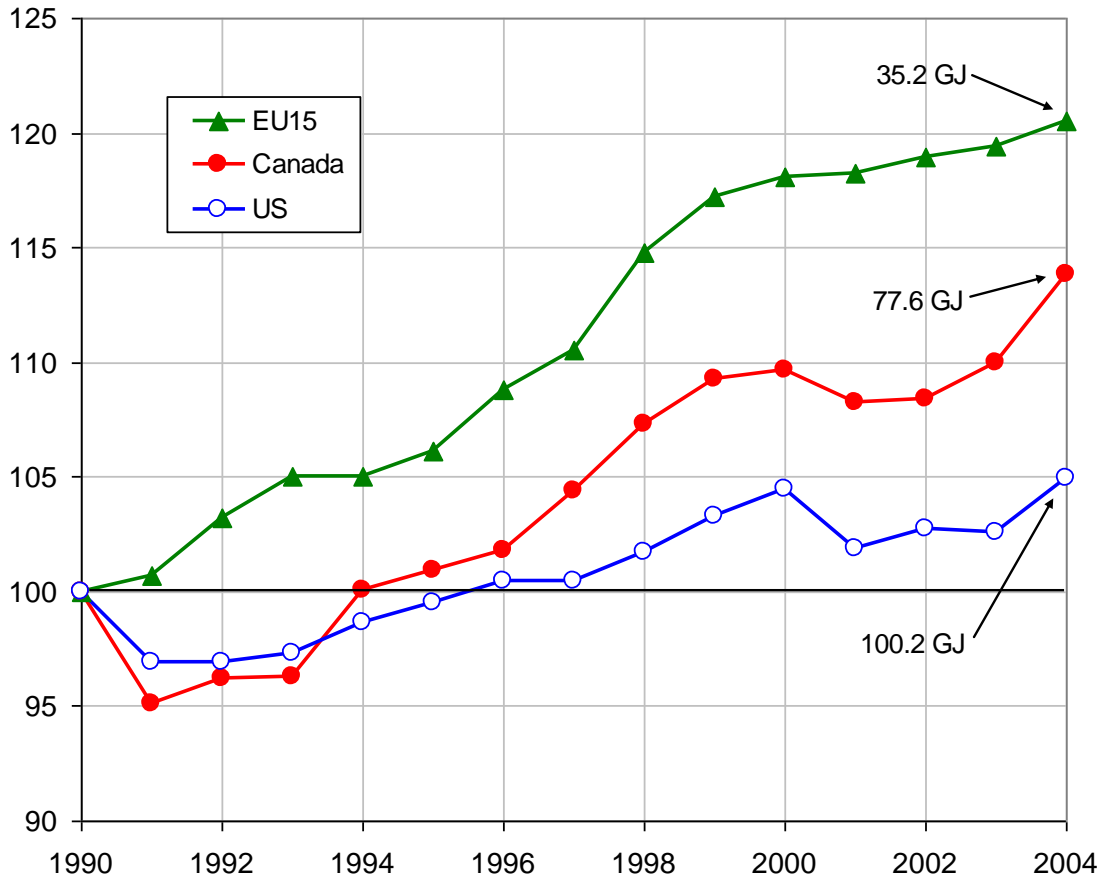
<[http://www.smartgrowth.umd.edu/InternationalConference/ConferencePapers/Timmermans\\_TODEnvironments\\_DateNA.pdf](http://www.smartgrowth.umd.edu/InternationalConference/ConferencePapers/Timmermans_TODEnvironments_DateNA.pdf)>

TRB: Transportation Research Board. 2005. *Integrating Sustainability into the Transportation Planning Process*. Washington D.C.: National Academies.

World Commission on Environment and Development. 1987. *Our Common Future*. New York: Oxford University Press.

Zittel, W. & Schindler, J. (2007) *Coal: Resources and Future Production*, Energy Watch Group, Ottobrun, Germany, <http://www.energywatchgroup.org/files/Coalreport.pdf>.

Figure 1. Relative changes in per-capita transport energy use, 1990-2004, in the U.S., Canada, and European Union countries (EU15)



Note: Actual per-capita transport energy use in gigajoules is also shown for 2004  
 Sources: EU15, Eurostat (2007); Canada, Canada (2007); U.S., Davis & Diegel (2006)