

Sustainable Transportation - the time is now.

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Here's another guest post below from Dr. Mir F. Ali about sustainable transportation.

His article makes me think about riding my bike more and maybe signing up for Victoria's [car share](#) program and dumping my vehicle. We all know driving is a problem and that car pooling and taking public transit are necessary. IN the near future we are also going to have to get used to less air travel, which will be getting more and more expensive and we should be looking to increase rail services in North America both for freight and for public transportation. The Europeans and the Japanese are ahead of us on that account and it's about time we started to build some high speed trains *and* let's get off our political butts and use the rail lines we have for commuter trains.



Sustainable transportation is critical to reducing GHG emissions

Canadian transportation industries account for approximately 4% of Canada's gross domestic product, and employ more than 800,000 people. Canada is a huge country with a massive transportation infrastructure which includes: 48,000 kilometres of track which makes Canada one of the largest rail networks in the world; Canada's national highway system is made up of over 38,000 kilometres of national and regional highways; and 900,000 kilometres of roads which are being used by cars, vans, buses or trucks and this is enough to circle the globe 22 times.

The users of the transportation infrastructure include private cars and trucks which account for a large proportion of both passenger and freight movements; when commercial and private transportation are considered together, more than \$150 billion a year, or one in every seven dollars spent in Canada, goes to pay for transportation. There are 17.3 million - 16.6 million cars and other light vehicles, and 575,000 heavy trucks registered in Canada.

Unfortunately, sensitivity to climate change was not one of the design considerations for designing modern transportation systems. Consequently, advanced transport technologies and a growing economy allowed governments around the world to continue to build infrastructure for automobiles that empowered people to travel faster and move their goods more quickly while at the same time consuming what seemed to be a limitless supply of energy for transportation.

The impact of this behaviour included:

1. Transportation is the second largest source of greenhouse gas (GHG) emissions in Canada representing 27 per cent of total GHG emissions (From 1990 to 2005, this figure grew by 33 per cent, from 150 mega tonnes (Mt) to 200 Mt);
2. Passenger GHG emissions continue to grow (From 1990 to 2005, GHG emissions from passenger vehicles increased by 10 per cent, as passenger-kilometres increased by 30 per cent during the same period);
3. While GHG emissions from the transportation sector continue to increase, air pollution emissions, such as fine particulate matter, sulphur oxides, nitrogen oxides and volatile organic compounds, have shown a steady decline due to regulatory initiatives and automobile stock turnover;
4. Energy use for transport in Canada increased by 21.5% between 1990 and 2000, from 1,878 to 2,282 (Pet joules); and
5. Transportation is also the largest end-use source of CO₂, which is the most prevalent GHG.

Furthermore, there are a number of associated environmental impacts which also occur during extracting, refining, and transporting crude oil for gasoline production and in the use of the vehicles. Chemical gases and particles which are released by cars and trucks do eventually fall out of the air onto street surfaces and land; at the same time vehicles often leak oil, gas, brake fluid, worn brake linings, windshield detergent, engine coolant and worn metal particles. Car tires leave a residue of zinc and other pollutants as they wear out and road salt is added to the mix in the winter. Hard pavement, streets and parking lots often provide direct conduits to storm sewers, allowing pollutants to wash directly into lakes and streams without any filtration.

According to a recent report, driveways and parking facilities have large economic and environmental costs. A typical urban parking space has an annualized value between \$500 and \$1,500, and even more for structured or underground parking facilities. Conventional standards often result in more land being devoted to driveways and parking facilities than to the buildings they serve.

In addition to emitting GHG into the atmosphere, transportation also has a direct impact on the environment in terms of air quality, ozone depletion, particulates, toxins, water quality, use of natural resources and noise. These pollutants not only contribute to global warming, but they also contribute to a variety of diseases, including cancer, respiratory diseases, and heart failure. The total health impacts of transportation pollution are difficult to calculate since there are so many different pollutants causing a variety of diseases, and most pollutants have other sources besides cars; however, the number of premature deaths from car pollution appears to be similar in magnitude to the number of deaths resulting from traffic crashes, although the exact amount is difficult to determine.

Perhaps the only way to reduce the GHG emissions including CO₂ and also to minimize the consumption of energy in the transportation sector is to adopt the principles of sustainable transportation. Energy conservation is indeed a basic rule of sustainable transportation which insists that individuals and societies should not consume resources beyond the rate at which they can be renewed, otherwise it will not be available for future generations.

While it is difficult to find a perfect definition for sustainable transportation, the following definition developed in 1997 by the Toronto-based Centre for Sustainable Transportation is widely accepted and is used as a base for developing definitions around the world including the European arm of the Rand Corporation and several partners:

A sustainable transportation system is one that:

Allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations; Is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy; and limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.

Transport Canada's vision of a sustainable transportation system is guided by the following eight principles which are based on three elements of sustainable transportation – social, economic, and environment:

1. Highest practicable safety and security of life and property;
2. Efficient movement of people and goods to support economic prosperity and a sustainable quality of life;
3. Respect for the environmental legacy of future generations of Canadians;
4. User pricing that better reflects the full costs of transportation activity and transportation infrastructure decisions that meet user needs;
5. Reasonable access to the national transportation system by Canada's remote regions;
6. Accessibility in the national network without undue obstacles for persons with disabilities;
7. Coordinated and harmonized actions across all modes of transport; and
8. Partnerships and collaboration among governments and with the private sector for an integrated, coherent transportation policy framework.

Studies have shown that the continued growth in population and employment forecast for the year 2020 will result in greater traffic congestion levels in the future. Unfortunately, each year in Canada, commuter trains provide 53 million rides to customers and taxpayers using only 500 kilometres of track. With 40 percent of greenhouse gases originating from urban transportation sources, especially private automobiles, providing alternatives to single occupant vehicles is clearly in the public interest. Canada has committed to reducing greenhouse gases to help minimize the impact of global warming. Commuter Rail and Rapid Transit (Sky Train, Light Rail, Metro/Subway, Bus Rapid Transit, Streetcar/Tram, and Kerb Guided Buses) can play an important role in meeting this commitment, while protecting existing green space that might otherwise be lost to highway expansion.

On November 27, 2008, BC Transportation Minister Kevin Falcon announced he will commission a half-million-dollar study to look at the options for commuter rail and freight on Vancouver Island's historic route. Currently, a VIA rail passenger train makes one daily run along the old north to south line between Victoria and Courtenay on the island's east coast. For years, island communities, which now own the rail bed, have pleaded for money to upgrade the tracks to provide a more reliable and more frequent service, with no result. Now, however, it seems the B.C. government has taken an interest. "There's growing interest in alternative forms of transportation on Vancouver Island, so the time is right to do a thorough business case

analysis," said Falcon.

Another reason for the provincial interest in the commuter rail system is that transportation is one of the largest sources of air pollution and greenhouse gases in British Columbia.

Environment Canada's most recent emissions summary indicates that on-road motor vehicle emissions deposited over 600 kilo-tonnes of criteria air contaminants (CACs) into the air in British Columbia in 2005, representing 20% of the total air pollutants generated by all sources (Env. Canada 2007).

Further, Environment Canada's most recently released National Inventory Report indicates that on-road transportation generated 17 million tonnes or 25% of the total annual GHG emissions in British Columbia in 2004. The Inventory also indicates that, over the period from 1990 through 2004, greenhouse gas emissions from all transportation sources increased by 40% in British Columbia, in comparison to a national growth of 27% during the same period.

The government of British Columbia has committed to achieving a 33% reduction in GHG emissions by 2020 and as part of the Climate Action Plan \$14 billion were allocated to the Provincial Transit Plan to build infrastructure and double ridership across BC by 2020. In order to accomplish this goal, it is critical that efforts to select and implement sustainable transit solutions are focused on developing and following transport and land use management strategies that improve mobility options, reduce total motor vehicle traffic, and create more accessible land use patterns. This will provide multiple benefits (Litman) including:

- Energy conservation and emission reductions;
- Reduced traffic congestion, and barrier effect (traffic delay to pedestrians and cyclists);
- Reduced parking problems and parking facility cost savings, which reduces development costs and increases housing affordability;
- Reduced costs to build, maintain and operate roadways;
- Consumer transportation cost savings;
- Improved mobility options, particularly for non-drivers;
- Reduced traffic accidents;
- Reduced land consumption, reducing stormwater costs, and habitat loss;
- Supporting strategic planning objectives, such as urban redevelopment and reduced sprawl; and
- Increased physical activity and associated health benefits.

Sustainable transportation is indeed critical to reducing GHG emissions. This is based on the concept of energy conservation which insists that individuals and societies should not consume resources beyond the rate at which they can be renewed otherwise it will not be available for future generations.

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