

Sustainable Development  
Strategy 2007-2009  
Freight Transportation  
Issue Paper

G.W. English, J. Lawson, D.C. Hackston

**RESEARCH AND TRAFFIC GROUP**

# Presentation Overview

- **Status and Trends**
- **Roles/Responsibilities of Government**
- **Opportunities and Constraints**
- **Priority List for SDS-2007**

# **Sustainability Issues for Freight**

**(Prioritized For Our Intercity Focus, and  
Alignment with Transport Canada's Mandate)**

- 1. Global Climate Change**
- 2. Interference/Congestion Cost**
- 3. Accidents/Crashes**
- 4. Local Air Pollution**
- 5. Local Noise Pollution**

# Status and Trends

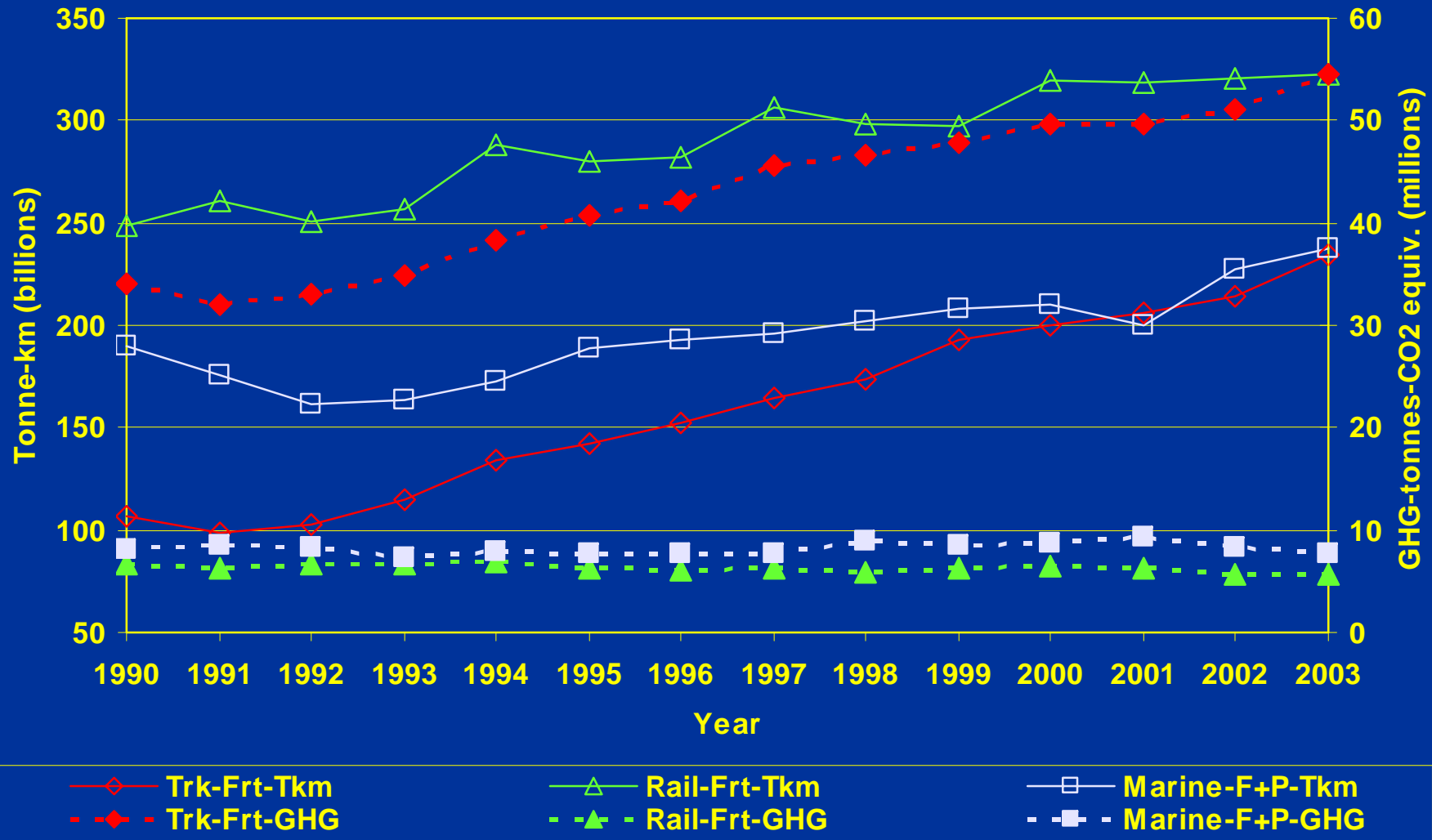
- **Transportation Is The Highest Emitting Sector Accounting For 27% Of Total GHG Emissions, (34 % Of Energy-Based Emissions)**
- **Freight Transportation Accounted For 38 % Of Transport Emissions In 1990.**
- **From 1990 To 2003 Freight GHG Emissions Grew 2.6 Times Faster Than Passenger Emissions.**
- **Freight GHG Emissions In 2003 Were 40% Higher Than 1990.**
- **If Trends Continue, Freight Emissions Will Exceed 1990 Levels by : 67% in 2010, and  
116% in 2020**

# Modal Shares of Freight Emissions

Mode	Year	
	1990	2003
Truck	68.8%	79.0%
Marine (includes passenger)	16.5%	11.3%
Rail	13.6%	8.3%
Air	1.1%	1.4%

Source: derived from NRCan's *Comprehensive Energy Use Database*

# Activity and Emissions Trends



# Average Annual % Growth of Key Parameters (1990 to 2003)

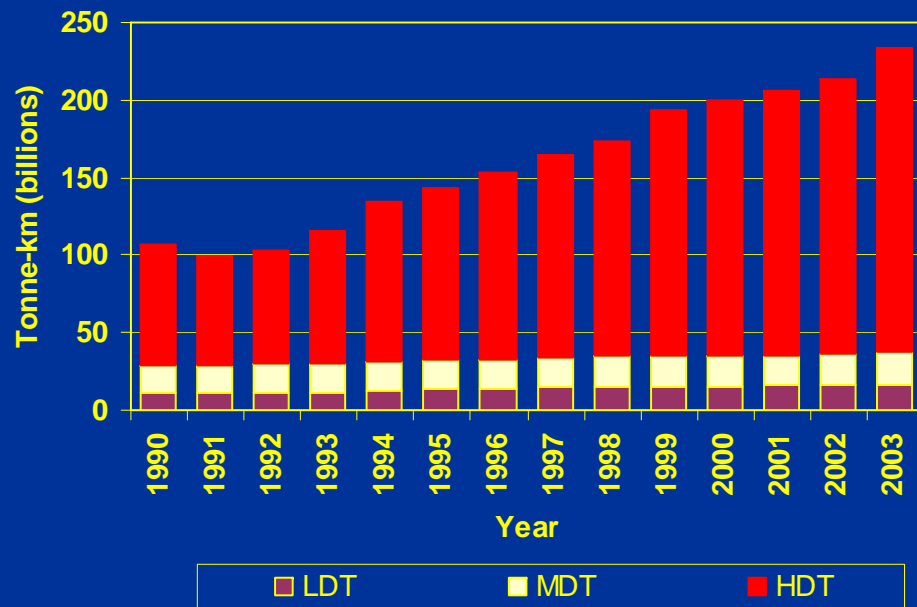
Mode	Tkm Activity	Tkm/MJ Efficiency	GHG Emissions
Freight Truck	6.24 %	2.52 %	3.69 %
Rail Freight	2.03 %	3.41 %	-1.25 %
Marine (including passenger)	1.72 %	1.98 %	-0.35 %

Source: derived from NRCan's *Comprehensive Energy Use Database*, air freight excluded due to data inconsistencies.

# Dominant Factors in Trucking Growth Characteristics

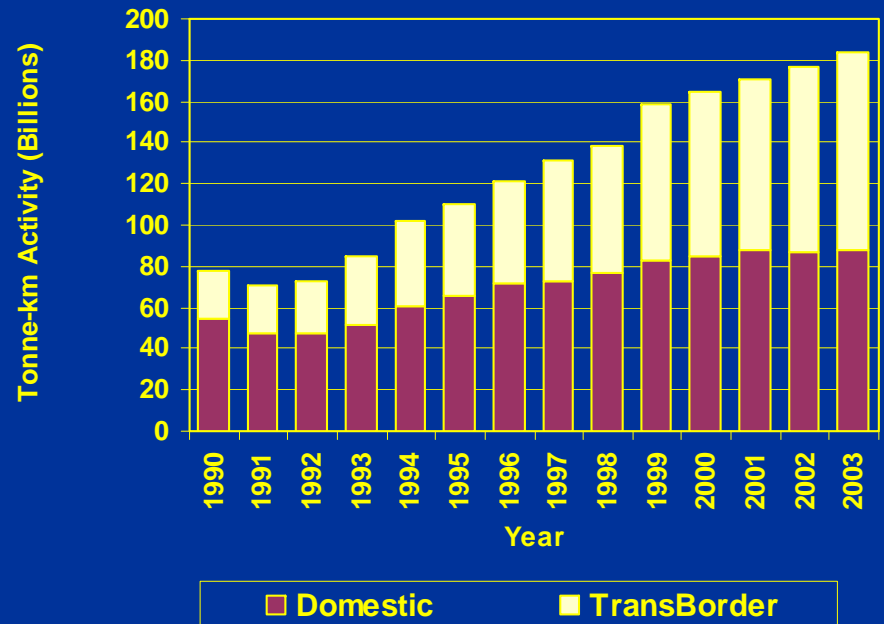
## Vehicle Class

HDT (Intercity)



## Growth

Transborder > Domestic





# Truck's Share of the Top Four Border Crossings (2004)

Crossing Point	Volume	Process Capacity	Bridge Queuing Capacity
Windsor - Ambassador Bridge	36%	53%	72%
Sarnia - Blue Water Bridge	32%	48%	67%
Fort Erie - Peace Bridge	19%	32%	51%
Niagara Falls - Queenston Br.	24%	39%	59%

Volume data for truck and all-other vehicle crossings from *Transportation in Canada 2004*,  
 Estimated process capacity based on 2 to 1 ratio of process clearance time  
 Estimated bridge queuing capacity based on a 4.5 to 1 ratio of standing length.

# Federal Government's Toolkit (Spending Measures)

- **Infrastructure investments**
  - partnerships with other governments in intelligent transport systems (ITS), with benefits in reductions in congestion, emissions or accidents;
  - or with private transport companies in intermodal facilities, or other facilities producing environmental benefits from traffic diversion.
- **Equipment subsidies**
  - e.g. for purchase of replacement trucks, locomotives or aircraft with specified technologies (such as those using alternate fuels, or best-in-class fuel consumption);
  - or after-market equipment, such as for anti-idling, low-rolling-resistance tire, “shore power”, or synthetic lubricants.
- **Service subsidies** – possibly for operation of services producing environmental benefits.

# Federal Government's Toolkit (Fiscal Measures)

- **Tax measures:**
  - Taxes on motive fuels, and exemptions for “greener” alternatives.
  - Sales taxes on transport equipment based on fuel consumption or emissions (e.g. the federal tax on “heavy automobiles”, tax on car air conditioners).
  - Tax credits or accelerated CCA rates for purchases of specified equipment.
- **User fees for federal infrastructure:**
  - fees for congestion, emissions or noise at such facilities – as part of policy to internalize the external damage costs.
- **Emissions trading/targets:**
  - A hybrid of fiscal and regulatory measures, emissions trading could conceivably be introduced for freight transport by extending the Large Final Emitter system under the Climate Change Plan to include freight carriers, or by allowing off-sets for industrial emitters included in the LFE system for freight transport emissions reductions.

# Federal Government's Toolkit (Legislation and Regulations)

## ■ Standards and Licensing

- Standards for safety of new transport equipment, including trucks, rail locomotives, aircraft, vessels;
- Standards for emissions of pollutants from new transport equipment.
- Standards for fuel consumption of new transport equipment.
- Conditions of licensing of those carriers and operators under federal jurisdiction.

## ■ Indirect Influences

- Recycling requirements, e.g. for equipment, packaging.
- Labelling requirements – e.g. best-in-class identification for buyers of equipment; or potentially of emissions intensity of products.
- Requirement for energy use and emissions reporting in corporate annual reports.

# Mitigation Opportunities Are Limited

- **Opportunities Exist in all Modes for Efficiency Improvement via Operational and Technological Change; However,**
- **Full Realization of these Opportunities Will Only Sustain Present Trends**
- **Mode Shift, Relaxed Service Demands, and/or Demand Restraint Are Necessary Components of an Effective SDS for Freight Transportation**

# Transportation's Importance in the Canadian Economy Dictates Careful Analysis of Measures

- **In 2004, commercial transportation industries accounted for \$43.3 billion (1997 dollars), or 4.1 per cent of the GDP in Canada.**
  - **Trucking \$14.4 billion (1.4 %),**
  - **Rail \$5.5 billion (0.5 %),**
  - **Air \$3.8 billion (0.4 %),**
  - **Marine \$3.0 billion (0.3 %).**
- **GDP Does Not Reflect Freight Transportation's Enabling Role in the Economy**

# Challenges and Limitations Exist in Setting Strategy

- **Environmental Responsibility Is In TC's Vision And Mission Statements; However,**
- **Its Mandate Has Remained Focused On Safety, Economics And Accessibility (Until The Proposed Amendments To The CTA Are Adopted).**
- **The Department Has Also Not Been Allocated Sufficient Funds To Make An Appreciable Impact In Influencing The Development Path Being Taken In The Transportation Sector In Responding To Significant Growth In Trade.**

# Challenges and Limitations Exist in Setting Strategy

- **Finding The Optimal Balance Between The Positive Impacts Of Transportation (Economic Growth And Standard Of Living) And The Negative Impacts (Emissions, Congestion, Land Use) Is TC's Biggest SD Issue.**
- **In Our View, SDS-2007 Needs To Focus On The Prerequisites To Preparing A Meaningful SDS For The Transportation Sector In 2010.**



# Priorities and Constraints

- Trucking Activity Data Remains A Critical Gap That Must Be Addressed; However,
  - Multi-jurisdictional Cooperation Is Required
  - Some Progress Is Being Made
  - More Provinces Need to Buy In.
- Regulatory And Economic Tools Are Focused On Carriers; However,
  - The Key To SD Is In Modifying Shipper's Service Demands.
  - A Better Understanding Of Shipper's Choices And The Factors That Influence Those Choices Is A Prerequisite To Measures That Would Modify Them.

## Transport Canada's SDS Initiatives (Our Prioritization for Freight in Yellow)

1. **Encourage Canadian shippers to make more sustainable transportation choices.**
2. Enhance innovation and skills development.
3. **Increase system efficiency and optimize modal choices.**
4. Enhance efficiency of vehicles, fuels and fuelling infrastructure.
5. Improve performance of carriers and operators.
6. **Improve decision-making by governments and the transportation sector.**

# Priority SDS Initiatives

## (Preparing for SDS-2010)

1. **Develop Truck O-D Data**
2. **Prioritize the Full Cost Investigation Initiative**
3. **Understand Shippers' Choice Mechanisms,**
  - Assess the use of just in time delivery for the range of industries that use it.
  - Explore its perceived and actual value in different industries that use it.
  - Assess the sensitivity of service demands to transportation costs.
  - Attempt to define the optimal service balances across industries under full social cost allocation.
4. **Promote Awareness of the Reasons for Road Pricing and Highway Cost Allocation Initiatives**