Moving Goods Sustainably: The Future of Freight Transportation

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Freight: growing challenges and opportunities
Transformational change is possible
Freight CO2 emissions growing faster than passenger transportation

Percent Change in US CO₂ Emissions Compared to 2015

-20% -10% 0% 10% 20%
2015 2020 2025 2030 2035 2040

-20%

Passenger Transport (LDV, Bus, Passenger Air & Rail, Recreational Boats)
Freight Transport (HDV, Freight Air & Rail, Shipping)

DOE Annual Energy Outlook 2015
Global volume growth by mode

Projected Growth by Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>2010</th>
<th>2050</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0</td>
<td>0</td>
<td>482%</td>
</tr>
<tr>
<td>Road</td>
<td>0</td>
<td>349%</td>
<td></td>
</tr>
<tr>
<td>Rail</td>
<td>0</td>
<td>349%</td>
<td></td>
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<tr>
<td>Sea</td>
<td>0</td>
<td>327%</td>
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Source: ITF Transportation Outlook 2015
Global CO2 emissions growth by mode

Projected Growth by Mode

- Air: 411% growth
- Road: 304% growth
- Rail: 250% growth
- Sea: 238% growth

Source: ITF Transportation Outlook 2015
Technology alone will not save us
Disruptive technologies

• Mega-ships – more efficient for ocean route, but – higher shore-side emissions? Reduced pressure to nearshore, increasing total GHG?

• e-commerce / sharing economy – fewer consumer trips, but – more “last mile” trips by less efficient smaller trucks or LDVs?

• 3-D printing – fewer shipments of finished goods, but – increased demand for goods, especially disposable goods?

• Closed loop – less waste, but – higher VMT due to reverse logistics?

• IT advancements (V-2-V, I-2-V, autonomous vehicles) – more safety & mobility, less congestion, but – higher VMT due to induced demand?
We Have the Imagination

WE’VE DONE BIG THINGS

- Cars replaced horses in 20 years
  1900–1920
- U.S. Interstate Highway System
  built in 35 years
  1955–1990
- MPG set to double for passenger cars in 15 years
  2010–2025
- Digital navigation replaced paper maps in 15 years
  1995–2010

WE CAN DO BIG THINGS

- E85
- Plug
- CNG
- H₂
U.S. leadership in freight sustainability

- **270 MMT GHG: 1st-ever GHG/efficiency rules for HD trucks**
  - Began in 2014, will be fully phased in by 2018
  - Joint national program of the US EPA & US DOT (NHTSA)
  - Industry achieving with cost-effective “off-the-shelf” technologies

- **1 Billion MT: proposed “phase 2” standards**
  - Based on widespread deployment of existing and advanced technologies; encouraging a new generation of cleaner trucks
  - Extensive assessment, testing and stakeholder input
  - Joint national program of EPA and NHTSA
  - Proposed phase-in 2021 to 2027 (2018 for trailers)
Beyond regulation: market “nudges” for sustainability

• Customer and investor interest
• Global competition
• Financial and other indices
• Energy use, volatility (fuel costs total 38% operational trucking costs vs driver wages at 26%)
• Internal champion
• Risk management/resiliency
• Executive Orders (eg 13693), state and local climate plans
• Tender / procurement processes and requirements
• Corporate transparency
• Save money
• Values marketing
• Support brand value
• Align carbon accounting across global supply chains (GRI, CDP)
SmartWay complements regulation by leveraging “nudges”

• SmartWay extends business’ capacity to respond to market signals about sustainability

• Covers multiple modes across supply chain: truck, rail, barge, air cargo, multimodal, logistics, shipper

• Helps companies improve their transportation operations
  • At freight docks and in distribution, routing and logistics

• Provides additional tools, technical assistance, data management
  • Serves as clearinghouse for P2P learning
  • Offers incentives to improve
  • Tests and verifies technologies and strategies (national HD GHG regs build upon SmartWay’s technology testing and verification)
SmartWay – what is it?

• EPA developed the SmartWay brand as a mark of cleaner and more efficient transportation

• SmartWay covers transportation services (program) and products (vehicle mark)

• SmartWay program: A voluntary partnership to promote greener goods movement

• SmartWay mark: Similar to Energy Star, but for passenger vehicles and freight trucks
How SmartWay works

• Companies submit data on freight transportation activity using EPA-provided assessment and tracking tools

• Tools calculate annual carbon footprint along with annual emissions of other air pollutants from transporting goods

• EPA ranks companies by environmental performance

• Recognition for top 1 – 2% environmental performance

• Transparency, market forces and EPA technical expertise foster continual improvement
Advancing sustainability through procurements

• Using SmartWay, any organization that ships and receives goods can include an environmental sustainability metric in its transportation RFQs

• Freight carriers can quantify environmental sustainability (along with cost, reliability, customer service) in procurement bids

• Third party logistics companies (outsourced transportation service providers) can also use these metrics in procurements

• To help educate suppliers and vendors across their supply chains, SmartWay offers companies access to best practices, partner and industry forums and events, and training and communication material (print, web, social media, video)
Results

• In 11 years, cut 72 MMT CO$_2$, 1.4 M tons NOx, 59,000 tons PM
  • while saving businesses and communities nearly $25$ billion in fuel costs

• Conserved 170 million barrels oil
  • equivalent to taking 15 million cars off the road for an entire year

• Enables market to operate more efficiently across supply chains
  • cargo shippers learn about greener carriers and modes
  • carriers can compare performance relative to peers
  • shippers and carriers benchmark and track carbon emissions from freight transportation
  • shippers and carriers learn to improve environmental performance
SmartWay in North America

Canada adopted SmartWay in 2012
• Fully integrated seamless program
• Administered by Natural Resources Canada
• Metric and French tools
• Joint Smart Driver online curriculum

Mexico operating Transporte Limpio since 2010
• Modeled on SW 1.0

• Commission for Environmental Cooperation issued report recommending aligning North American freight efforts

• EPA and NRCan working to further develop options for SmartWay in Mexico

Mexico can set stage for Latin American efforts
• Brazil, Argentina, Chile, Columbia
Expanding globally

• Build capacity for other countries to design Green Freight programs
• “How to Develop a Green Freight Program” guide for emerging regions
• Mandarin, Spanish, Portugese, French versions available
• Conduct trainings and share expertise in countries such as China, Viet Nam, S. Korea and Mexico
• Develop tools for freight accounting that can be adapted for other regions
Global partnerships

- **China - Climate Change Working Group**
  - China Green Freight Initiative

- **Multilateral collaboration in Brazil**

- **UNEP - Climate and Clean Air Coalition**
  Global Green Freight Action Plan
  1. Align/Enhance Existing Green Freight Efforts
  2. Develop/Support New Green Freight Programs
  3. Address Black Carbon in Green Freight Programs

- **Global Logistics Emissions Council**
  - Creating global framework for freight supply chain logistics/emissions methodologies

- **Integrating with CDP, WRI, GRI**
“There is such a thing as being too late when it comes to climate change.”

- President Obama, August 3, 2015
For more information:

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call: 734-214-4767

email: smartway_transport@epa.gov