

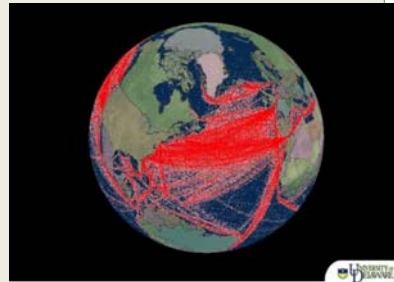


The Future of Freight: *Improving Environmental, Economic, and Energy Dimensions of Goods Movement*

James J. Corbett, University of Delaware
James J. Winebrake, Rochester Institute of Technology
FFCA East Coast
The Jacob K. Javits Convention Center, New York NY, 9-13 June 2008



- Containership
- Tanker
- Bulk Carrier
- General Cargo
- Refrigerated Cargo
- Ro-Ro
- Passenger



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Sustainable Goals for Freight: **CLEAN & AGILE**

**NEEDED COMPONENTS:
ADVANCED TECHNOLOGIES
AND FUELS**


**IMPROVED OPERATIONS
AND LOGISTICS**

**RENEWED
INFRASTRUCTURE**

**FOCUS ON
DEMAND MANAGEMENT**

**“Innovations both
inside and outside
the box”**

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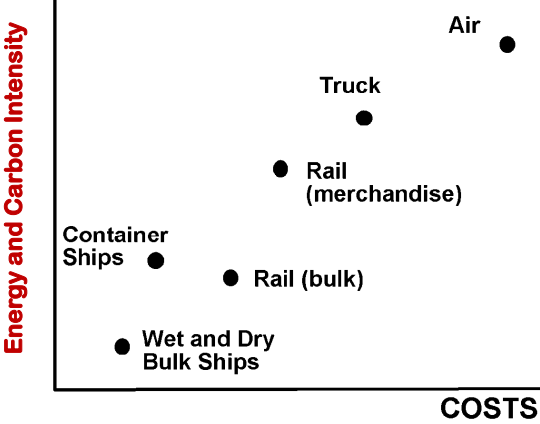
Freight Overview

Thinking about **freight transport** requires more system-thinking than **passenger transport**.

Freight transport is the fastest growing energy sector

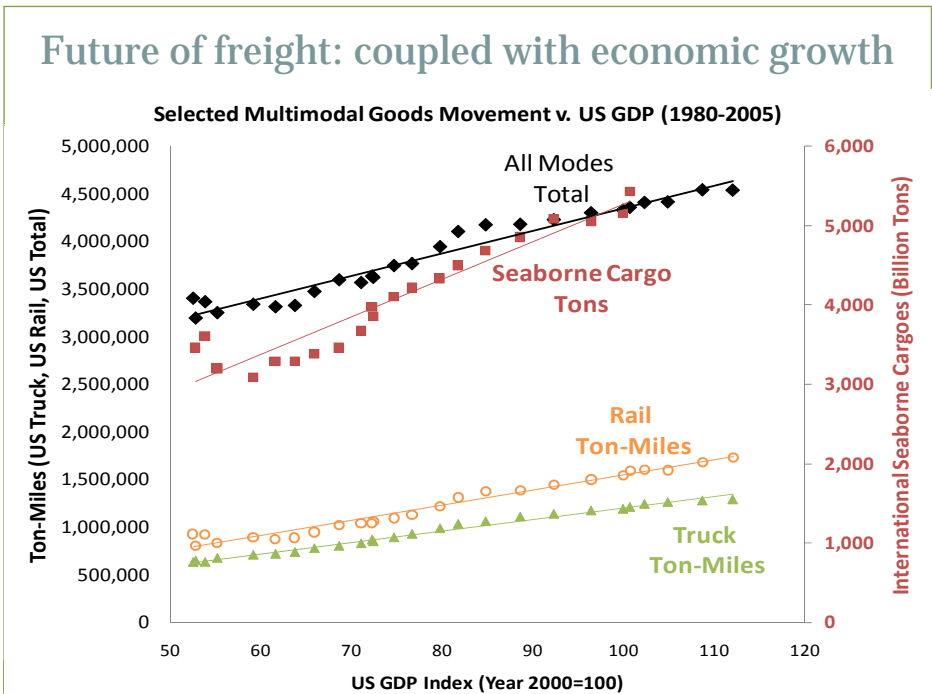
Shippers, carriers, consumers can jointly achieve sustainable supply chain systems to

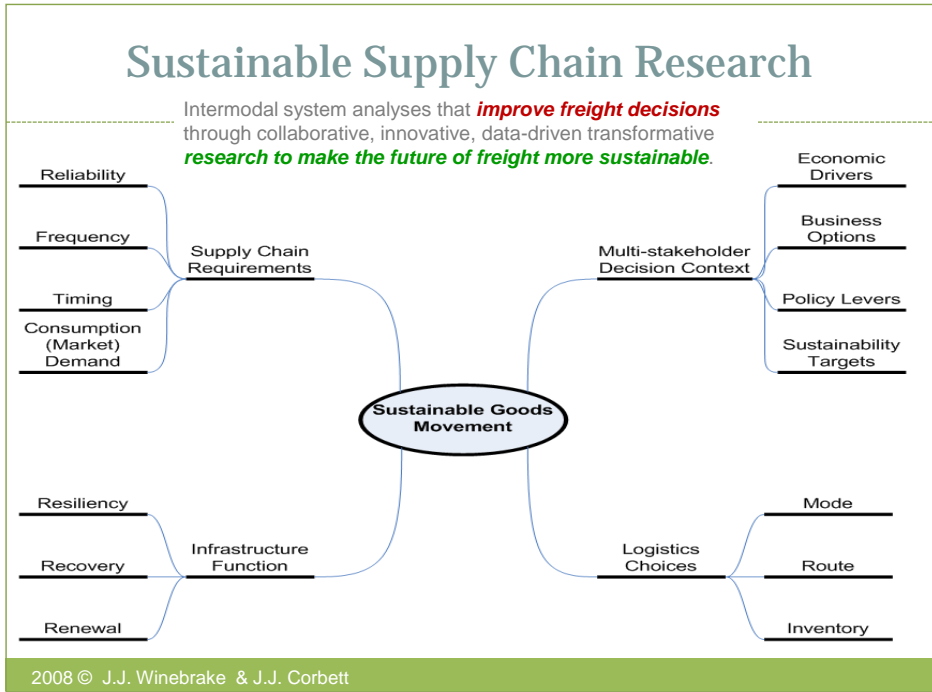
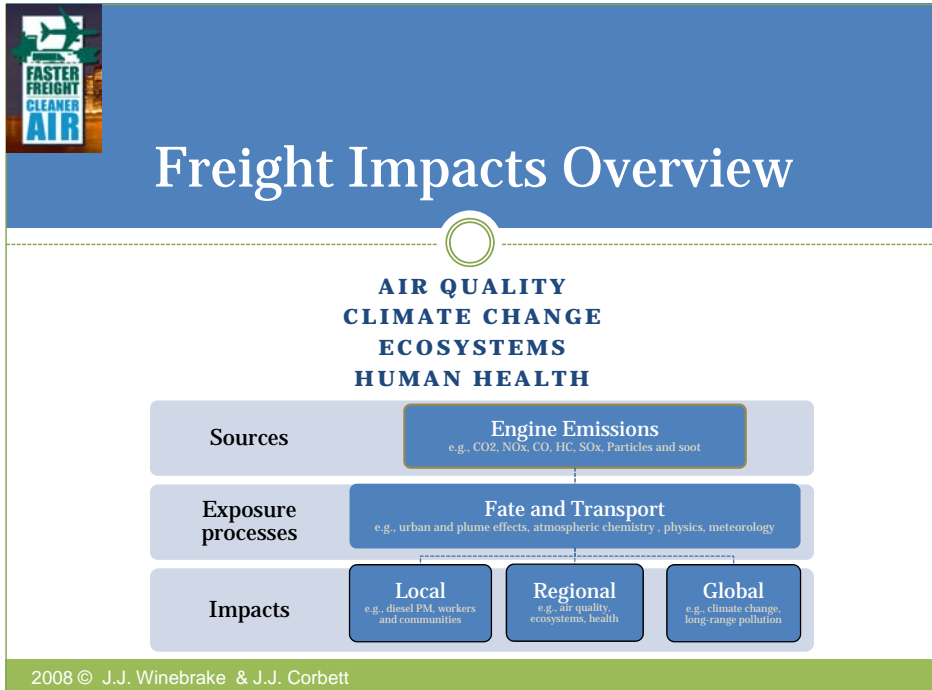
- reduce **costs**,
- conserve **energy / environmental resources**,
- protect **environment & health**



Energy and Carbon Intensity (Y-axis) vs **COSTS** (X-axis)

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What do we want for the Future of Freight?

- **Modernize** existing fleets
... replace fleet with best technology
- **Maximize** current fleet usage
... use current fleet to maximum performance
- **Optimize** system performance
... logistics, infrastructure, operation

Might these be shared goals, depending on targets, timeframe?

Business Goals ↔ **Environmental Goals**

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VISUALIZING GOALS MODELING ALTERNATIVES

Intermodal freight network optimization model to evaluate objective tradeoffs.

Developing resources for "table-top" exercises with industry and agencies.

Evaluates performance against *benchmarks* and optimizes with respect to possible *targets*

Web-version in development.

Geospatial Intermodal Freight Transportation (GIFT) Model



Decision makers can **explore tradeoffs** among **alternative routes**, **across modes**, and **identify optimal routes** for economic, energy and environmental objectives.



Winebrake, James J., James J. Corbett, Aaron Falzarano, J. Scott Hawker, Karl Korfmacher, Sai Ketha, and Steve Zilora, "Assessing Energy, Environmental, and Economic Tradeoffs in Intermodal Freight Transportation," *Journal of the Air and Waste Management Association*, 2008 (in press).

How might things look in the Future?



A verifiable process for benchmarking, tracking, and optimizing the movement of freight would apply to retail, business to business, and internal shipments.

Sustainable performance across three sustainability dimensions is green cubed!

 **GoGreenGo** ...annually, our  shipments emit G% fewer pollutants, saving E% energy, at standard shipping cost

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Working together on *vision and modeling*,
we can deliver the Future of Freight **FoF**

DEFAULT FoF: More freight moved (growth)

EXPECTED FoF: Better service (agile, timely, reliable)

DESIRED FoF: Cleaner performance (GHGs, health)

ACHIEVABLE FoF: Sustainable goods movement

FoF: More, better, cleaner, sustainable goods movement

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Discussion Welcome

More, better, cleaner, sustainable goods movement

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