### Sustainable and Resilient Supply Chains with Emerging Technologies

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Panel II: Emerging Issues, Opportunities, and Tradeoffs for Reducing Greenhouse Gas Emissions toward Sustainable Supply Chains

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#### The context of sustainble supply chains

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## Two main forces impacting the sustainability of supply chains



# Two main forces impacting the sustainability of supply chains

National and international Regulatory pressure

- Emission limitations
- Emission trading schemes\* Environmental
  - Transport technologies
    - Alternative fuels
    - Safety & security
      - Enforcement

\*) Mainly voluntary schemes for now

**Sustainability** 

Social Financial

Customers, suppliers, competitors Competitive pressure

- Product offerings
- Process know-how
- Data management
  - Cost & price
  - Related R & D



# Technological and managerial approaches to simprove supply chain sustainability

Regulatory conformance

- Adoption of emission reduction technologies
- Use of alternative fuels
- Use of emission trading, where applicable
  - Investing in the latest transport technology

A mixture of reactive and proactive behavior of firms!

Environmental

Competitive conformance\*

- Improving business resilience
- Utilization of "Big Data" (AI, IoT, Blockchains, etc.) Nearshoring of production
  Commercial trade-offs of costs and profitability

Social Financial

\*) See e.g. The Economist, 16 Jan. 2021

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#### Supply chains\* emit up to 15 % of global CO<sub>2</sub>

- All transport accounts for approx. 25 % of global CO<sub>2</sub> emissions
- Fuel combustion emits 33,500 Mtons of CO<sub>2</sub> in 2018 (IEA 2020)
  - Global road, rail, air and marine transport, incl. passenger and public transport
  - ~ 34 % from OECD countries, U.S. share of total ~ 15 %; China ~ 28 %
- The share of **freight transport** of all fuel combustion emissions:
  - Trade-related international freight approx. 30 % (<u>ITF 2016</u>)
  - Domestic freight globally approx. 20 %
- Other logistics-related emissions more difficult to estimate
  - Warehousing, cargo handling equipment usage, electricity usage etc.

\*) Transport, warehousing and cargo handling operations only

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#### Selected global or international initiatives

- On-going work in multilateral agencies
  - IMO (Maritime) and
  - ICAO (Aviation)
- International Transport Forum at the OCED
  - Decarbonizing Transport Initiative
  - <u>Transport Climate Action</u> Directory



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### **Ex. of ITF's Decarbonizing Transport Initiative**

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### Thank you!

