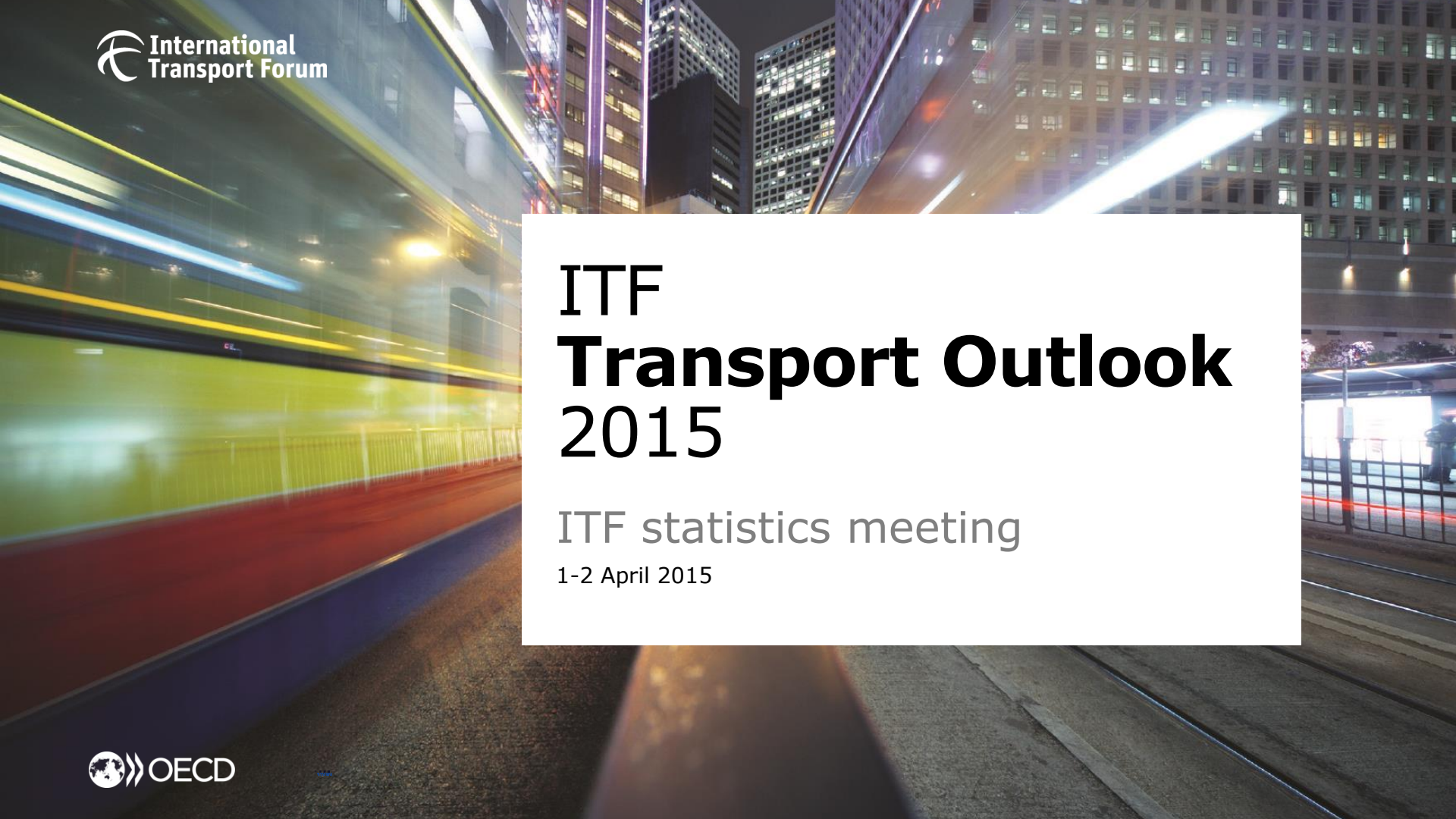


International Transport Forum

ITF **Transport Outlook** 2015

ITF statistics meeting

1-2 April 2015

OECD

Strategic tool

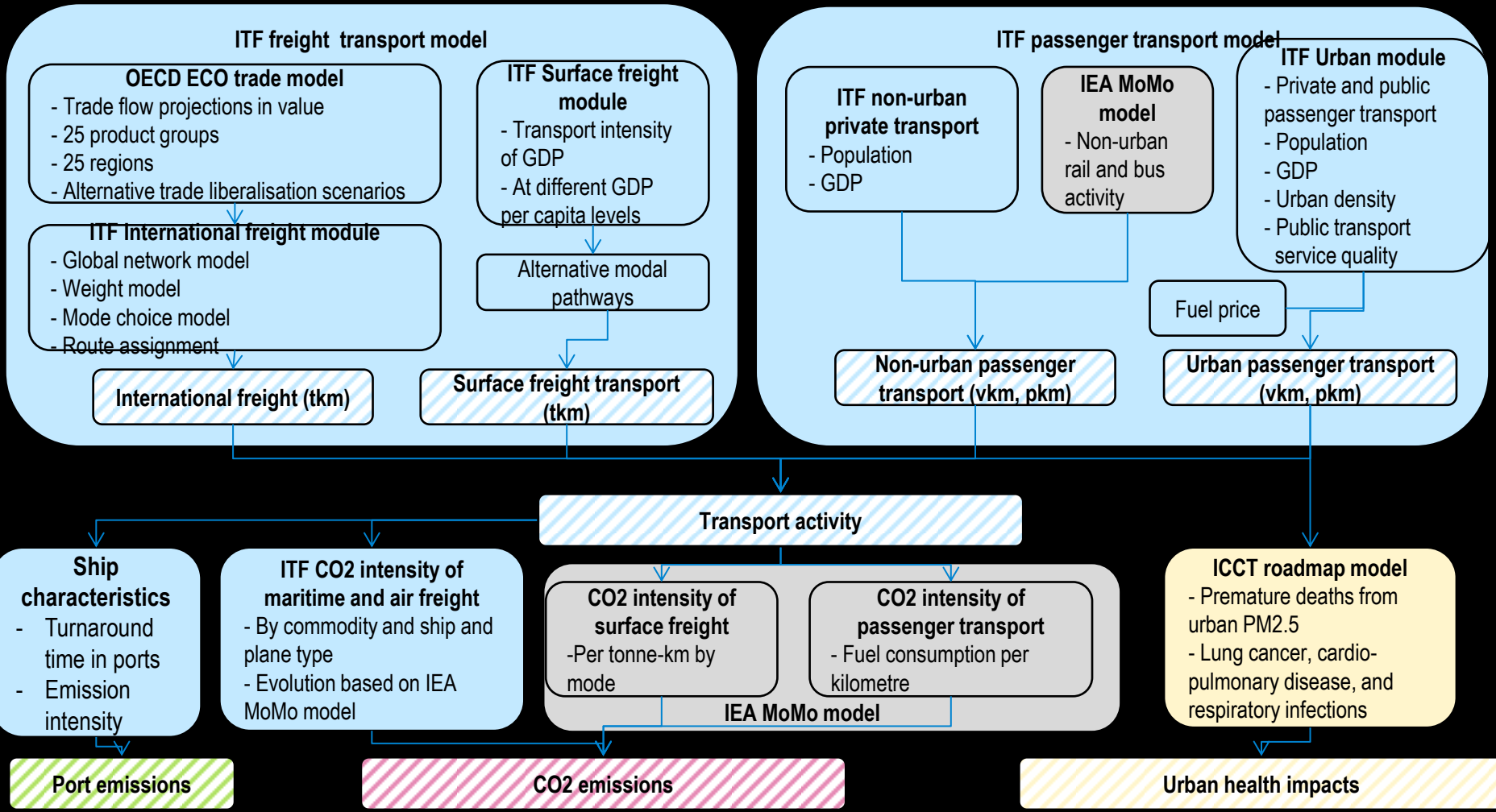
- A scenario tool to examine development of global transport volumes and related CO_2 emissions, health impacts
- Strategic tool to support policy-makers in shaping the future of transport policies
- Allows us to analyse how world could change if we choose different policies and development paths
- Focus on scenarios illustrating potential upper and lower pathways

What's new

- Focus on own model development for transport demand
  - Extended collaboration: GDP (ENV), trade model (ECO+ENV), health impacts (ICCT), technology and emissions (IEA), data (ECLAC, TERI, CATS, TPRI), population (UN)
- International freight model
- Urban model extension (China and India)
- Health impacts
- Shipping related port emissions

Publication

- Second year part of OECD Outlook series
  - Incorporates Trends in the Transport Sector; specific style requirements; StatLinks, increased visibility
- Chapter 1: Summary of scenarios to 2050
- Chapter 2: Near-term outlook
- Chapter 3: Long-term surface transport projections
- Chapter 4: International freight up to 2050
- Chapter 5: Urban transport in China, India and LA


ITF freight transport model
OECD ECO trade model
- Trade flow projections in value
- 25 product groups
- 25 regions
- Alternative trade liberalisation scenarios
ITF International freight module
- Global network model
- Weight model
- Mode choice model
- Route assignment
International freight (tkm)
ITF Surface freight module
- Transport intensity of GDP
- At different GDP per capita levels
Alternative modal pathways
Surface freight transport (tkm)
ITF passenger transport model
ITF non-urban private transport
- Population
- GDP
IEA MoMo model
- Non-urban rail and bus activity
ITF Urban module
- Private and public passenger transport
- Population
- GDP
- Urban density
- Public transport service quality
Fuel price
Non-urban passenger transport (vkm, pkm)
Urban passenger transport (vkm, pkm)
Transport activity
Ship characteristics
- Turnaround time in ports
- Emission intensity
ITF CO2 intensity of maritime and air freight
- By commodity and ship and plane type
- Evolution based on IEA MoMo model
CO2 intensity of surface freight
-Per tonne-km by mode
CO2 intensity of passenger transport
- Fuel consumption per kilometre
IEA MoMo model
ICCT roadmap model
- Premature deaths from urban PM2.5
- Lung cancer, cardio-pulmonary disease, and respiratory infections
Port emissions
CO2 emissions
Urban health impacts

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Population growth generates rising mobility needs

8.8 billion

The world population by 2050

Source: ITF Transport Outlook 2013 based on UN Urbanisation Prospects (2011 Revision)

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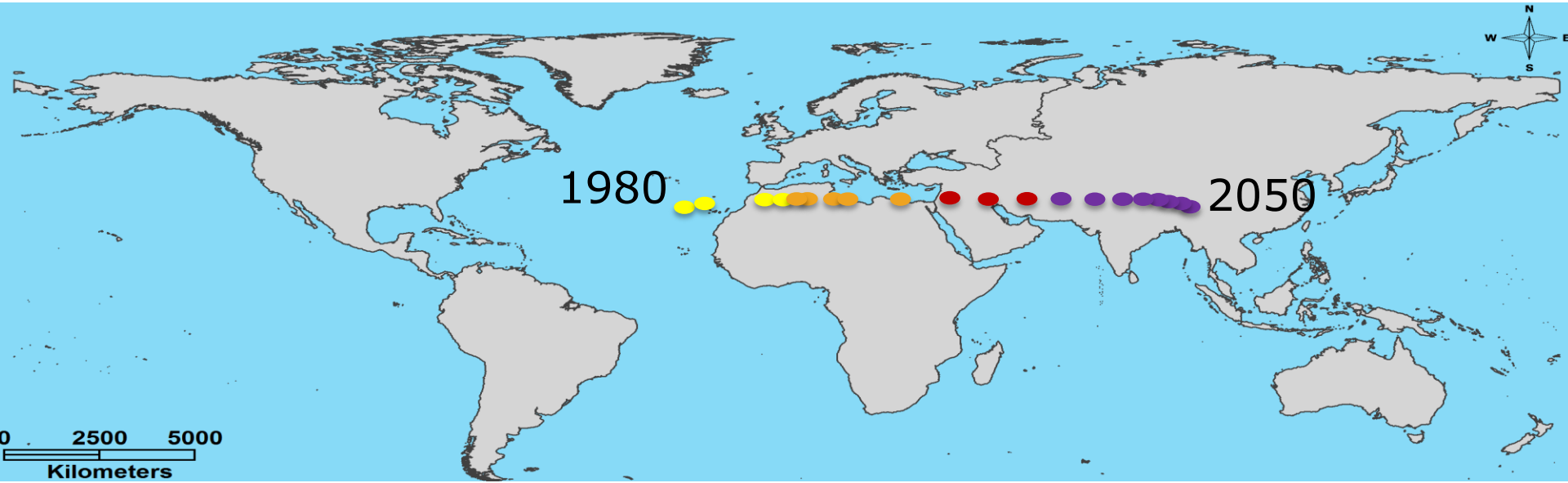
Economic center of gravity shifts



Source: Quah (2011). GDP projections ITF Transport Outlook 2013 based on OECD (2012), Conference Board (2012) and IMF (2013)

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Cities shaping future transport flows

2.7 billion

Additional urban dwellers in 2050, 94% will live in developing countries

Source: ITF Transport Outlook 2013 based on UN Urbanisation Prospects (2011 Revision)

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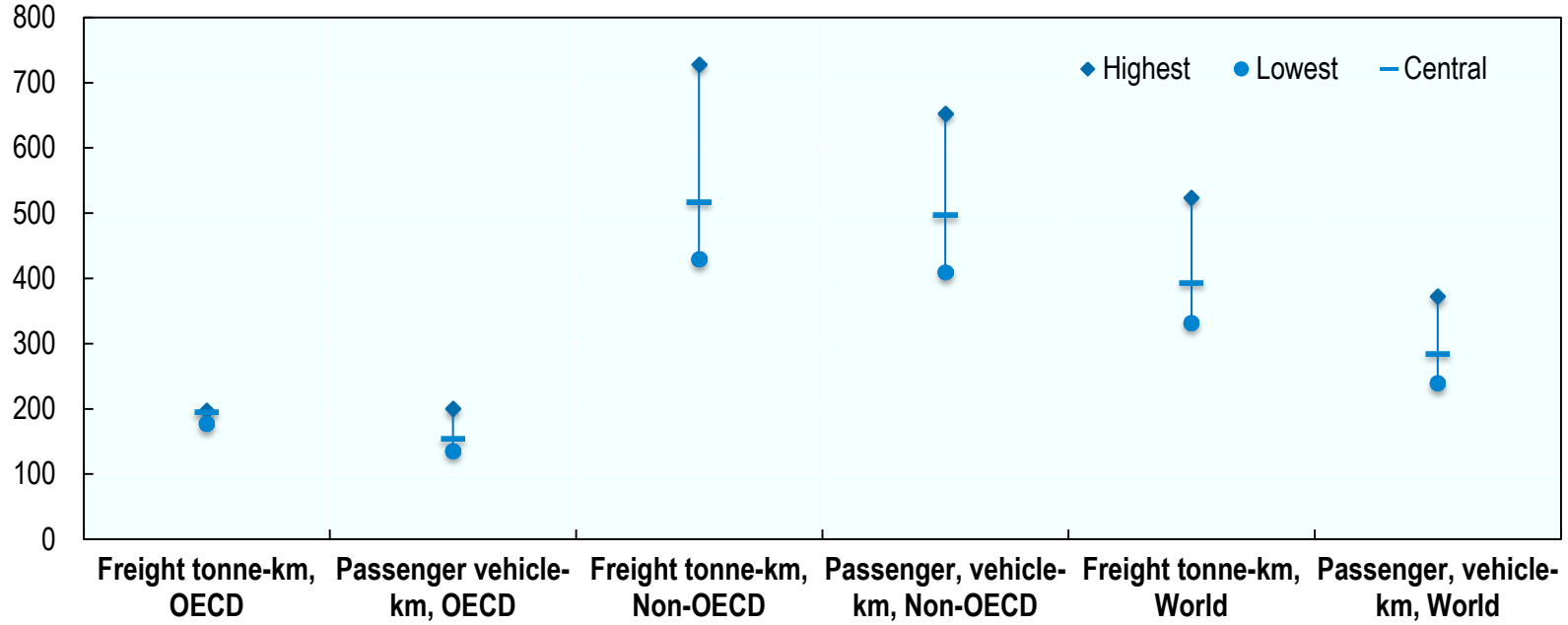
International freight patterns change

1/3 of world trade

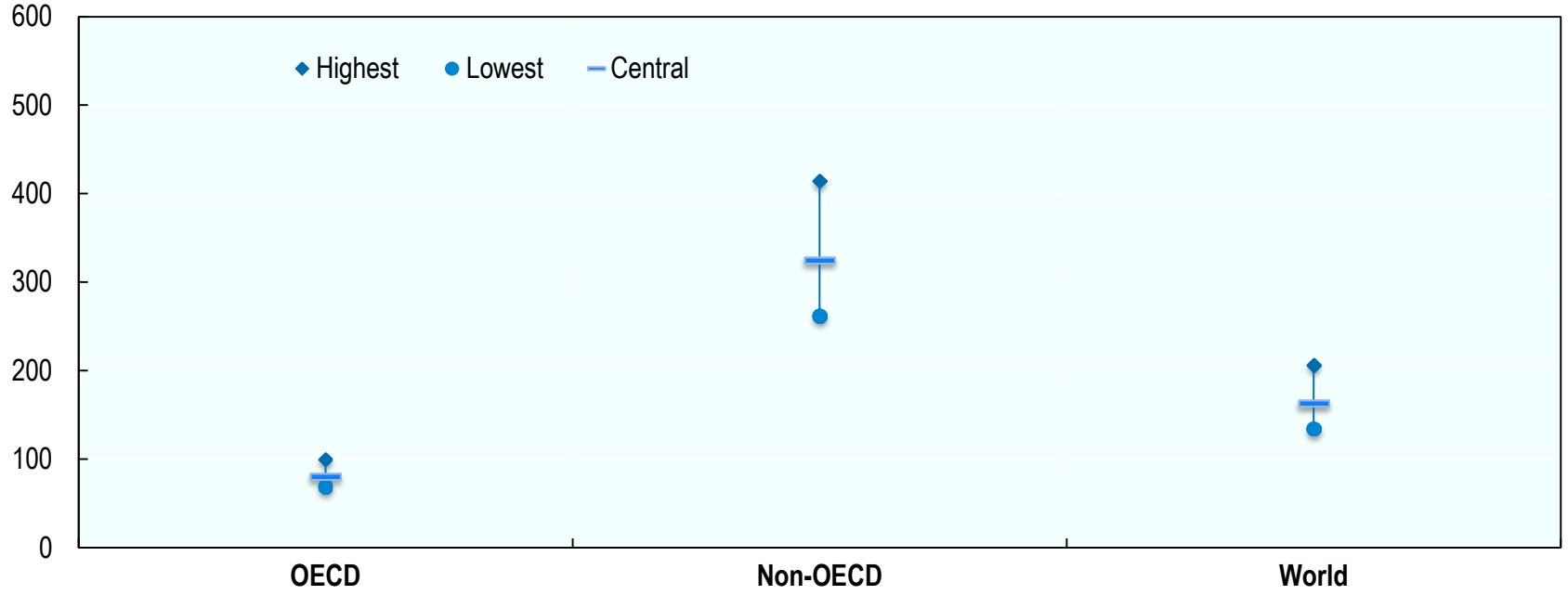
will take place between non-OECD countries by 2050 (15% in 2010)

Source: ITF Secretariat based on OECD Economics Department (forthcoming)

Surface passenger and freight transport, 2050 (2010=100)



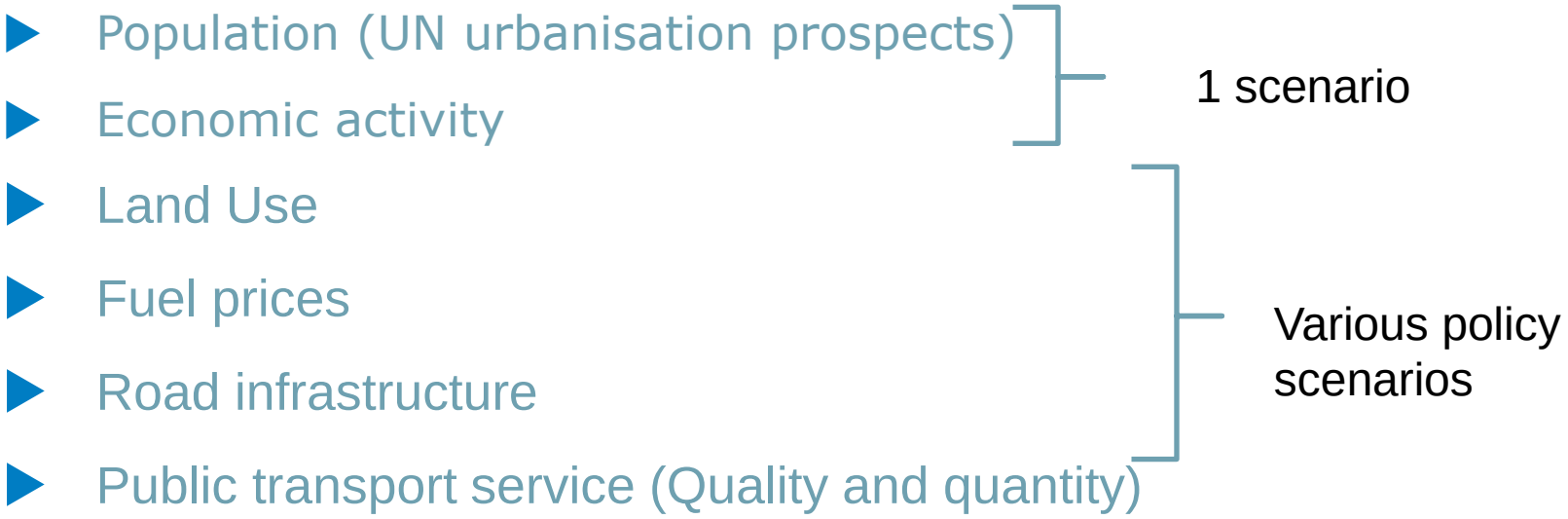
CO_2 emissions from surface transport, 2050 (2010=100)



Urban model

ITF urban transport model

- Simulates the evolution of variables that are relevant to transport demand in urban agglomerations (above 500 000 population):



Key messages on urban mobility in emerging economies

38%

Big cities in China, India and Latin America will generate more than one third emissions growth from passenger transport by 2050

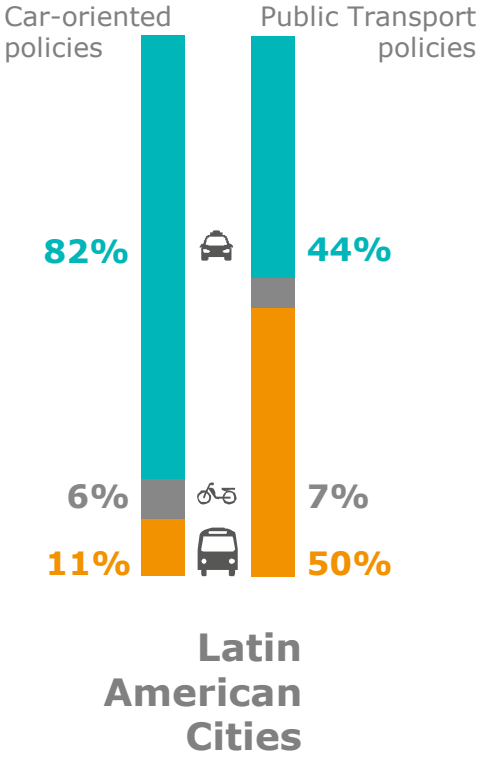
(baseline scenario)

Policies that:

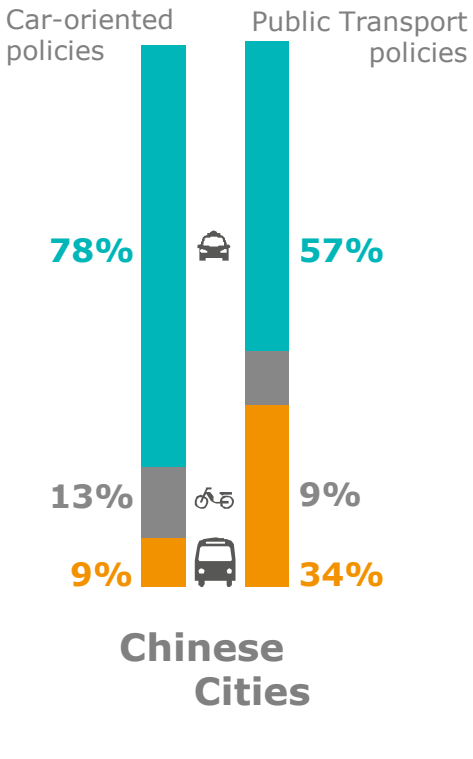
- **contain urban sprawl**
- **Favour public transport**
- **set prices to reflect real costs**

can reduce this growth by 30-40%

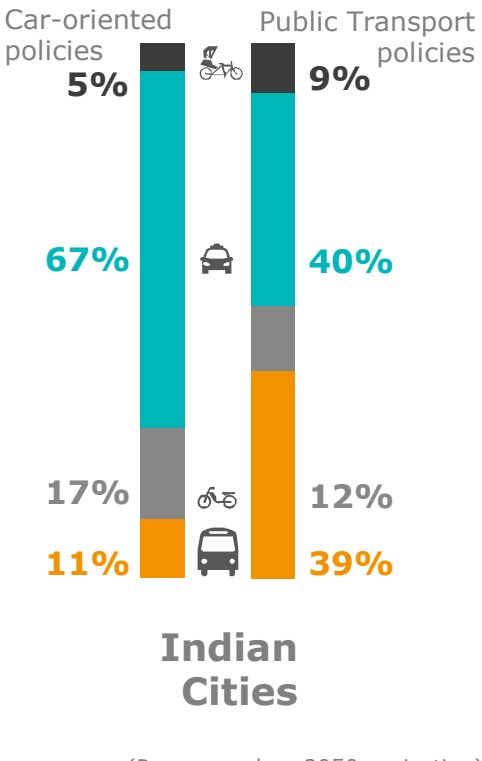
Impact of alternative policies on urban modal split



Latin American Cities



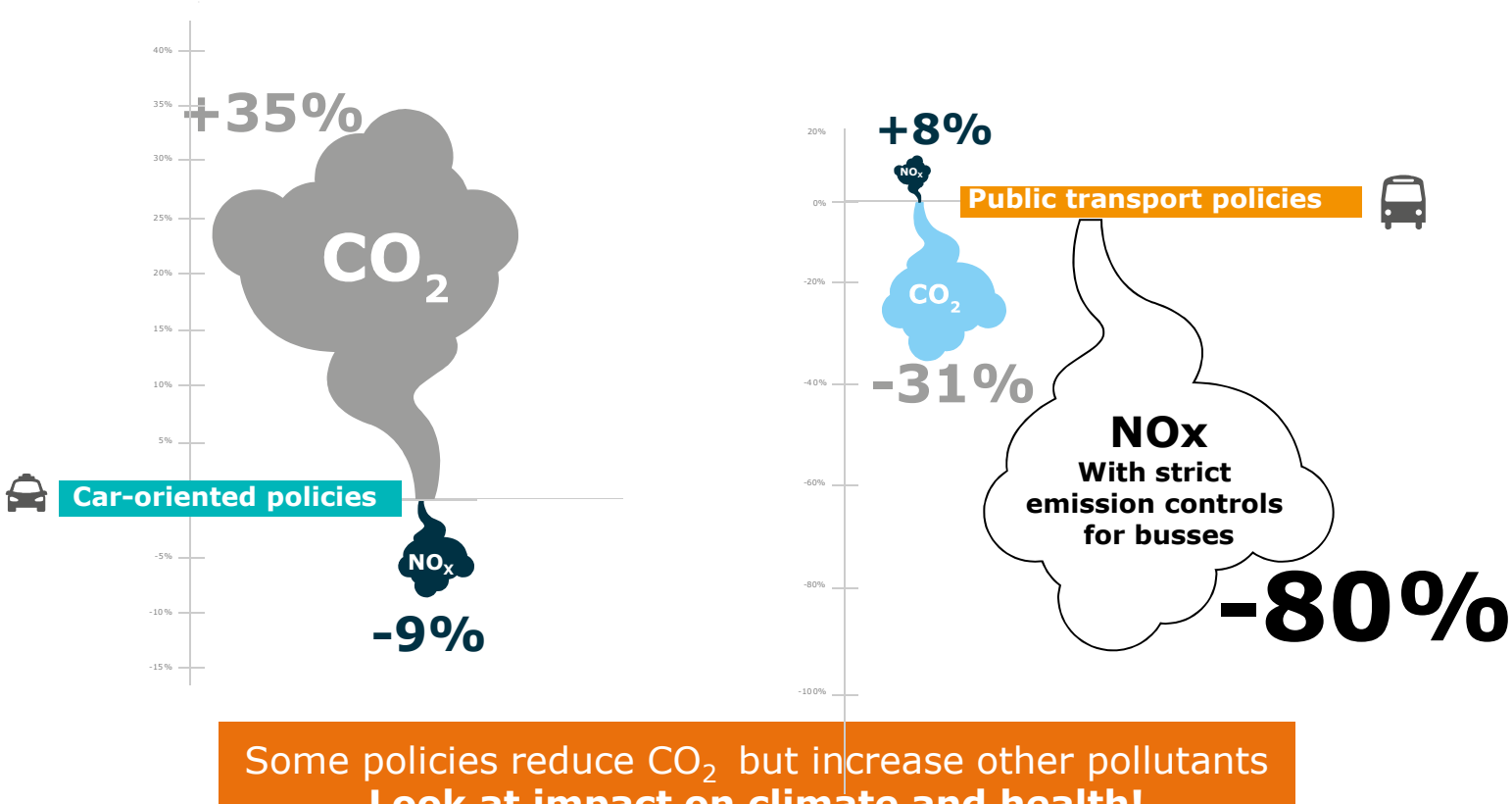
Chinese Cities



Indian Cities

(Passenger-km, 2050 projection)

CO_2 and NO_x emissions in alternative policy scenarios (Latin America)



Some policies reduce CO_2 but increase other pollutants
Look at impact on climate and health!

Recommendations for urban mobility in emerging economies

Focus on avoid-shift-improve	Change investment priorities	Think climate and health
Contain urban sprawl to reduce need for mobility	Spend more on public transport	Avoid trade-offs by setting policies for all emission types
Encourage shift to public transport,	Spend less on new city roads	Tighten emission standards for buses and two-wheelers
Stimulate and deploy technological innovation		
Charge real prices		

International freight model

Objective

- Assess the international freight flows and related CO_2 emissions into the future under:
  - Different international trade configurations
  - Available transport infrastructure (2010)

Underlying projections

- Trade projections: OECD Economics Department
- GDP: OECD
- Population: UNHABITAT

Model description available at:
http://www.internationaltransportforum.org/jtrc/DiscussionPapers/DP201421.pdf

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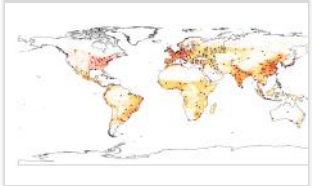
Model framework

International Trade (world regions)*

Centroids



Mode split

Weight model

Assignment to routes by mode

Model steps sequence

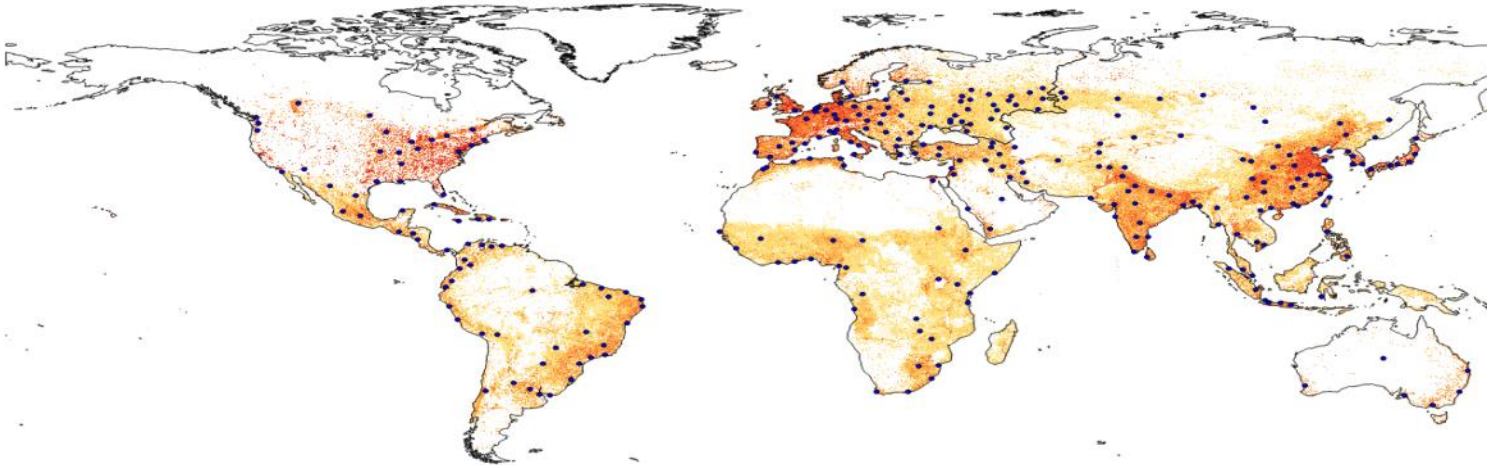
- Model by commodity type (19 classes)
- **Outputs:**
  - International trade in weight by OD pair
  - International trade tonne-km by OD pair and mode
  - CO_2 emissions

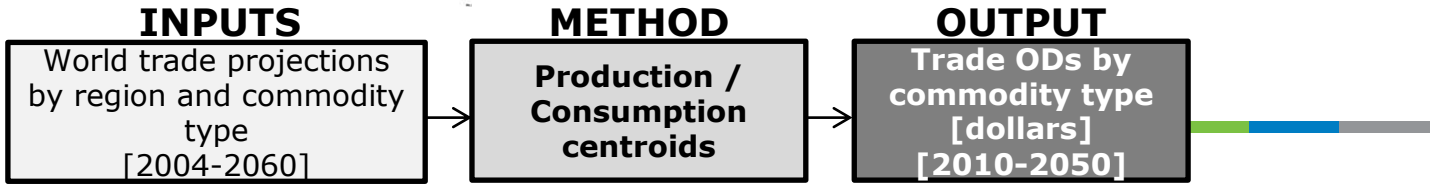
* Source: OECD Economics Directorate

Production/consumption centroids

Formulation

- Based on Population density, regional GDP and minimum influence area (500 km)





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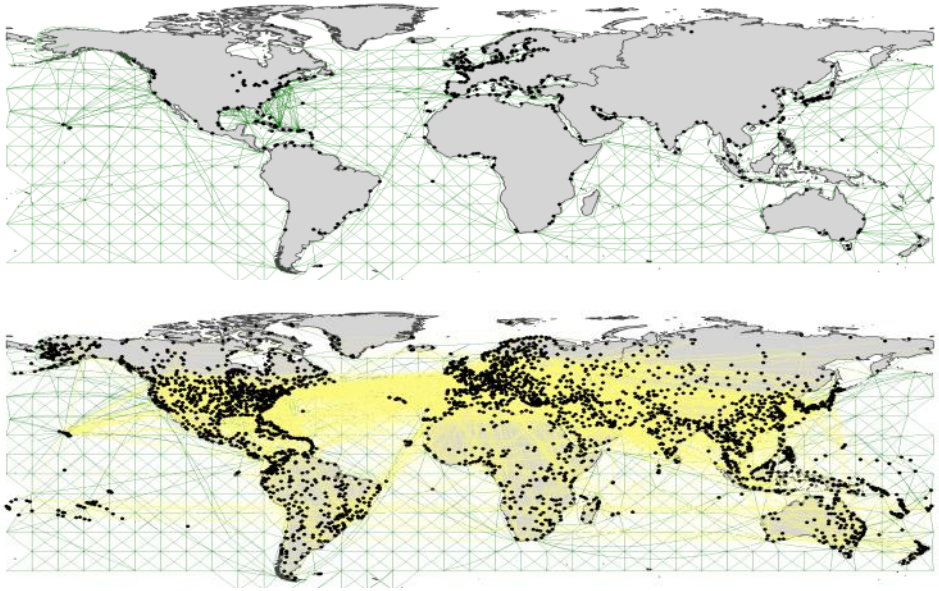
Network model

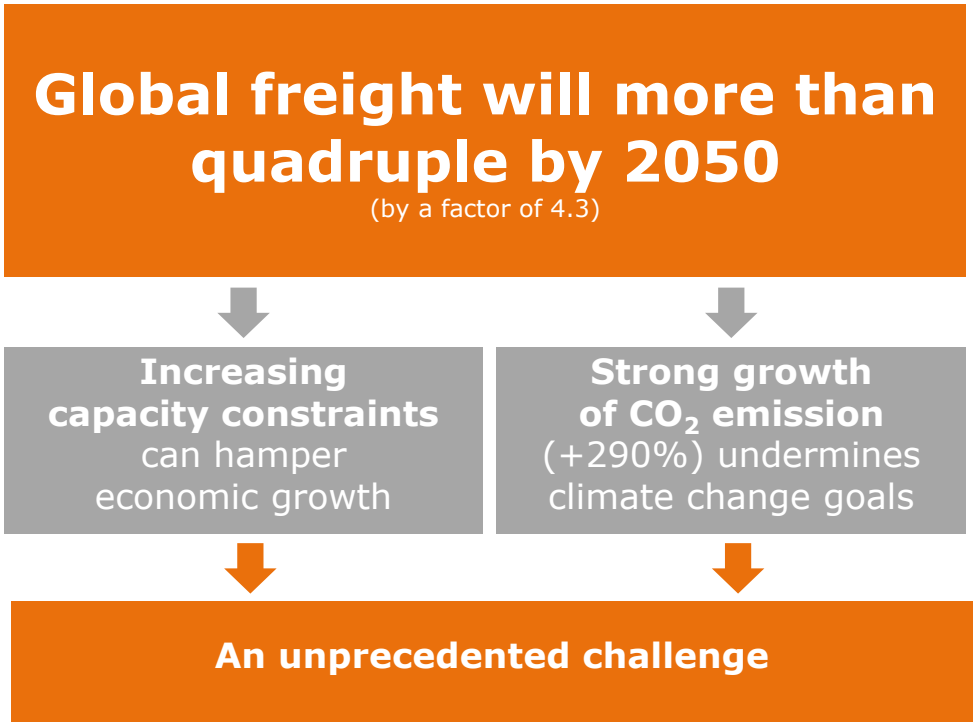
Formulation

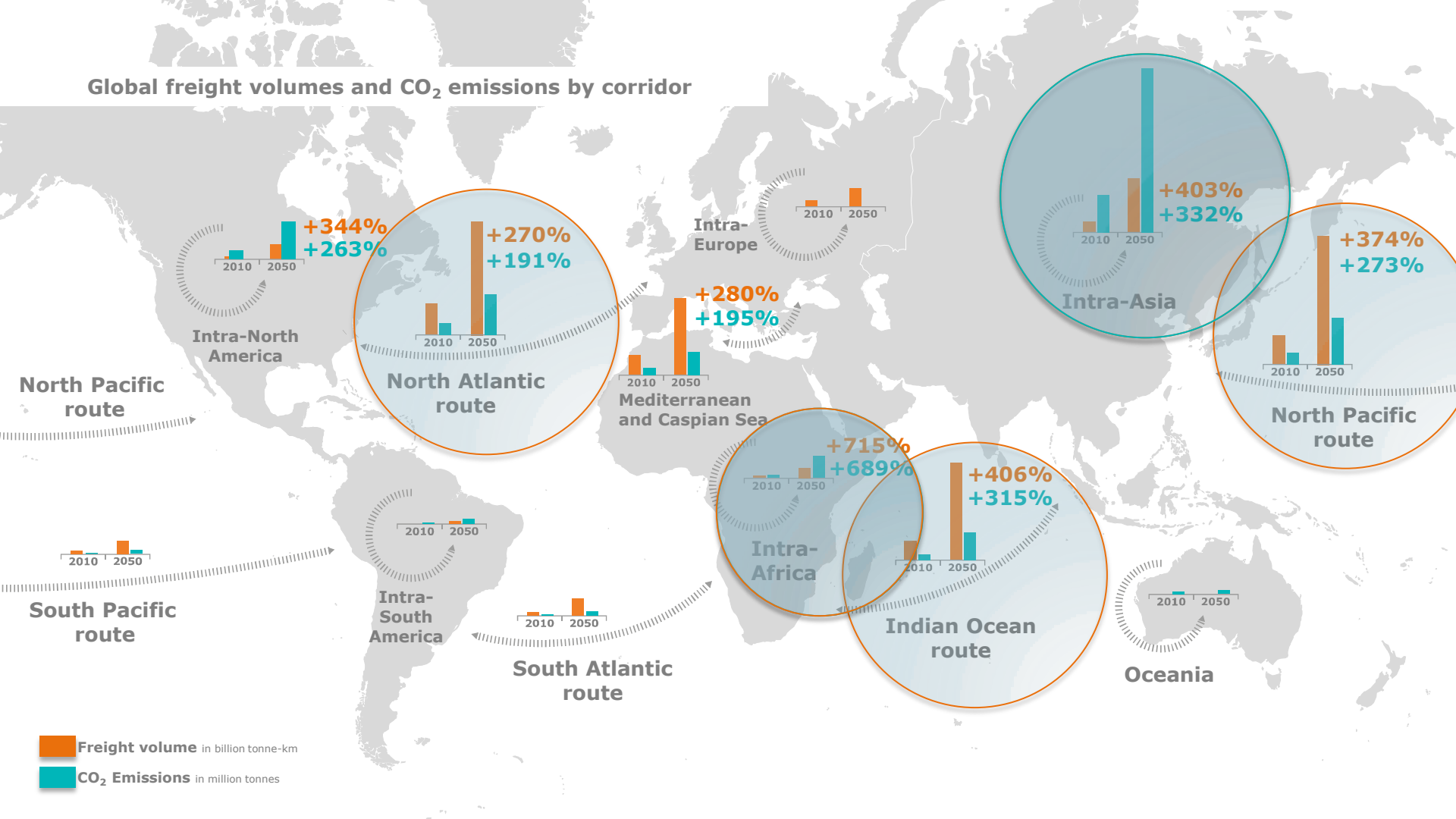
- Infrastructure and routes
  a) Road (highways or main roads)
  b) Rail (station, network)
  c) Sea (ports, routes)
  d) Air (airports, commercial flights)
  – Differential speeds by mode, infrastructure and continent
- Routable O-D network
- Links between modes and to centroids
- Includes dwelling times between modes
- Port capacity



Source: ITF International Freight model
OpenStreetMap, OpenFlights, Sea Project, UCL

Key messages on global trade and the future of freight




Global freight volumes and CO_2 emissions by corridor
+344%
+263%
2010 2050
Intra-North America
+270%
+191%
2010 2050
North Atlantic route
North Pacific route
Intra-Europe
2010 2050
+280%
+195%
2010 2050
Mediterranean and Caspian Sea
+403%
+332%
2010 2050
Intra-Asia
+374%
+273%
2010 2050
North Pacific route
+715%
+689%
2010 2050
Intra-Africa
+406%
+315%
2010 2050
Indian Ocean route
2010 2050
Oceania
2010 2050
South Pacific route
2010 2050
Intra-South America
2010 2050
South Atlantic route
Freight volume in billion tonne-km
CO_2 Emissions in million tonnes


EVER

Domestic share of global freight

10% of international trade takes place within domestic borders

Domestic share of trade-related CO_2 emissions

10% of international trade takes place within domestic borders

30% of total trade-related CO_2 is emitted here

Recommendations for global freight transport

Improve capacity management	Invest in missing links	Prepare for mega-ships	Increase vehicle utilisation
Many freight facilities are underutilised and / or managed at low efficiency level	More alternative and multi-modal connections increase efficiency	Adapt infrastructure to more and bigger vessels – including port-hinterland links	Improve load factors and reduce idle times across supply chains

Your

Questions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www.oecd-ilibrary.org
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