International Transport Forum

Expert Workshop
21 March 2024

Assessing Health Impacts of Low Carbon Transport Scenarios in Urban Areas

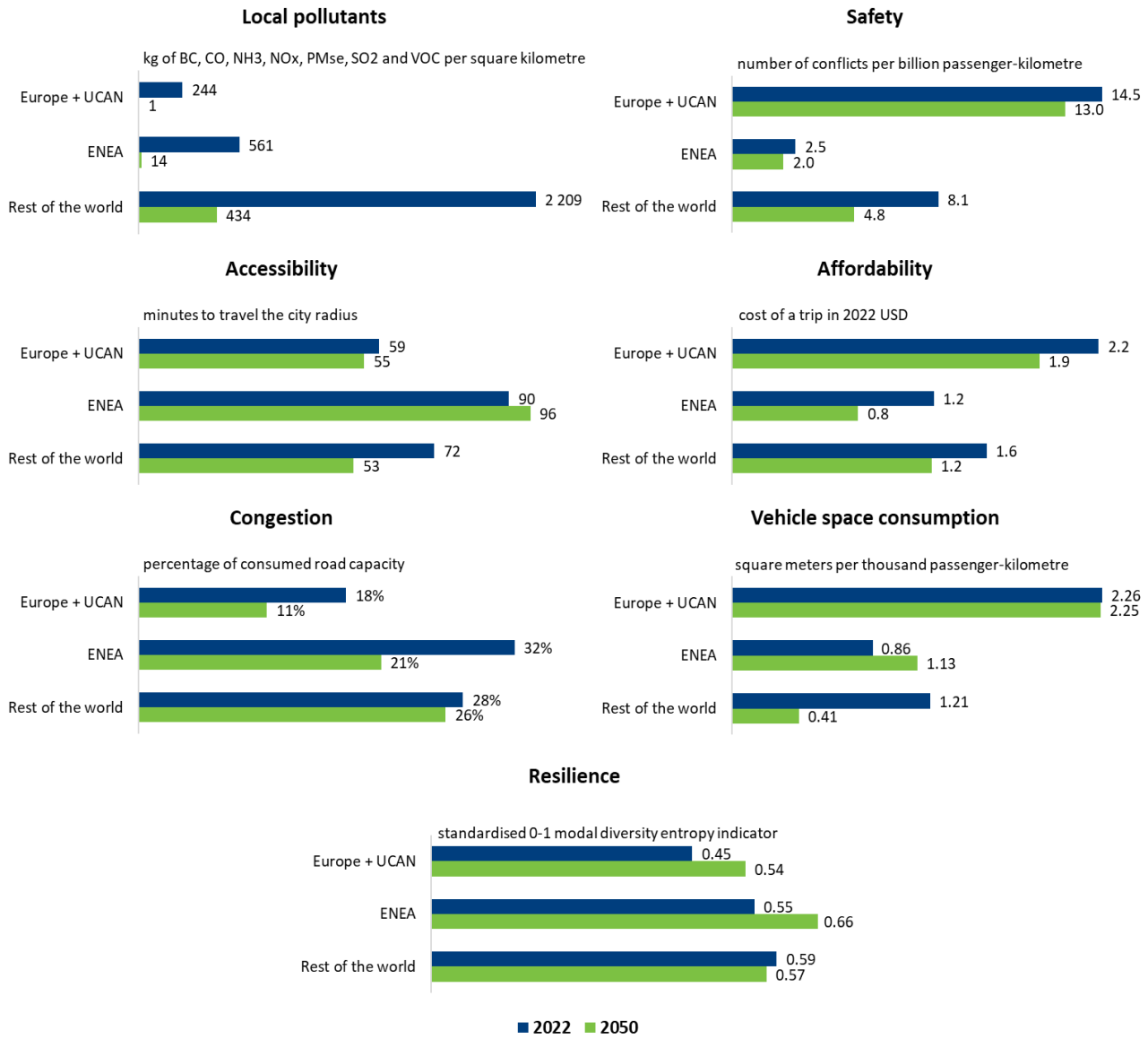
Vatsalya Sohu and Mallory Trouvé, PhD.

CPB
Corporate Partnership Board

Sustainability agenda

The **decarbonisation modelling** has been the focus of ITF in the last decade, assessing the impact of many demand management and infrastructure provision in reducing mobility externalities or co-benefits

The recent connection of ITF with the OECD ELS Health model opened the window of opportunity of exploring further on the health component



Project background

The new project will acknowledge that successful decarbonisation efforts must reduce carbon emissions and prioritise urban residents' health and overall quality of life.

It is increasingly recognised that **transport, air quality, climate change, and health** have complex related linkages enacted over short- and long-term time horizons. Failure to adequately identify these links can lead to unintended public policy consequences in the long term.

In urban areas, policies to reduce GHG emissions from the transport sector can have both positive and negative social and health effects.

Low-carbon transport policies in cities **can decrease air pollution levels**, which in turn are responsible for several health outcomes, such as an increased risk of cardiovascular or respiratory disease. They can also **influence physical activity patterns** by encouraging or reducing active transportation.

Past ITF work on the topic

The analysis so far has focused on individual measures and their impacts on specific indicators.

In this project, we will focus on the **impact of bundles of policies on several health indicators for different decarbonisation scenarios.**

How transport policy and investment can produce liveability benefits, such as clean air, beyond reductions in carbon emissions

Walking and cycling: the benefits of increased active mobility and the societal and economic case for increasing active mobility

Improving well-being by managing street space use by putting people first and how street space allocation can serve the population

Goals of the project

1. Assessing the impact of decarbonisation scenarios on health in urban areas

- The project will link OECD/ELS SPHeP model to the ITF Transport Outlook 2023 urban transport activity scenarios into 2050 - both Current and High Ambition.
- SPHeP includes indicators such as air quality, life expectancy, absences to work due to illness (productivity) and health expenditure. It also studies the impact of increased physical activity on specific diseases (obesity, cardiovascular diseases, mental illnesses, etc.)
- Other indicators that have been developed through past ITF work will also be included - the risk of crash (Streets that Fit), road space consumption (Liveable cities).

Goals of the project

2. In-depth exploration of dimensions that are linked with transport decarbonisation and quality of life

This will be achieved by presenting focused case studies and qualitative discussions in the report. Potential topics include:

Behavioral shifts

- Accounting for the declining share of work trips within the European Union, particularly in the context of an ageing population, and its impacts
- The interaction of transport policies and growing social isolation in senior citizens

Inclusive urban policy

- Inequity of health impacts (income, gender)
- PM2.5 exposure differences between children and adults
- Pollution caused by metro system and how some countries are solving this

Economic dimensions

- Cost of decarbonising the urban transport sector
- Savings from public health expenditures

Our approach

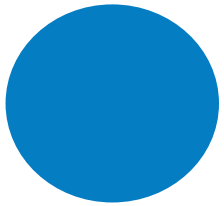
Analyse scenarios to account for the health impacts of decarbonising transport in cities

Distill key policy challenges and build on existing assessments

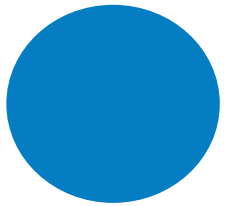
Gather insights from expertise at the workshop

Build on synergies with other ITF work streams, the on-going collaboration with ELS and other potential experts

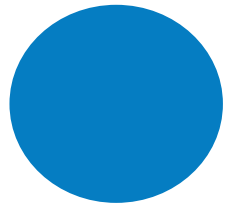
Outputs



Expert Workshop



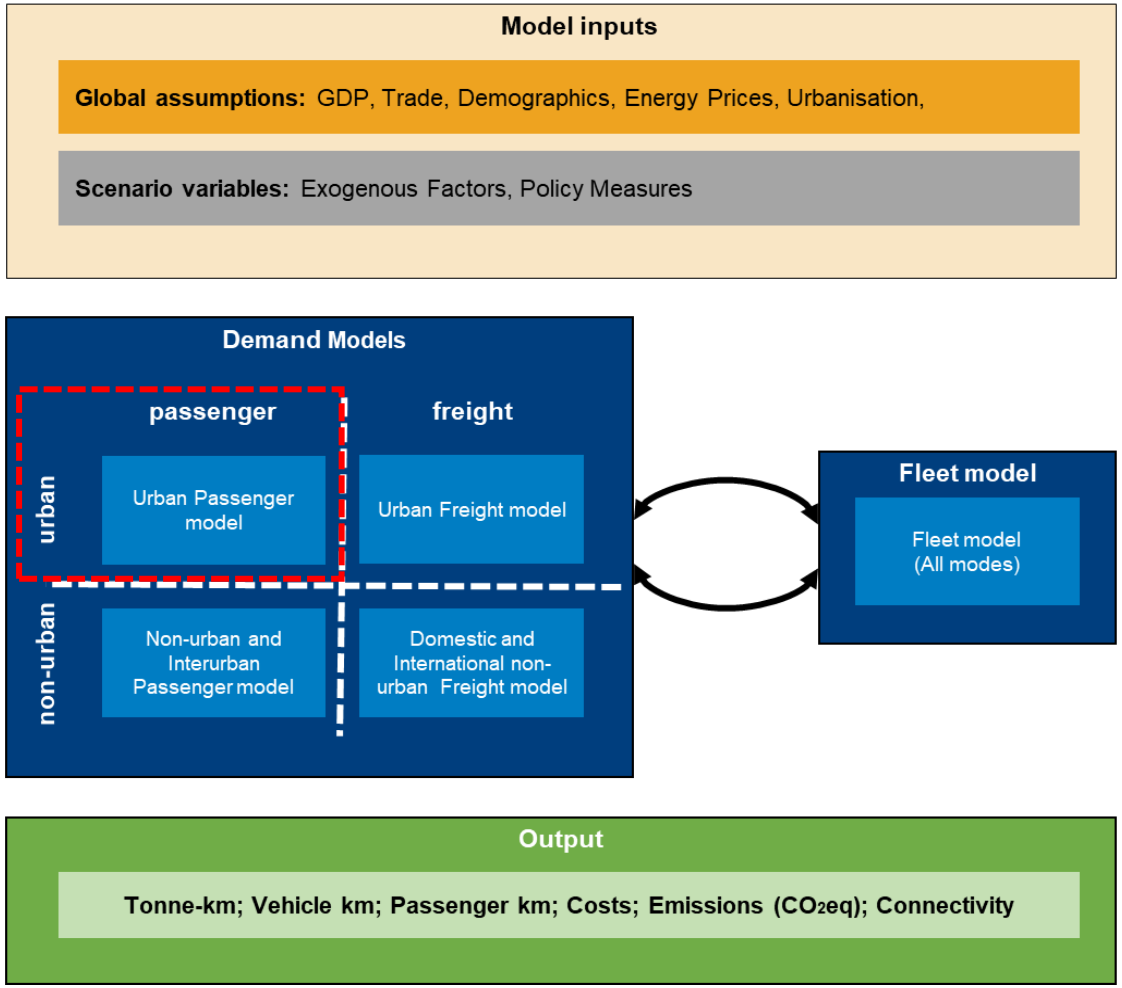
Interim findings brief



Project report

The ITF global urban passenger model

PASTA – Modelling Framework



Main use:
- ITF Transport Outlook
- regional studies
- national studies (with additional calibration)
- thematic studies

ITF global urban passenger model: aim

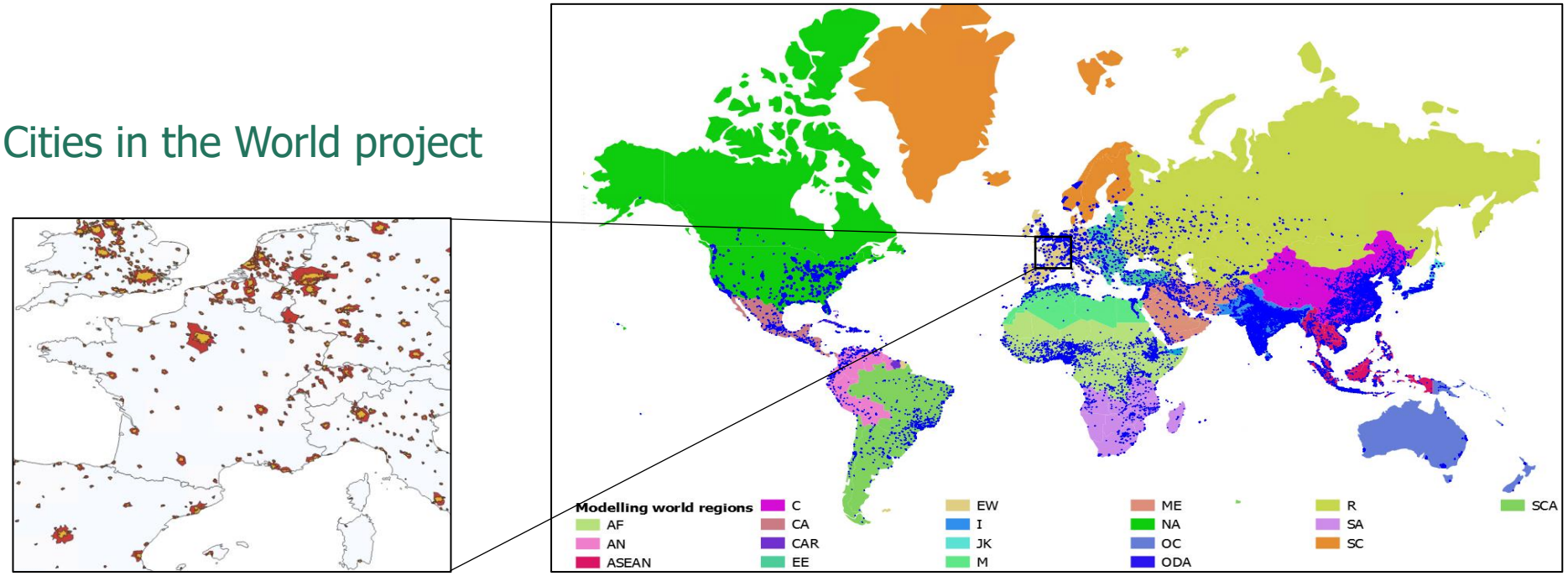
Assess transport supply and demand on the long run, in all regions in the world, including urban touristic transport.

How: Estimate trips, mode shares, passenger-kilometres, vehicle-kilometres, energy consumption and CO_2 (TTW and WTT) and local pollutants (BC, CO, NH_3, Nox, Pm_{se}, SO_2, VOC) emissions for 18 modes for the period from 2015 to 2050, every 5 year.

Model resolution

- 9 234 mFUAs

  from the OECD-EC Cities in the World project

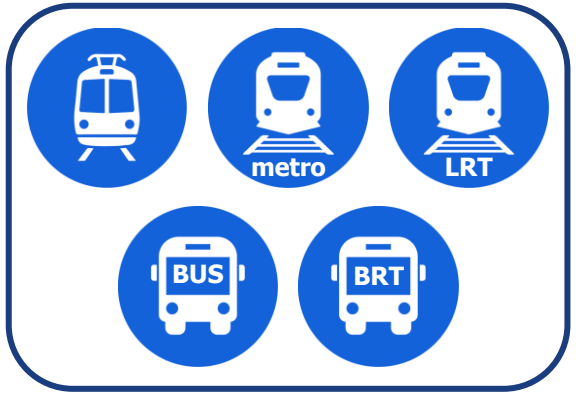


- Accounts for 18 modes including active and shared mobility
- Includes a demographic model
- Results available by 6 trip distance, 2 gender and 18 age categories

Modal resolution: 18 modes

Active mobility

Public Transport

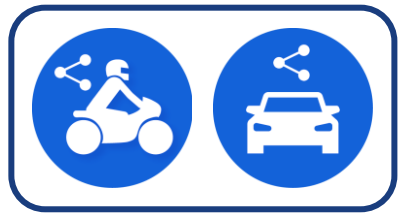


Shared mobility

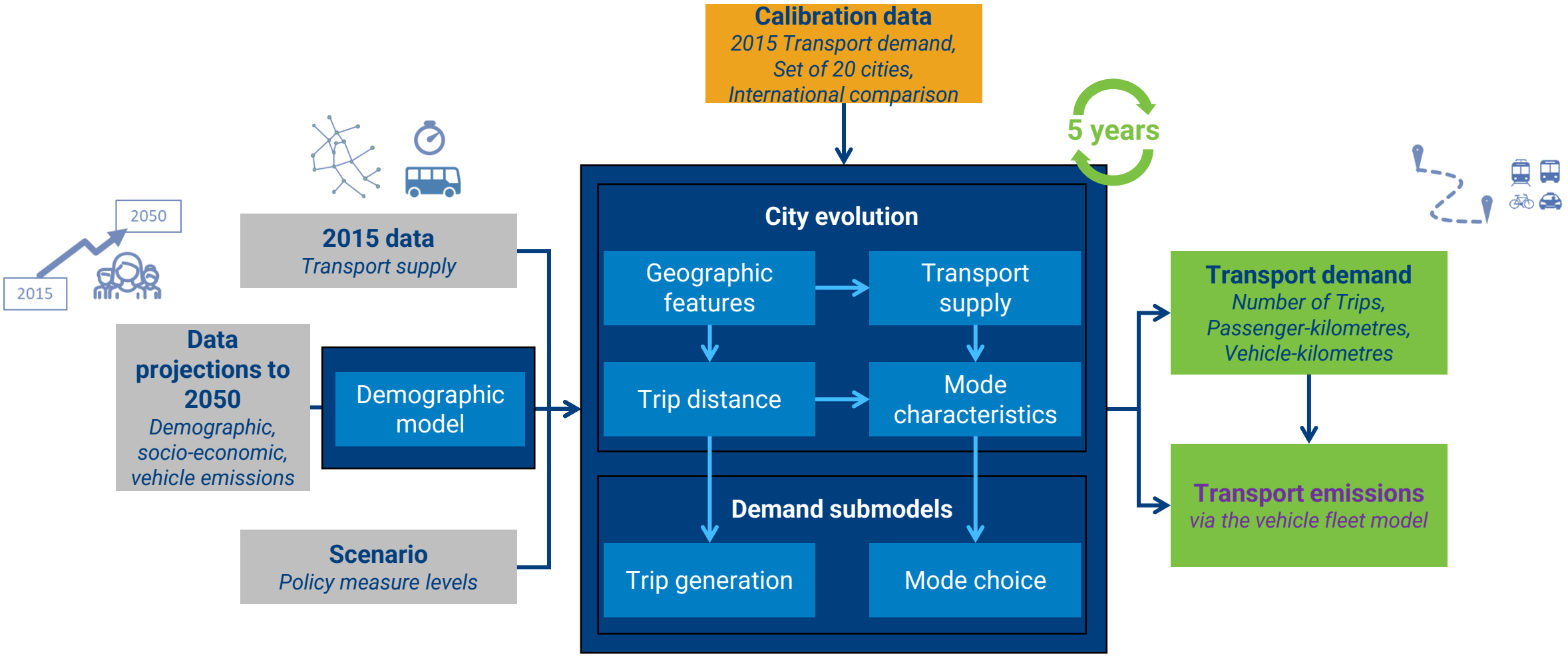
Private vehicles

Paratransit

Shared vehicles



Framework


Calibration data
2015 Transport demand,
Set of 20 cities,
International comparison
5 years
2050
2015
2015 data
Transport supply
Data projections to 2050
Demographic, socio-economic, vehicle emissions
Demographic model
Scenario
Policy measure levels
City evolution
Geographic features
Transport supply
Trip distance
Mode characteristics
Demand submodels
Trip generation
Mode choice
Transport demand
Number of Trips, Passenger-kilometres, Vehicle-kilometres
Transport emissions
via the vehicle fleet model

Intermediate Outputs

- **By city and year**
  - Availability
  - Directness
  - Travel and parking cost
  - Trip duration
  - Access time
  - Waiting time
  - Number of transfers
  - Infrastructure connectivity (simplified)

Model Outputs

- **Main outputs by city and year**
  - Emissions, passenger and vehicle demand for all the sub-population (gender, age group, tourists vs residents), distance and mode categories
- **Indicators by city and year**
  - Accessibility
  - Congestion
  - Affordability
  - Resilience
  - Road safety
  - Space consumption

Scenario policy measures

Economic

- Carbon Pricing
- Road pricing
- Parking pricing

Regulatory

- Vehicle sharing incentives
- Carpooling policies
- Parking restrictions
- Urban vehicle restrictions
- Speed limitations
- Land-use planning
- TOD

Behavior trends

- Teleworking

Infrastructure

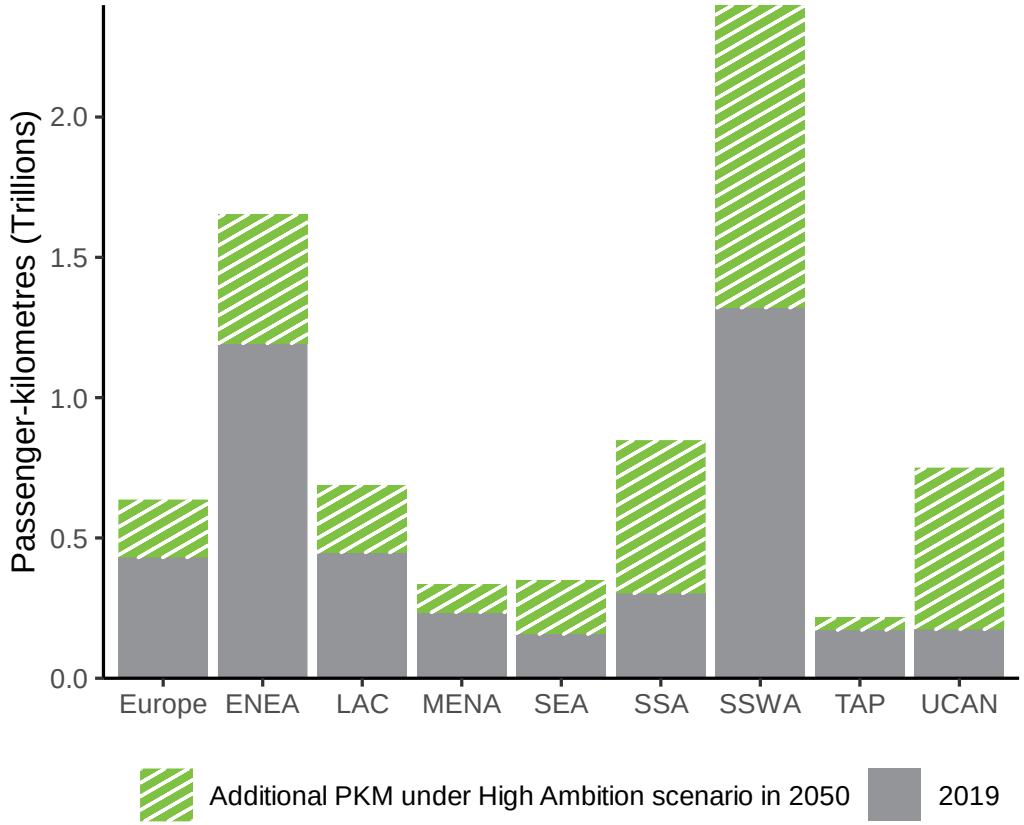
- Bike and pedestrian infra improvements
- PT infra improvements
- PT service improvement
- PT priority and express lanes

Innovation

- Mobility as a Service (MaaS)
- Integrated PT ticketing
- Ride sharing and shared mobility
- Electric Vehicles incentives (Fleet model)
- Fuel standards (Fleet model)

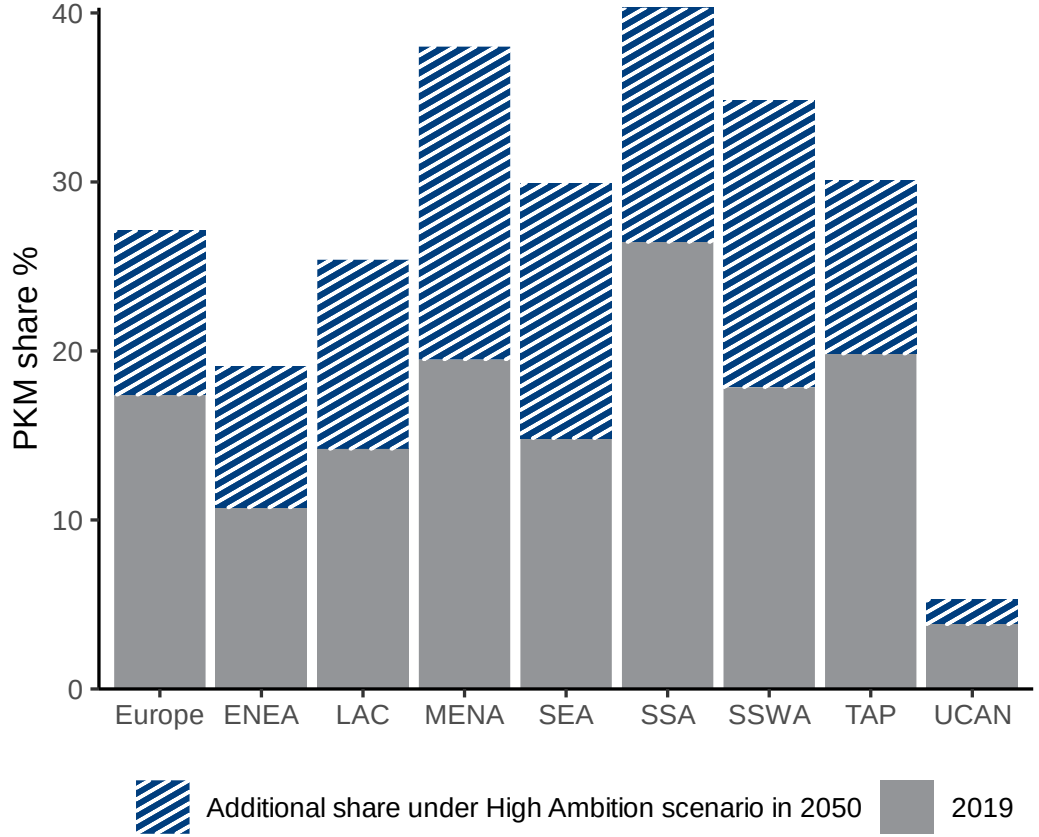
Model Outputs: examples (Outlook 2023)

Public transport activity evolution

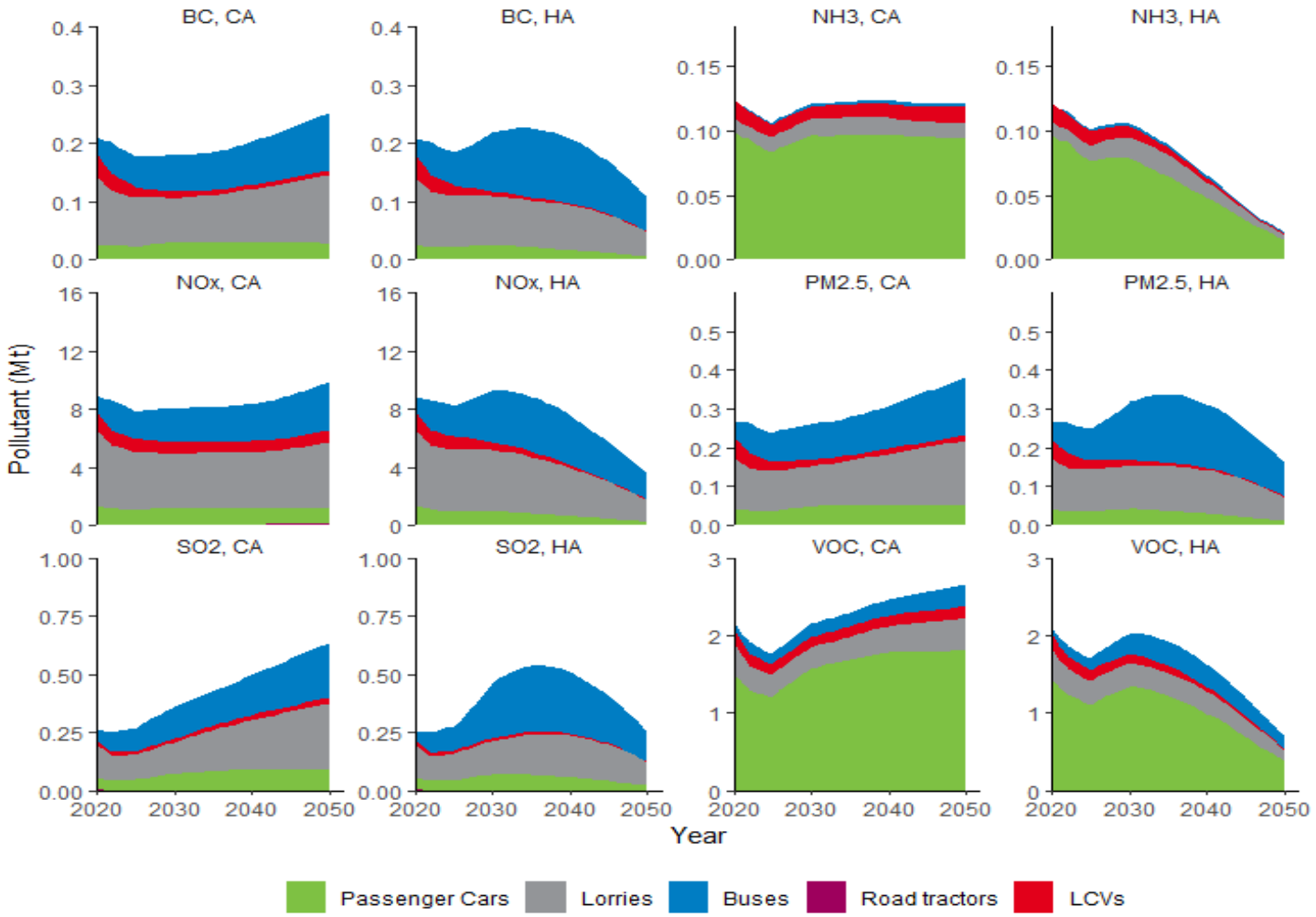


Model Outputs: examples (Outlook 2023)

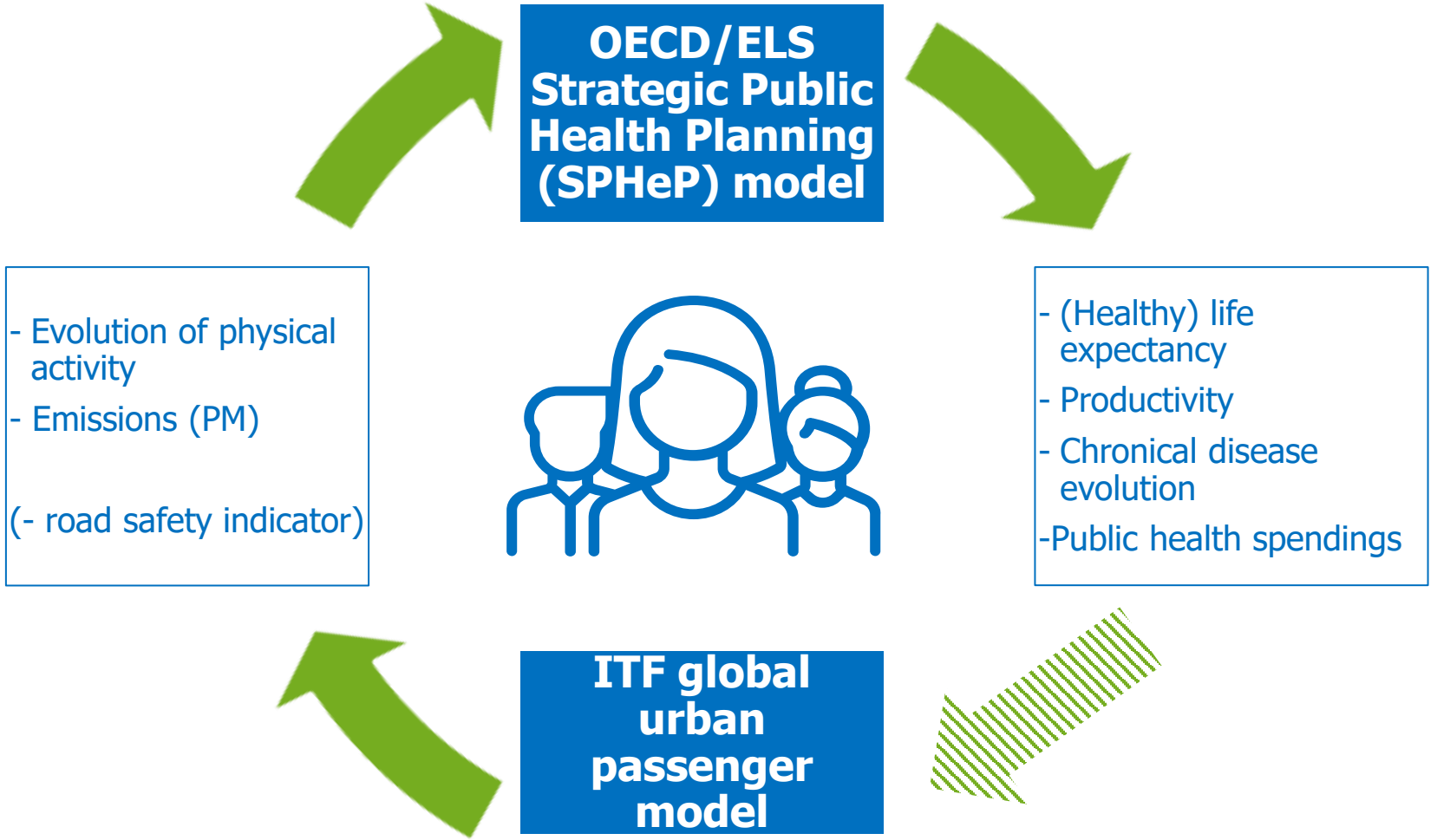
Active transport evolution



Model Outputs: examples (Outlook 2023)



Interaction between health and transport



Project timeline

Key milestones	Timeline
Kick-off call	17 January 2024
Expert Workshop (in-person at the OECD in Paris)	21 March 2024
Intermediate Workshop output	April-May 2024
Report drafting	May-August 2024
Review period	September 2024
Report launch	November/December 2024

Thank you!

Vatsalya Sohu

Vatsalya.SOHU@itf-oecd.org

Mallory Trouvé

Mallory.TROUVE@itf-oecd.org