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CONNECTA

Technical Assistance for the Deployment of Smart and Sustainable Mobility in the Western Balkans

Component 1: Impact assessment and cost effectiveness analysis of the Sustainable and Smart Mobility Strategy for the Western Balkans

Approach and specific variables evaluated in impact assessment

CONNECTA-TRA-CRM-REG-MOB-07

Workshop No. 2

06/07/2022

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Component 1 - Update on progress and plans

Specific objectives:

- Setting up of Baseline / BAU Scenario and analysing the roadmap of the Sustainable and Smart Mobility Strategy in the Western Balkans
- Setting up of Impact Scenarios (“do something” and “decarbonisation” scenarios)
- Preparation of Action Plans and national targets for each Regional Party (RP)

Progress of implementation so far:

- Methodologies developed (included in inception report) for:
 - Impact Assessment of Flagship’s Actions
 - Prioritisation of Actions/Activities – including quantifiable and non-quantifiable criteria
 - Traffic Modelling/Forecasting
 - Calculations / modelling of energy consumption / GHG emissions
- Documentation of current state of play for most actions – **Almost complete**
- Development of transport model which will provide km travelled per vehicle type and time spent on the roads/ rails in the BAU scenario - **Almost complete**
- Development of energy / greenhouse gas / economic model which will translate actions into energy, GHG, financial (fuel) savings - **Underway**
- Development of a tool for Analytical Hierarchy Process (ranking by criteria) of actions to help prioritise – **to be shared in the coming week**



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Component 1 - Update on progress and plans

Next actions and timeline:

- July / August 2022 - Completion of Baseline / BAU Scenario – "D1: Baseline scenario and analysis of the Sustainable and Smart Mobility Strategy (SSMS) for the Western Balkans roadmap" – **to be delivered for comments**
- Carrying out of prioritized ranking – July 2022 – ***Proposed approach is to involve Government and expert group scoring – for discussion***
- September 2022 - Assessing potential impacts of actions
- September / October 2022 - Combined Impact Scenarios ("do something" and "decarbonisation" scenarios) assessed – to be based on modelling and documented - Report "**D2: Impact scenarios of the Sustainable and Smart Mobility Strategy (SSMS) for the Western Balkans**" – **to be delivered for comments**
- Preparation of Action Plans and national targets for each Regional Party (RP) - **Report D3: Action Plans and National Targets for each Regional Participant of the Western Balkans** - September / October 2022 – **to be delivered for comments**



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GHG and energy modelling - Introductory Facts - 1

- Worldwide, the transport sector produced 8.7 billion tonnes CO₂eq of direct GHG emissions in 2019 and was responsible for approximately **23% of total energy-related CO₂ emissions**.
- **70% of direct transport emissions came from road vehicles**, while 1%, 11%, and 12% came from rail, shipping, and aviation, respectively.
- **GHG emissions are still growing** in spite of more efficient vehicles (road, rail, water borne, and aircraft) and policies being adopted.
- Scenarios from bottom-up and top-down models indicate that without intervention, CO₂ emissions from transport could **grow in the range of 16% and 50% by 2050**.

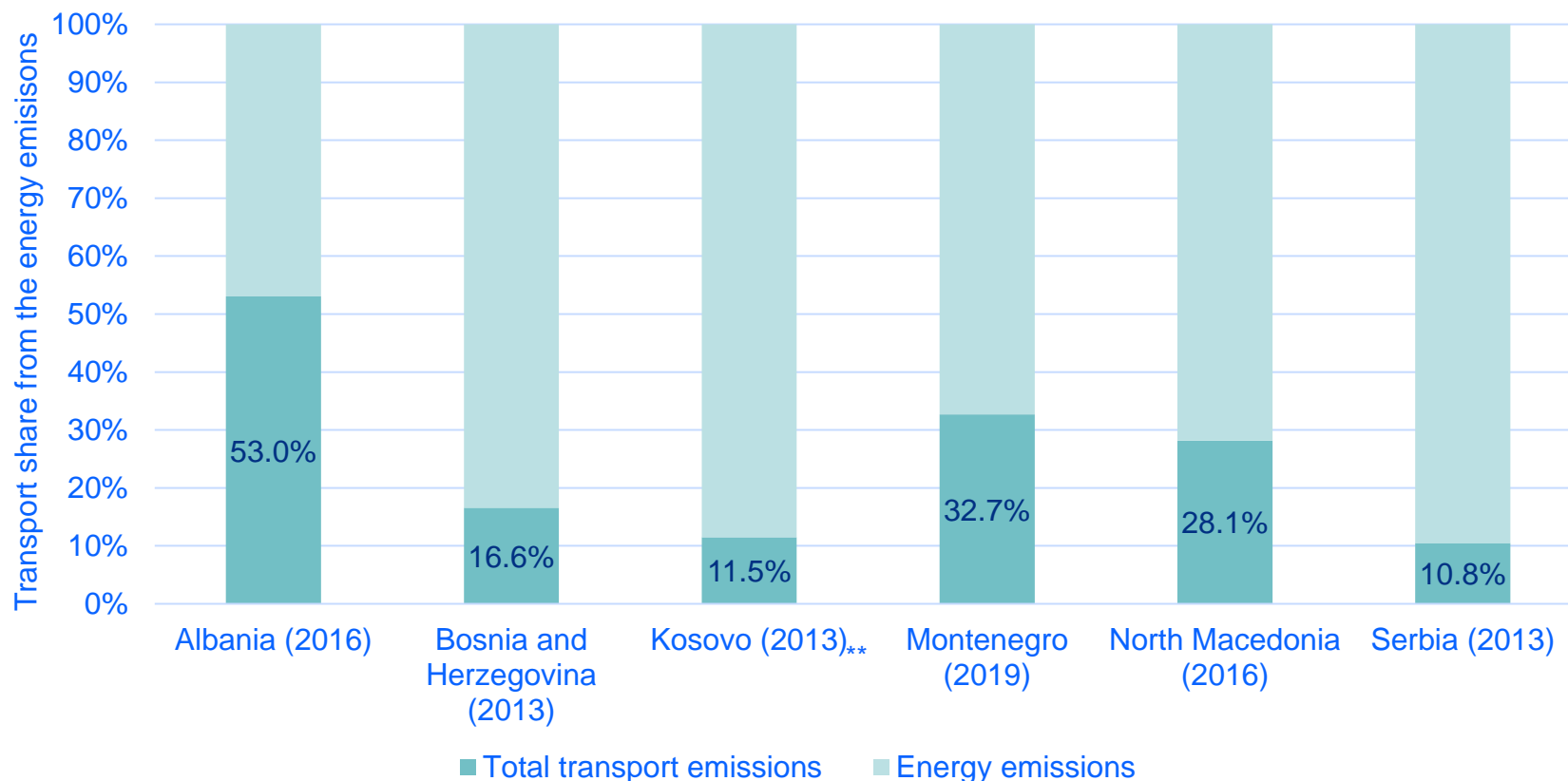
Source: IPCC, AR6 Climate Change 2022: Mitigation of Climate Change, Chapter 10: Transport



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GHG and energy modelling - Introductory Facts - 2

Energy sector emissions and transport share



*Some of the Regional Partners do not disclose all the categories inside transport.

** This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

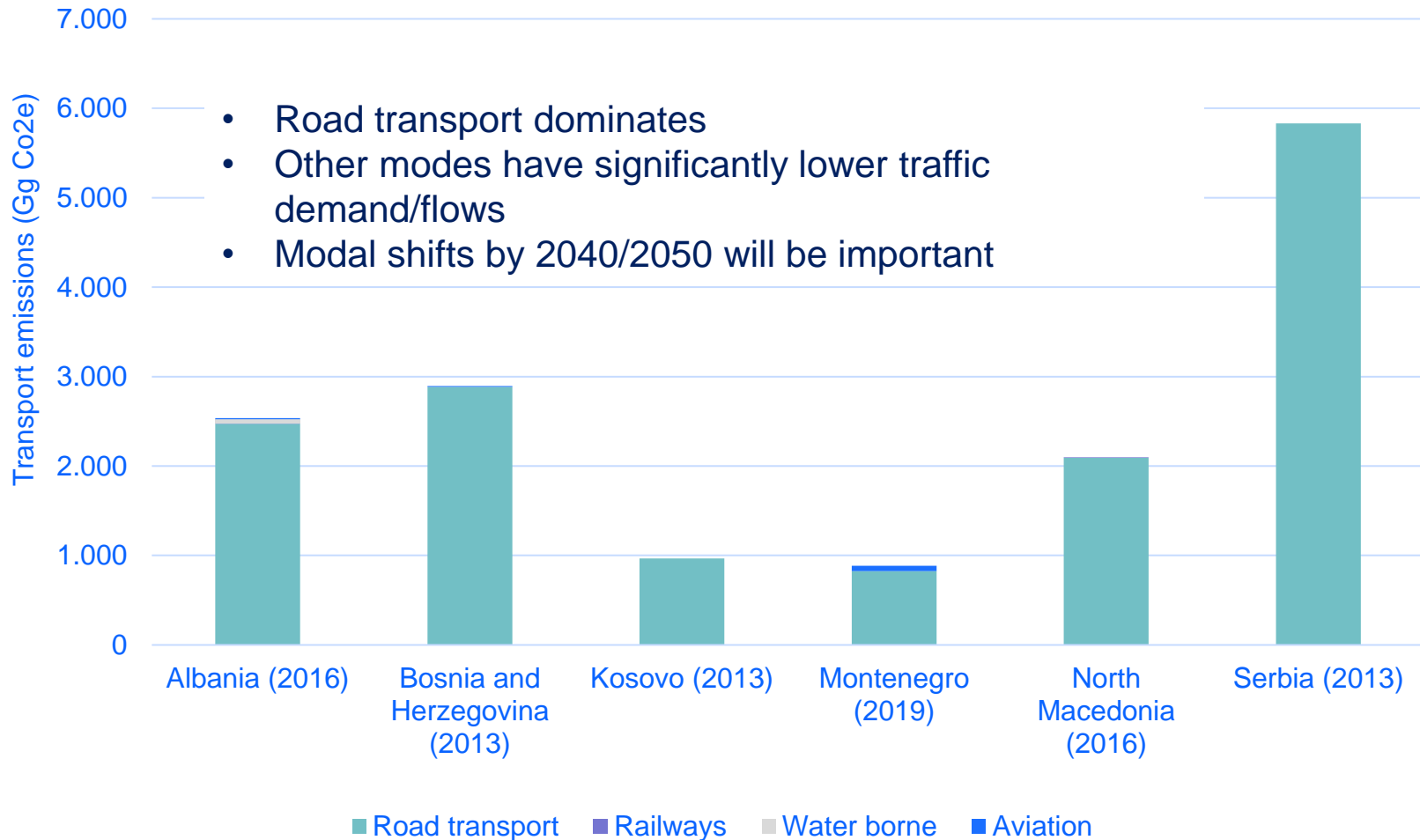
Sources: Albania's National Greenhouse Gas Inventory Report. Jul 2021; Third National Communication Report on GHG emissions of Bosnia and Herzegovina. Jul 2016; Republic of Kosovo. Climate Change Strategy 2019-2028. 2018; National Inventory Report 2021 of Montenegro; Republic of North Macedonia, National Inventory Report. Dec 2019; Republic of Serbia, Second National Communication. Aug 2017.



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GHG and energy modelling - Introductory Facts - 3

Transport emissions per category*



*Some of the Regional Partners do not disclose all the categories inside transport.

Sources: Albania's National Greenhouse Gas Inventory Report. Jul 2021; Third National Communication Report on GHG emissions of Bosnia and Herzegovina. Jul 2016; Republic of Kosovo. Climate Change Strategy 2019-2028. 2018; National Inventory Report 2021 of Montenegro; Republic of North Macedonia, National Inventory Report. Dec 2019; Republic of Serbia, Second National Communication. Aug 2017.



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Overview

- Energy modelling is **the process of building computer models of energy systems in order to analyse them.**
- Employed for scenario analysis to investigate different assumptions about the technical and economic conditions and what would happen if...
- In this project, the energy model will be used to **evaluate the impact of the different transport-related measures**, separately and interacting with others.
- The expected outcome is **three scenarios modelled through 2050:**
 - Baseline
 - Do something
 - Decarbonisation
- The variables analysed would be **energy consumption, GHG emissions, and financial flows (investments and on-going fuel / energy costs).**



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Scope

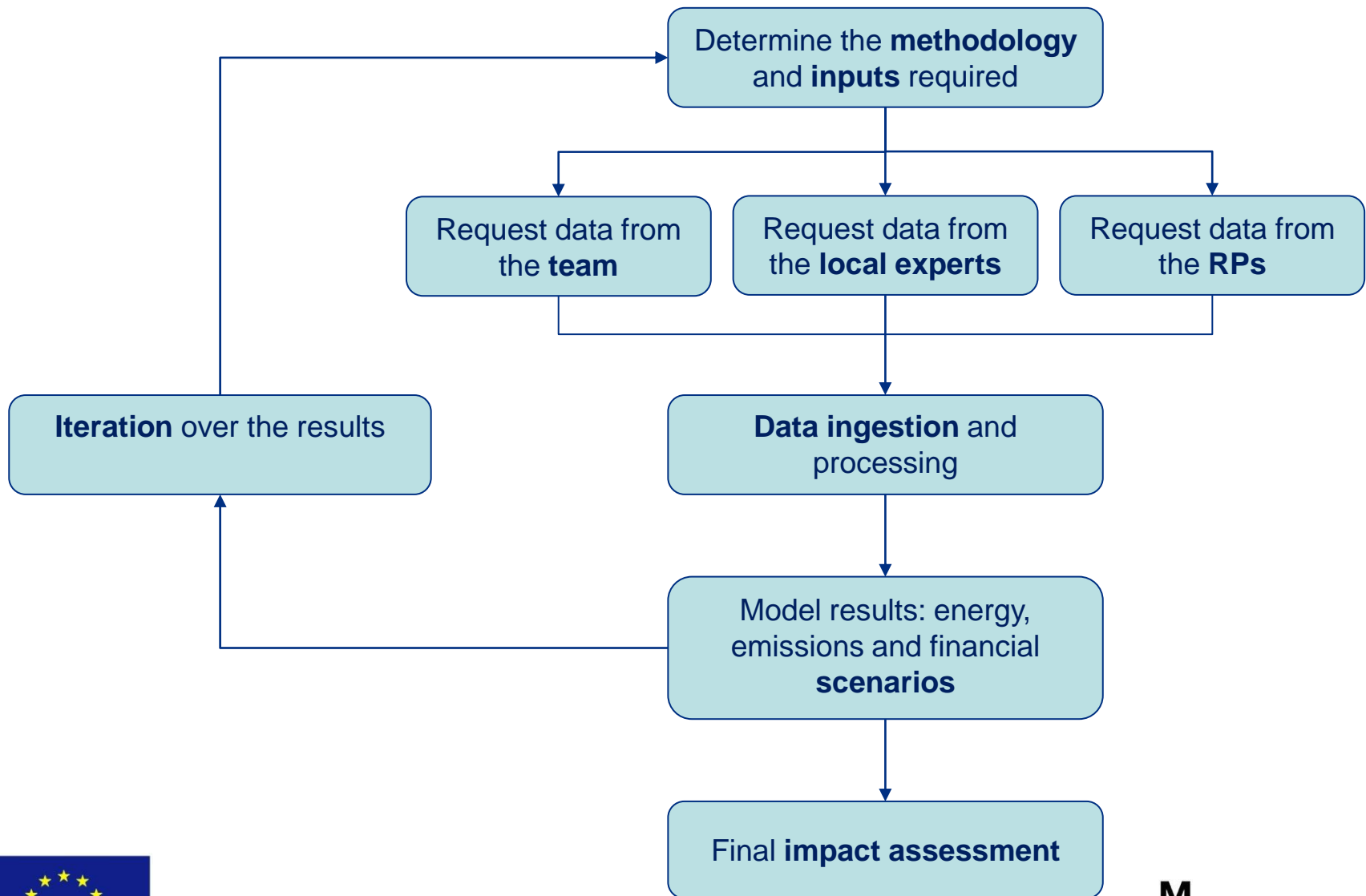
- **Geographical area:** Regional parties (Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, North Macedonia, Serbia)
- **Timeframe:** 2022-2050
- **Sector:** transport, including road transport, railways, water borne, **aviation (just airports), and off-road transport**
- **Actions:** 69 measures applied to the RPs
- **Goal:** impact assessment on energy consumption and GHG emissions reduction of the measures, including the financial flows analysis.
- **Limitations:**
 - The model will be constructed based on information available publicly gathered by the team and experts, and provided by the RPs during the process – some data may be missing
 - Some actions will rely on “expert opinion” since there isn’t even a track record in other (e.g. EU) countries

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Methodological approach



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Methodological approach

- **Inputs:**

- transport model: km per transport type – based partly on GDP growth (and subsequent elasticity – impacts vehicle ownership)
- transport data: quantity of vehicles and km travelled, type of fuel used, efficiency standard, etc
- emission factors: are dynamic for electricity which is quite important
- Prices: energy prices, investments per unit, etc.

- **Process:**

- Estimate the fuel use
- Estimate the associated emissions.
- Financial flows (CAPEX, O&M / OPEX)

- **Outputs:** energy and climate scenarios:

- Baseline: without applying any measure
- Do something: applying the measures to a certain extent
- Decarbonisation: applying all the measures, **aligned with a net-zero path.**

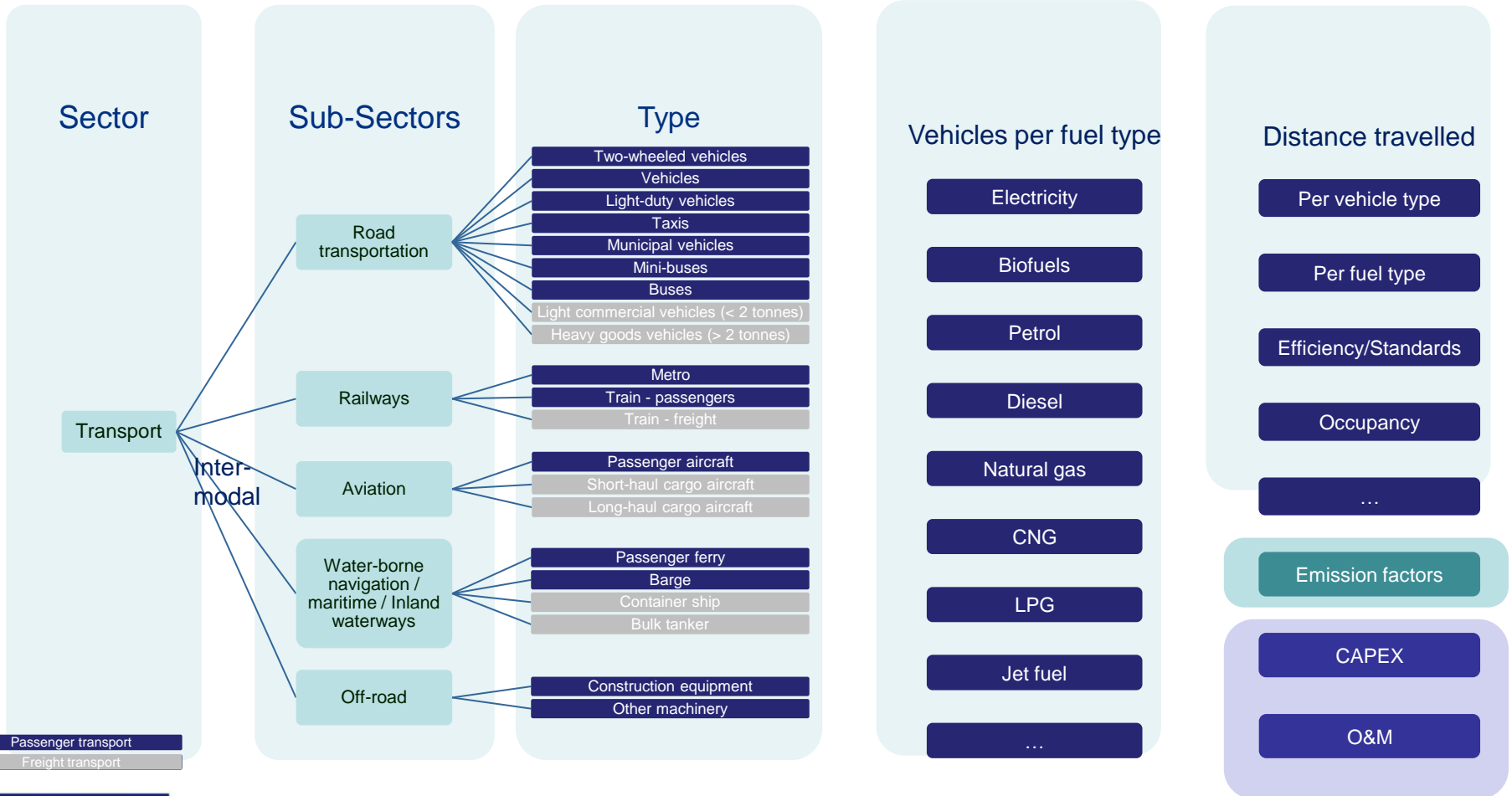


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Inputs

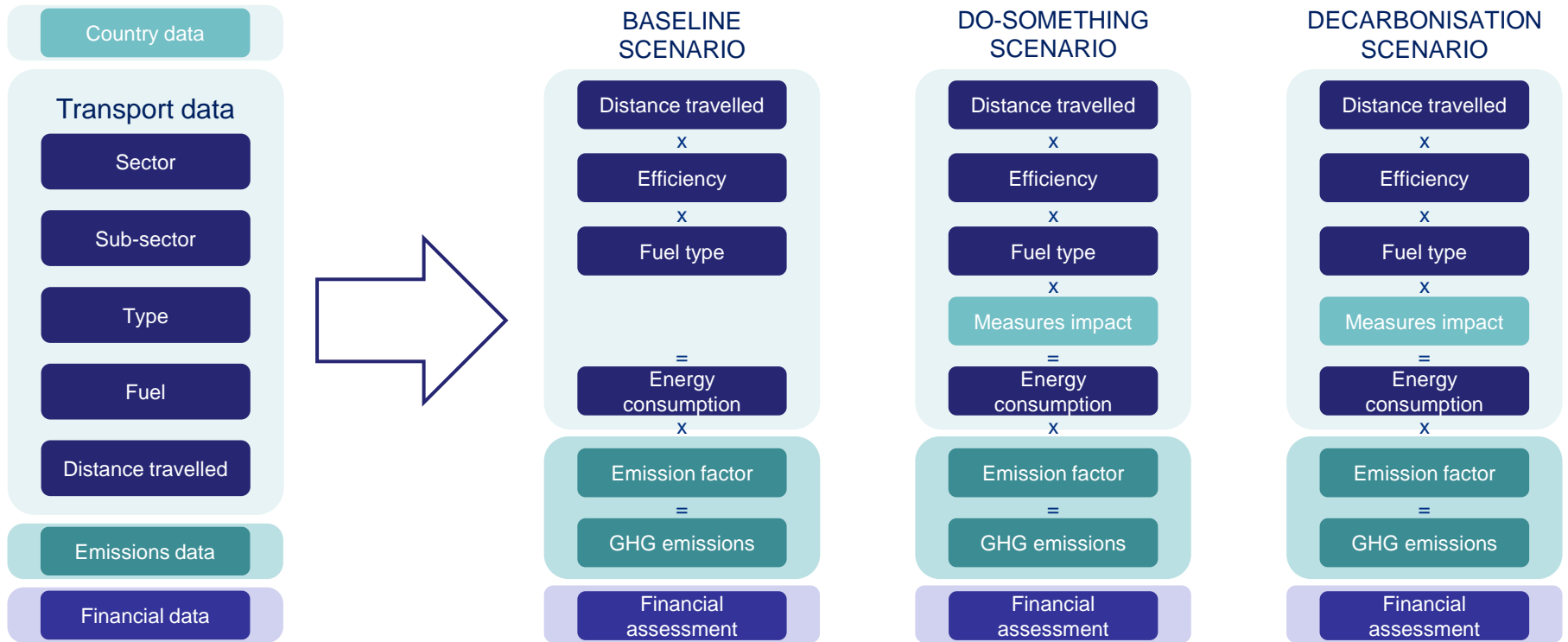
Drivers

Population, population growth, GDP, GCP growth, inflation level, energy prices, energy matrix, ...



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Process



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Process

BASELINE SCENARIO (2022-2050)

Primary energy savings

Final energy savings

Total GHG emissions

Financial aspects

DO-SOMETHING SCENARIO (2022-2050)

Primary energy savings

Final energy savings

GHG emissions savings

Total GHG emissions

Financial savings

DECARBONISATION SCENARIO (2022-2050)

Primary energy savings

Final energy savings

GHG emissions savings

Total GHG emissions

Financial savings



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Conclusions

- Energy models are useful tools in transport planning to quantify the impact of different measures on energy consumption, GHG savings, and financial costs of applying different measures, legislation, and regulation.
- The accuracy of the model depends on the quality of the input data: better data provides more accurate results.



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Next steps

1. Data collection of transport, emissions and financial variables.
 - Transport model (Transport planning expert)
 - Initial drivers per regional party (team RP's experts)
 - Measures descriptions and impacts (Measures' lead expert)
2. Design of a tool to process the inputs.
 - Data ingestion per RPs.



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Questions and Discussion



Any comments/suggestions?



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Thank you!

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