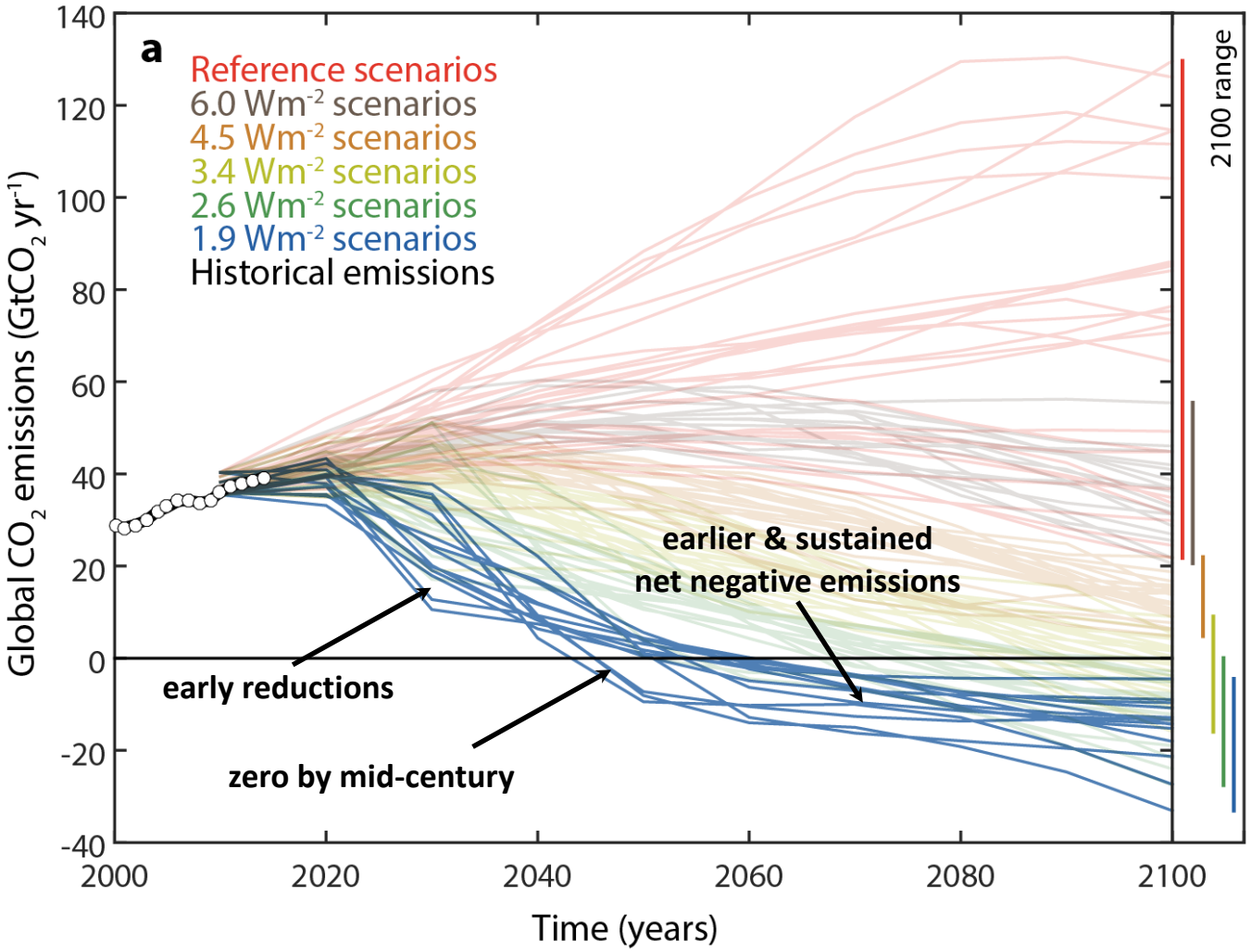
Supported by:
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
based on a decision of the German Bundestag
European Climate Initiative EUKI

CEE CLIMATE POLICY FRONTIER

Paris Agreement compatibility – where do we have to be in 2030?

04.07.2019

Paris Compatibility: 1.5 vs 2C



Integrated Assessment Models

Macro-economy
MACRO

Consumer vehicle choice
TRANSPORT

Income Distribution Projections
-
Fuel choice model
Access

Energy Access

Energy++ system
MESSAGEix

Spatially explicit forest management
G4M

Integrated agricultural, bioenergy and forestry
GLOBIOM

Land & Food

Long-term climate pathways
MAGICC

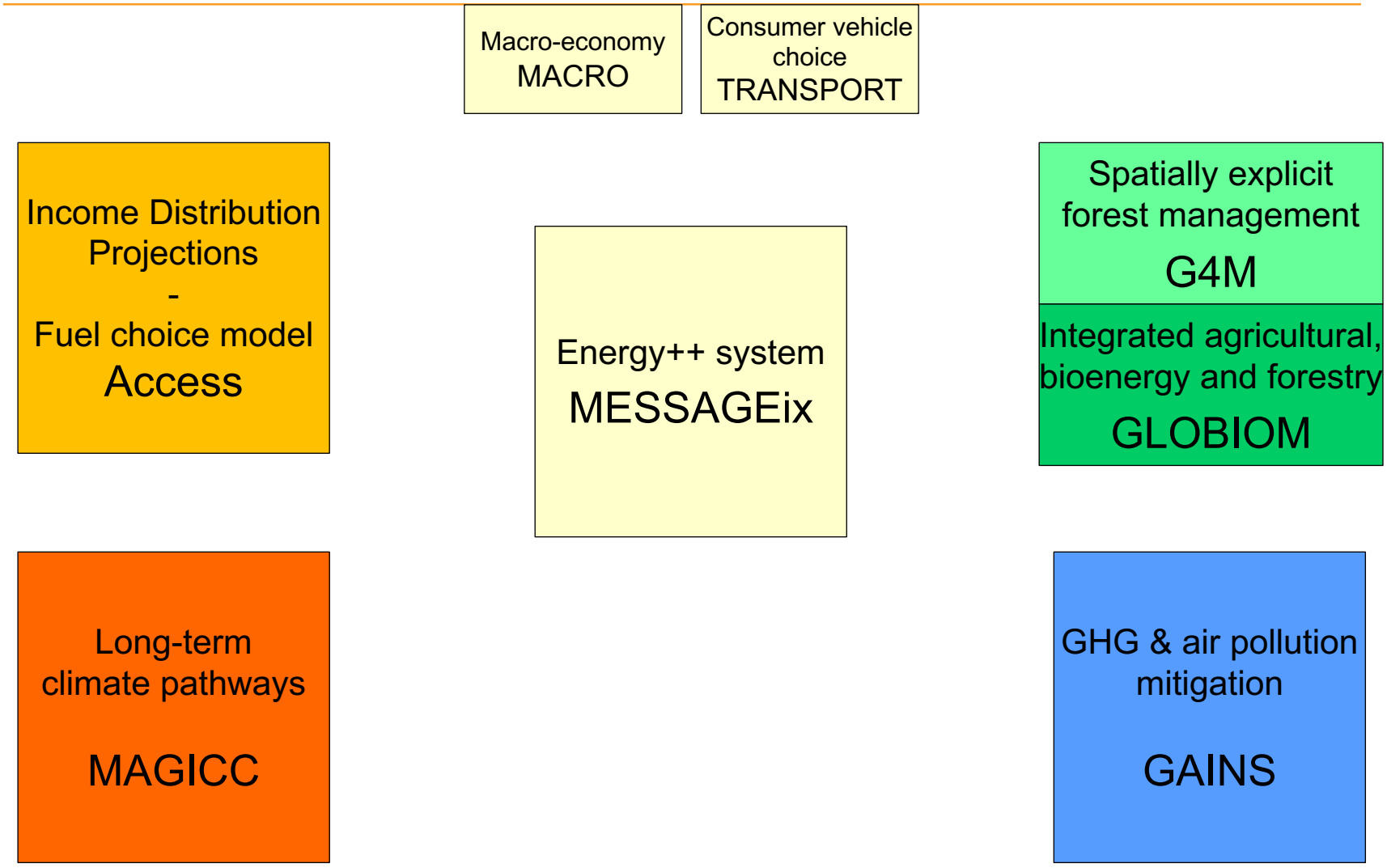
Climate Change

Water Scarcity

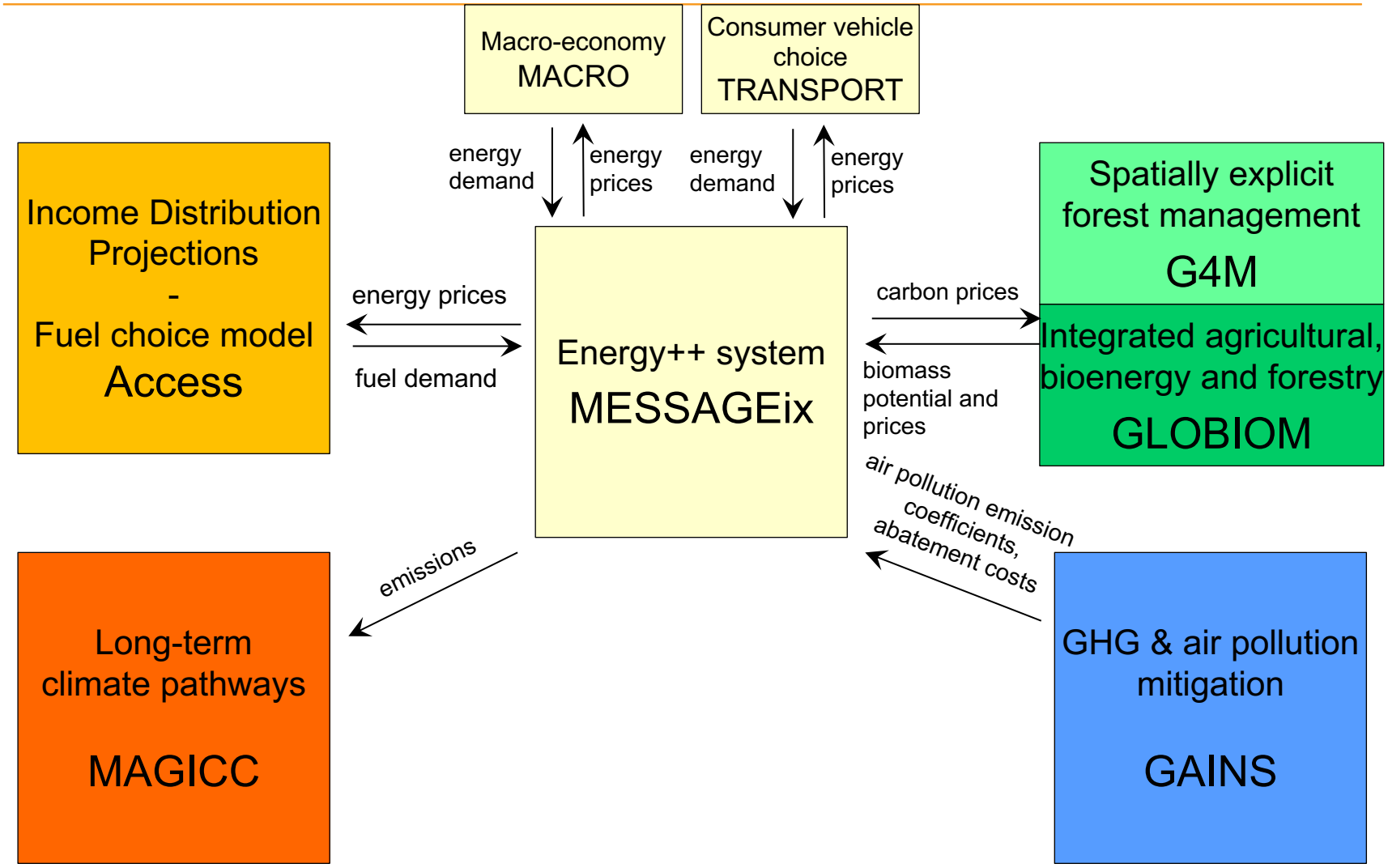
GHG & air pollution mitigation
GAINS

Local Air Pollution

Integrated Assessment Models



Integrated Assessment Models



IAM Characteristics

Key Insights

- How much do current policies and the NDCs achieve on the way to limit temperature change to 1.5 and 2°C?
- What are investment needs to limit temperature rise to 1.5 and 2°C?
- What are implications of climate policy to achieve the 1.5 and 2°C targets for SDGs?

Strengths

- Globally and sectorally comprehensive analysis
- Interlinkages between sectors, regions (incl. trade in some commodities), human and natural systems
- Investigation of different scenarios of socioeconomic futures (Shared Socioeconomic Pathways)

Limitations

- Limited spatial and temporal resolution
- Representation of national/sectoral barriers

Enhancing IAM results: the SIAMESE model

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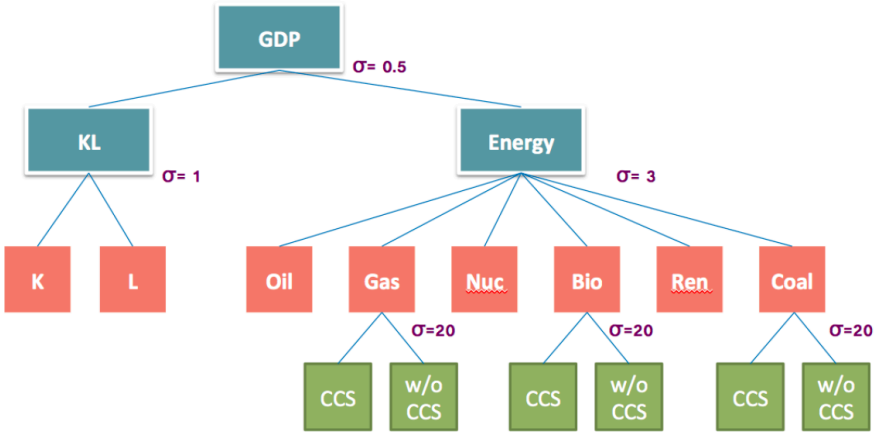
Towards optimal 1.5° and 2 °C emission pathways for individual countries: A Finland case study

Fabio Sferra[a,*,1], Mario Krapp[b], Niklas Roming[c], Michiel Schaeffer[d], Aman Malik[c], Bill Hare[e], Robert Brecha[f]



SIAMESE (Simplified Integrated Assessment Model with Energy System Emulator)

- An Optimization approach: a central planner maximizes welfare in all countries (within the same region)
- GDP is harmonized over time to match exogenous (SSPs) projections
- Outcome: Country-level sectoral activity and emissions

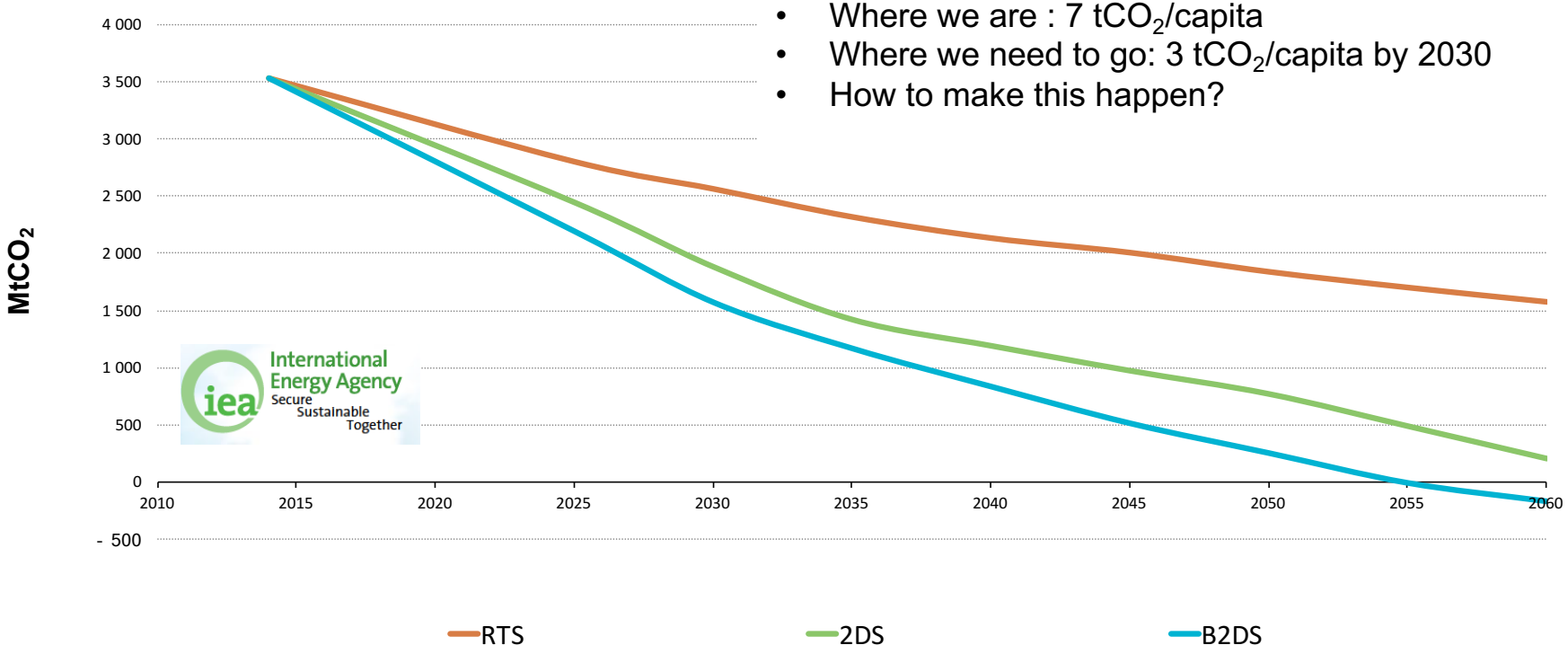
Scenario: IEA ETP Beyond 2°C

- One of the scenarios published in the IEA's Energy Technology Perspectives
- Combination of:
  - Forecasting reflecting known trends
  - Backcasting from a long-term outcome
- The outcome of the B2DS includes
  - Net-zero by 2060
  - 50% chance of limiting average temperature increase to 1.75°C
  - Total emissions from energy sector of 750 $GtCO_2$ between 2015-2100
  - Significant deployment of negative emissions
- 39 World regions – the region „European Union" downscaled to the analysed countries and sectors using SiAMESE

The IEA/ETP 2017

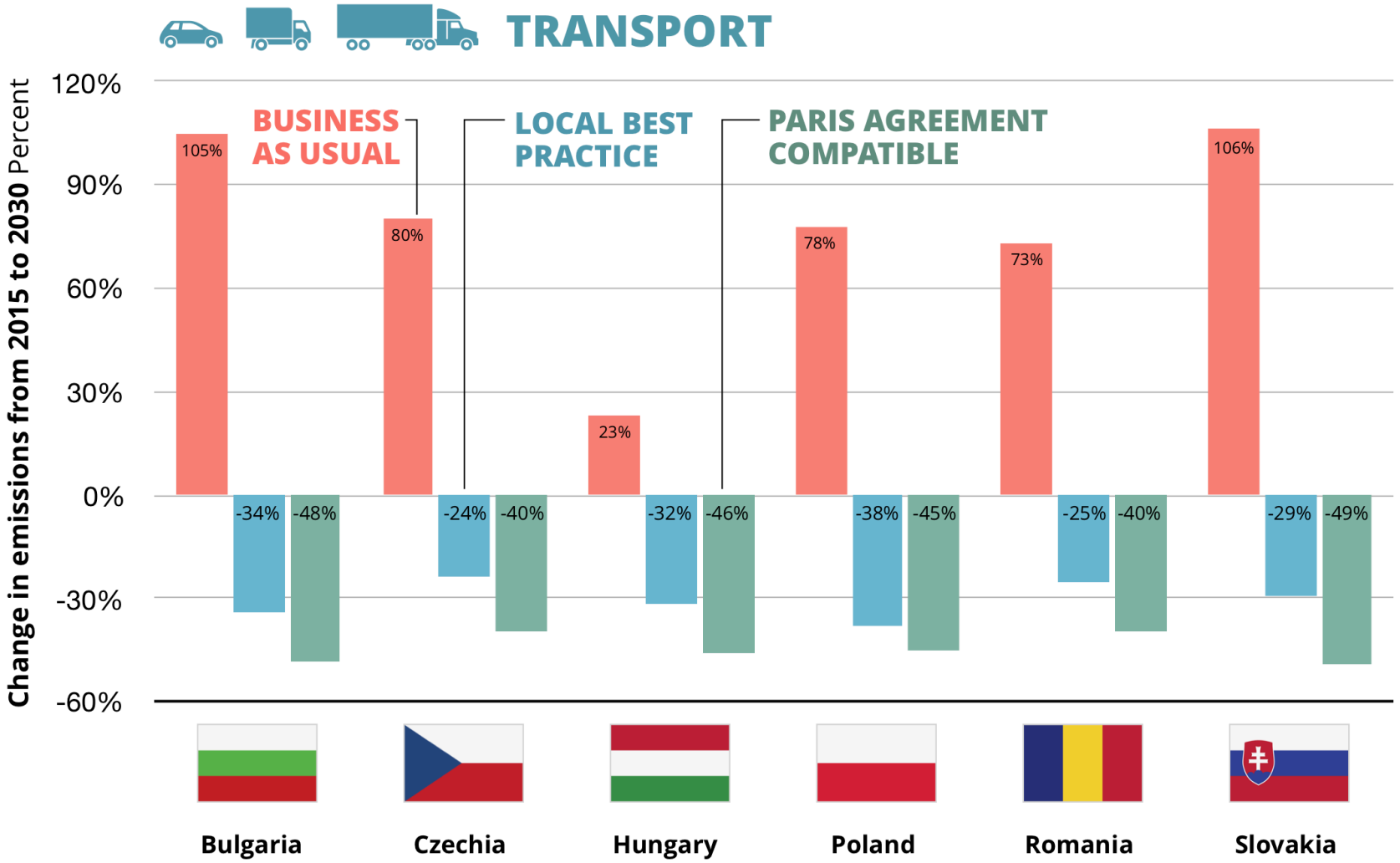
Direct Total CO_2 emissions | European Union

- Where we are : 7 tCO_2/capita
- Where we need to go: 3 tCO_2/capita by 2030
- How to make this happen?

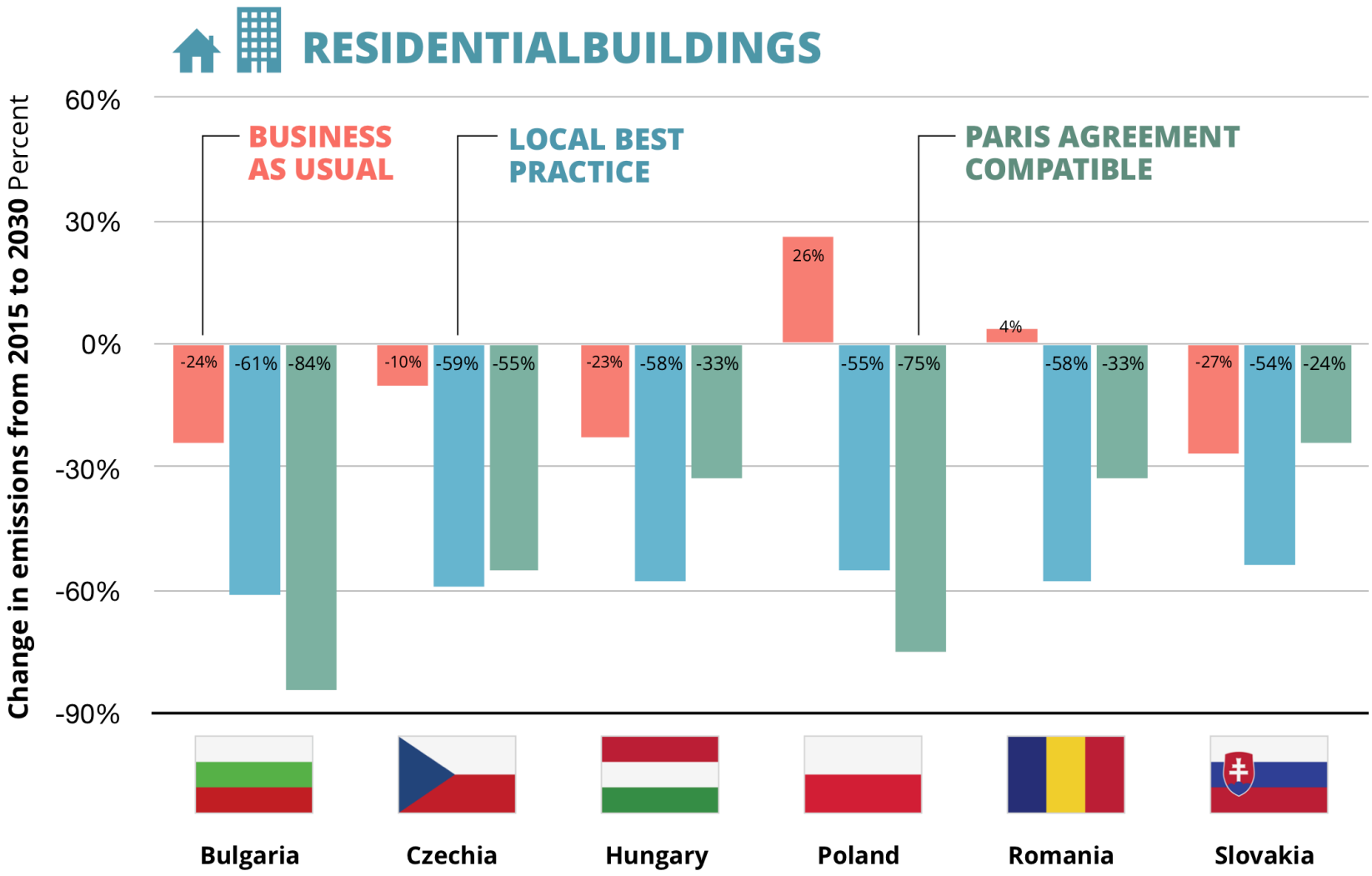


Source: IEA ETP 2017

Results – emissions reduction in transport sector



Results – emissions reduction in residential buildings



THANK YOU FOR YOUR ATTENTION

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