Understanding INDCs

Overview of the MILES Project

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[And the whole MILES consortium!]

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Overview of the MILES project

Country	Team
EU/Coordination	IDDRI
China	Tsinghua University, Renmin University, Energy Research Institute
India	TERI, Indian Institute of Management Ahmedabad
Brazil	COPPE
Japan	RITE, NIES
EU	E3 Lab - NTUA
USA	PNNL, SDSN
Global	PIK, PBL, IIASA, CCMC

- Understanding implications of 2015 for national and aggregate trajectories
- Improving modelling capacities in developing and developed countries
  - Better integration of global and national scenarios
  - Model improvements

Why try to understand the INDCs at granular level?

- Distinction between INDCs and INDC scenarios:
  - INDCs: headline targets and ambitions (often limited information)
  - INDC scenarios: detailed, internally coherent, credible explorations of pathways towards achieving INDCs (based on **national policy visions**, **expert judgement**, modelling, structured accounting frameworks,)

- Why?
  - How is just as important as how much
  - Derive policy relevant information: size of future markets, key areas for policy efforts, gaps in policy efforts implied by INDCs
  - Detailed understanding of national circumstances and multiple indicators of understanding
  - Credibility, feasibility and transparency

Methodology

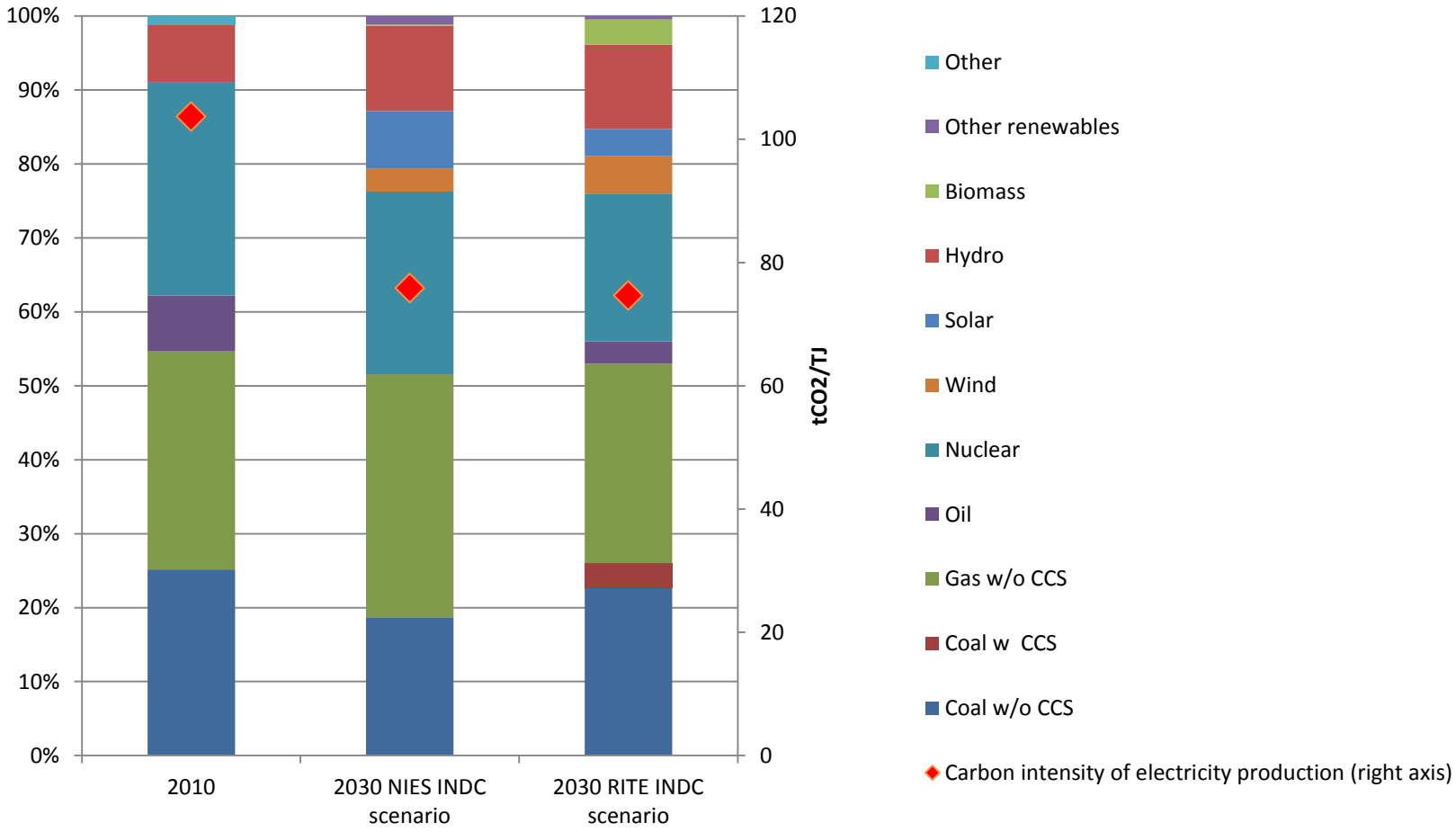
- Common data template
  - Drivers: GDP, population, sectoral activity levels
  - Emissions: energy + industrial CO2, all Kyoto gases, CO2 by sector
  - Energy production and demand by sector and fuel
  - Other indicators as appropriate

- National teams submit data based on an 'INDC scenario' implementing as closely as possible the INDC + national policy vision, explored within the available accounting + modelling framework

- Validation, presentation and sensitivity analysis

An example of preliminary results - Japan

Electricity mix and carbon intensity, 2010 and 2030



An example of preliminary results - EU

The three pillars of decarbonization in the EU, 2010-2030

Figure 1: energy intensity of GDP 2010-2030, European Union

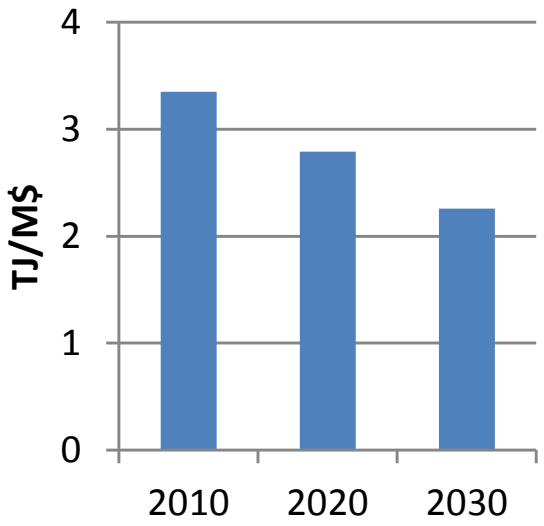


Figure 2: carbon intensity of electricity production 2010-2030, European Union

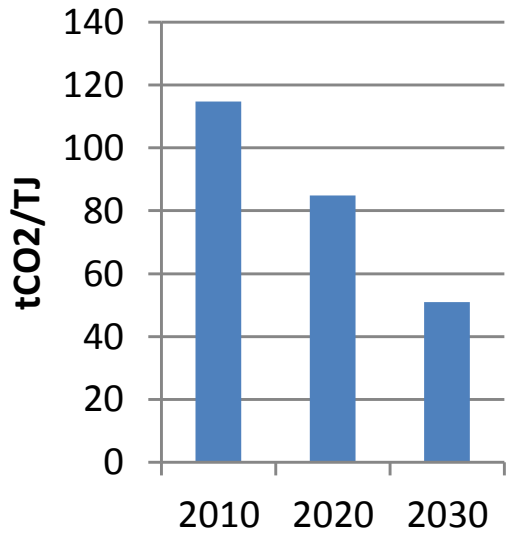
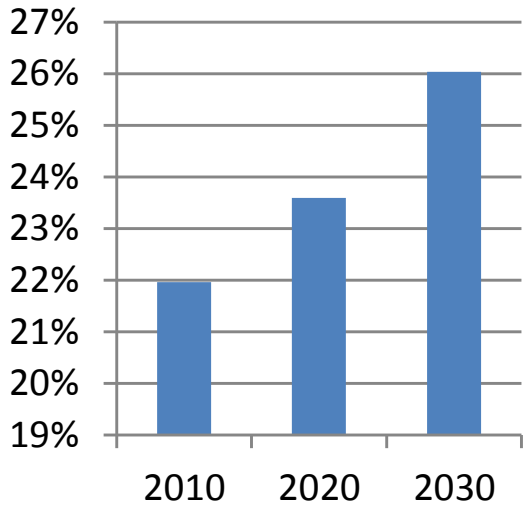
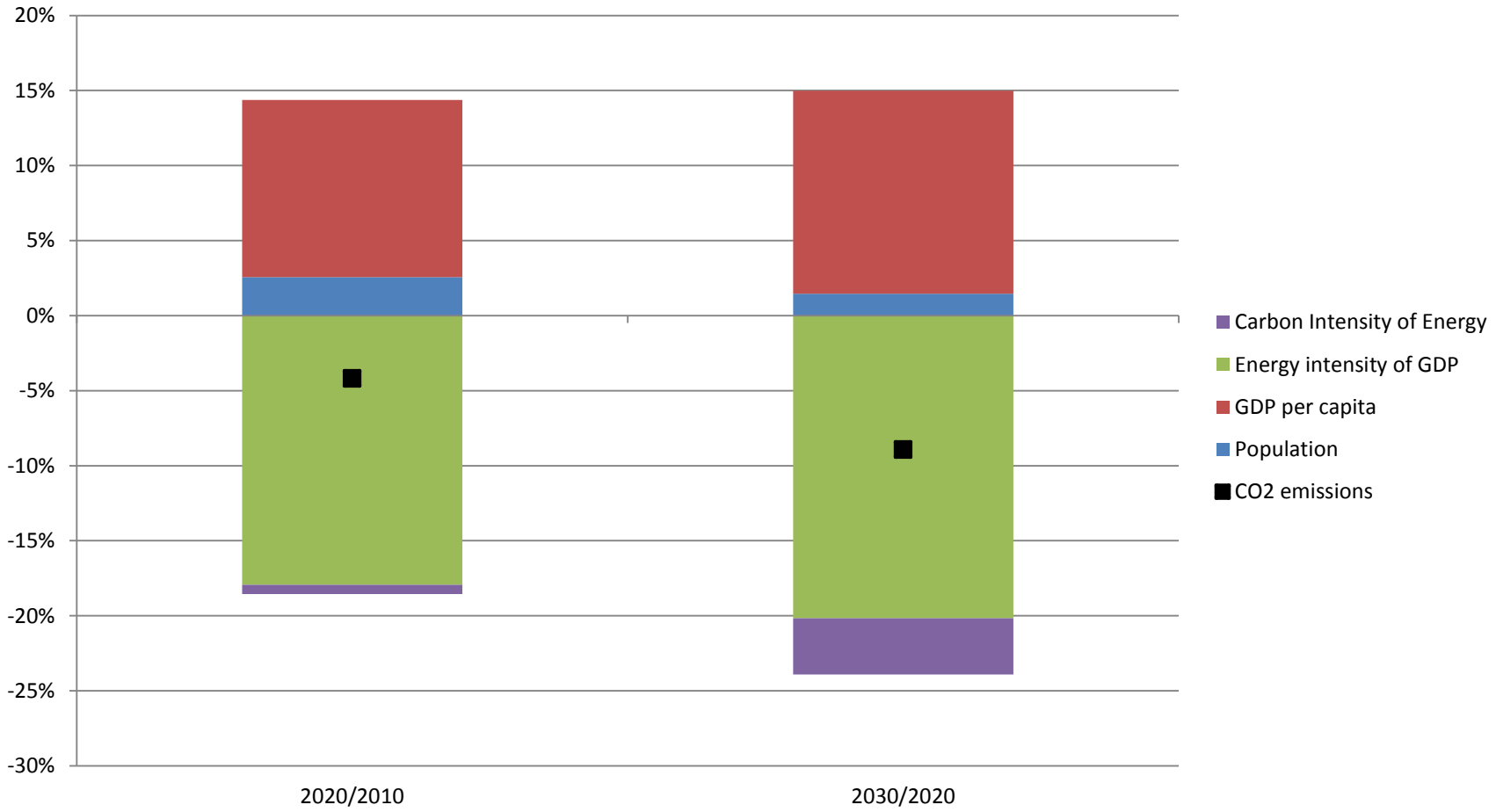


Figure 3: electrification of final energy demand 2010-2030 (%), European Union

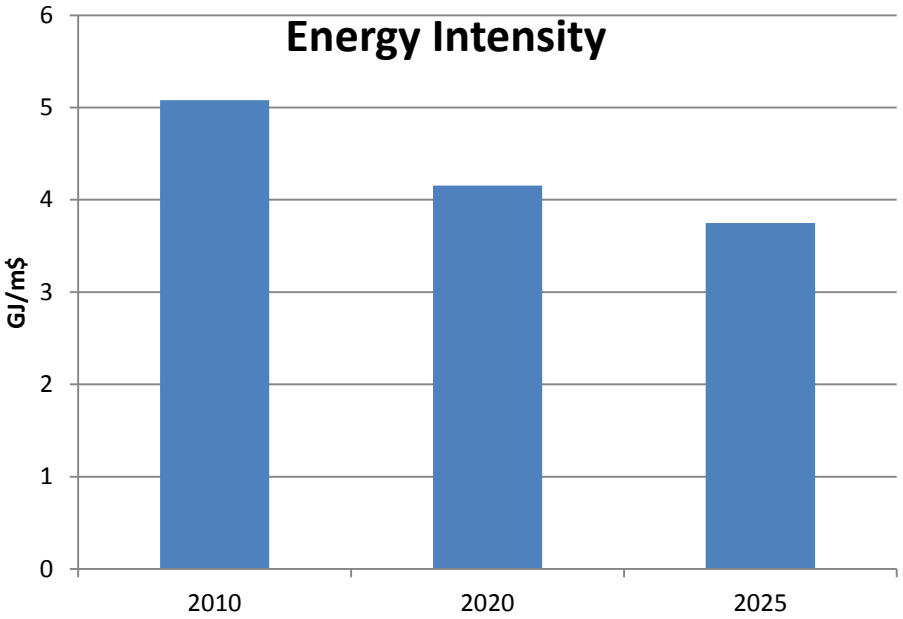


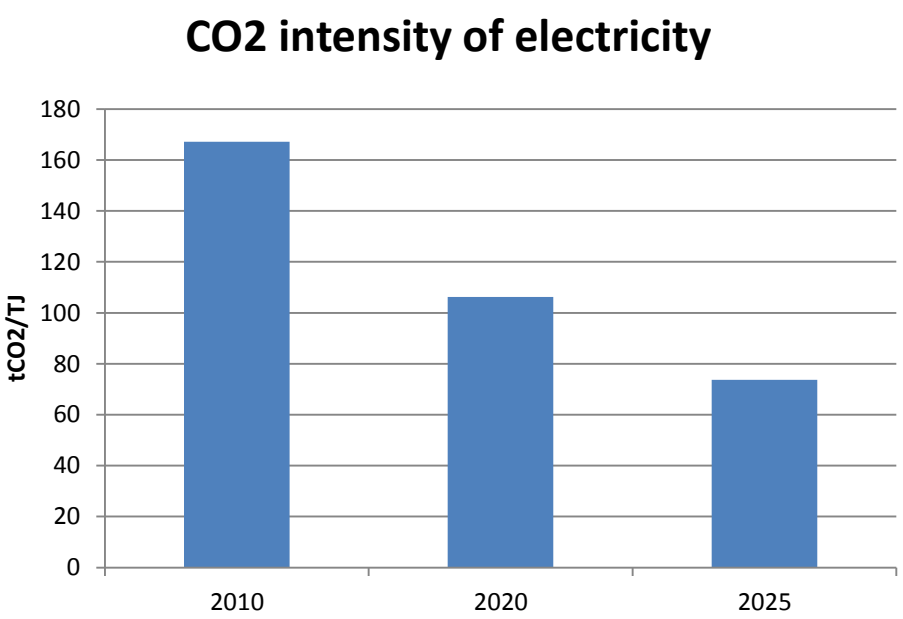
An example of preliminary results

Kaya analysis of decarbonization in the EU, 2010-2030



An Example of the USA Analysis





Co-benefits

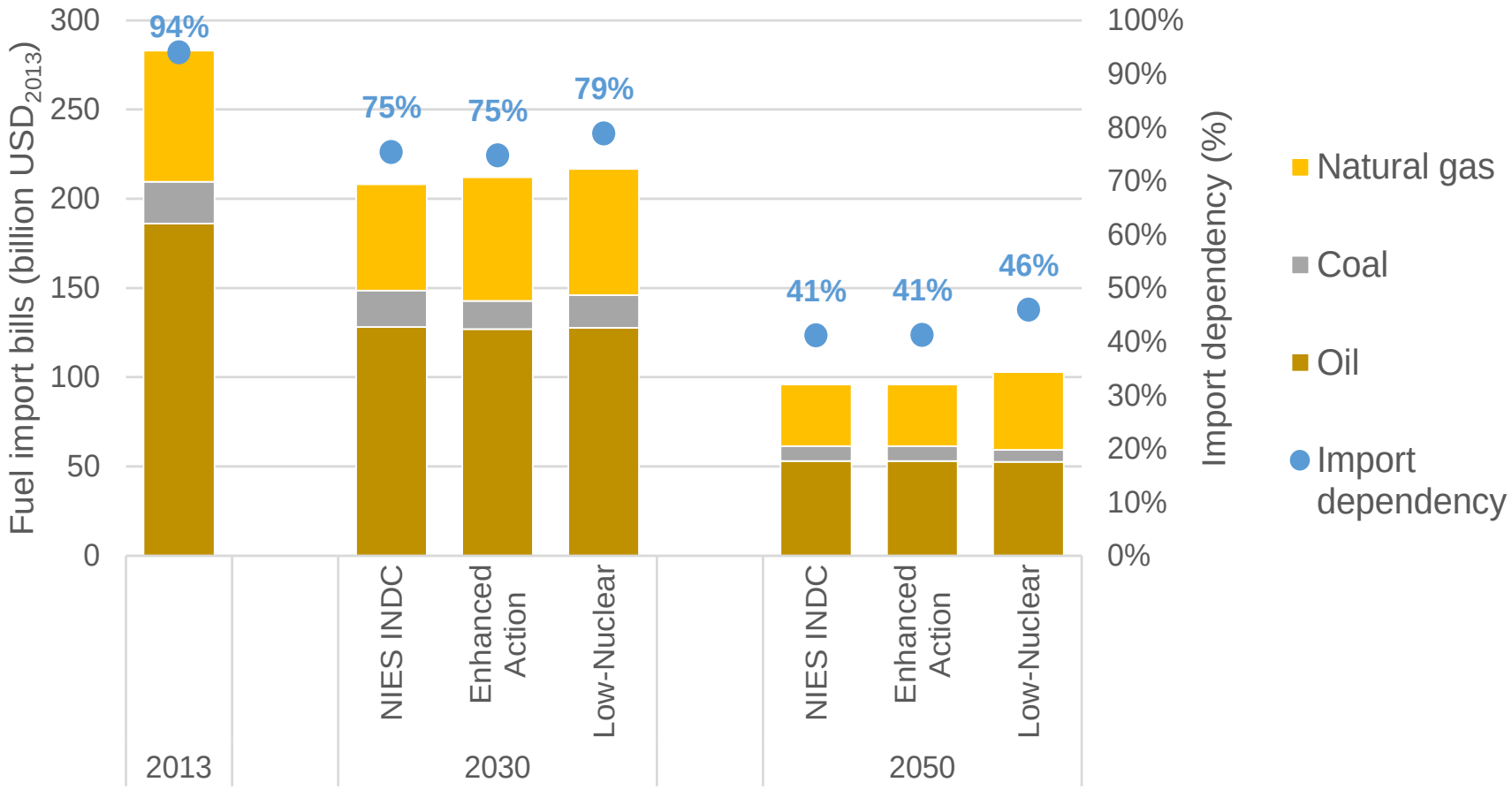
- Starting from the estimated greenhouse gas – or alternatively CO_2 – emission reductions implied by the INDCs, co-benefits, synergies and trade-offs will be estimated for the year 2030.

- Two dimensions will be explored:

(1) energy trade and independence,

(2) local air pollution.

An example of indicative results - Japan



Understanding aggregate effects

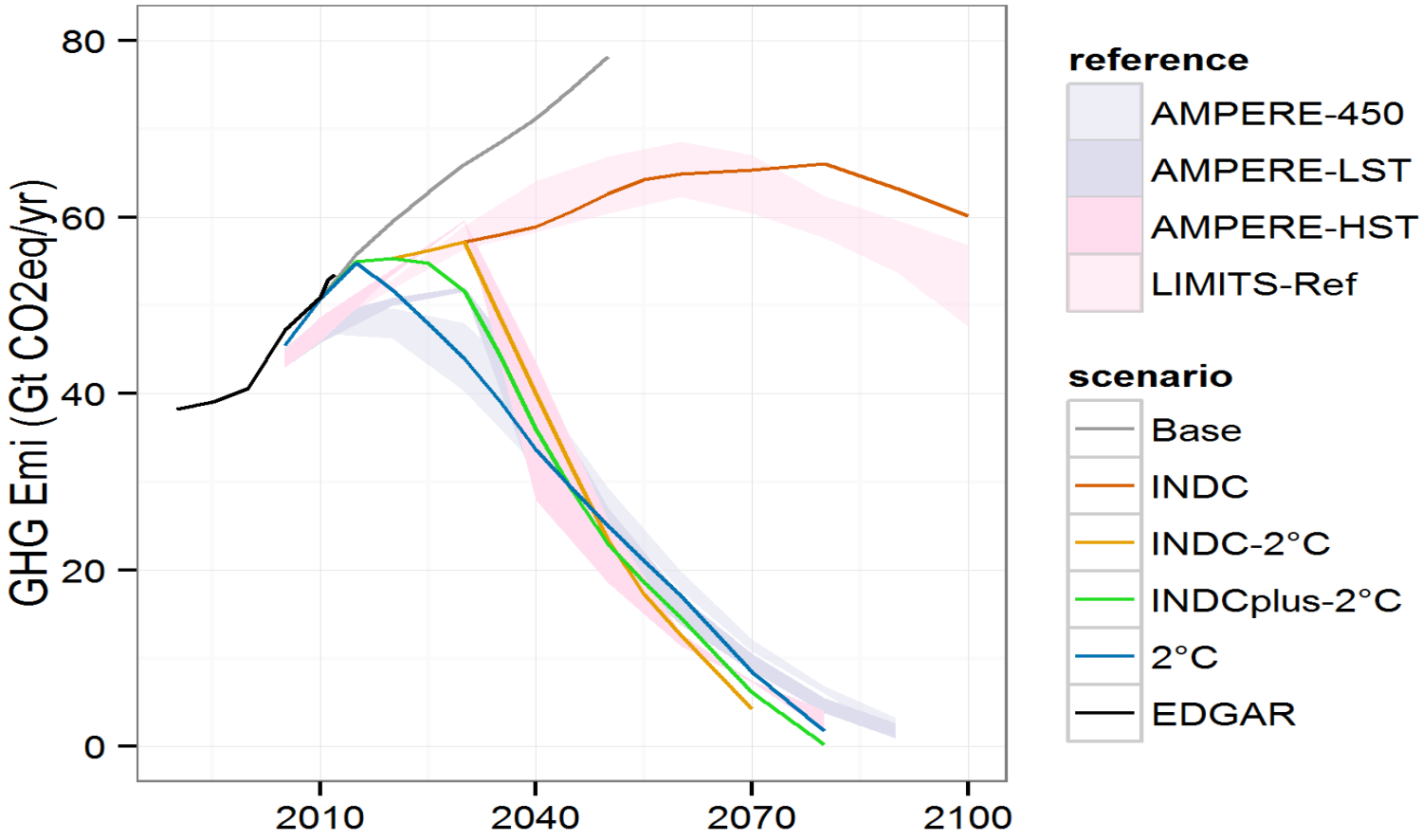
- In the energy-economy model REMIND with 11 regions, INDC emission targets implemented **regionally** via carbon prices and/or more granular policy representations

- LU CO2 emissions are analysed with the MAgPIE model, used as exogeneous inputs in REMIND scenarios

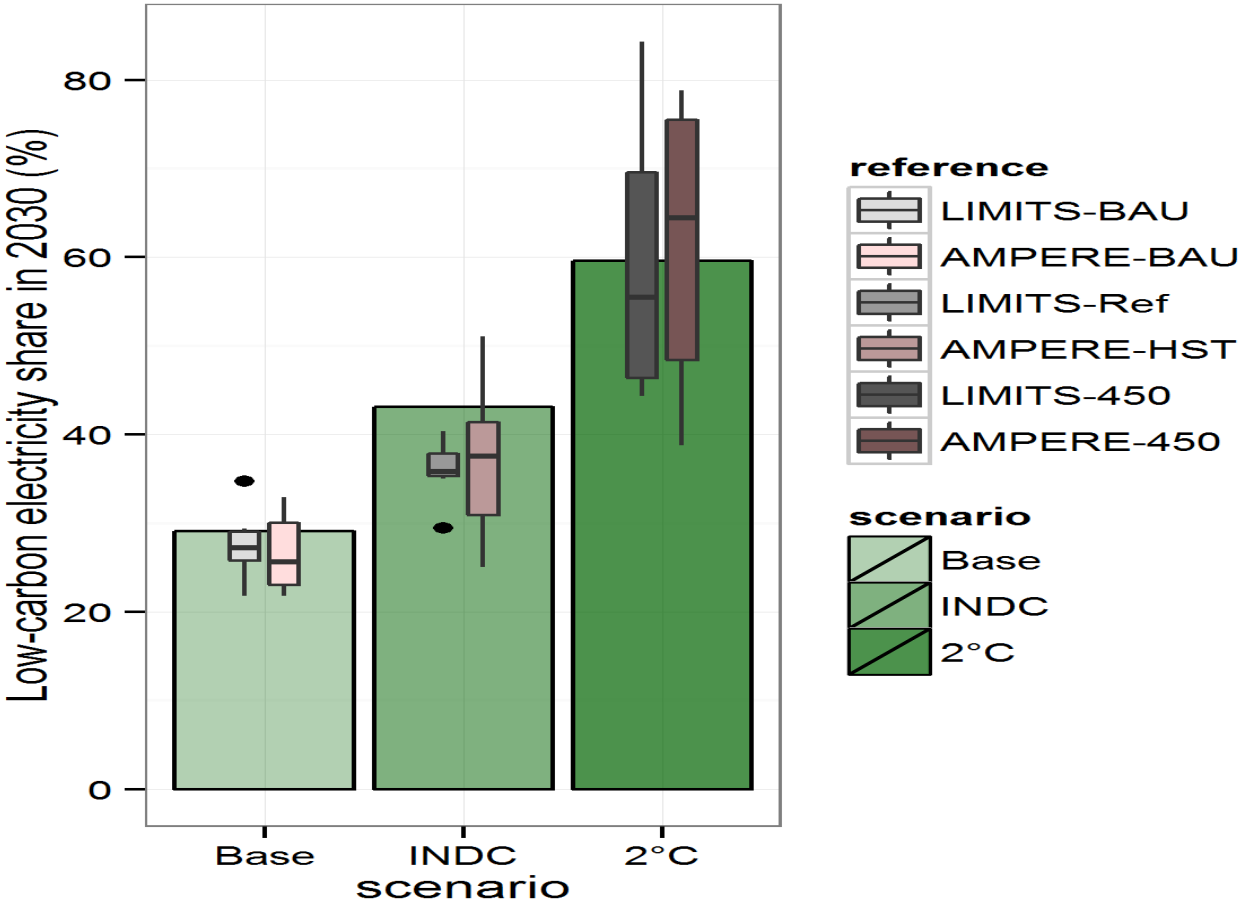
Four scenarios:

- Base: Business-as-usual without climate policies
- INDC: INDC targets until 2030 and extrapolation thereafter
- INDC-2°C: INDC targets until 2030, 2°C compatible carbon price after 2030
- 2°C: 2°C compatible carbon price starting in 2020

Example of preliminary results



Example of preliminary results



Preliminary conclusions

- Granularity is important for understanding implications of INDCs
- INDCs, although more transparent than CPH pledges, do not provide all information needed - hence need to look at INDC scenarios
- Initial analysis suggests that INDCs do imply an acceleration of climate action in major economies compared to pre-Paris trends
  - Particularly in the electricity sector – massive growth of renewables
  - And in energy efficiency
  - Question-marks around whether **required** post 2030 **technology and policy** options are being adequately prepared (electrification, industrial emissions, **CCS, carbon pricing,** etc)
- INDCs seem likely to lead to a significant deviation from BAU, but not coherent with an optimal 2 degrees trajectory
- Key elements for the future: dynamism and focused future commitments/cooperation