



Understanding the Intended Nationally Determined Contributions (INDCs) submitted for the COP21 in Paris

A Report by the MILES Consortium

Presented by Prof. Pantelis CAPROS

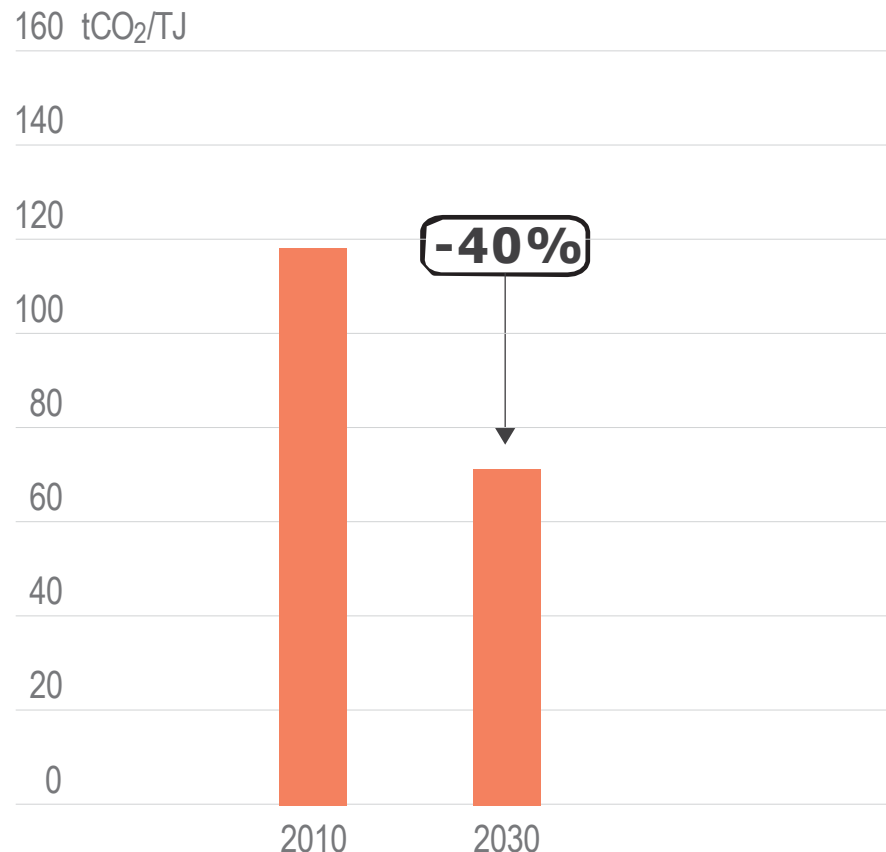
**MILES: IDDRI, PIK, PBL, E3MLab, NIES, RITE, PNNL,
Tsinghua, RENMIN, ERI, COPPE, TERI, IIASA, IIM**

Implications of INDCs of EU, USA, China, Japan, Brazil and India

- As of October 19, the 123 INDCs, covering 150 countries, submitted to the UNFCCC represent ca. 85.8% of global GHG emissions.
- The countries analyzed by the MILES project represent 60% of global GHG emissions.
- The analysis focuses on emissions in 2030 and evaluates whether emissions could be on track with the 2°C target.
- Co-benefits related to local air pollution and to security of energy supply are also assessed.
- **European Union**: 40% GHG in 2030 down from 1990 levels
- **Japan**: 25.4% GHG in 2030 down from 2005 levels
- **USA**: 26% to 28% GHG in 2030 down from 2005 levels
- **China**: Reduce CO₂/GDP intensity by 60-65% in 2030 from 2005 and peak emissions before 2030
- **Brazil**: 43% GHG in 2030 down from 2005 levels
- **India**: Reduce CO₂/GDP intensity by 33-35% in 2030 from 2005 and 40% capacity of power sector from non-fossils

Key message: INDCs imply an acceleration of emission reduction in particular in the power sector

Aggregate reduction in carbon intensity of electricity in USA, EU, China, India, Brazil and Japan



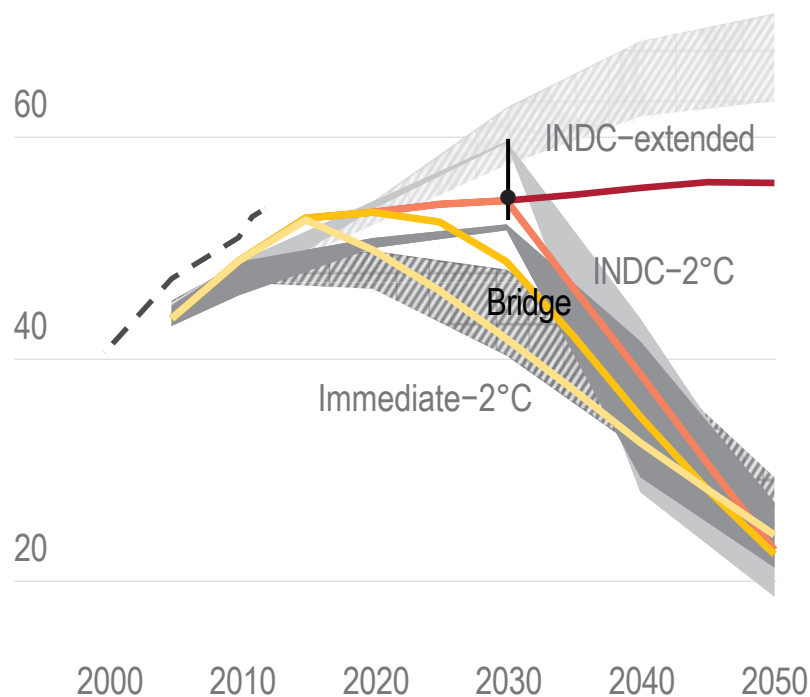
Source: MILES project analysis (see country chapters in this report)

- Renewables reach 36% of electricity supply
- 30% reduction in the energy intensity of passenger transport from 2010-2030
- Coal demand falls 17% in China, Japan, EU and US from 2010-2030
- Low carbon electricity reaches 41% of global electricity supply by 2030.

Key message: Paris Agreement needs to include strengthening mechanisms to build bridge from INDCs to staying below 2°C

Greenhouse gas emissions

80 GtCO₂eq/yr

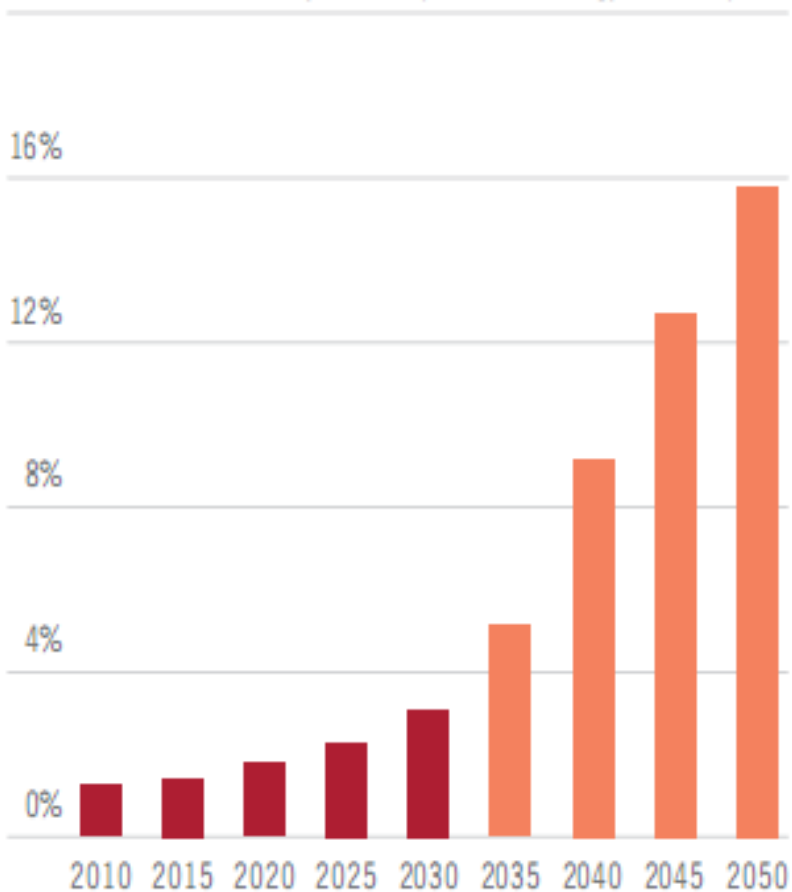


Source: REMIND model calculations, EDGAR (JRC/PBL, historical emissions), PBL INDC Tool calculations (www.pbl.nl/indc INDC range and best estimate, vertical black line and circle) and IPCC AR5 scenario database

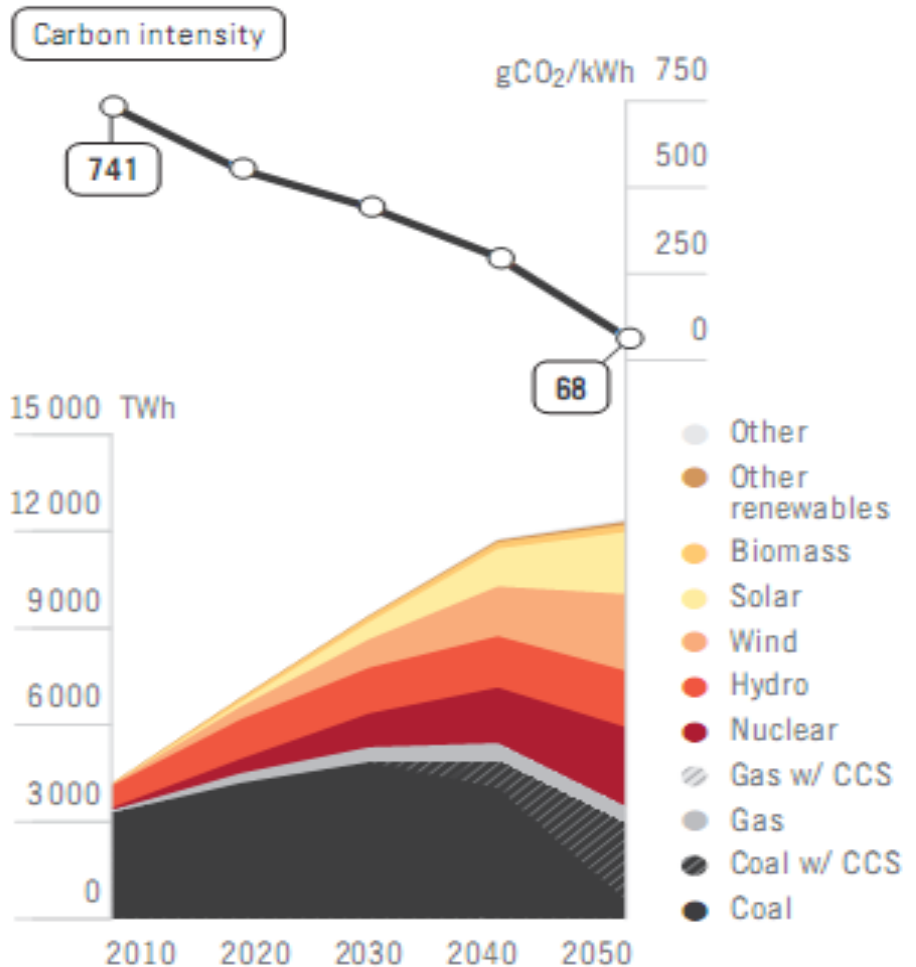
- INDCs are significant deviation from current trends and policies
- But not sufficient to keep below 2°C in reach as freely emitting fossil fuel infrastructure is not reduced until 2030
- Mechanisms for rapid strengthening can send signal of commitment to long term goal to investors.
- Early restructuring of investments can shave additional 5 GtCO₂eq off trajectory in 2030 and reduce the risk of disruptive, rapid, costly change
- The Paris Agreement must establish this early and regular ratchet

Some crucial low-carbon solutions, like CCS, electric vehicles, advanced biofuels, sustainable urban planning and others, appear unlikely to be developed under the INDCs at the scale and speed required for a 2°C scenario.

20% Share of electricity in transport final energy consumption



The challenge of electric mobility in the EU

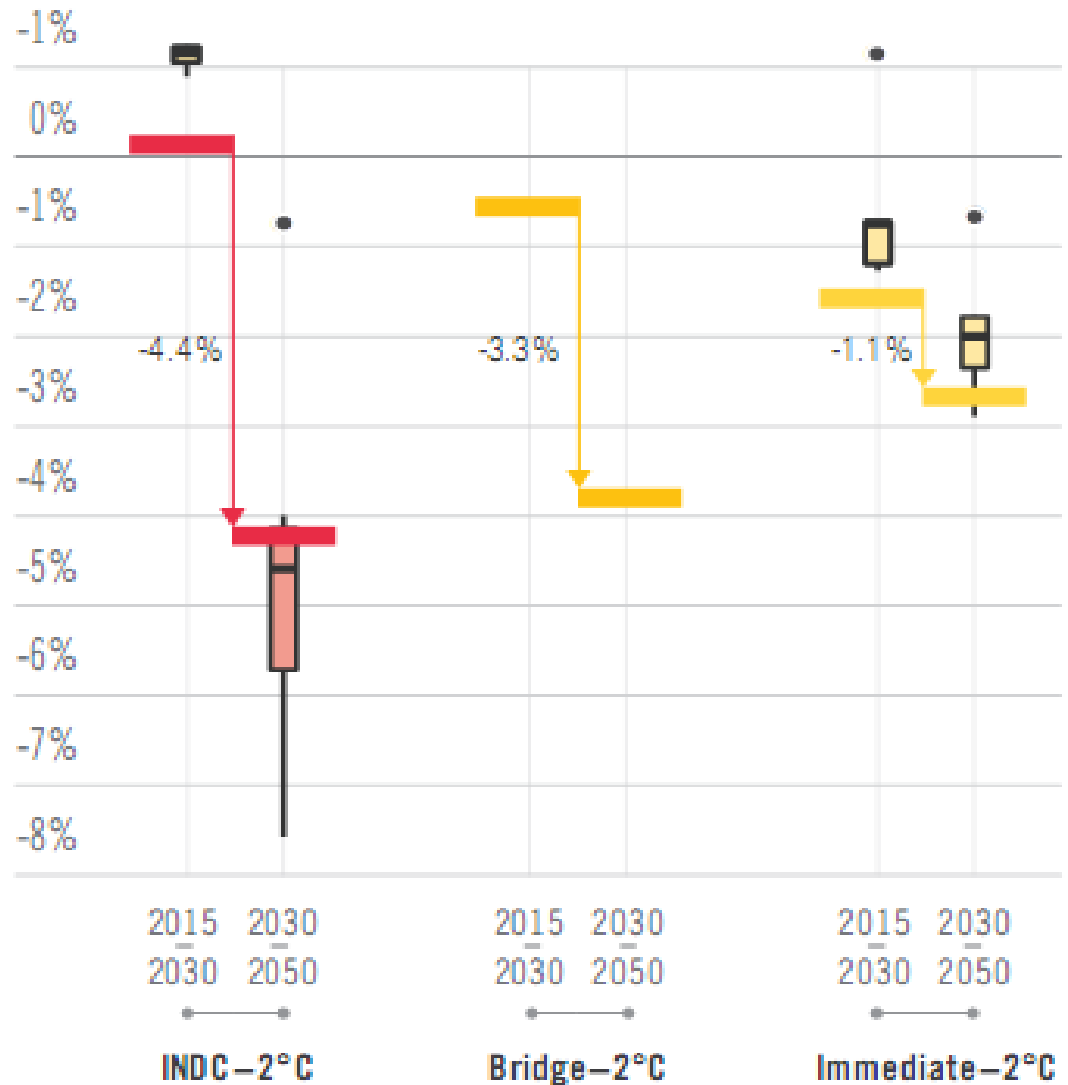


Power sector decarbonisation in China

Emission abatement effort in three scenarios post 2030

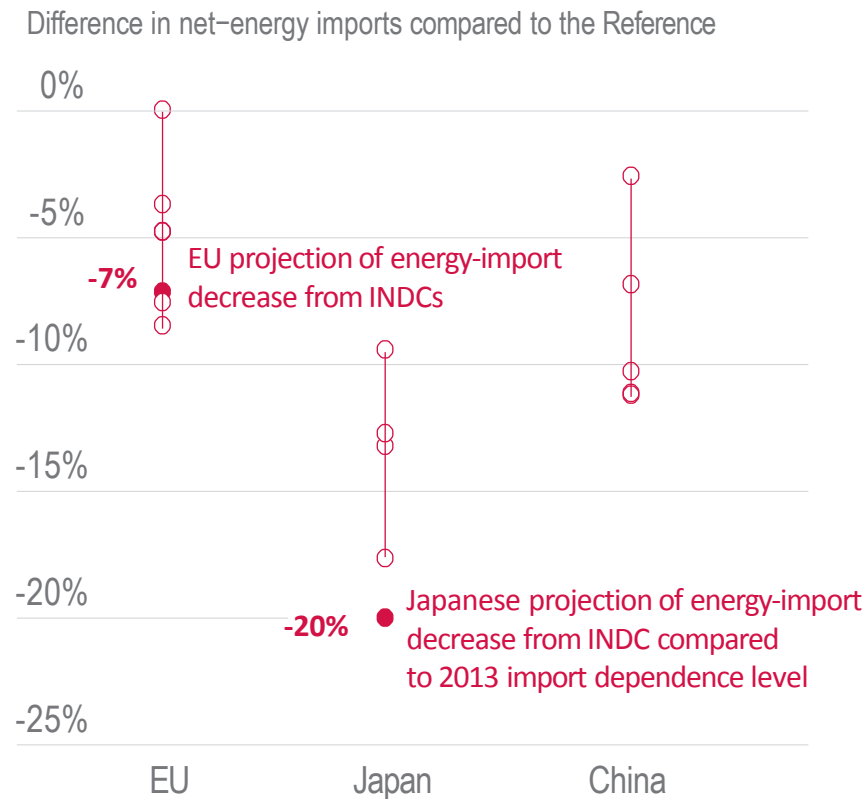
- The INDCs are an entry point to put the world on a trajectory towards 2°C
- But as currently submitted may not be enough to keep the below 2°C goal in reach.
- Post-2030, the required rate of transformation is very high and potentially costly.
- In order to address this, the Paris agreement should establish a clear mechanism to allow the regular, predictable and timely revision of national contributions and the global framework.
- New contributions should be based on a vision for the deep decarbonisation of national energy systems.
- The Paris agreement should foster the development of national deep decarbonisation pathways by 2018.

Annual rate of change in GHG emissions



Key message: INDCs can provide significant co-benefits and impetus for sustainable development

Estimates of the reduction in net-energy imports in 2030 as a result of implementing the respective INDCs



Note: each dot represents a single model estimate.

Source: IIASA calculations

- INDCs can lead to significant sustainable development co-benefits
- Reductions in energy imports in the order of 5-20% for major energy importing countries
- Reductions in local air pollutants of 5-20%
- Future INDCs need to be integrated into a long-term, low-emissions development strategy