



**Advanced Model Development and Validation for the
Improved Analysis of Costs and Impacts of Mitigation Policies**



This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 308329.

Preliminary results, do not cite

Implementing the Paris Agreement: system transformations and the contribution towards 1.5-2° C targets

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Brussels, 24 October 2016

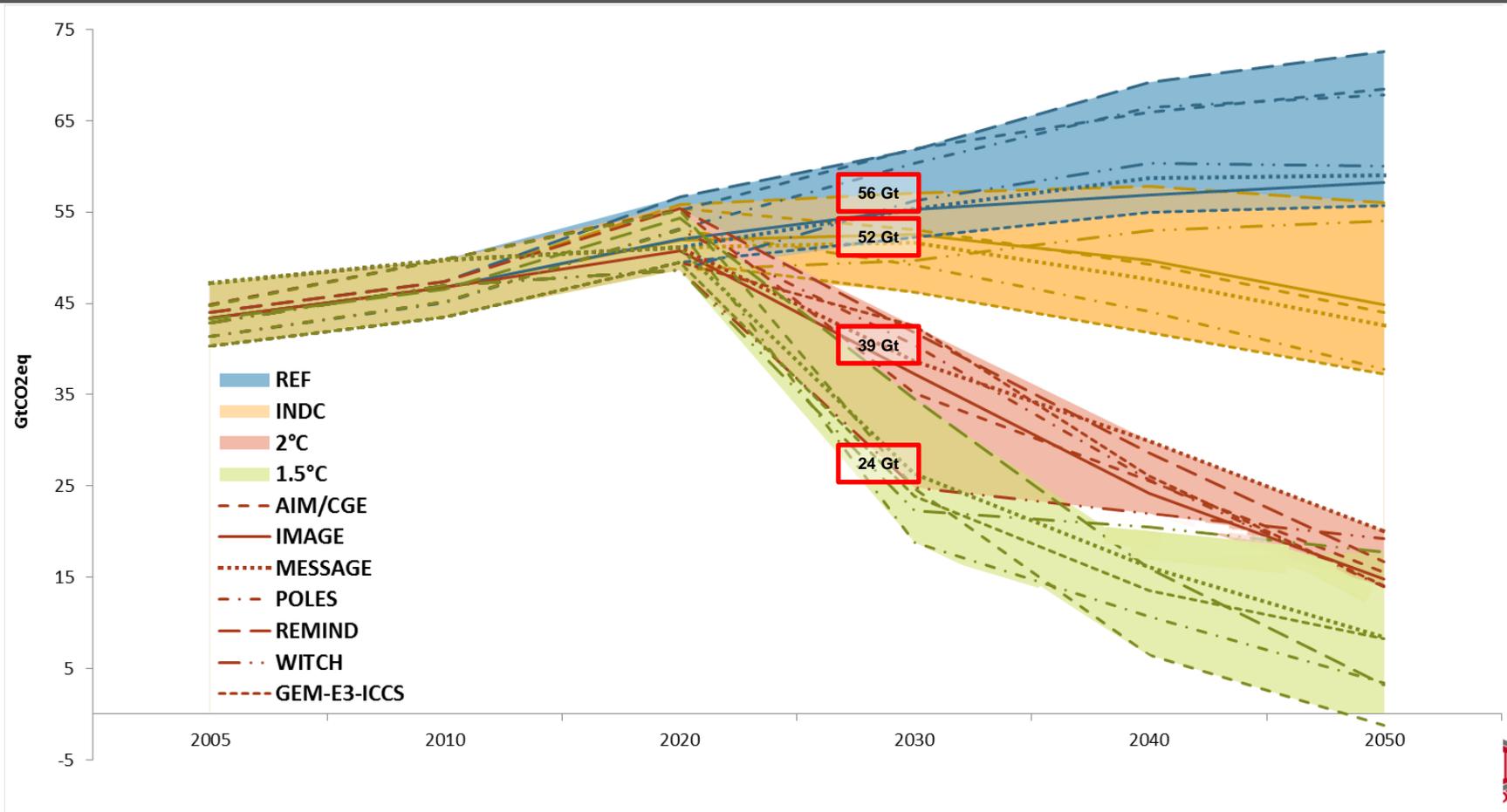
- Milestone in international climate policy that poses new scientific challenges
- ADVANCE project timely response:
 - First multi-model assessment with 8 state-of-the-art IAMs and hybrid CGEs to estimate:
 - ✓ Emissions gap for 1.5°C and 2°C
 - ✓ Sector mitigation
 - ✓ Energy system transformation
 - ✓ Economy-wide policy costs

Methodology

Model	Model type ^[1]
POLES	Energy system-PE model
MESSAGE	Energy system – GE growth model
GEM-E3-ICCS	Computable GE model
IMACLIM	Computable GE model
REMIND	Energy system – GE growth model
IMAGE	Energy-Land PE model
WITCH	Energy system – GE growth model
AIM/CGE	Computable GE model

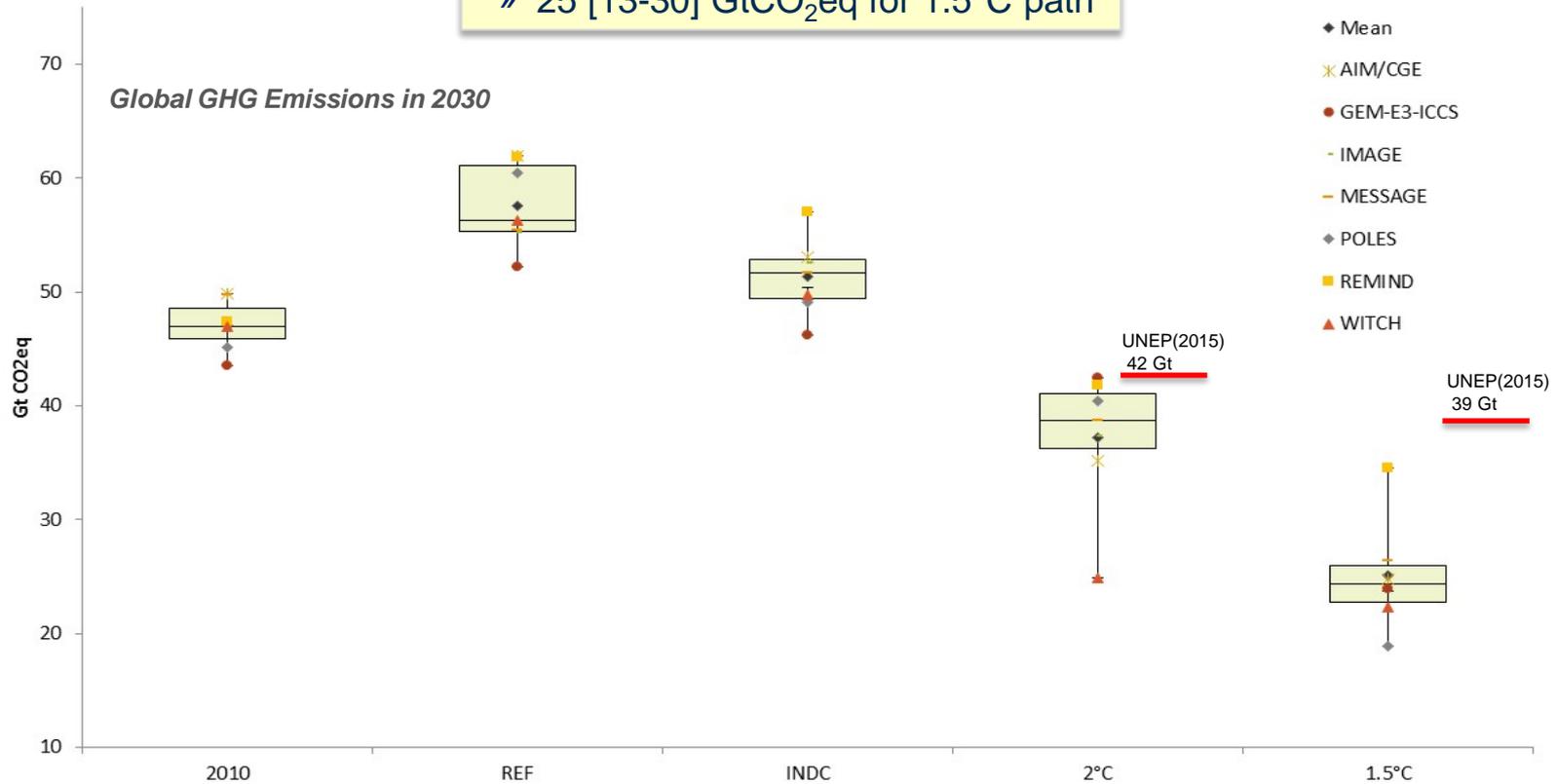
Scenario name	Description	Long-term temperature target
Reference	2020 Cancun pledges / post-2020 fragmented action, low ambition reductions	No
INDC	2020 Cancun pledges / 2030 INDCs / post-2030 fragmented action sustaining the 2020-2030 emission reduction intensity	No
2°C	2020 Cancun pledges / post-2020 global action, common carbon price to achieve 1000Gt CO ₂ carbon budget for 2011-2100	2°C
1.5°C	2020 Cancun pledges / post-2020 global action, common carbon price to achieve 400Gt CO ₂ carbon budget for 2011-2100	1.5°C

Global GHG trajectory to 2050

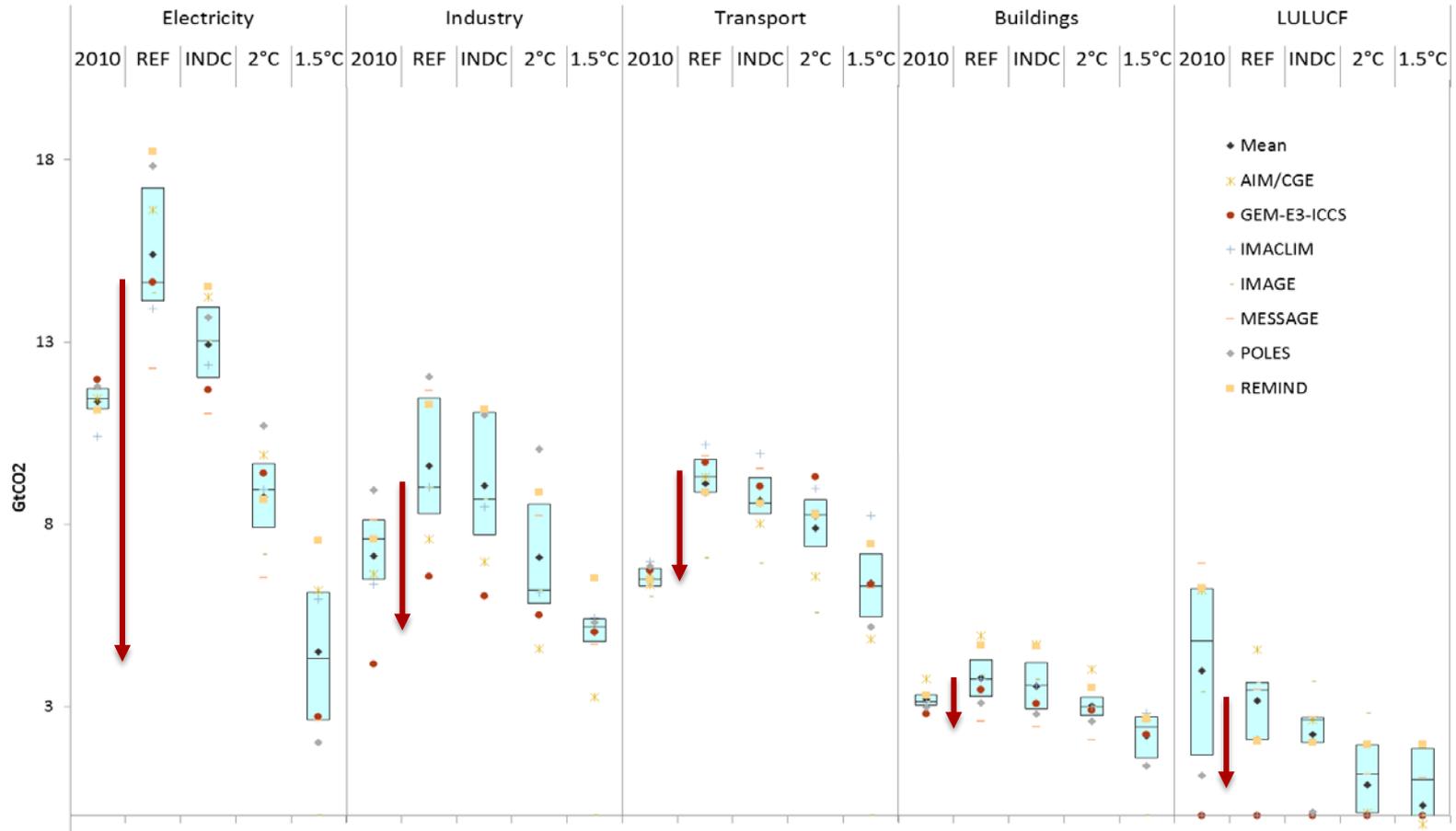


The Emissions Gap in 2030

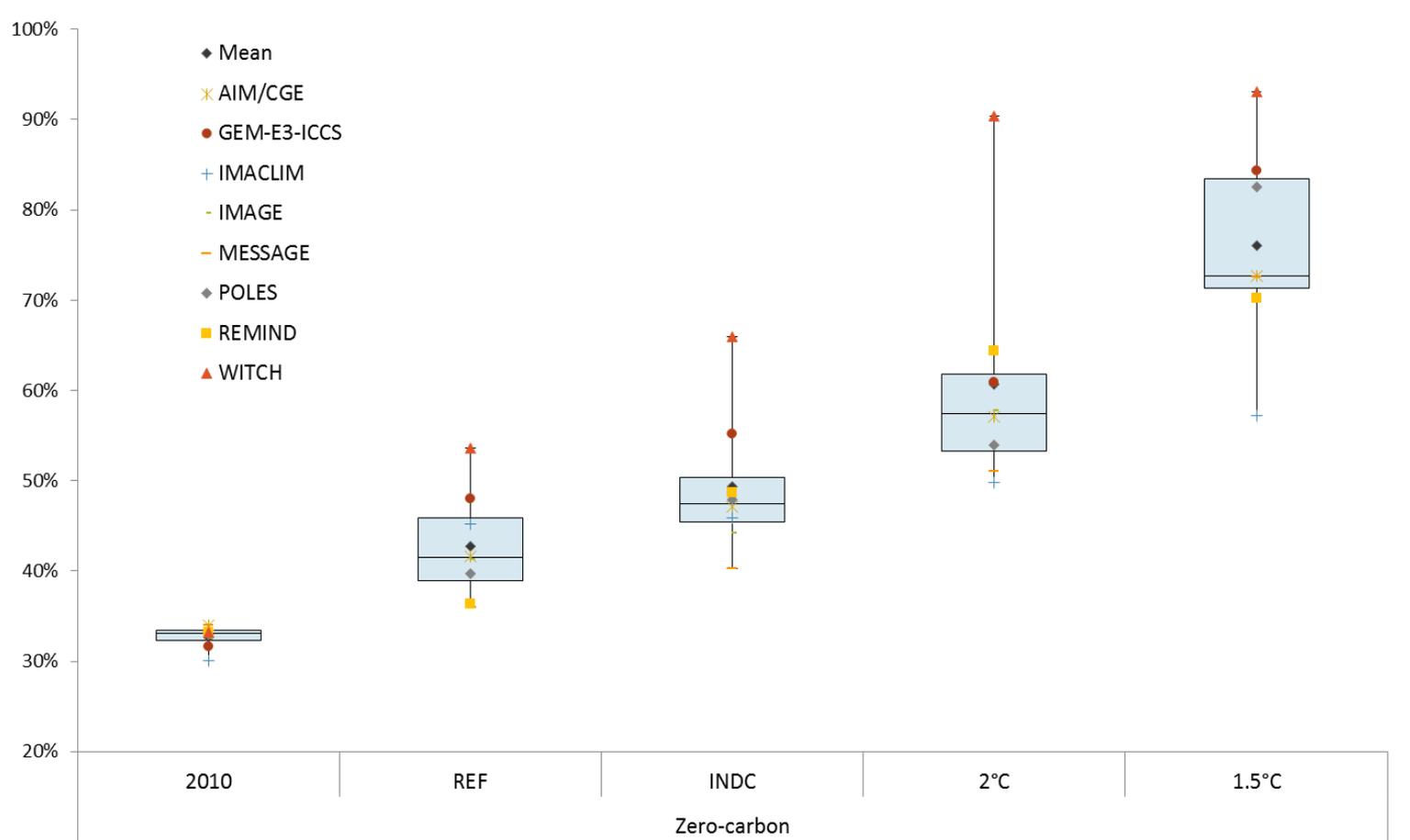
» 14 [4-25] GtCO₂eq for 2°C path
» 25 [13-30] GtCO₂eq for 1.5°C path



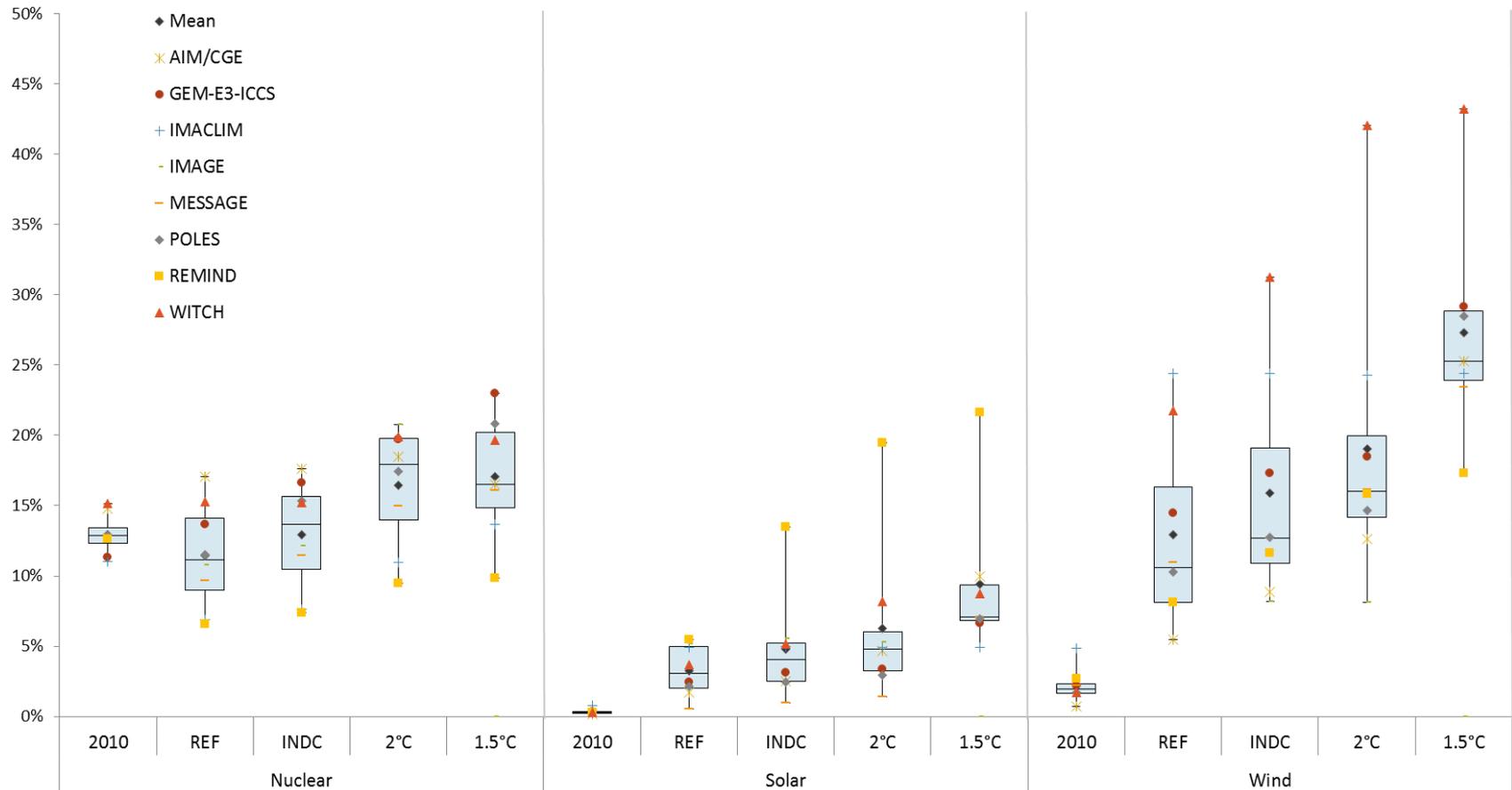
Sectoral contribution to CO₂ reductions in 2030



Power system transformation: Zero-carbon global shares in 2030

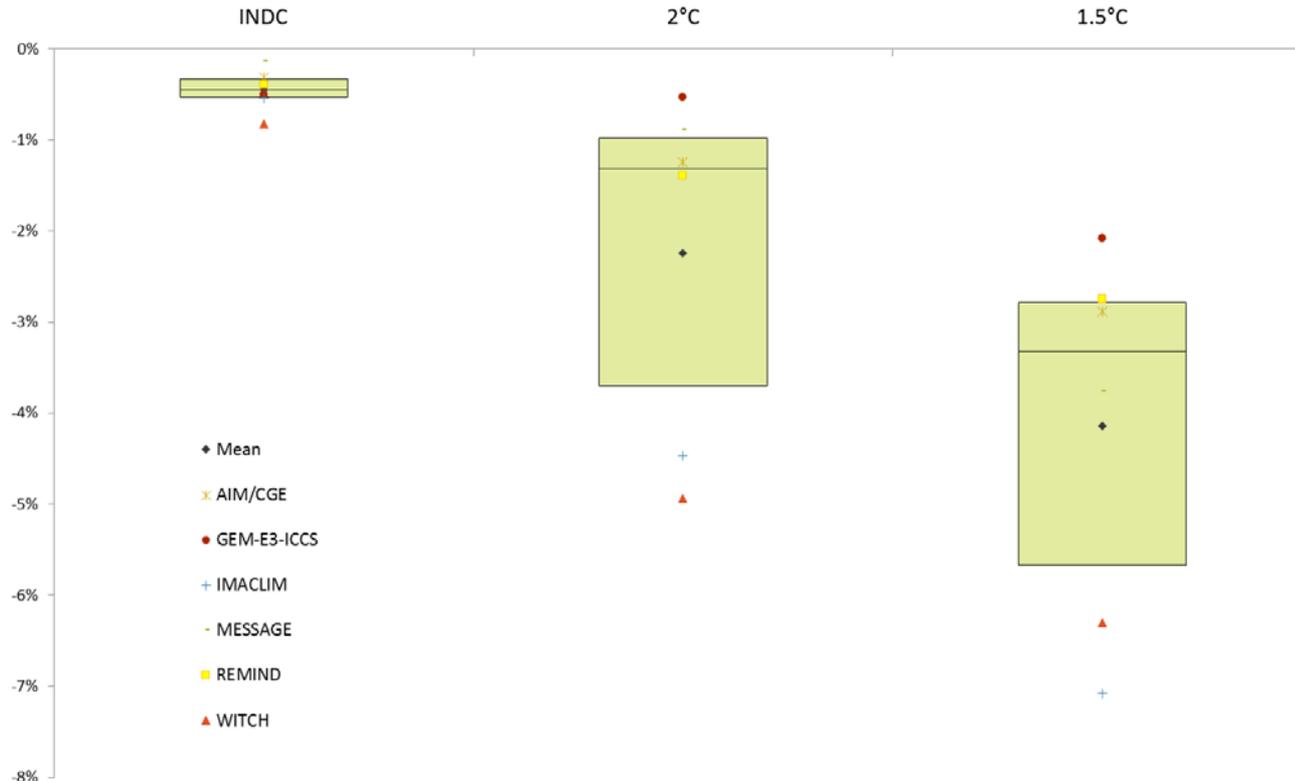


Power technology penetration in 2030



Mitigation costs in 2030, GDP change from Reference

Only cost calculation not including positive feedbacks, co-benefits and avoided climate damages



GDP growth rate 2010-2030	INDC	2°C	1.5°C
AIM/CGE	3.1%	3.1%	3.0%
GEM-E3-ICCS	2.8%	2.8%	2.7%
IMACLIM	3.0%	2.8%	2.7%
MESSAGE	4.6%	4.6%	4.4%
REMIND	3.1%	3.0%	3.0%
WITCH	3.0%	2.8%	2.7%

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Thank you!

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