

# Institutional processes & modelling inputs for LEDS

## Insights from the DDP initiative and the IPCC

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## Global Warming of 1.5°C

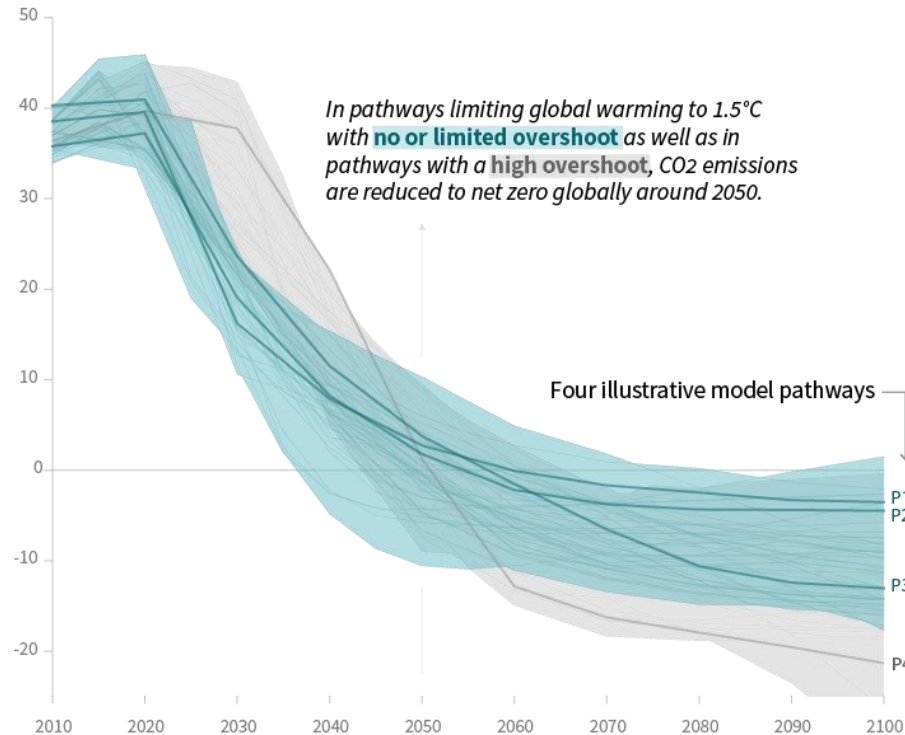
An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.



# Global carbon emissions must fall to zero

## Global total net CO<sub>2</sub> emissions

Billion tonnes of CO<sub>2</sub>/yr



Paris-compatible trajectories require fast and profound reductions of global carbon emissions

❑ 20-45% lower in 2030 compared to 2010 levels

❑ **Carbon neutrality between 2050 and 2075**

❑ We need to take carbon out of the atmosphere

➤ less emissions than what can be sequestered

- ❑ All countries need to implement changes at an unprecedented scale in all sectors to achieve deep decarbonization, ie close to zero GHG emissions, by 2050-2075
  - Energy, Industry, Urban/Infrastructure, Land-use
- ❑ There is no silver bullet! Each country needs to find its own strategies and policy packages according to national circumstances
- ❑ Delaying action is a dead end, early emission reductions open the windows of opportunities for a smooth and desirable transition
- ❑ International cooperation is a critical enabler for decarbonization to happen in the context of sustainable development  
... but this cooperation should be driven by country-specific needs to implement net-zero emission transitions

- ❑ LEDS are complementary to the NDCs
  - Explore different options and strategies
  - Inform the impact of long-term constraints on short-term action
  - Build ownership in the country
  - Reveal requirements from international cooperation
  
- ❑ Consequences in terms of method and process
  - Involve a wide range of stakeholders
  - Create space for open discussions on challenges and opportunities
  - Adopt a method that can translate stakeholder visions into quantified metrics measuring the content of transformations
  - Install stable inclusive institutions to ensure continuity and enable learning

- **Mission Statement** = HOW can countries transform to 2050 consistently with the Paris Agreement (towards global net zero emissions) and national development priorities?
- **Organization**
  - International community coordinated by IDDRI
  - In-country partners in most G20 countries, Latin America and Africa + emerging partnerships in Central Asia and Europe
- **Interlinked objectives**
  - In-country capacity building
  - Scientifically robust analysis
  - Stakeholder engagement
  - International community of practice

Investigating deep decarbonization requires a renewed approach to national scenario design

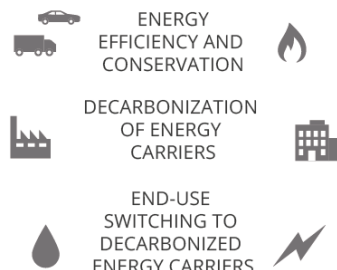
## COUNTRY-DRIVEN STRATEGIES IN A CONTEXT OF DEEP UNCERTAINTY

## MODELLING DEVELOPMENT PATHWAYS

## COMPARABLE SCENARIO DATA REPORTING

## BACKCASTING USING LONG-TERM BENCHMARKS

### STRATEGIES



Sectors and drivers  
of decarbonisation

QUANTITATIVE  
ASSESSMENT  
TOOLS, INCLUDING  
NATIONAL-SCALE  
MODELS

### DASHBOARD

		2010	2020	2030	2040	2050
Aggregate	Population					
	GDP					
	Energy					
Energy Demand Sectors	Emissions					
	Activity level					
	Energy by fuel					
Energy Supply Sectors	Emissions					
	Production					
	Technology					
Physical Stocks	Power generation					
	Passenger vehicles					
	...					

Indicators to 2050

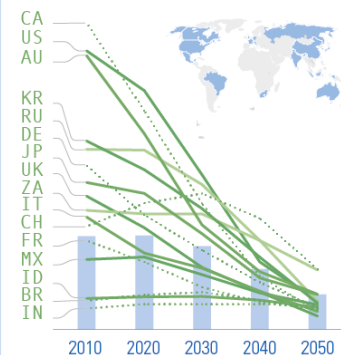
OVERALL AND  
SECTORAL  
BENCHMARKS  
SATISFIED?



YES?

NO?

### PATHWAYS



Energy-related CO<sub>2</sub>  
emissions per capita

REVISED STRATEGY ASSUMPTIONS

GLOBAL CUMULATIVE EMISSIONS SATISFIED?  
GLOBAL-SCALE ENABLING CONDITIONS

Waisman et al (2019) « A pathways design framework for national low greenhouse gas emission development strategies » *Nature Climate Change* 9.4 (2019): 261-268

Decision driver	Accounting	B-U optimisation	Hybrid (B-U base)	Mixed linked systems	Hybrid (T-D base)	National IAM
<b>1. Policy priority</b>						
Technology roadmaps	***	***	***	***	**	*
Representing role of policy	*	**	***	***	***	*
Wider economic impacts	*	*	**	***	***	**
Development priorities	**	**	***	***	***	**
Electricity system operation	**	***	**	**	*	*
Distributional impacts	*	*	*	***	***	**
Stakeholder education	***	**	**	*	*	*
<b>2. Country specifics</b>						
Substantial non-energy emissions	***	*	*	**	*	*
Strong informal sector	**	*	***	*	*	*
Central control vs. competitive markets	***	**	**	*	*	*
<b>3. Practical considerations</b>						
Low data intensity	*	*	*	*	*	*
Low entry barriers	***	**	*	*	*	*
Use transparency	***	**	**	*	*	*
Usability	***	**	**	*	*	*

Pye & Bataille (2016) Improving deep decarbonization modelling capacity for developed and developing country contexts, *Climate Policy*, 16:sup1, S27-S46

1. Deep decarbonization is feasible in all the contexts we have investigated
2. Deep decarbonization can be articulated with domestic socio-economic priorities
3. A long-term (2050) perspective must be used to inform short-term decisions and the sequencing of actions ( $\neq$  risks of lock-ins)
4. Physical and economic transformations must be made transparent to inform concrete actions
5. Policy packages must be adjusted to fit the domestic context
6. National deep decarbonization depends on critical international enablers



# Thank you for your attention!

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