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# Deep Decarbonization Pathways Project (DDPP) Overview and perspectives for COP21

Henri WAISMAN  
DDPP Director - IDDRI  
[henri.waisman@iddri.org](mailto:henri.waisman@iddri.org)

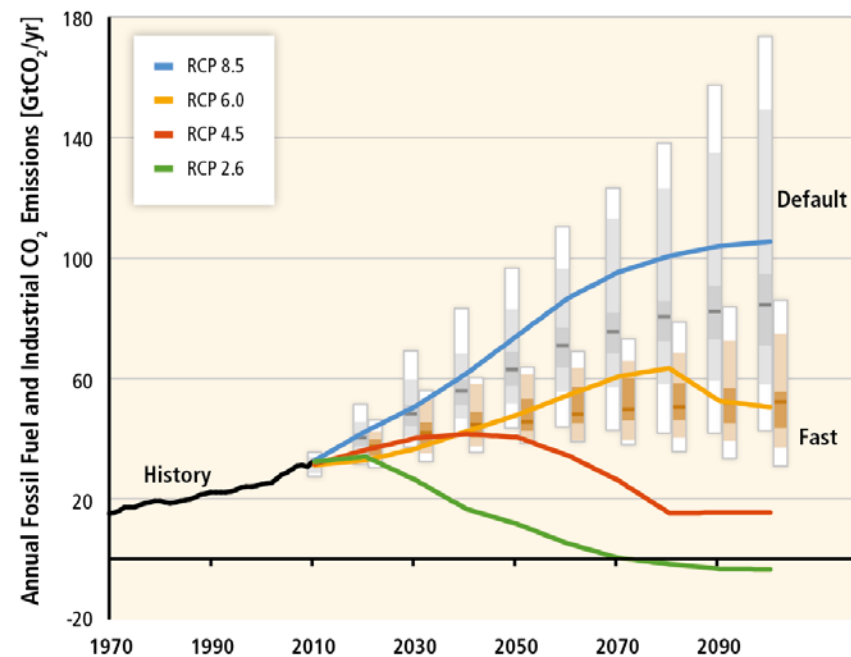
# 2°C, the trajectory for energy-related emissions

## Depth of the transformation to 2050

- ❑ Absolute emissions
  - divided by more than 2
- ❑ Emissions per capita
  - divided by more than 3
- ❑ Emissions per unit of GDP
  - divided by about 10
- ❑ Carbon neutrality in the second half of XXIe century

## Speed of the transformation

- ❑ Global peaking around 2020



# Deep decarbonization: Creating a roadmap to transformation

- ❑ Taking 2°C seriously requires **profound transformations**  
(≠ marginal adjustments around current trends)
  - **National-scale approach** to account for domestic circumstances and promote synergies with socio-economic priorities  
(≠ tradeoff btw environment and development)
  - **Long-term strategic** vision to inform short term decisions  
(≠ risks of lock-ins)
  - **International cooperation** to enable national transitions  
(≠ competition and burden-sharing)

# DEEP DECARBONIZATION PATHWAYS PROJECT (DDPP) – GENERAL PRINCIPLES

# Objectives

- ❑ Research : Understand and demonstrate HOW individual countries can implement the transformation of their energy systems
  - Support/inform the elaboration and implementation of national decarbonization strategies consistent with the 2°C
  
- ❑ Policy : Favor the appropriation by policymakers and stakeholders of challenges and opportunities of their low-carbon transition
  - Improve learning & structure dialogue inside and among countries

# Operationalizing the DD concept

## Deep Decarbonization Pathways (DDPs)

DDP = internally coherent national low-carbon transformations

- National specificities
  - Technical potentials (eg, resource endowment), interests (eg, competitiveness), needs (eg, development priorities), preferences (eg, nuclear) ...
- Long-term vision (2050)
  - To inform short-term decisions on the route towards 2°C
- Explicit content in a problem-solving approach
  - What concrete measures? How to implement?

# (Current) Organisation of DDPP

- ❑ A joint initiative IDDRI / SDSN
- ❑ 16 countries (74% of 2010 energy-related CO2 emissions )
  - 16 country teams, independent of their governments
    - Expert judgment
    - National models
    - Policy relevance
- ❑ Transparent, Iterative, Collaborative, Not prescriptive

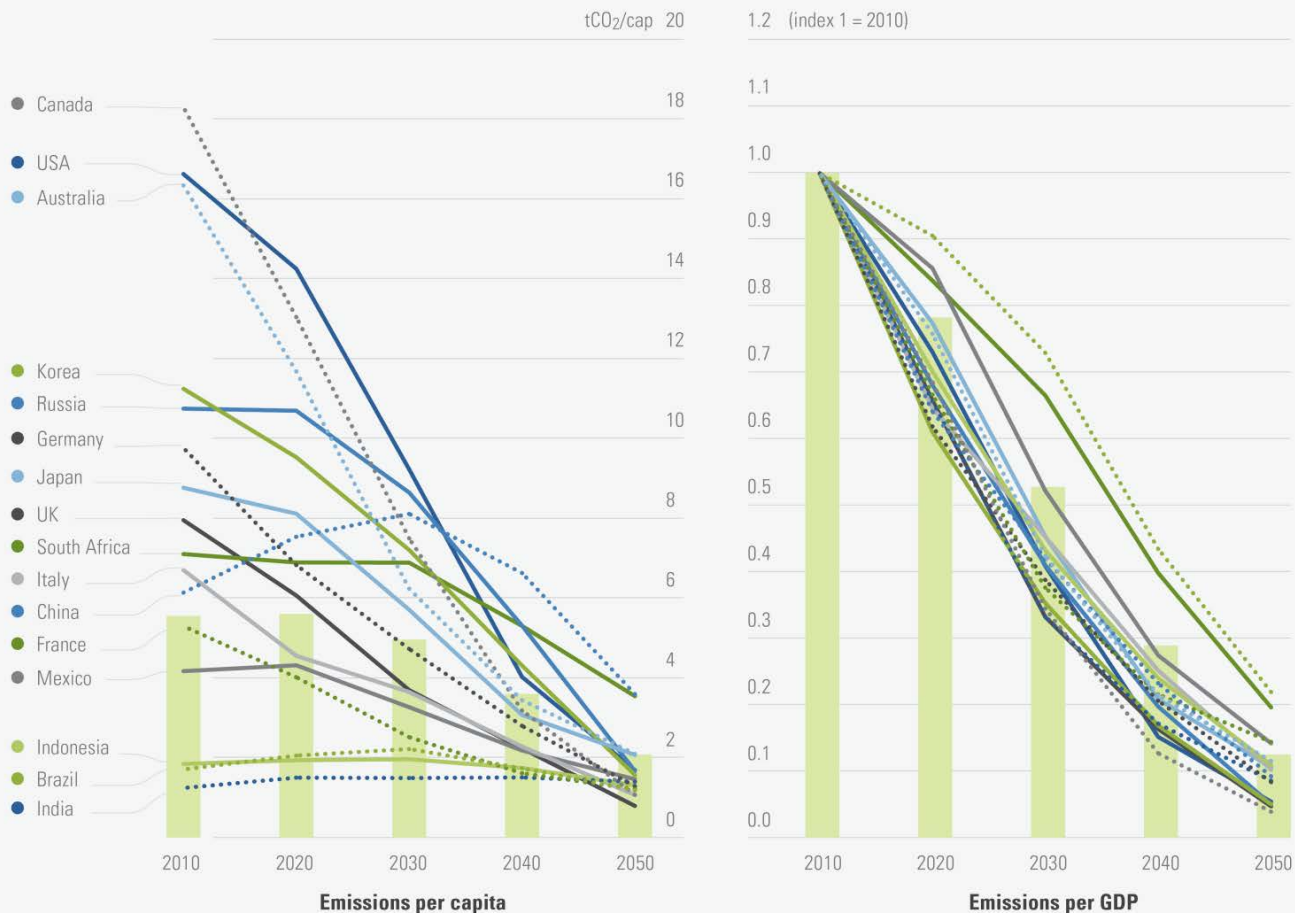


# DEEP DECARBONIZATION PATHWAYS PROJECT (DDPP) – 2015 RESULTS



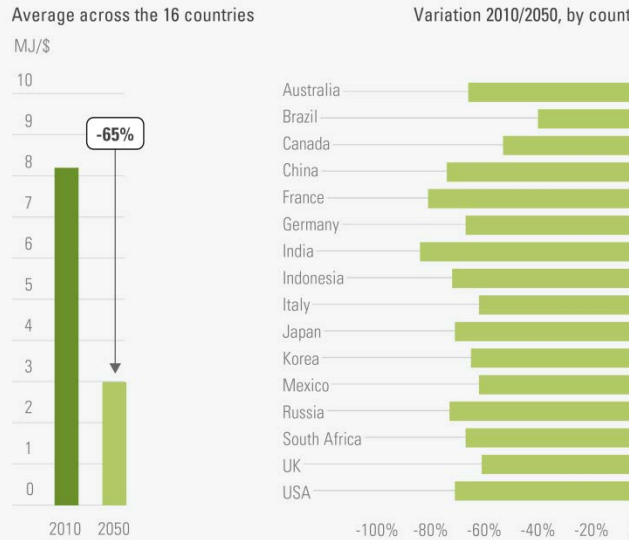
# Truly transformative scenarios are feasible in all the countries we have studied

Figure 2. (L) Energy-related CO<sub>2</sub> emissions per capita for DDPP countries, (R) Energy-related CO<sub>2</sub> emissions per unit of GDP for DDPP countries 2010 to 2050, indexed to 2010.

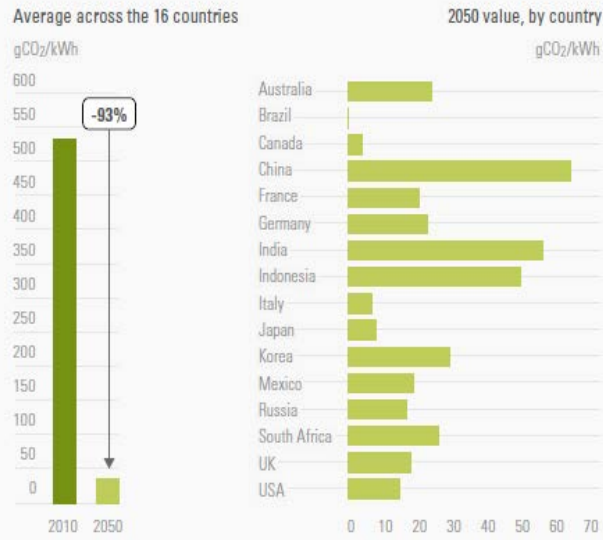


# Deep decarbonization is country specific in strategies, technologies, and sequences, but all countries need all of the three pillars

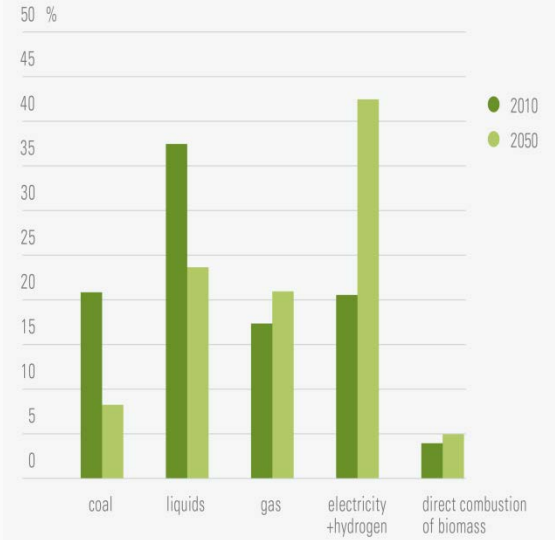
**Figure 3. (L) Average energy intensity of GDP for DDPP countries as a whole, 2010 and 2050. (R) Changes in energy intensity, 2010 to 2050, for individual DDPP countries.**



**Figure 4. (L) Average carbon intensity of electricity for DDPP countries as a whole, 2010 and 2050. (R) Carbon intensity of electricity in 2050, for individual DDPP countries.**



**Figure 5. Share of different fuel types in final energy consumption.**

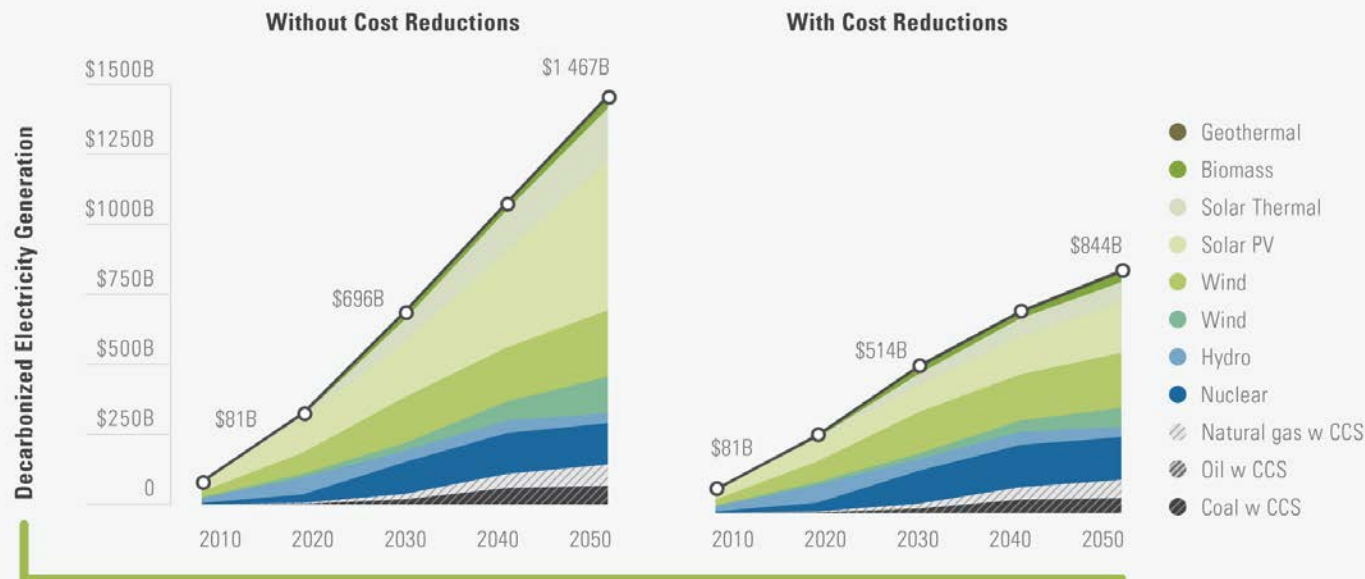


# It is possible to simultaneously meet socio-economic aspirations and transition to a low carbon economy

- ❑ income distribution, poverty and unemployment (South Africa)
- ❑ sustainable development (eg, air pollution) (India, China)
- ❑ energy security for energy importers (Japan)
- ❑ diversification of resource-rich economies (Russia, Indonesia)
- ❑ energy poverty (UK)
- ❑ industrial transition with opportunities for innovators (South Korea)
- ❑ cost of energy for households (Australia)

# DD offers large investment opportunities in new technologies, Large-scale global markets can bring costs down

		2020	2030	2040	2050
Annual investments in the 16 DDPP scenarios (Billion US \$)	Low-carbon power generation	270	514	701	844
	Low-carbon fuel production	57	117	124	127
	Low-carbon transport vehicles (passenger+freight)	157	333	626	911
	Total	484	963	1452	1882
Annual investments in low-carbon technologies as a share of GDP (%)		0.8%	1.2%	1.3%	1.3%



# DDPP analysis after 2015

- More in-depth analysis in current 16 countries
- Extend the number and types of countries
- Help to structure the national debates around energy/climate
- Support capacity building within the countries to ensure the availability of assessment tools able to inform discussions
- New scales of analysis (cities, regions...)

# PERSPECTIVES FOR COP21

# Towards a dynamic agreement

“The two sides recognize that Parties’ mitigation efforts are crucial steps in a longer-range effort needed to transition to green and low-carbon economies and they should move in the direction of greater ambition over time. ”

***USA-China Joint Presidential Statement on Climate Change (25 September 2015)***

“The Paris agreement must be balanced, durable and dynamic: it must define a facilitative process to periodically take stock of progress made towards reaching the agreed long-term global goals, and progressively increase ambition over time. Many expressed that a 5 year timeframe would be preferable in order to avoid locking in low levels of ambition”.

**Informal Working Lunch on Climate Change Conclusions of the Chairs (28 september 2015)**

# The role of DDPs in international climate negotiations

- ❑ Support the national definition (and revision) of INDCs
  - Consistency with 2°C
  - Complementary information on the content of transformation
  
- ❑ Enable discussions on national mitigation strategies to increase ambition
  - within countries (with different groups of national stakeholders)
  - with the international community (other Parties, practitioners...)
  
- ❑ Identify strategic domains for global action in support of national transitions



# Deep decarbonization: An emerging concept as framing tool for international discussions on climate

- ❑ USA-China Joint Presidential Statement on Climate Change (25 September 2015)
  - “the United States and China underscore the importance of formulating and making available mid-century strategies for the transition to low-carbon economies, mindful of the below 2 degree C global temperature goal.”
  - “The United States and China will strengthen their dialogue and cooperation to advance climate change related issues in relevant fora complementary to the UNFCCC”
  
- ❑ Informal Working Lunch on Climate Change, Conclusions of the Chairs (28 September 2015)
  - “[The Paris Agreement] must also recognize the importance and the usefulness of formulating and making available national mid-century strategies for the transition to low-emission economies.”
  - “[The Paris Agreement] must therefore find a way to translate this temperature increase limit into a common goal for collective action”

IDDRI



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**[www.deepdecarbonization.org](http://www.deepdecarbonization.org)**

# Deep decarbonization: An emerging concept as framing tool for international discussions on climate

- ❑ USA-China Joint announcement on climate change (November 2014)
  - “The actions they [the U.S. and China] announced are part of the longer range effort to achieve the deep decarbonization of the global economy over time, mindful of the global temperature goal of 2°C ”
  
- ❑ Lima draft agreement (December 2014)
  - In para 16.3 on Commitments / contributions / actions on mitigation [...]  
“indicative long-term trajectory”
  - In para 76.on the understanding of the level of ambition and fairness / level of ambition of the commitments / contributions and the long-term temperature goal  
“in the context of a Party’s long-term low-emission development pathway”
  
- ❑ G7 Leaders’ declaration (June 2015)
  - “we also commit to develop long term national low-carbon strategies.”

# DDPs are essential for climate policy

- ❑ Increasing the ambition of country commitments to reduce their GHG emissions.
- ❑ Staying within carbon budgets and avoiding dead ends.
- ❑ Coordinating policy and investment across jurisdictions, sectors, and levels of government
- ❑ Informing long-term technology roadmaps and private-sector decision-making
- ❑ Understanding how deep decarbonization can work in harmony with other sustainable development priorities (+ enabling conditions).
- ❑ Increasing trust in the international climate policy process

# The role of DDPs in climate negotiations: a detour via the INDCs

- ❑ First concrete step for **national appropriation** of the climate agenda
  - not the final word on what a country can contribute
  
- ❑ A tool to support the **dialogue among Parties**
  - share experiences and lessons
  - engage in a dialogue to identify fields of cooperation
  - create trust by providing transparent information on implementation
  
- ❑ A basis to operationalize a **dynamic process** after Paris
  - Concrete basis on which the Parties and the international community must build to increase the ambition of action.

# Operationalizing the DD concept

## Methodological aspects

DDP = internally coherent national low-carbon transformations

- National specificities
  - No ex-ante definition of emission budgets or trajectories from the top ( $\neq$  allocation)
- Long-term vision (2050)
  - Backcasting
- Explicit content in a problem-solving approach
  - Transparent representation of the transformation (“dashboard” and “strategy matrix”)