SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

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Deep Decarbonization Pathways Project (DDPP)

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The policy objectives

- Policy outreach
  - support positive outcome of short-term crucial milestones of international negotiations on climate
    - BKM World Leaders Climate Summit in 2014, COP-21 in 2015
  - support the continuation of international discussions on climate policies after 2015
    - dynamic agreement in function of aspirational LT objectives

- Rationale and contributions of DDPP
  - Support/Inform the elaboration of national “contributions” and the implementation of low-emission strategies.
  - Favor the appropriation by policymakers of challenges and

The research agenda to inform policy design

- Prepare **national, long-term and deep** decarbonization pathways

	Research questions	Informing the policy design on…
National	Identify the building blocks of low-emission pathways in function of national specificities	… the differentiation of the format and content of national "contributions"
Long-term (2050)	Analyze the endogenous dynamics of transition resulting from the tension btw the initial stage and the LT objective	… the sequencing of action and the temporality of emission reductions
Deep	Characterize the economic, technical and behavioral breaks consistent with the 2°C target	… the elaboration of transformational policies and bifurcations with current trends

The (current) 14 country teams of DDPP

- **Australia**: Australian National University (ANU), Climate Works Australia, Monash University
- **Brazil:** COPPE Centro Clima, Universidade Federal do Rio de Janeiro
- **Canada:** Carbon Management Canada, Sustainable Prosperity (réseau ntaional de recherches et de politiques basé à l'université d'Ottawa) Navius Research (experts en modélisation)
- **China**: Energy Resources Institute (ERI), National Center for Climate Change Strategy and International Cooperation (NCSC), National Development and Reform Commission (NDRC), Institute for Energy, Environment, Economy, (I3E), Tsinghua Univeristy
- **France:** IDDRI, Economie du Développement Durable et de l'Energie (EDDEN), Centre International de Recherche sur l'Environnement et le Développement (CIRED),

The methodological challenges

- **Beyond the burden-sharing approach** : no ex-ante prescription of national emissions pathways but … global consistency with the 2°C target
  - "downward attractor" for emission level in 2050 to ensure the "deepness" of decarbonization pathways
  - the pathway is the result of the analysis

- **Beyond the dictatorship of models**: the models do not tell the decarbonization story but … inform on the conditions of their realization
  - Step 1: country teams are national experts elaborating consistent national decarbonization storylines (synthesis of existing studies, expert-based judgments…)

The three phases of DDPP

- **Phase 1 (January 2014 - September 2014)**
  - Focus of the analysis: assessing the physical/technical possibilities to reduce GHG emissions
    - The « building blocks » of national deep decarbonization
    - Uncertainties and bifurcations
  - Deliverable: report around country chapters (end-June 2014, BKM summit)

- **Phase 2 (September 2014 - December 2015)**
  - Focus of the analysis:
    - policy analysis of the conditions of realization of emission reductions (national policy mix, international cooperation)
  - Deliverable: report on the articulation of national/global policies (COP-21)

The DDPP tools for characterizing national decarbonization pathways

Two complementary and consistent representations of national emission pathways

- Strategy matrix
  - high-level framework for organizing detailed low-emission strategies

- Dashboard
  - aggregate quantification of emission drivers in different activities

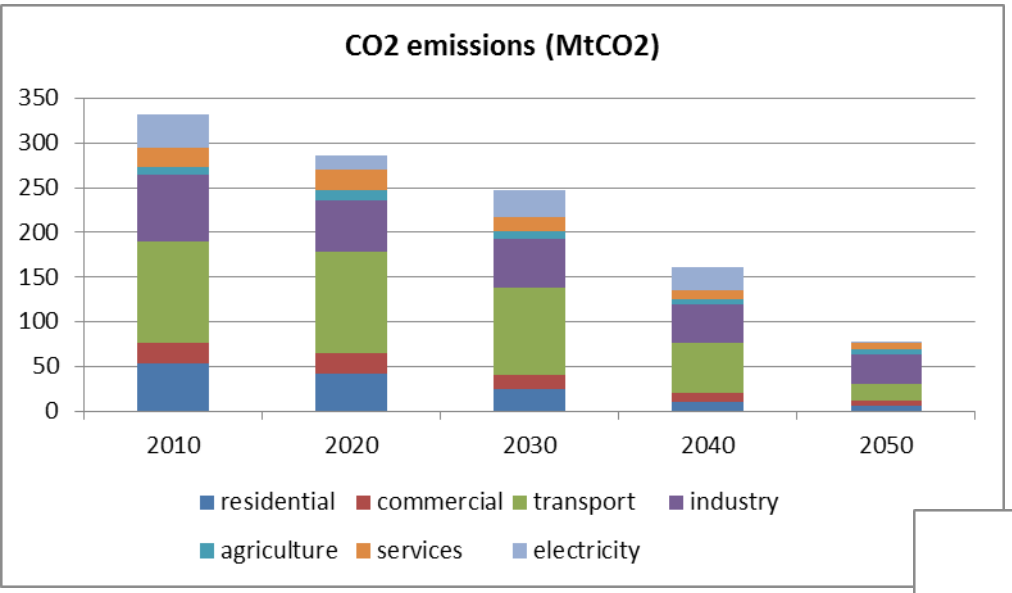
Ex: a pathway for the residential sector in France
Starting from the strategy matrix

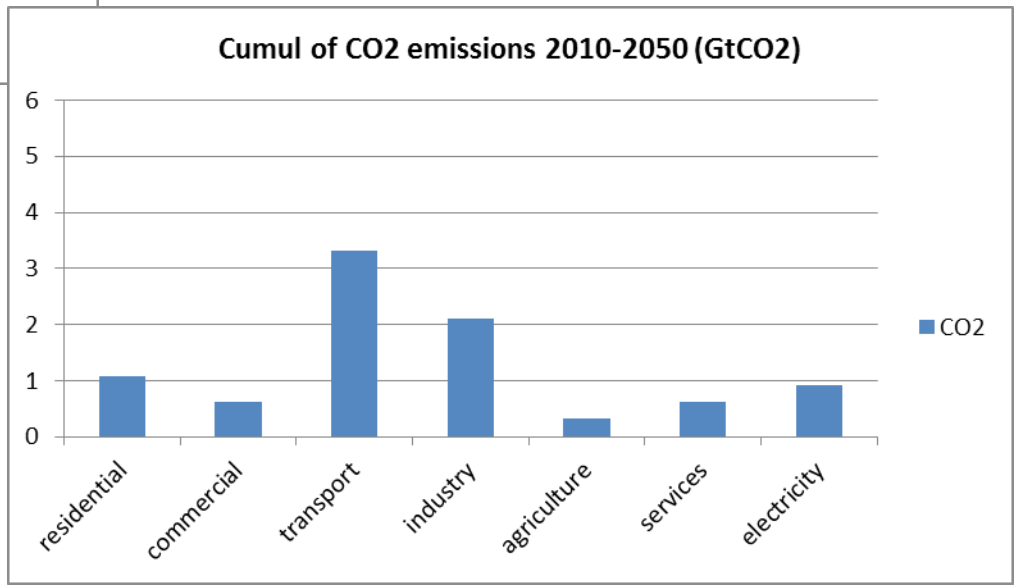
Structural change	Technical energy efficiency	Fuel switching	Decarbonization of energy transformation
Unitary surface per capita From 40.2 to 43.8 sqm/cap (+9%) between 2010 and 2050 Increase in the share of tenement buildings compared to individual houses	Retrofitting obligation of existing buildings: -650.000 retrofitting per year on average - -65% energy efficiency improvement on average Standards for new buildings building codes impose very efficient buildings for new construction energy-neutral buildings in 2050 Ambitious regulation for electric equipment (-40% specific electricity consumption per household)	Switch from gas to electricity and renewables as heating fuel Switch away from liquid fuels less than 10% in 2050	penetration of biogas (50% of gas)

Ex: a pathway for the residential sector in France the quantification in the dashboard

Residential Sector Inputs		2010	2020	2030	2040	2050	2050/2010
Floor area, residential units	Msqm	2539	2651	2833	3000	3154	24%
Residential FEC	Mtoe	47	41	34	27	21	-56%
Residential electricity consumption	TWh	185	194	176	153	129	-30%
Residential CO2 emissions	MtCO2	54	42	25	11	6	-89%
Residential Sector Indicators							
Per capita residential floor area	sqm/cap	40,2	40,2	41,4	42,5	43,8	9%
Residential energy intensity	kWh/sqm	215	181	139	105	76	-65%
CO2 intensity of residential FEC	tCO2/toe	1,15	1,03	0,74	0,40	0,30	-74%
Share of electricity in residential FEC	%	34%	40%	45%	49%	54%	60%

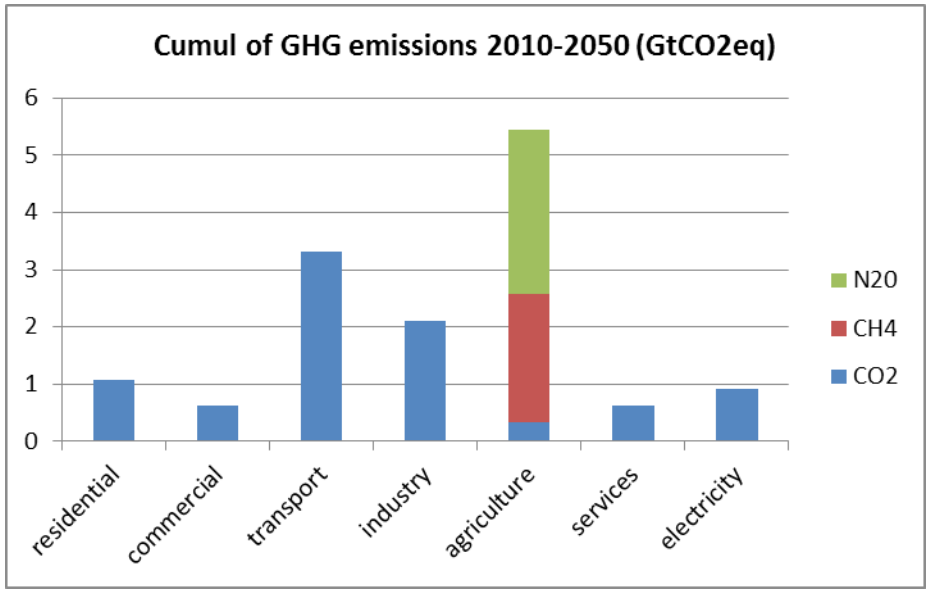
CO2 emissions
in a deep decarbonization pathway for France





What about non-CO2 GHG?
2 stylized visions of N20 and CH4 from agriculture

Constant intensity of non-CO2 GHG



Decoupling like CO2 from agriculture