

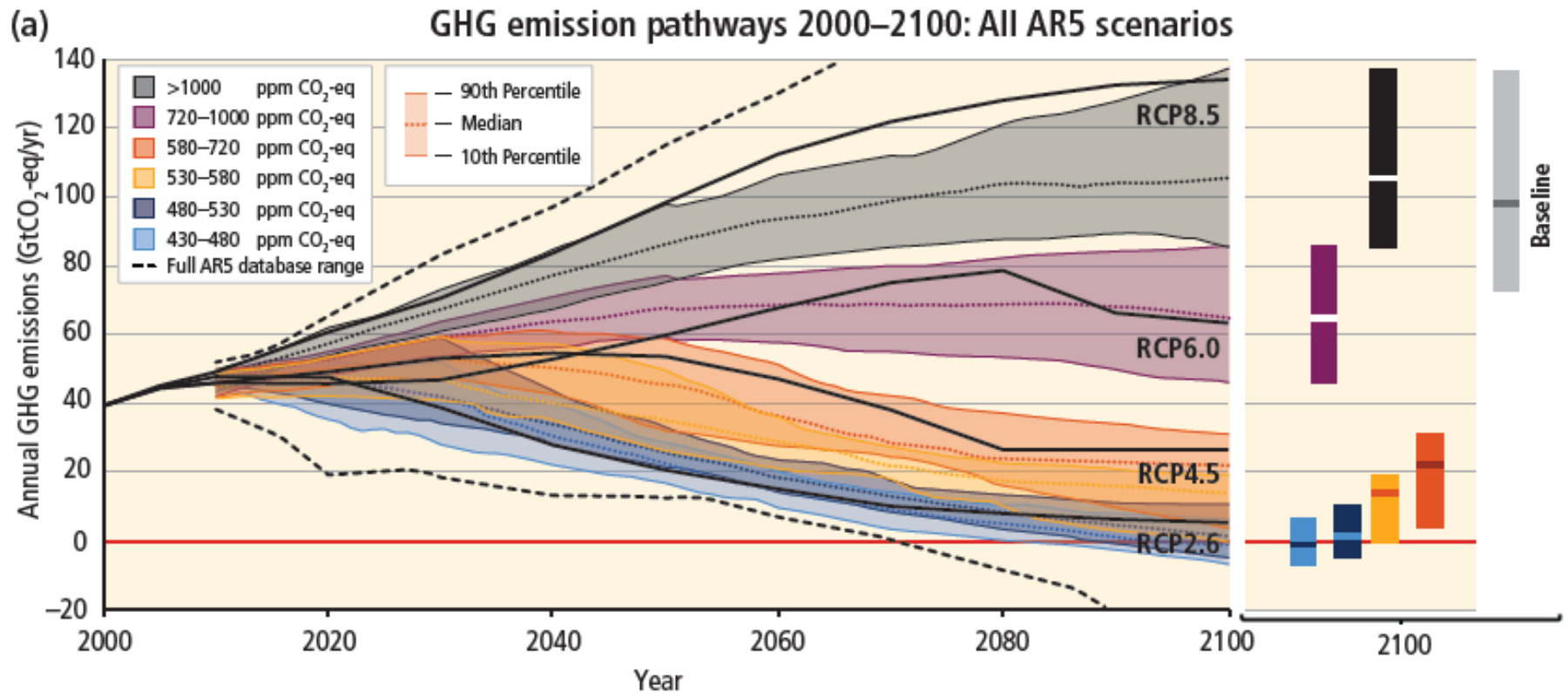
Écart entre les besoins et les perspectives en matière de réduction d'émissions

15 novembre 2016, réunion des Shifters, Clément Bultheel



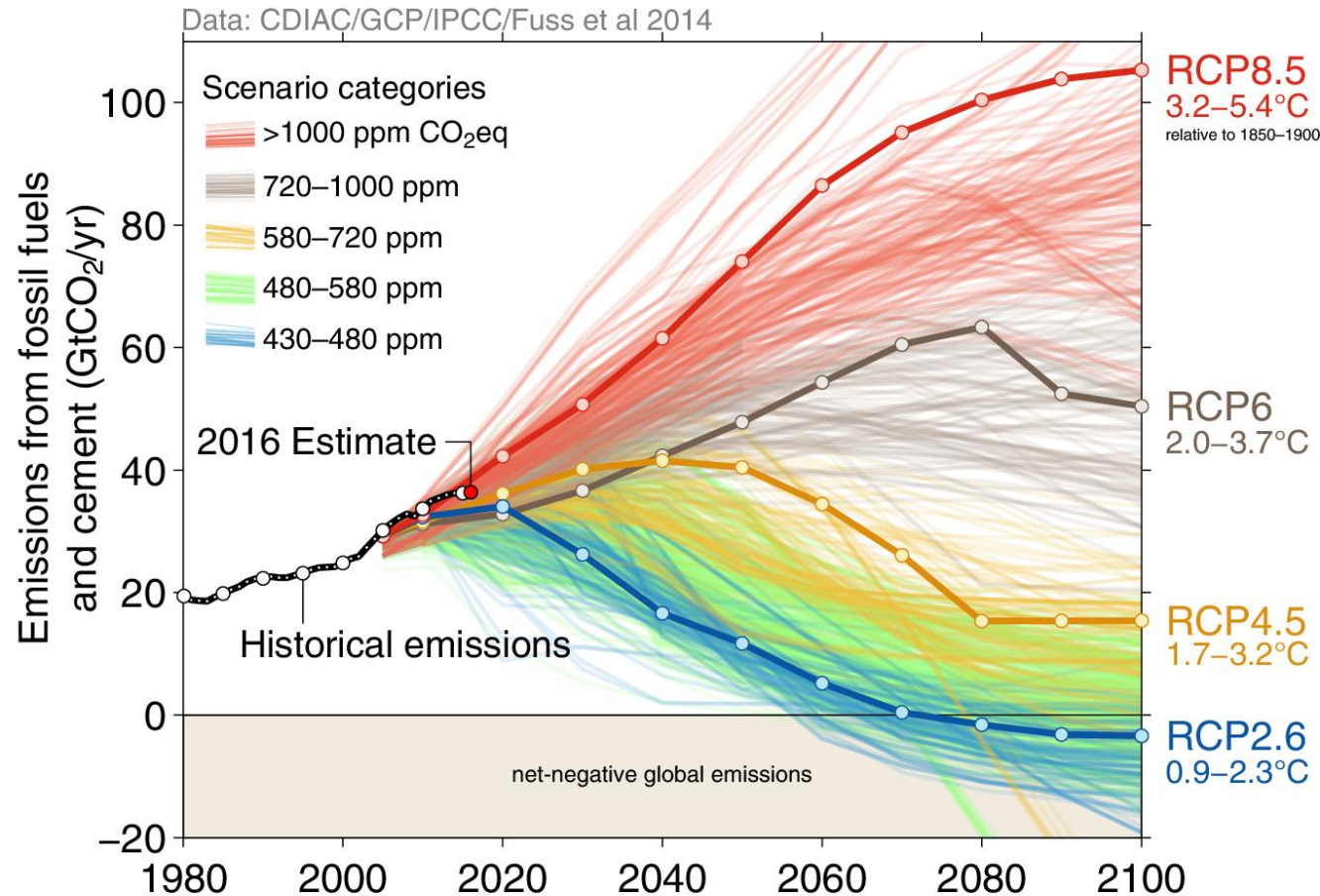
www.theshiftproject.org

Scénarios climatiques: de la gestion des probabilités par approximation



Source: IPCC (2014), AR5, WG1

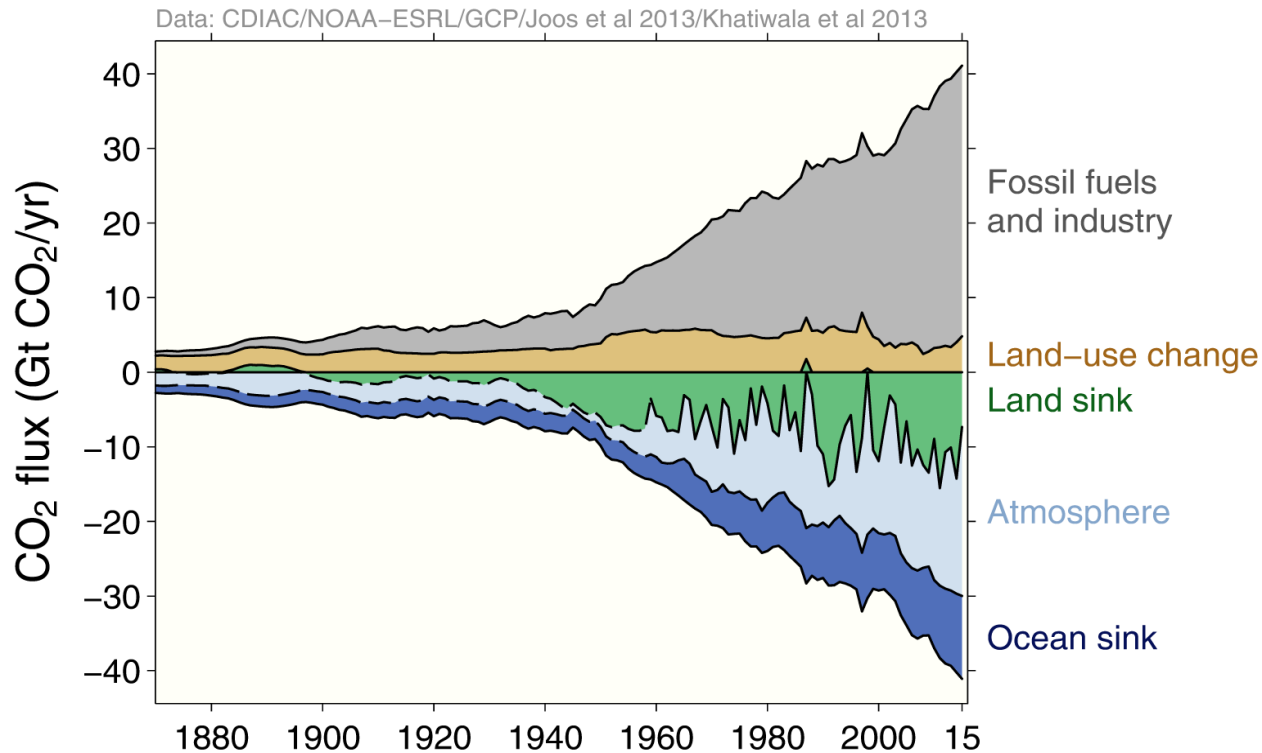
Observed emissions and emissions scenarios



The IPCC Fifth Assessment Report assessed about 1200 scenarios with detailed climate modelling on four Representative Concentration Pathways (RCPs).

Source: [Fuss et al 2014](#); [CDIAC](#); [IIASA AR5 Scenario Database](#); [Global Carbon Budget 2016](#)

Carbon sources & Global carbon budget

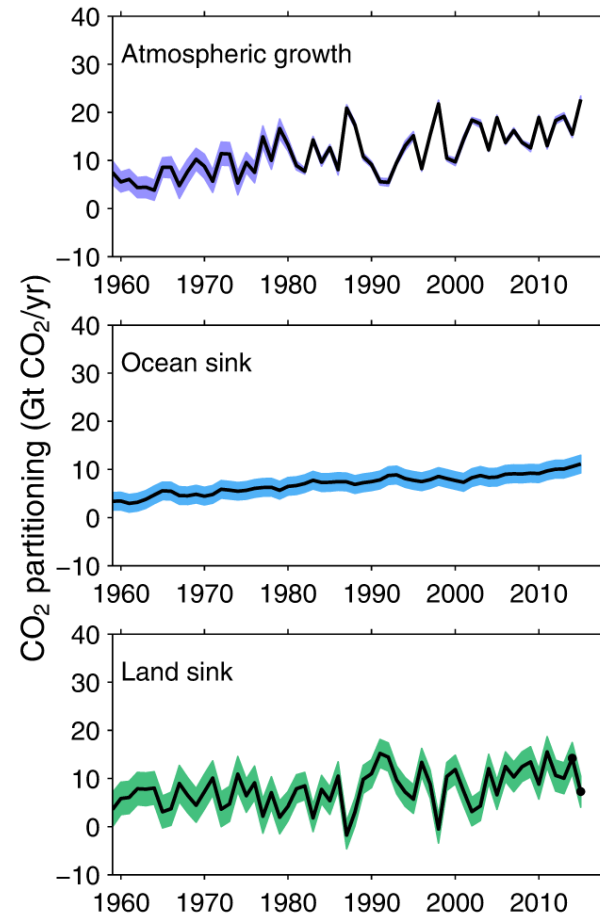
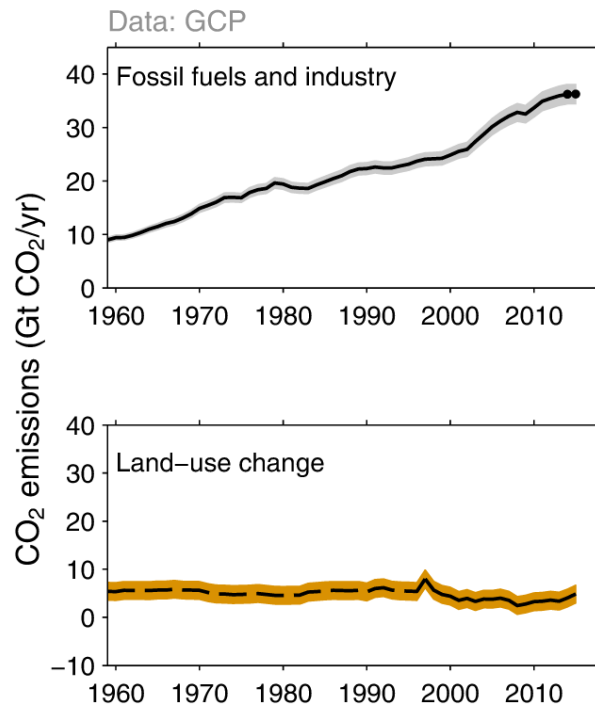


The carbon sources from fossil fuels, industry, and land use change emissions are balanced by the atmosphere and carbon sinks on land and in the ocean.

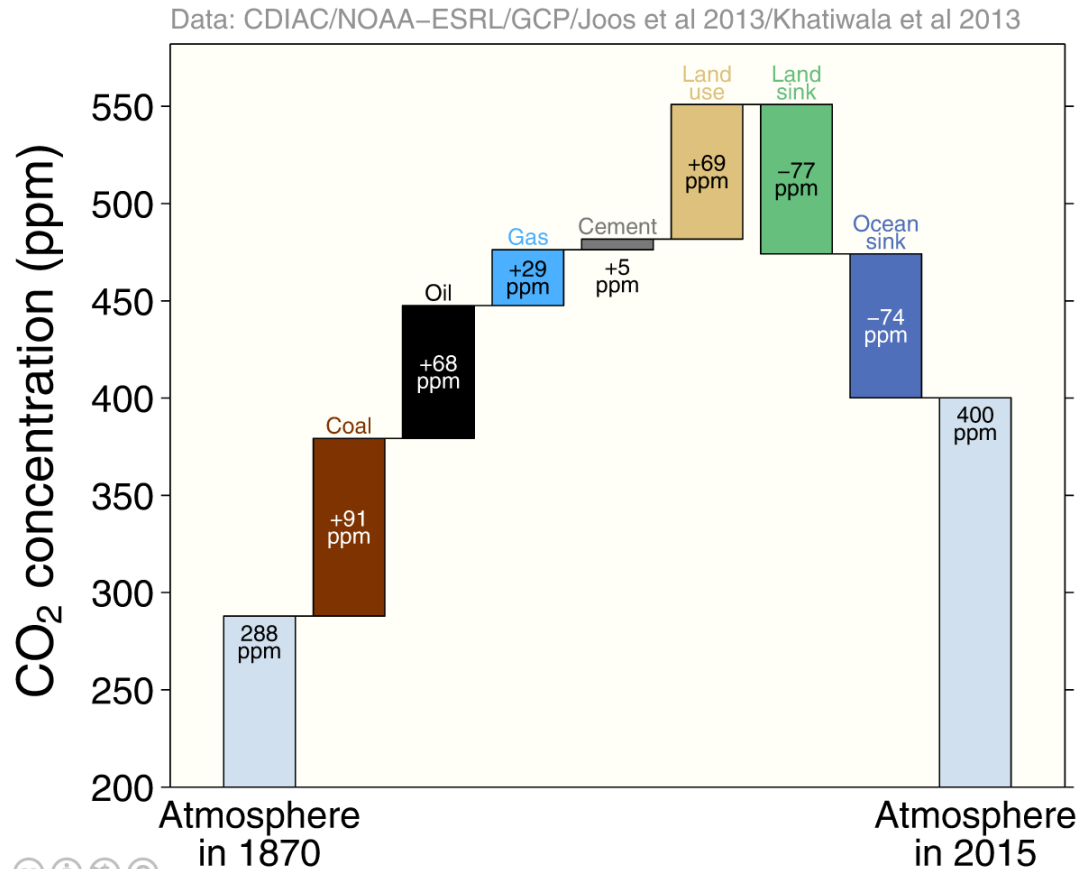
The sinks have continued to grow with increasing emissions, but climate change will affect carbon cycle processes in a way that will exacerbate the increase of CO₂ in the atmosphere.

Source: [CDIAC](#); [NOAA-ESRL](#); [Houghton et al 2012](#); [Giglio et al 2013](#); [Joos et al 2013](#); [Khatiwala et al 2013](#); [Le Quéré et al 2016](#); [Global Carbon Budget 2016](#)

Changes in the budget over time



Global carbon budget: the cumulative contributions to the global carbon budget from 1870

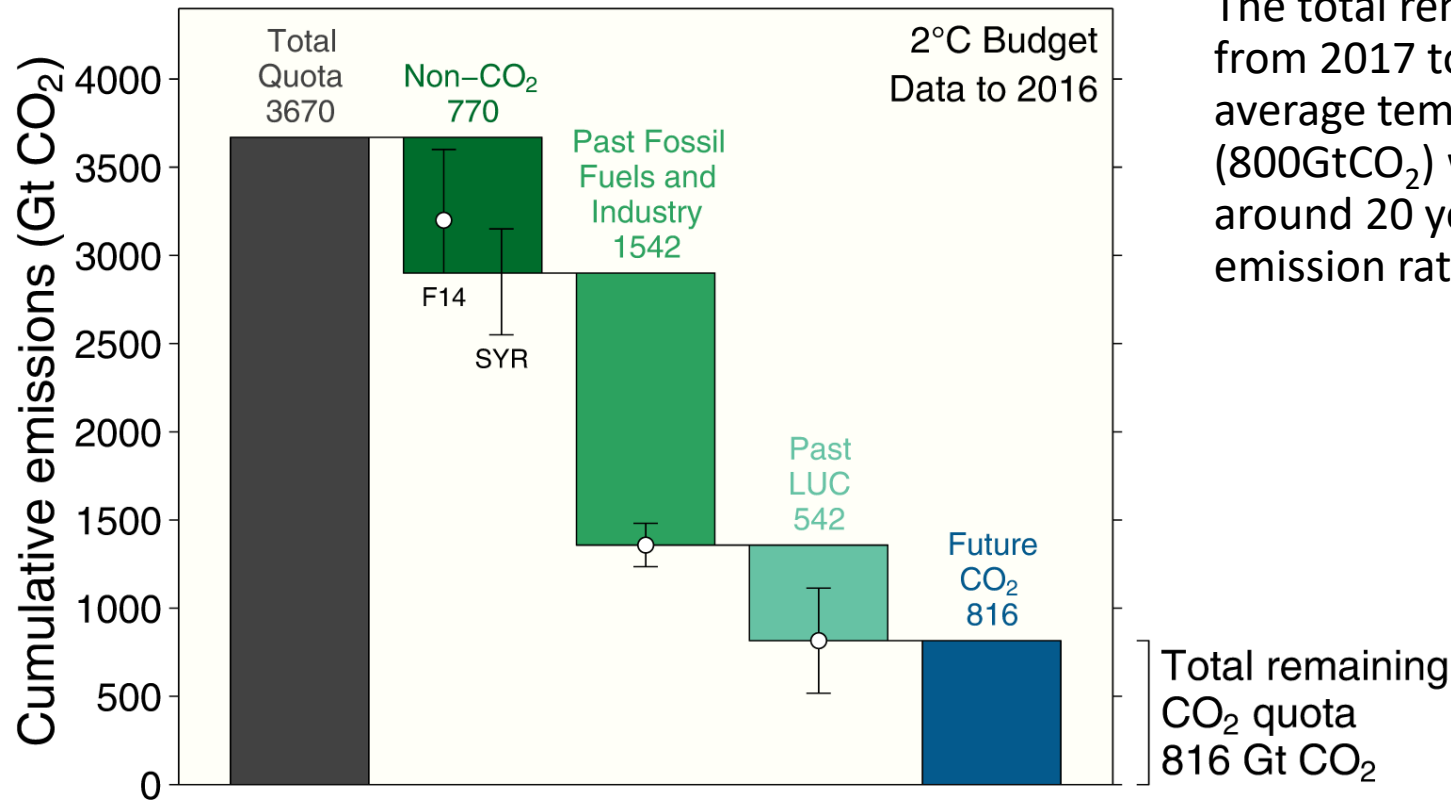


Source: [CDIAC](#); [NOAA-ESRL](#); [Houghton et al 2012](#); [Giglio et al 2013](#); [Joos et al 2013](#); [Khatiwala et al 2013](#); [Le Quéré et al 2016](#); [Global Carbon Budget 2016](#)

Carbon quota for a 66% chance to keep below 2°C



Data: IPCC/CDIAC/GCP/Peters et al. 2015



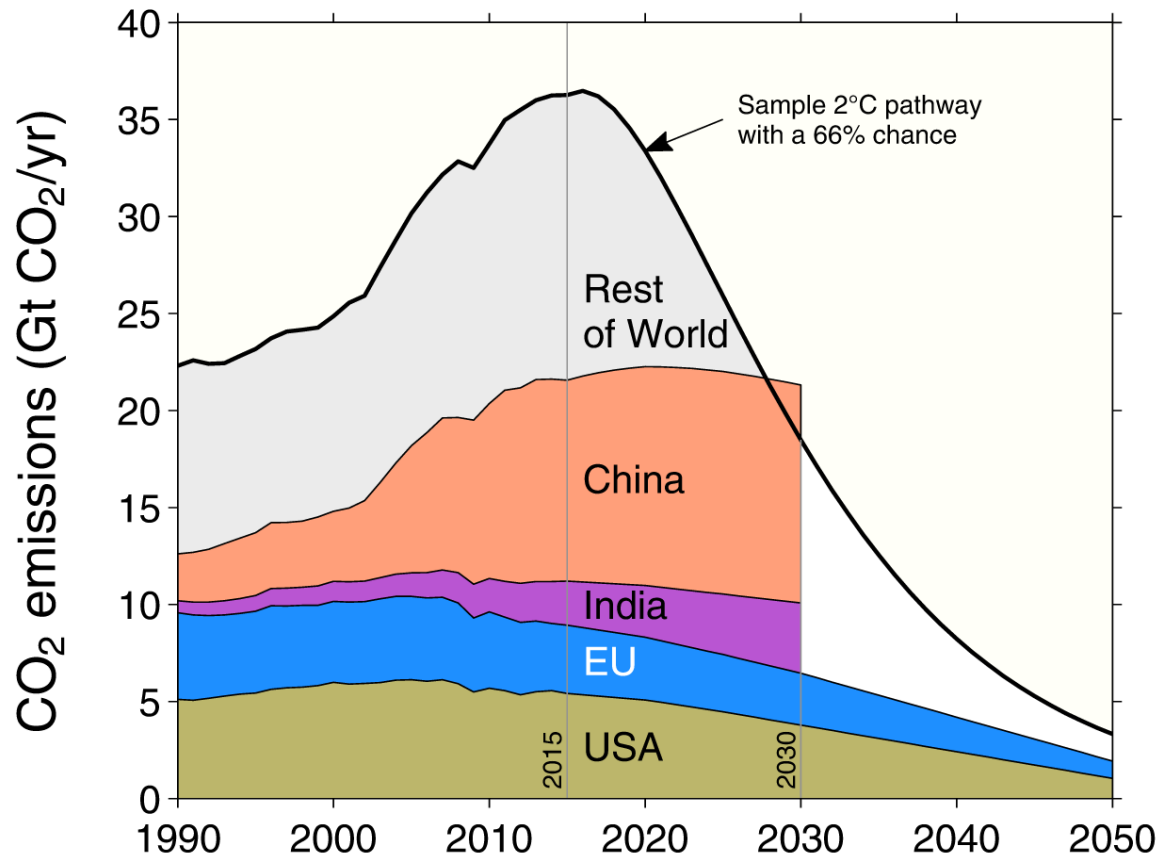
The total remaining emissions from 2017 to keep global average temperature below 2°C (800GtCO₂) will be used in around 20 years at current emission rates.

Grey: Total CO₂-only quota for 2°C with 66% chance. Green: Removed from CO₂ only quota. Blue: Remaining CO₂ quota.

The remaining quotas are indicative and vary depending on definition and methodology.

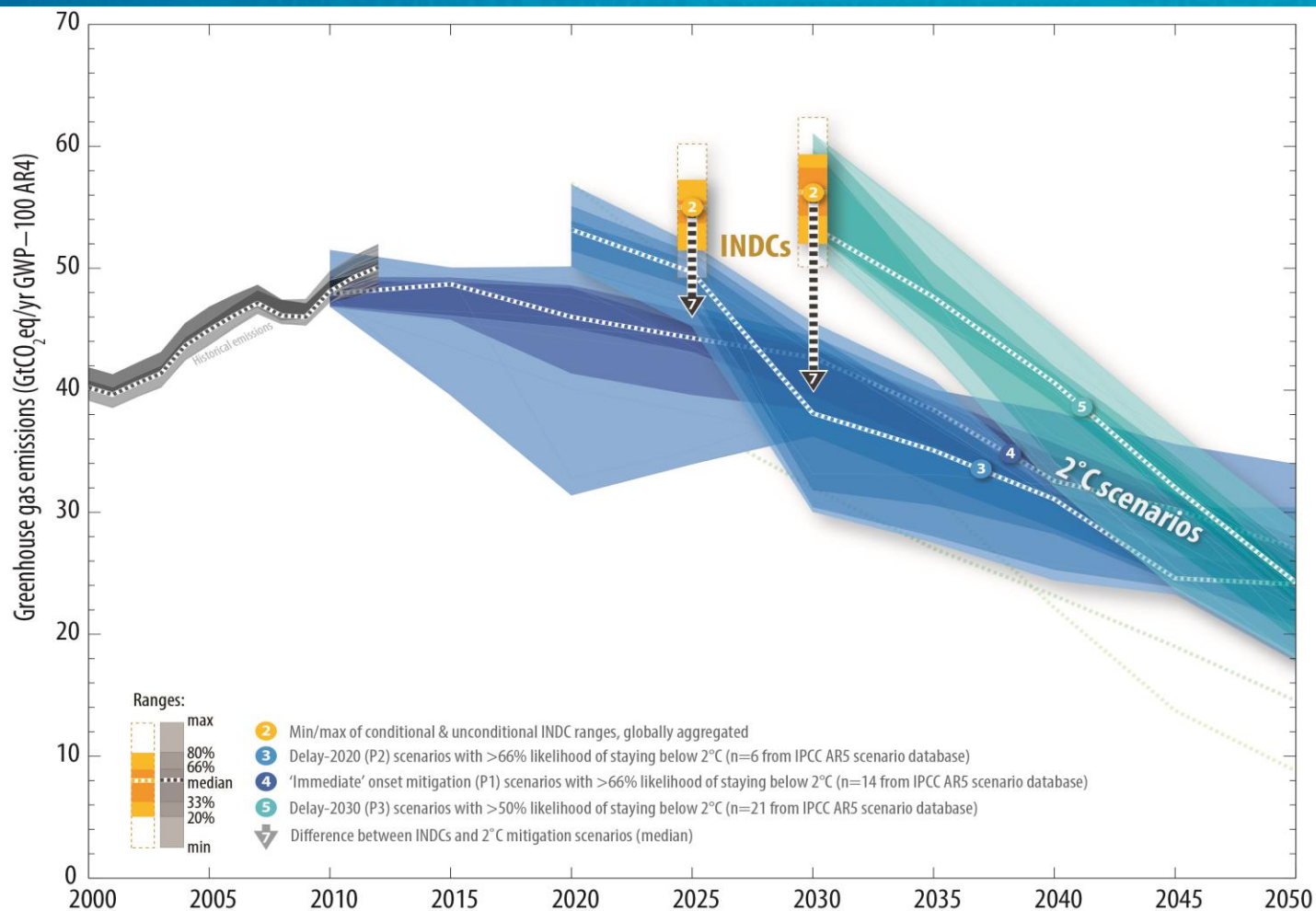
Source: [Peters et al 2015](#); [Global Carbon Budget 2016](#)

The emission pledges (INDCs) of the top-4 emitters



The emission pledges from the US, EU, China, and India leave no room for other countries to emit in a 2°C emission budget (66% chance).

1^{ères} approximations sur les INDC: marges & probabilités



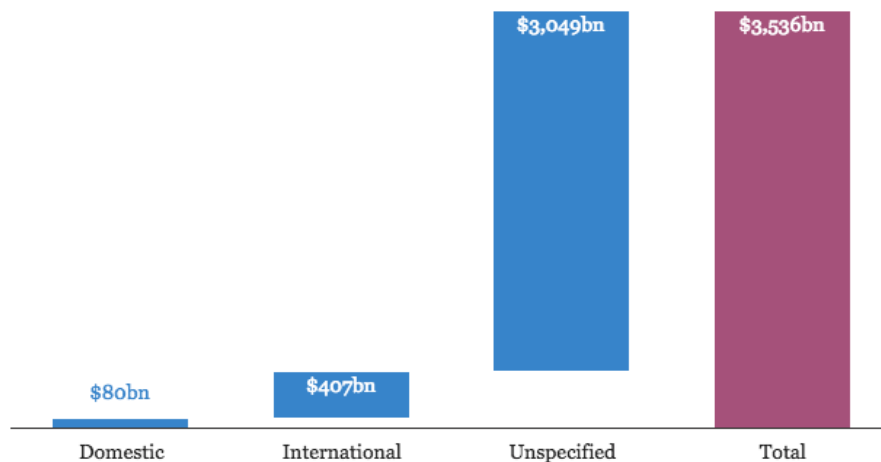
Source: UNFCCC (2016), Updated synthesis report on the aggregate effect of INDCs – published 2 May 2016

2^{ème} approximations: hétérogénéité et conditionnalité des INDC



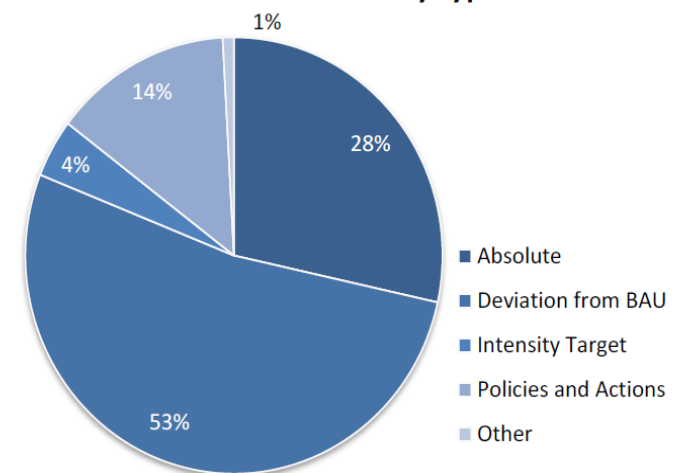
Most of the iINDC (almost all developing countries) are **conditional to international support of finance, technology transfer, and capacity-building**. The implementation of these conditional targets will depend on the ambition of the Paris agreement's mechanisms (finance, technology, market, etc.).

Financial needs expressed by developing countries Parties in their iINDC for the 2015-2030 period



Source: Carbon Brief, October 2015

Share of INDCs by type

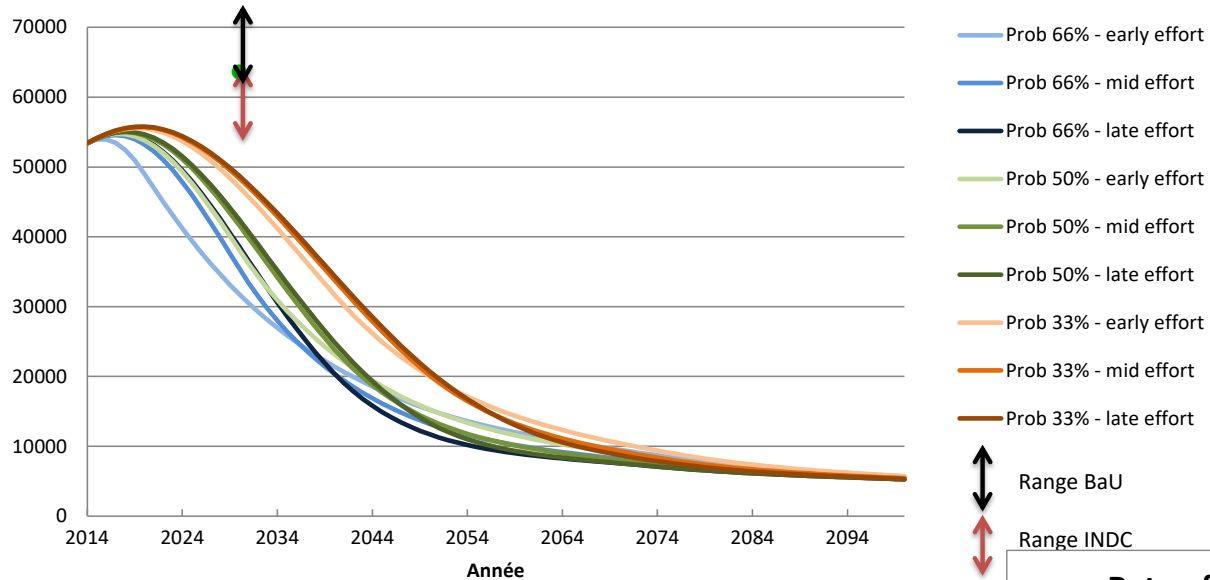


Source: WRI, October 2015

A glance on INDCs with carbon budget by probability level (1)



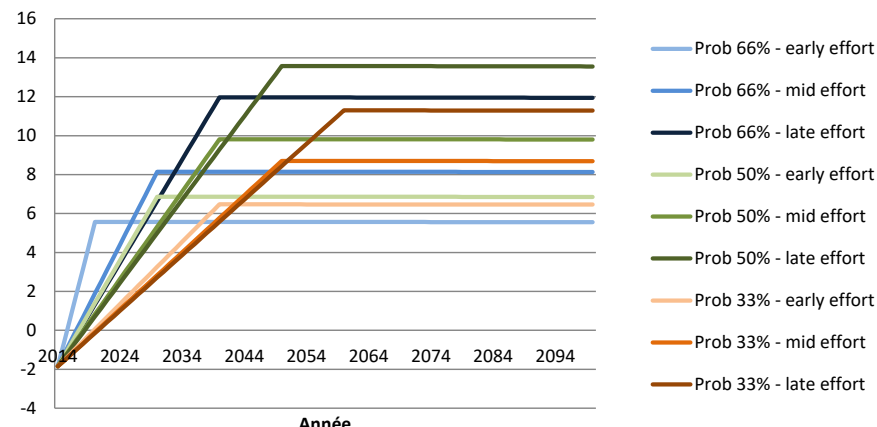
Worldwide GHG emissions (MtCO₂e)



Trajectory **WITHOUT** negative emissions by probability level to reach the 2°C target, and rate of worldwide emissions reduction to reach each scenario.

Source: Olivier Boucher (LMD, CNRS) H el ene Benveniste (IPSL, CNRS) members of GICN, October 2015

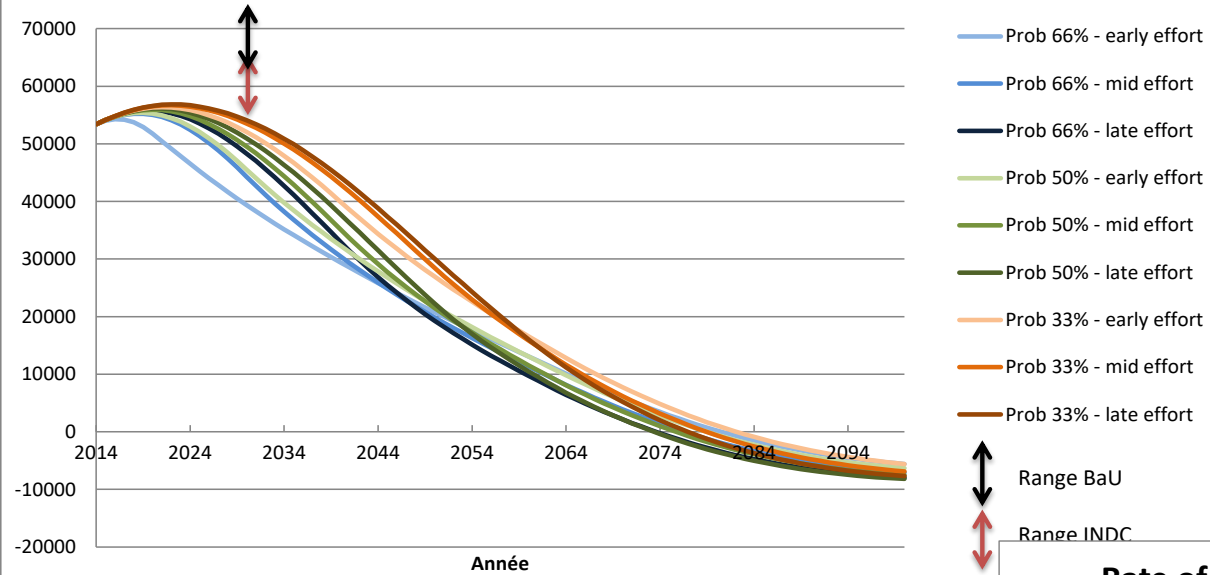
Rate of worldwide emission reduction (% per year)



A glance on INDCs with carbon budget by probability level (2)



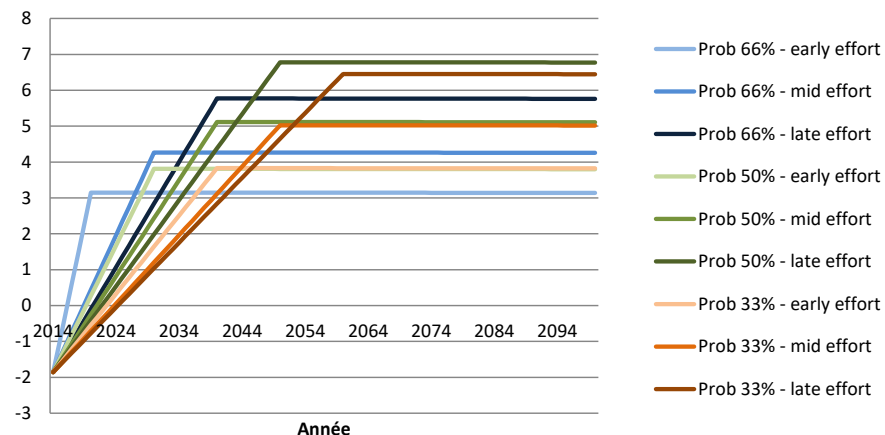
Worldwide GHG emissions with negative emissions (MtCO₂e)



Trajectory **WITH negative emissions** by probability level to reach the 2°C target, and rate of worldwide emissions reduction to reach each scenario.

Source: Olivier Boucher (LMD, CNRS) H el ene Benveniste (IPSL, CNRS) members of GICN, October 2015

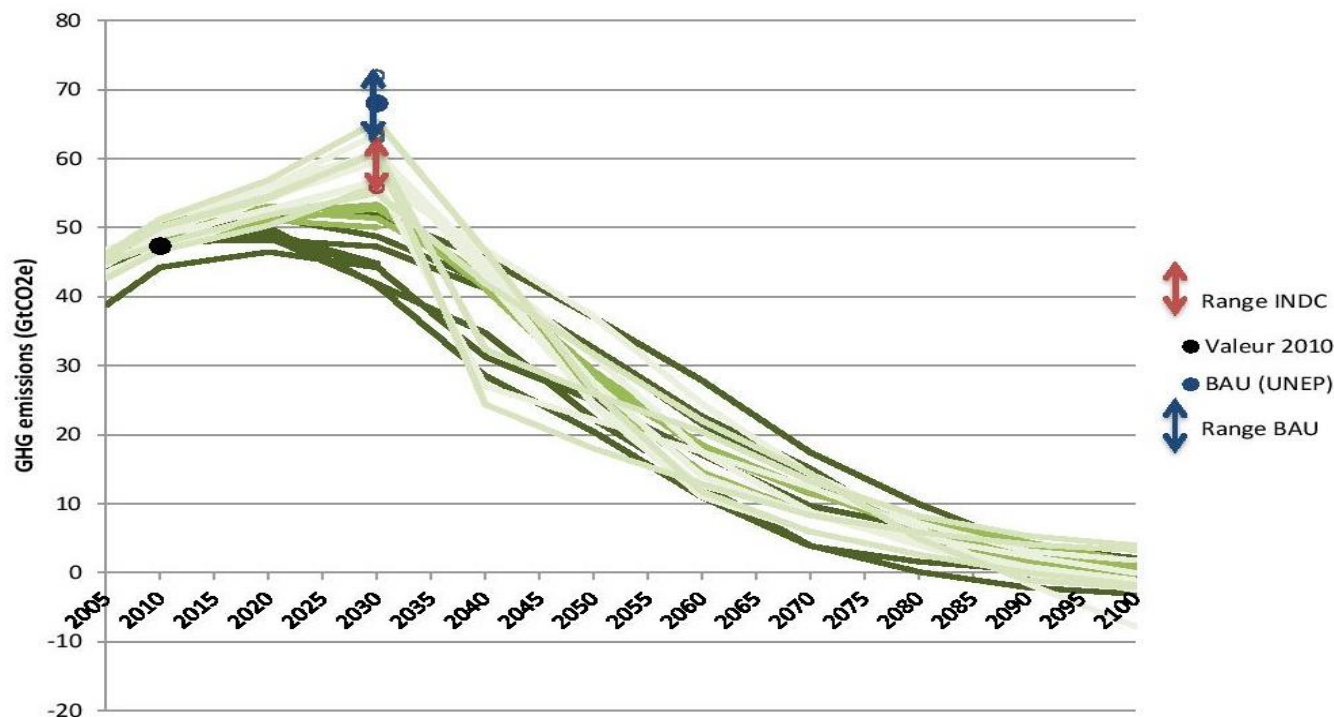
Rate of worldwide emission reduction (% per year)



Trajectoire de décarbonation: encore le flou artistique à ce stade



IPCC 2°C scenarios and INDC



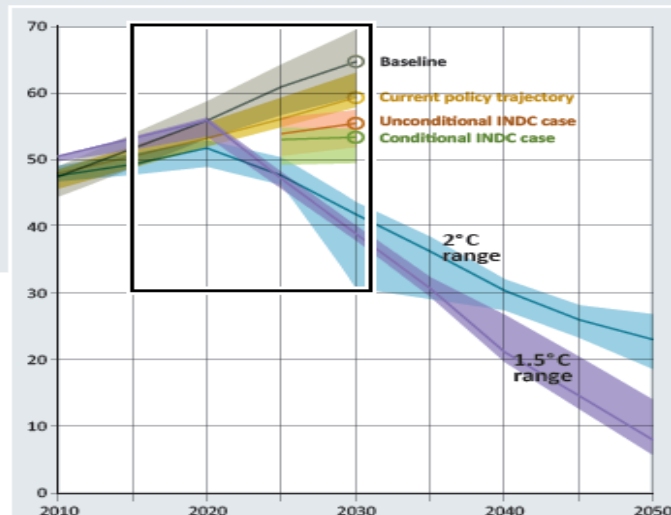
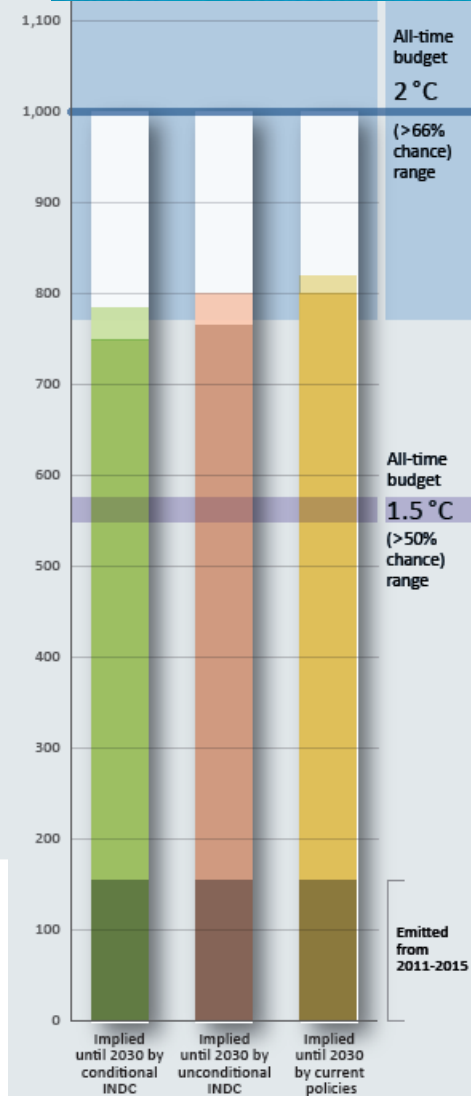
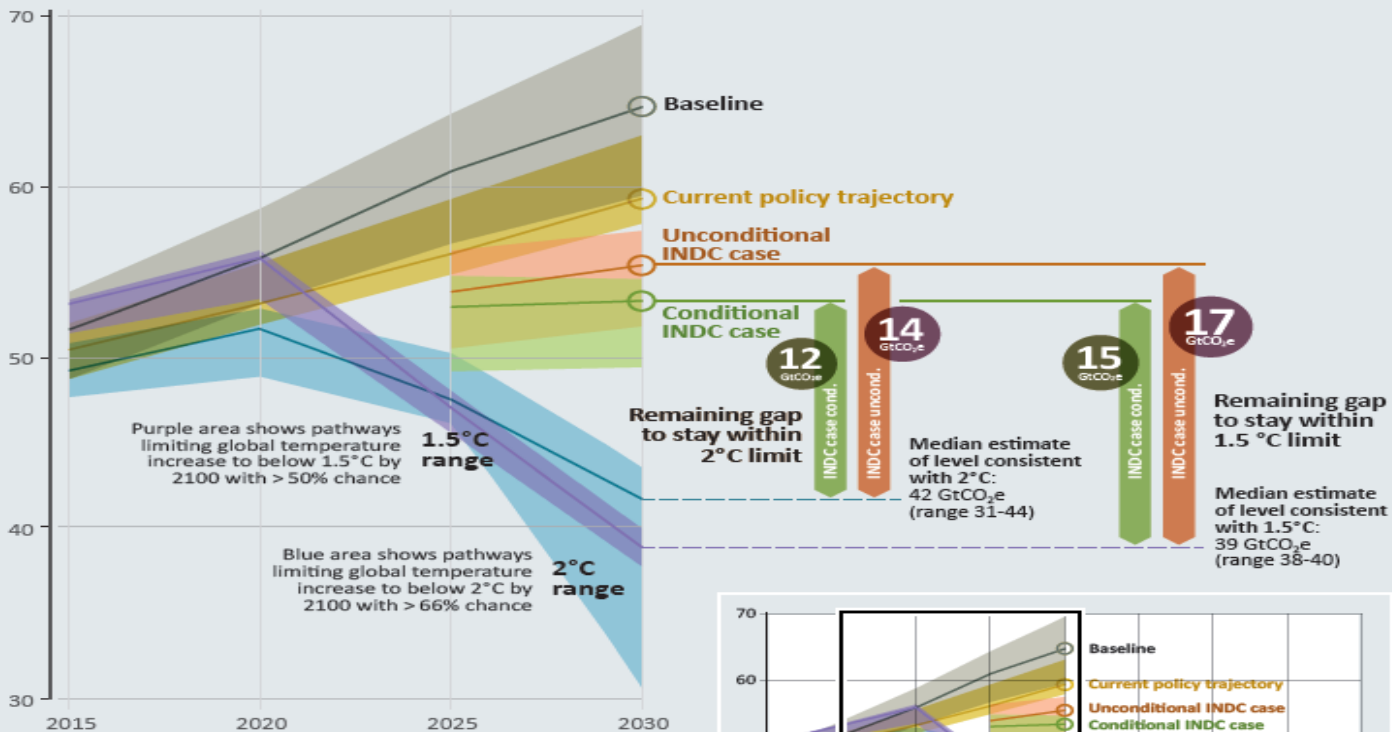
The emission pledges to the Paris Agreement avoid the worst effects of climate change (4-5°C).

Most studies suggest the pledges give a likely temperature increase of about 3°C in 2100.

But we actually don't know...

Source: Olivier Boucher (LMD, CNRS) H el ene Benveniste (IPSL, CNRS) members of GICN, October 2015

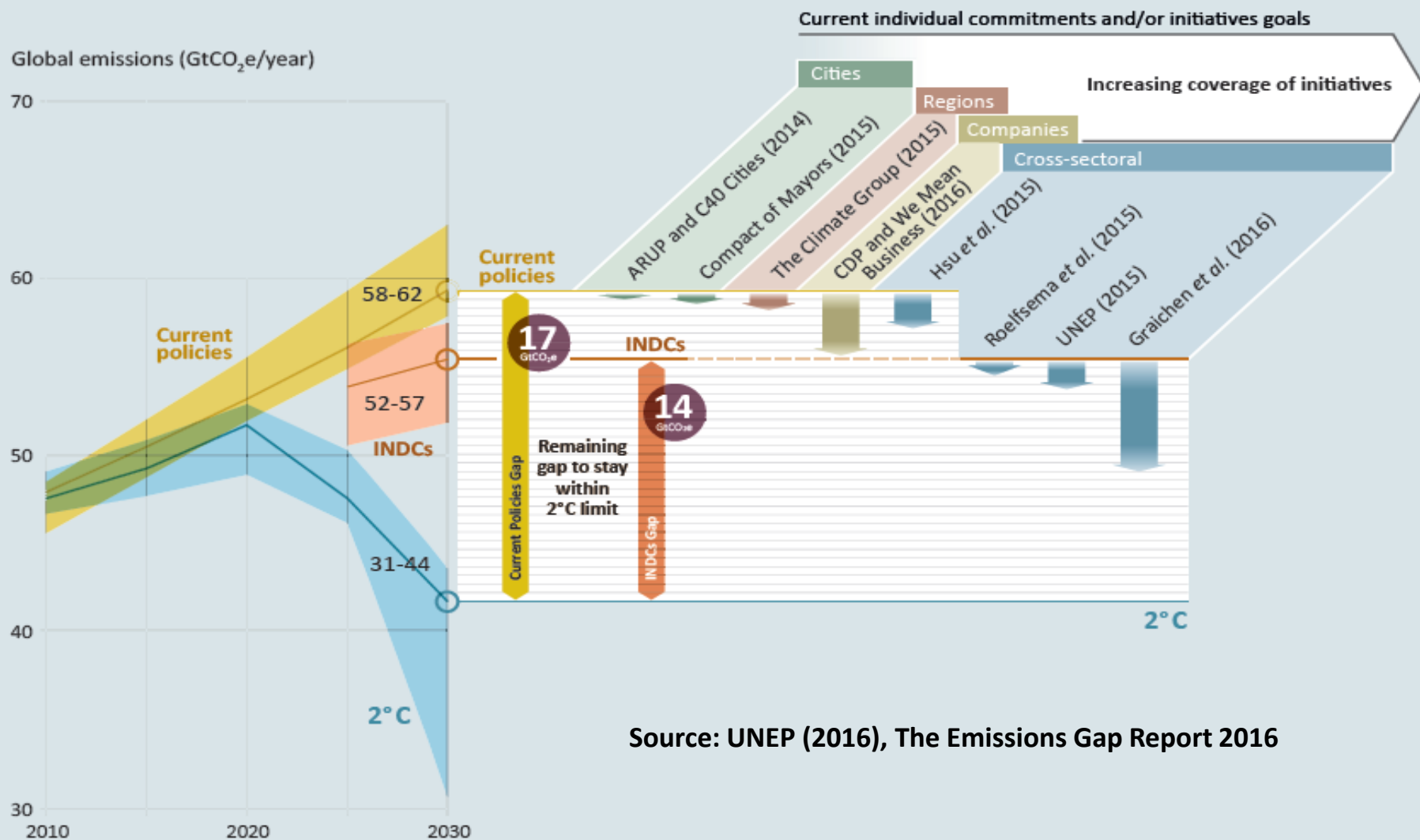
L'UNEP Emissions Gap Report: le véritable indicateur politico-économique



Sources: The 20th–80th-percentile ranges are shown for the baseline and the 2°C and 1.5°C scenarios. For current-policy and INDC scenarios, the minimum–maximum and 10th–90th-percentile range across all assessed studies are given, respectively.

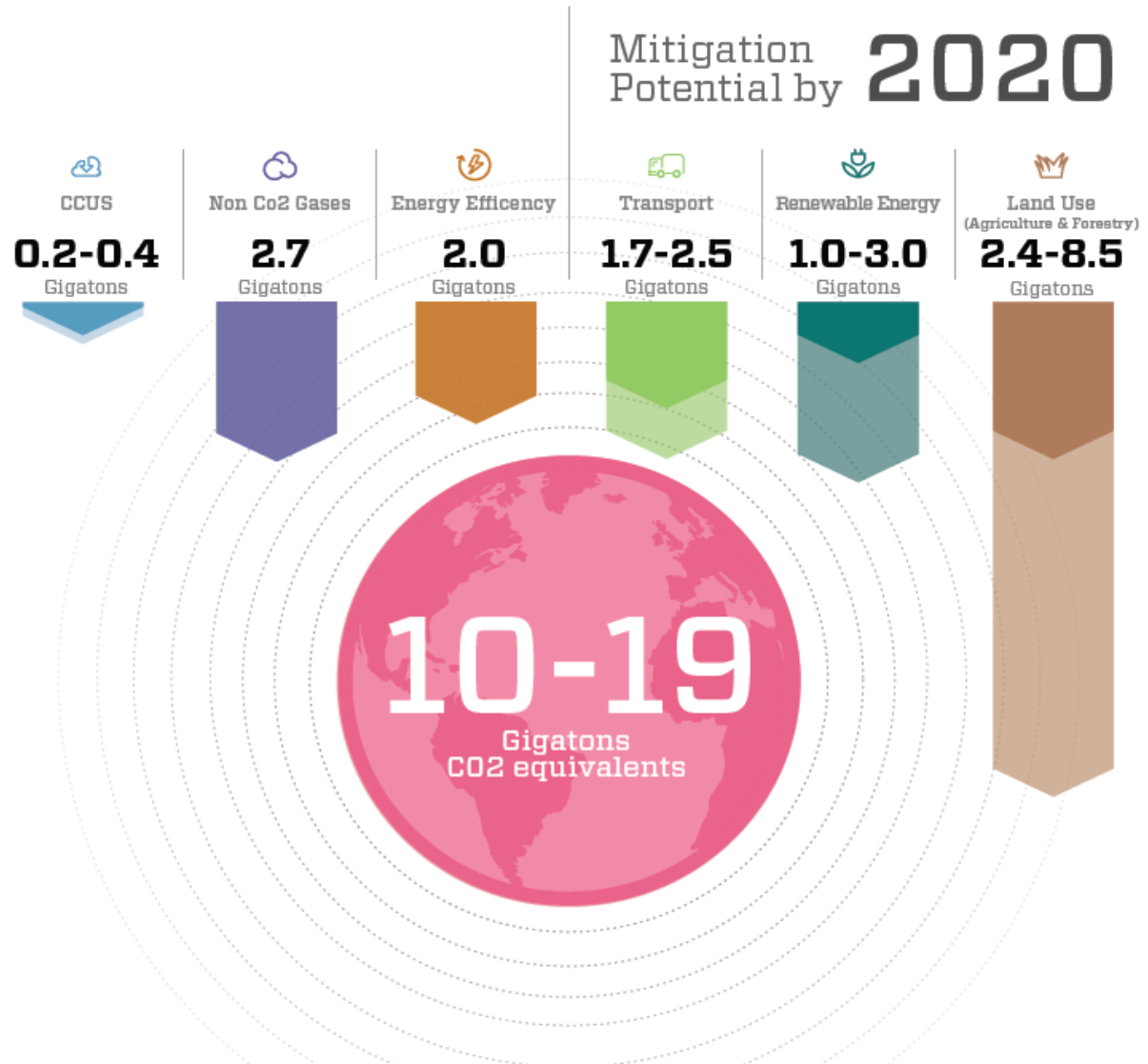
Source: UNEP (2016), The Emissions Gap Report 2016

N'oublions pas les acteurs non-étatiques !



Source: UNEP (2016), The Emissions Gap Report 2016

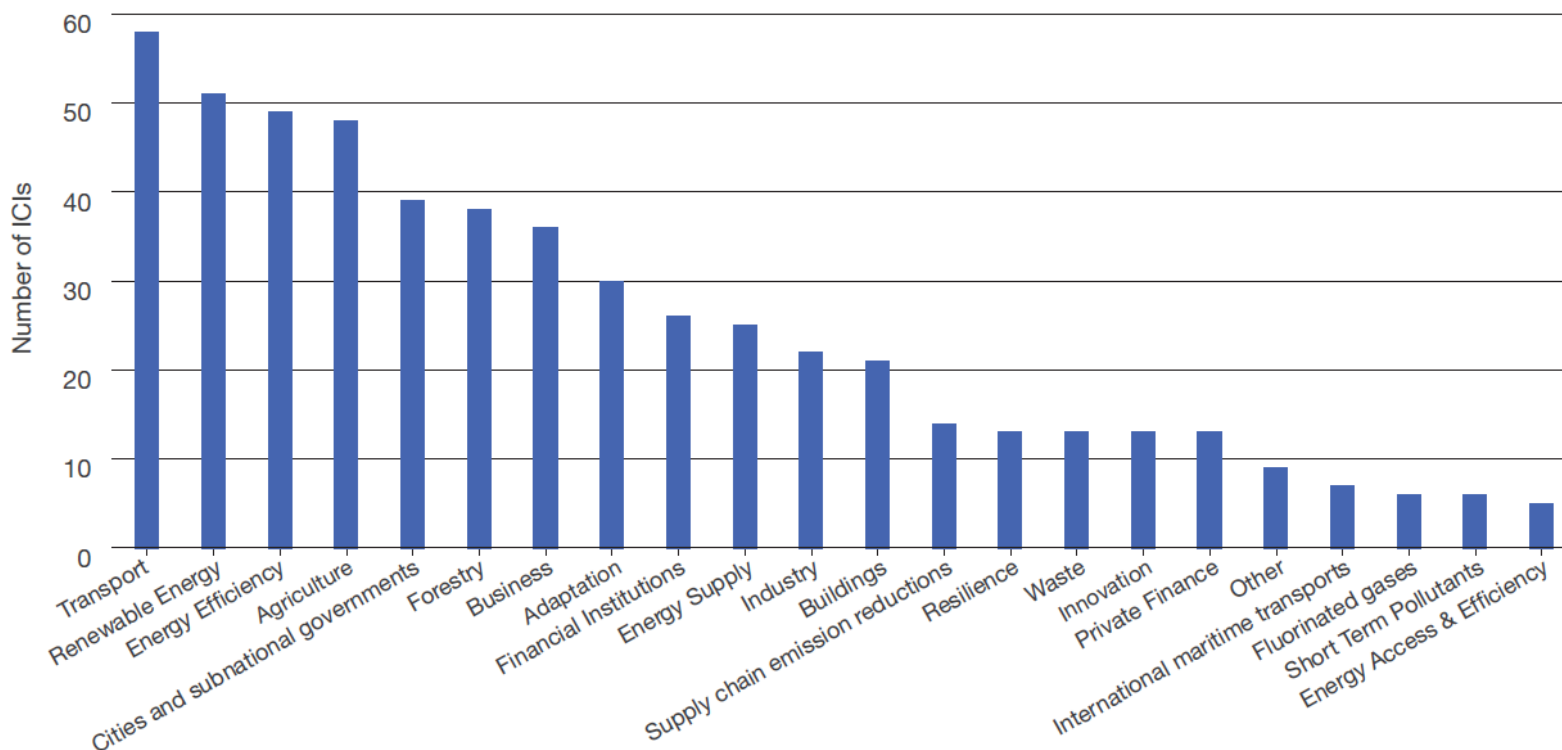
Sectoral pre-2020 climate action: technologies are here !



ICIs: plenty of, pending for a rigorous monitoring system



FIGURE N°1 – INTERNATIONAL COOPERATIVE INITIATIVES (ICIs) BY THEME*

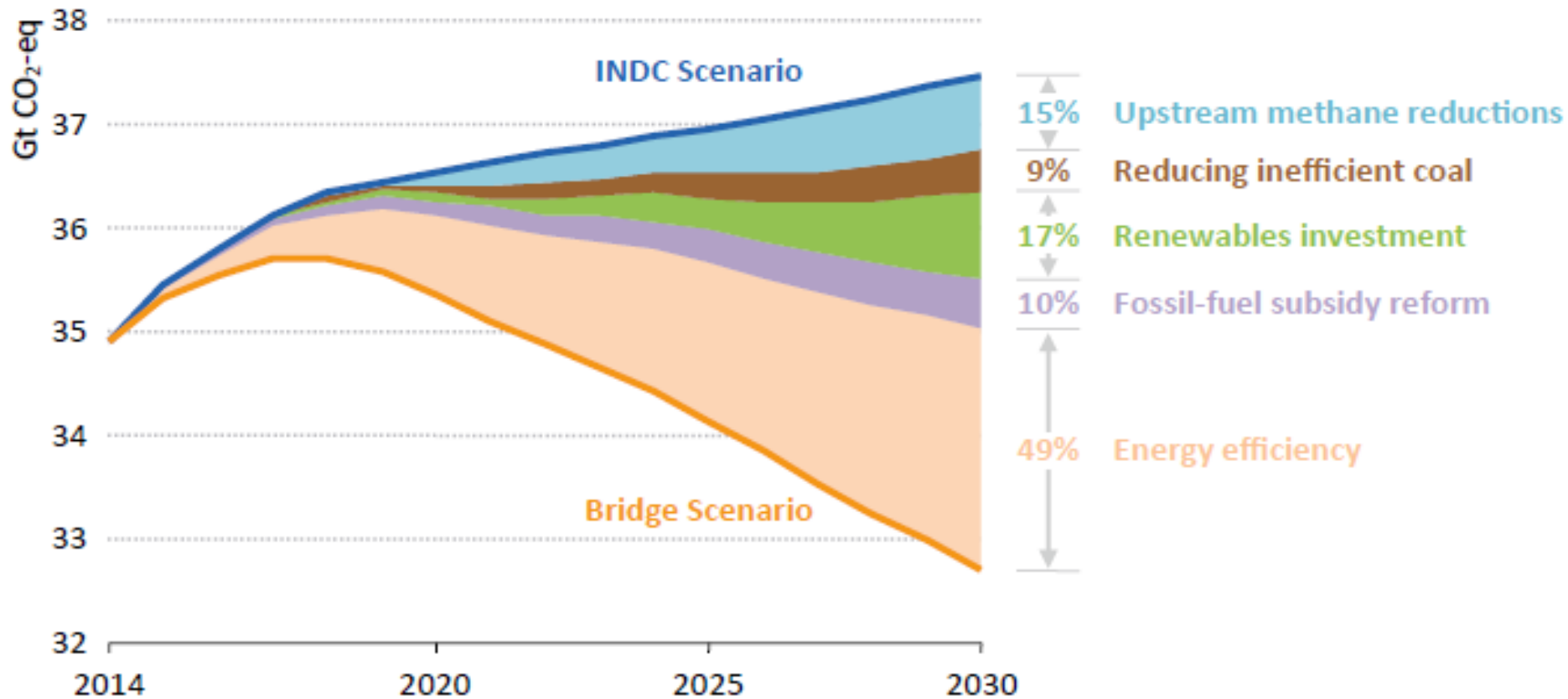


* Some of the 231 ICIs referenced in the platform regroup multiple themes.

Source: I4CE according to data from the Climate initiatives platform, October 2016

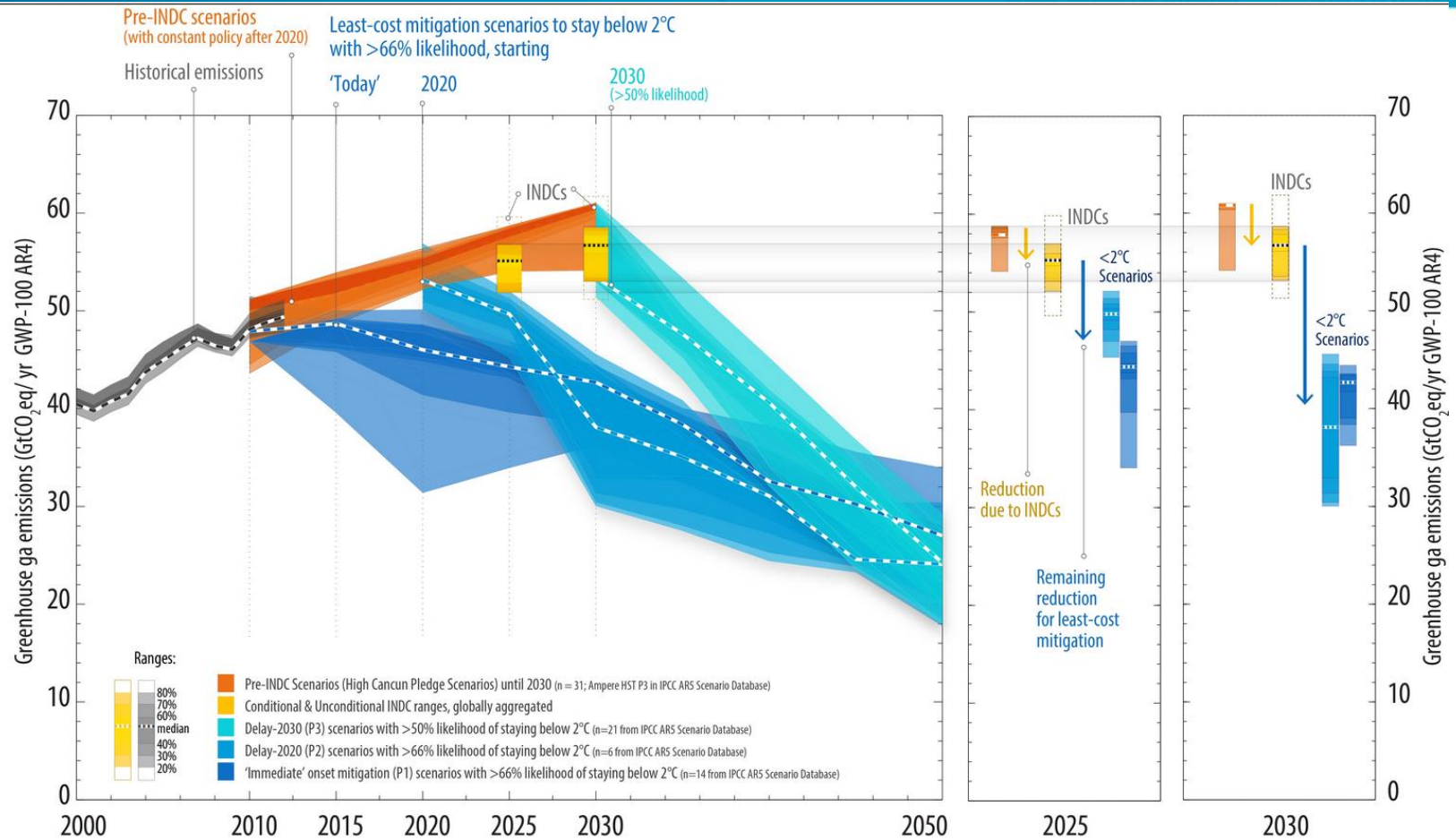
Source: Bultheel *et al.*, November 2016

Trajectoire de décarbonation: certitudes sur les actions, incertitudes sur les interdépendances



Source: IEA (2015), World Energy Outlook, Special Report on Energy & Climate

INDCs: a first check-point to assess « cost-effective » mitigation pathways



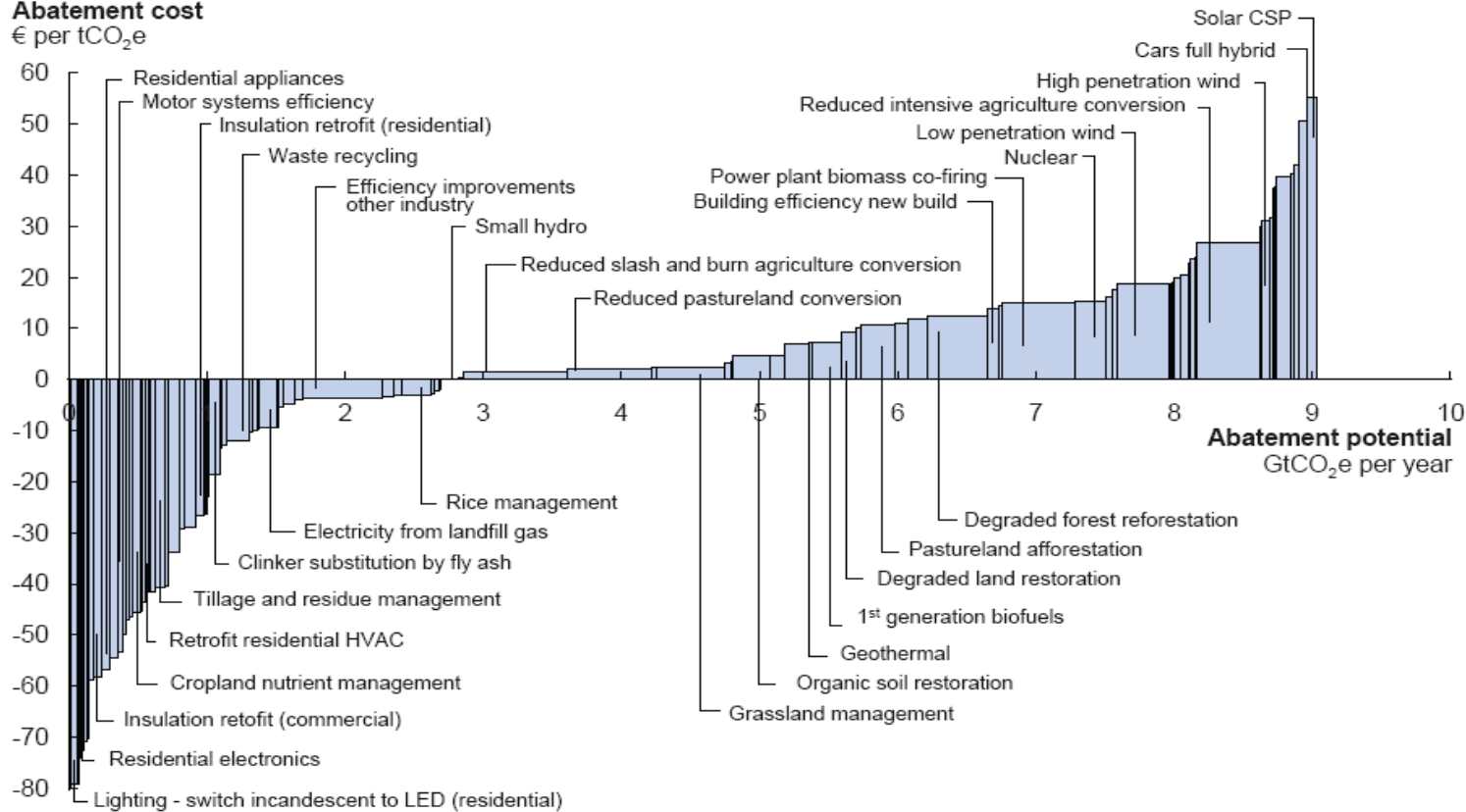
Source: UNFCCC (2016), Updated synthesis report on the aggregate effect of INDCs – published 2 May 2016

Une évolution permanente du rapport « coût-efficacité » de la décarbonation



Global GHG abatement cost curve beyond business as usual – 2015

Abatement cost
€ per tCO₂e



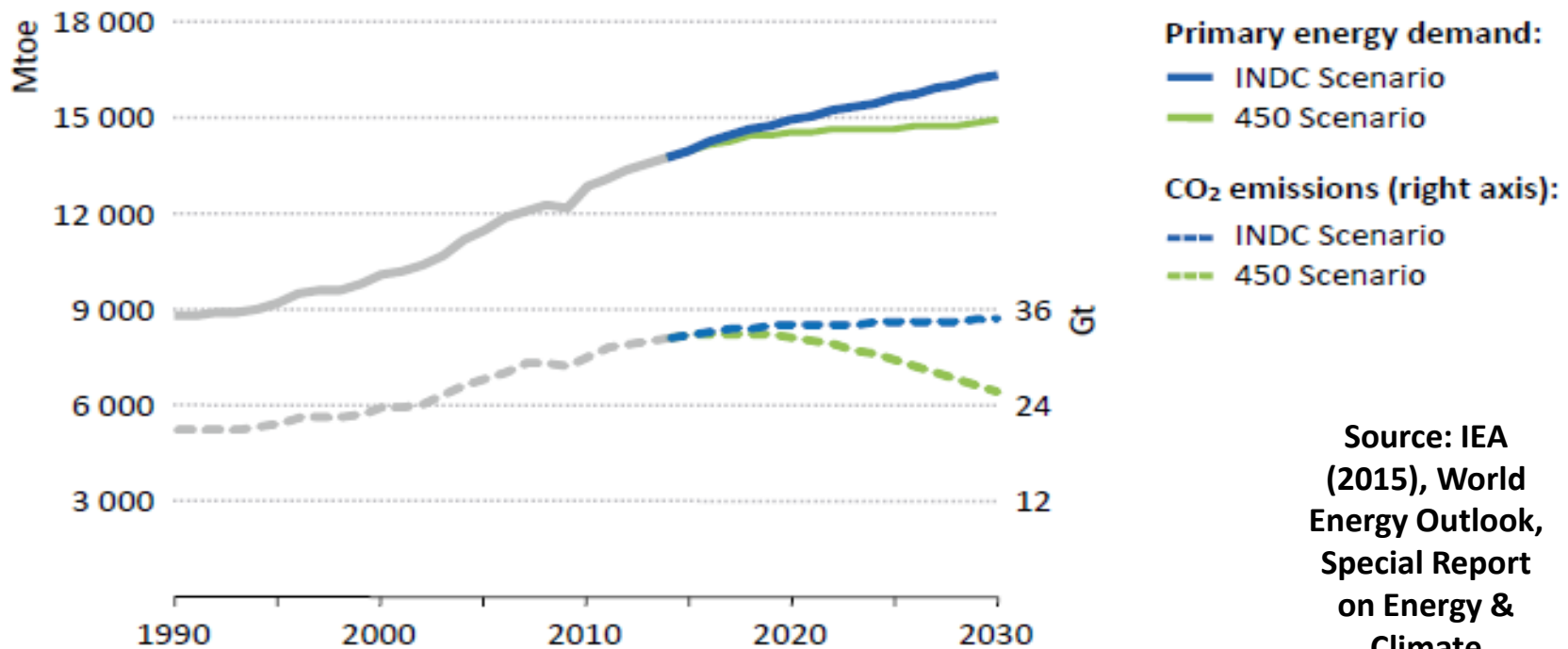
Source:
McKinsey, 2009

Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO₂e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.
Source: Global GHG Abatement Cost Curve v2.0

Estimer la trajectoire de décarbonation post-2030? Ah, prospection quand tu nous tiens...



Figure 2.1 ▶ Global primary energy demand and related CO₂ emissions by scenario



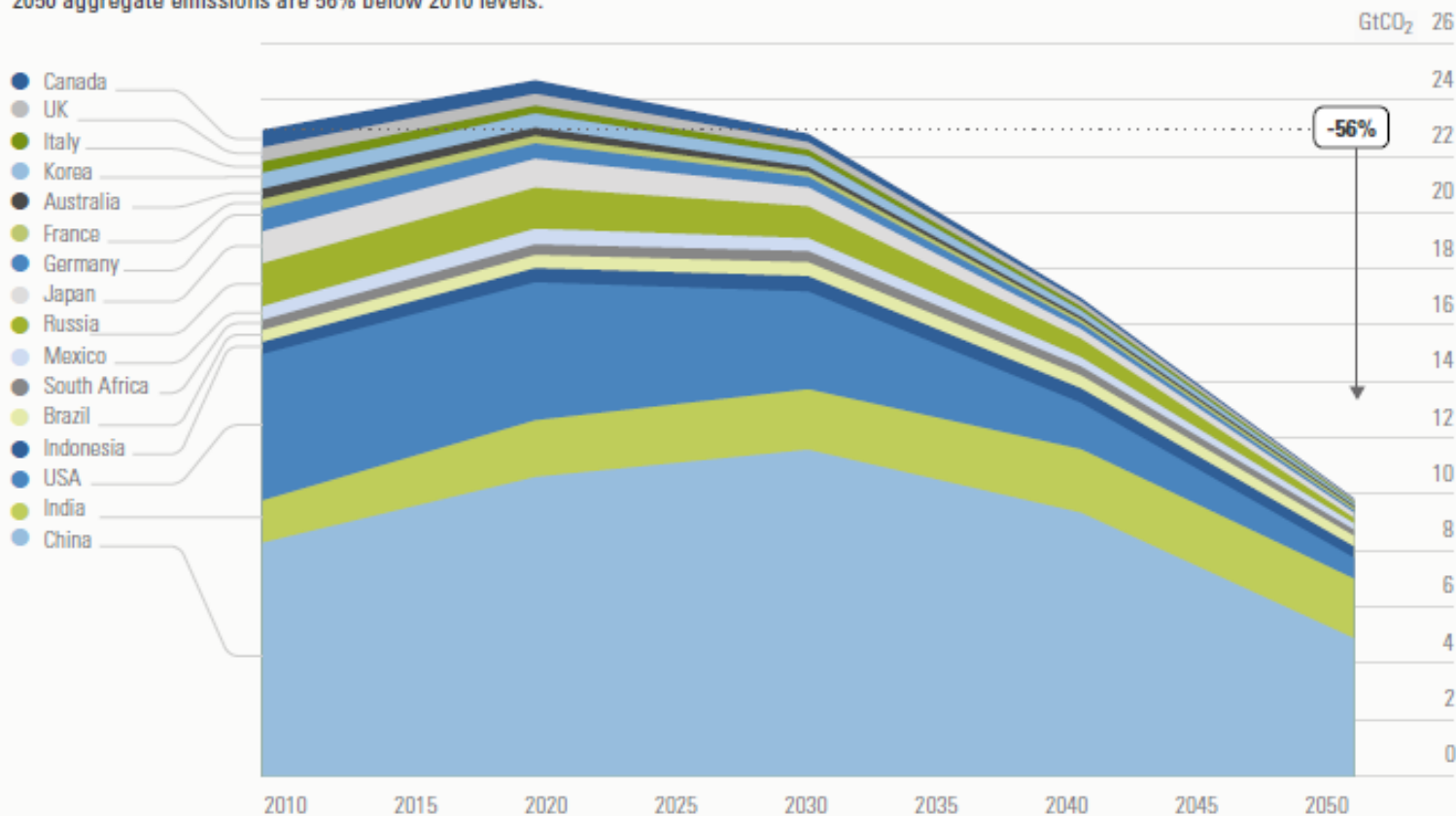
Source: IEA (2015), World Energy Outlook, Special Report on Energy & Climate

Note: Mtoe = million tonnes of oil equivalent; Gt = gigatonnes.

Seul le projet DDPP va en 2050, mais que sur l'énergie, et sur base des technologies actuelles (évolution uniq. sur le \$\$)

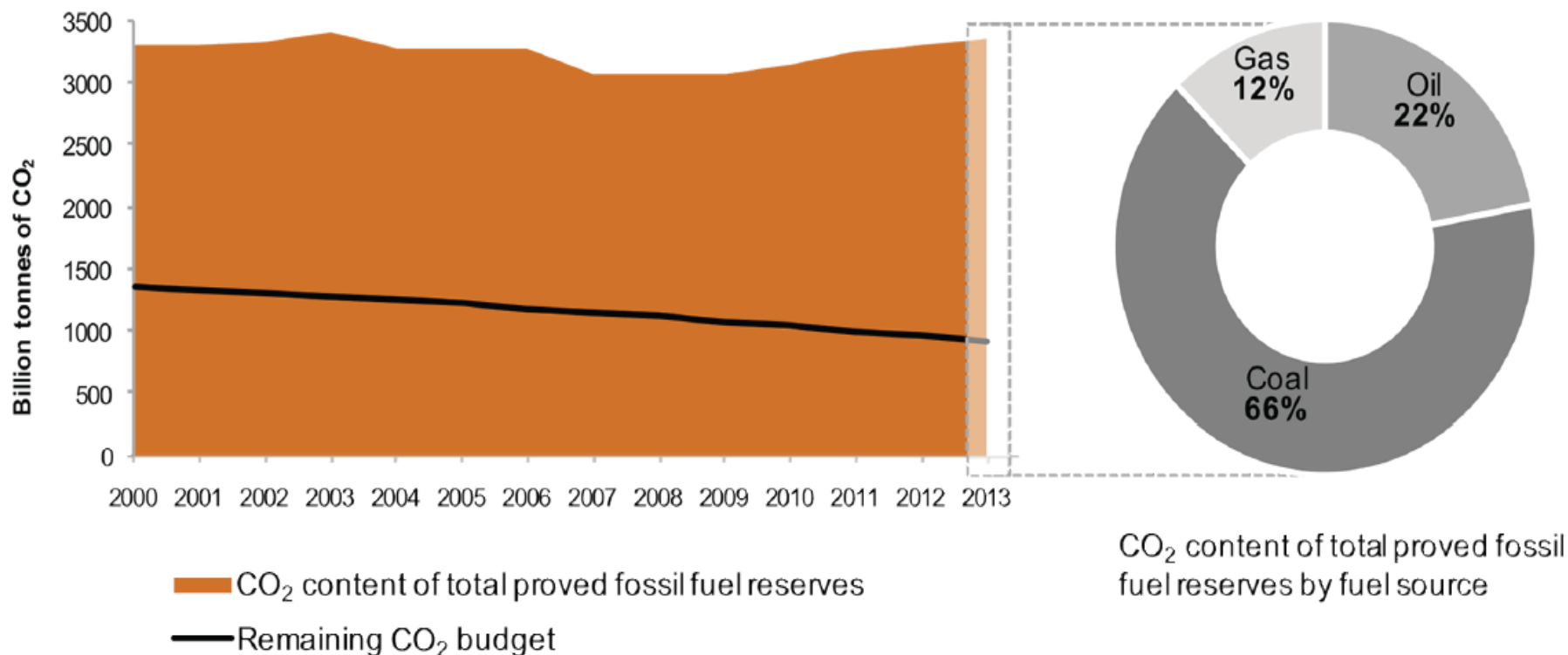


Figure 1. Emissions trajectories for energy CO₂, 2010-2050, showing most ambitious reduction scenarios for all DDPP countries. 2050 aggregate emissions are 56% below 2010 levels.



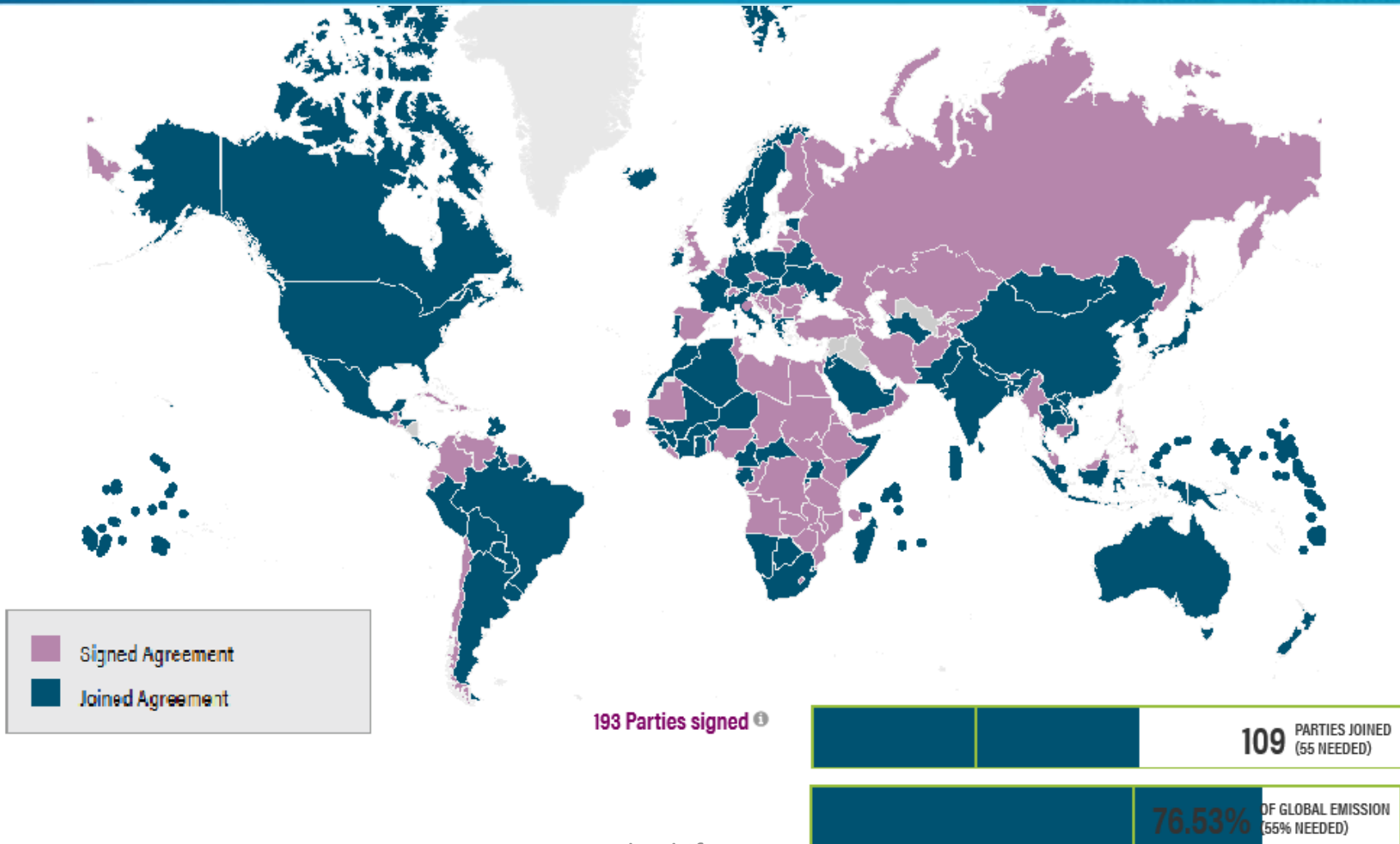
Source: Deep Decarbonization Pathway Project (2015), Pathways to Deep Decarbonization, 2015 Report

Keeping in mind the global carbon budget, at last for fossil fuels...



Carbon content of total proven fossil fuel reserves (GtCO₂) – Source: ODI, Oil Change International, novembre 2015

The Paris Agreement ratification: ¡Arriba! ¡Arriba!



NDCs: it should only progress, except with US Republicans rulling...



Ambition Mechanism in the Paris Agreement





COP22 : bilan & perspectives

19 novembre 2016, Causerie d'Avenir Climatique, Clément Bultheel



www.theshiftproject.org

The main issues that are (still) discussed



Equity and Differentiation

Share the responsibility between historical, current and future emissions, as well as emissions per capita, considering national circumstances and global carbon budget

Mitigation

Action to move towards low-carbon societies by the end of the century to stay below 1.5 or 2°C

Adaptation

Adapting to climate change consequences & Building resilience to reduce climate vulnerability

Loss & Damage

Implement a mechanism to respond to climate disasters

Financing

Reach US\$ 100 billion for developing countries by 2020, and further increase investments in low-carbon development & technologies

Transparency

Regarding the contributions :
Monitoring, Reporting &
Verification (MRV)

Capacity-Building

To improve poor and vulnerable countries capacity to enhance climate action

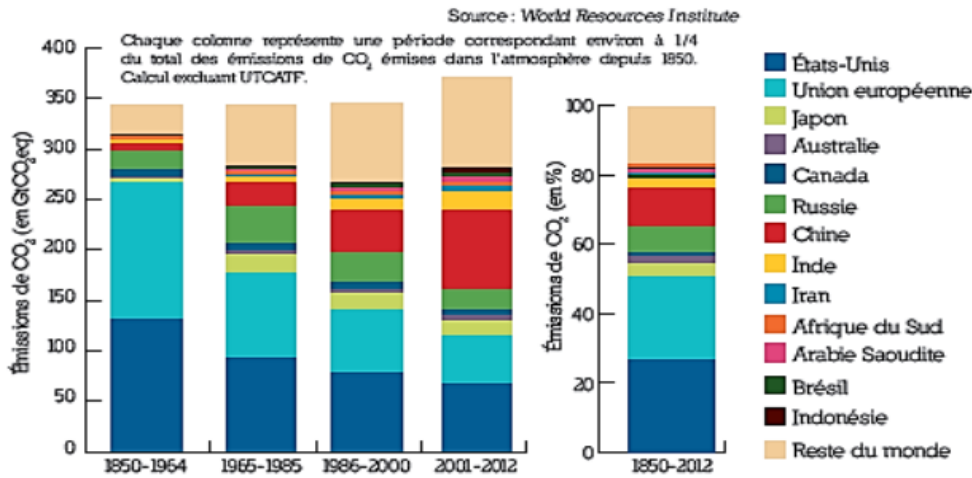
Technology Transfer

Help developing countries to have access to low-carbon technologies

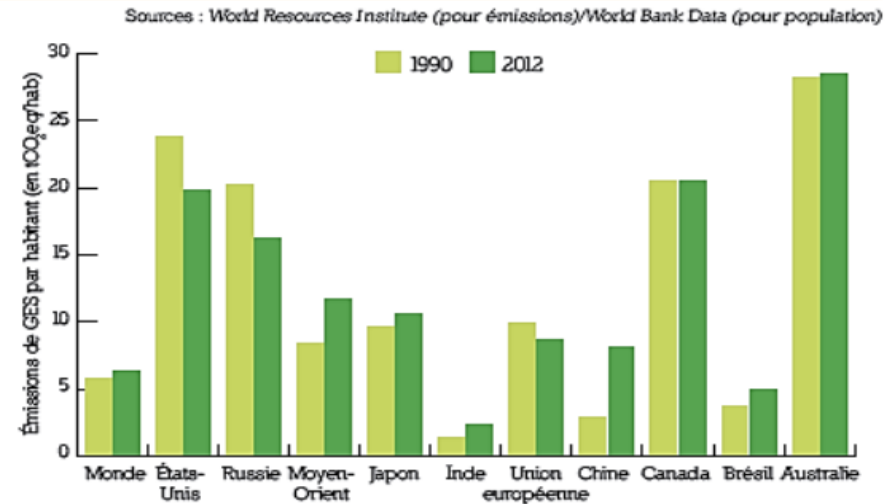
A need to recognize diplomatic efforts to negotiate the share of responsibilities



Répartition et cumul des émissions de CO₂ depuis 1850



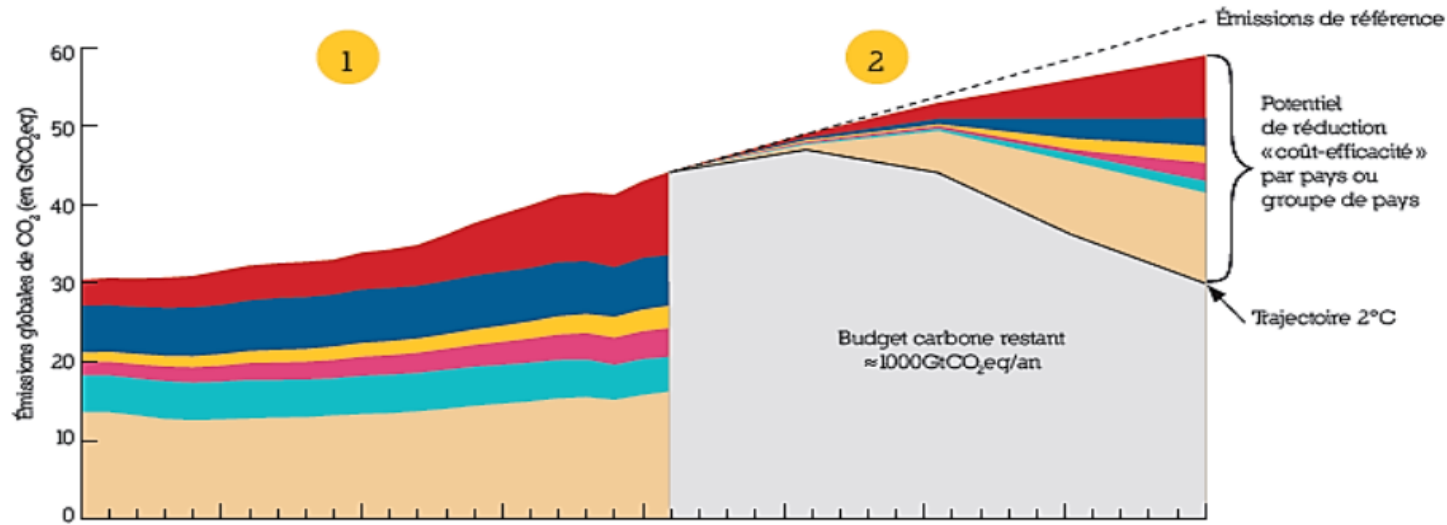
Émissions de GES par habitant (en tCO₂eq/hab)



Émissions globales de GES de 1990 à 2011 et trajectoires coût-efficace jusqu'à 2030 (en GtCO₂eq/an)

1 Émissions globales de GES de 1990 à 2011

2 Trajectoire « coût-efficace » de réduction d'émissions par pays pour atteindre l'objectif des 2°C = différence des émissions globales et le



We almost end up with political negotiations



A new three-way differentiation in the Paris Agreement:

1. The maintaining of a binary distinction between developed and developing countries, most notably on the topic of North-South financial commitments ;
2. A particular regime for least developed countries (LDCs) and/or small island developing States (SIDS) concerning the regularity of national communications, or priority access to financial resources, most notably for adaptation. This regime allows, by contrast, a convergence between the obligations of other developing countries (notably emerging countries) and of developed countries;
3. A flexible regime based not on groups of countries but on the specific conditions of each country, for example national circumstances and respective capabilities. However, this flexible regime will have to demonstrate its coherence and progress in order to bring States to improve their actions.

(Source: *Bultheel et al.*, 2015)

Beyond ambition, how to judge the success of the Paris Agreement?



- The success of Paris COP 21 could be judged in the light of several criteria:
- the **global** nature of the agreement (the **number of Parties signatories**);
 - the **long-term** objectives of the agreement (eg reduction of global emissions by 75% by 2050, zero net emissions by the end of the century, etc.);
 - the **dynamic** nature of the agreement (ie its ability to strengthen the ambition of countries over time; as such, a **5-year review mechanism** for national contributions is the option on the table);
 - the **transparency** of commitments (**Monitoring, Reporting and Verification**, so-called "**MRV**") to build confidence;
 - the **international support** to developing countries in terms of **finance, technology transfer, and capacity building**.



Expectations for COP22



What are we expecting ?

*A Conference of the Parties serving as the meeting of the Parties to the **Kyoto Protocol (CMP)** & the first Conference of the Parties serving as the meeting of the Parties to the **Paris Agreement (CMA)**.*

The “COP of implementation”:

- Increasing the ambition of domestic action;
- Strengthening action on mitigation and adaptation by all Parties before 2020;
- Mobilizing finance, technology and capacity-building.

- **First high-level annual event on pre-2020 ambition for the period 2016-2020**
- **Facilitative dialogue “to assess the progress in implementing decision 1/CP.19, paragraphs 3 and 4, and identify relevant opportunities to enhance the provision of financial resources, including for technology development and transfer and capacity-building support, with a view to identifying ways to enhance the ambition of mitigation efforts by all Parties”**
- **Initiation of a process to identify the information to be provided by Parties in developed country on their biennial finance communications for consideration and adoption at CMA1**
- **Launch of the capacity building work plan for the period 2016-2020 managed by the Paris Committee on Capacity-building**

COP22's results: keep calm and let the experts work on technicalities !



What are the next important steps?



COP23 (2017):

- Adaptation Committee to review adaptation institutional arrangements in 2017 to prepare recommendations for CMA1;

COP24 (2018):

- **IPCC to provide a special report in 2018 on impacts of global warming of 1.5C;**
- **SBSTA to develop modalities for the accounting of financial resources provided and mobilized through public interventions to make recommendations for consideration at COP24 and adoption at CMA1;**
- **APA to develop recommendations for common modalities, procedures and guidelines as appropriate for transparency of action and support for consideration at COP24 and adoption at CMA1;**
- **Facilitative dialogue among Parties in 2018 “to take stock of the collective efforts of Parties in relation to progress towards the long-term goal referred to in Article 4, paragraph 1, of the Agreement and to inform the preparation of nationally determined contributions pursuant to Article 4, paragraph 8, of the Agreement”;**

COP25 (2019):

- Review progress of Paris Committee on Capacity building with a view to make recommendations of appropriate action and on enhancing institutional arrangements for CMA1;

COP26 (2020):

- **Parties to communicate by 2020 (minimum 9-12 months before the relevant COP or earlier) a new NDC for those whose commitment period is to 2025;**
- **Parties to communicate or update by 2020 (minimum 9-12 months before the relevant COP or earlier) an NDC for those whose commitment period is to 2030.**

What are the next important steps for CMA?



Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA):

- APA to develop guidance on features of NDC's for consideration and adoption at CMA1
- SBSTA to develop rules, modalities and procedures for the sustainable development mechanism for adoption at CMA1
- Adaptation Committee, LDC Expert Group, and Standing Committee on Finance to develop methodologies and recommendations on mobilization of support in line with the temperature goal and review of adequacy and effectiveness of adaptation support for CMA1
- CMA1 to consider common time frames for nationally determined contributions

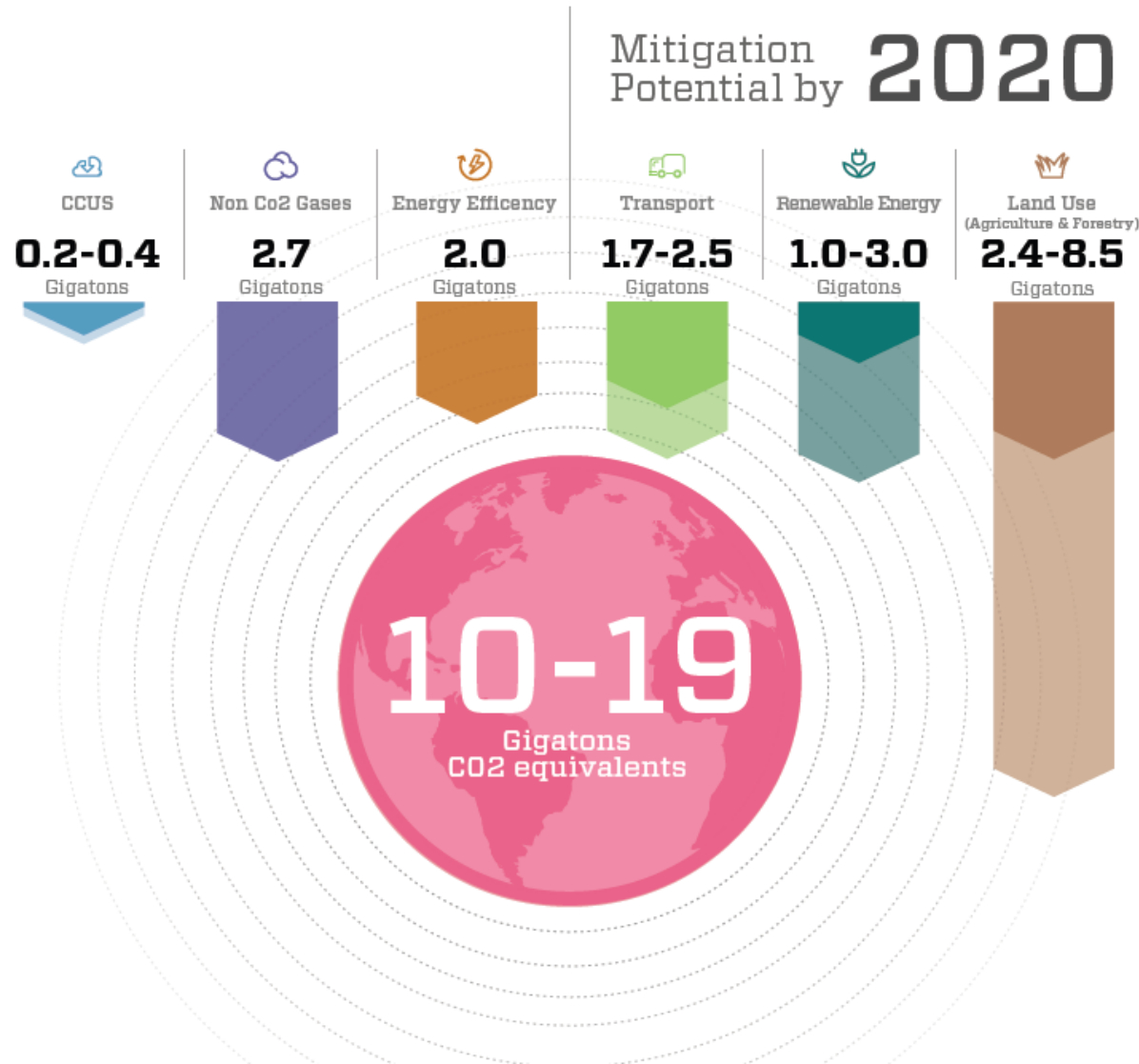
NDCs: it should only progress, except with US Republicans rulling...



Ambition Mechanism in the Paris Agreement



Sectoral pre-2020 climate action: technologies are here !



The role of International Cooperatives Initiatives (ICIs)



“ICIs, where mitigation ambition is enhanced outside the UNFCCC framework as a complement to Party pledges for those Parties and/or other stakeholders that wish to do so, can be one possible option to help close the pre-2020 ambition gap. The number of ICIs is growing and they offer many possibilities to support, and go beyond, pledges.” (Source: Ecofys)

Initiatives by sectoral areas:

- **Renewable Energy (Energy Supply)**
- **Energy Efficiency & Energy Access**
- **Cities & Subnationals**
- **Transports**
- **Buildings**
- **Short-lived climate pollutants**
- **Agriculture**
- **Forestry**
- **Adaptation & resilience**
- **Financial instruments (ex: Carbon pricing coalition; Auction facility; etc.)**
- **Private Finance & Business**
- **Technology transfer and development**
- **Capacity building**
- **Innovation**

ICIs by type of stakeholders



International organizations:

- United Nations agencies ([UNEP](#); [UN-Habitat](#); [UNDP](#) ; [FAO](#) ; [World Bank](#))
- EU agencies ([Commission](#); [ERBD](#) ; [EIB](#))
- Others international institutions ([IEA](#) ; [IRENA](#) ; [IPEEC](#) ; [FIA](#); [CEM](#))

International coalitions :

- Public sector ([IDFC](#))
- Private sector ([UN Global Compact](#) ; [WBCSD](#) ; [We Mean Business](#))

Local authorities :

- Cities ([C40](#) ; [ICLEI](#) ; [WMCCC](#) => [Mexico City Pact](#) [[carbonn registry](#)] & [LG Climate Roadmap](#))
- Regions ([R20](#))
- Local governments ([UCLG](#))

Further multilateral cooperation on climate issues



Others negotiations frameworks linked with climate change:

- [UN Sustainable Development Goals](#) (2015-2030)
 - [UN International Strategy for Disaster Reduction \(UNISDR\)](#)
 - [Montreal Protocol on Substances that Deplete the Ozone Layer](#) (1987)
 - [Negotiations on Environmental Good & Services \(EGS\) as part of the WTO](#)
- + G8, G20, and OECD

Others political initiatives to strengthen political dialogues on climate issues:

- [Major Economies Forum](#) (2009)
- Carthage Dialogue (2010)
- Petersberg Dialogue (ex-Greenland Dialogue) (2010)

Examples of key research projects:

[The New Climate Economy report](#)

[Deep Decarbonization Pathways Project](#)

L'essentiel désormais: se concentrer sur le rapport coût-efficacité de la décarbonation



Example of some new important announcements

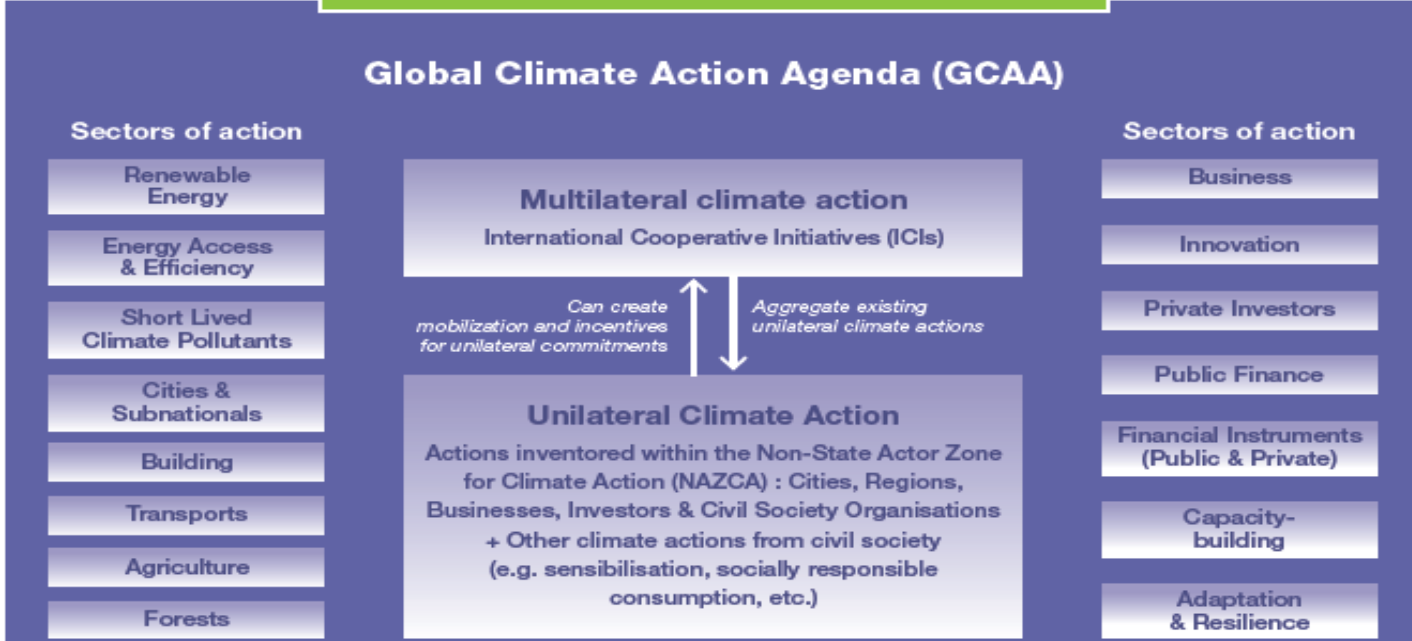
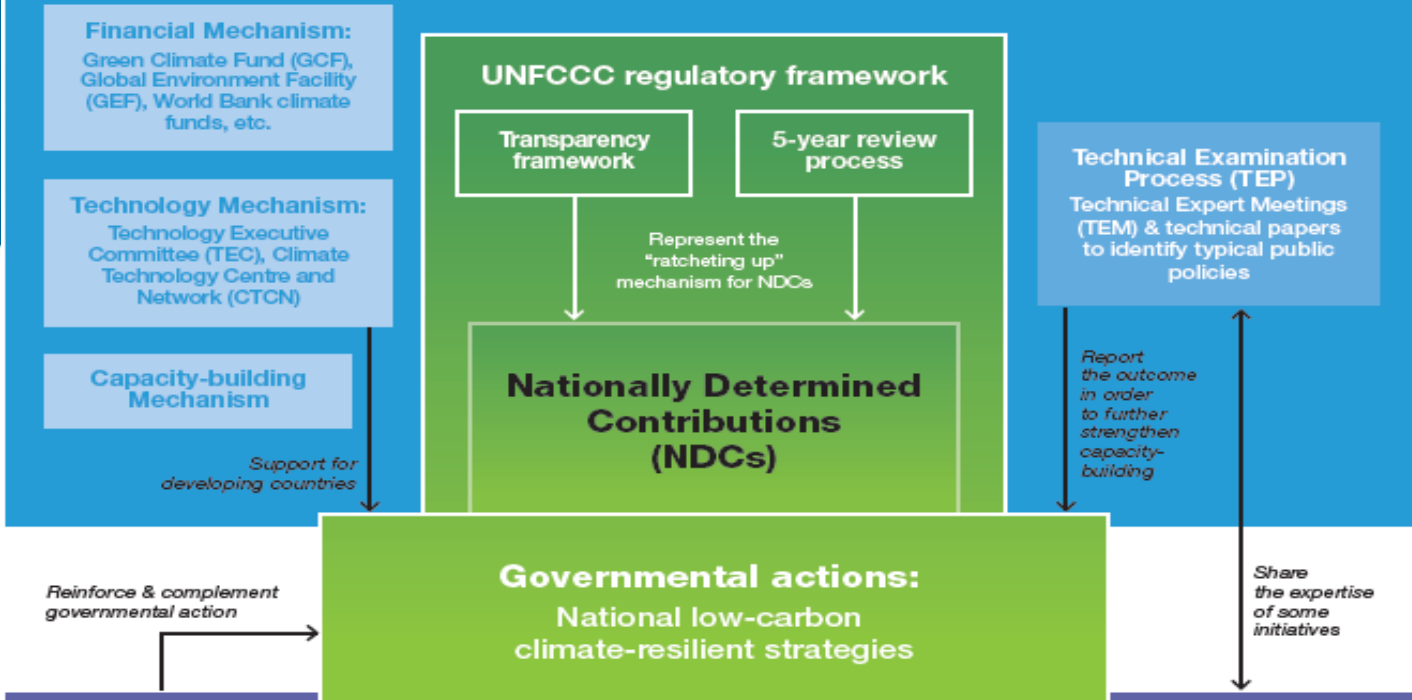


-Indonesia's government extended its forest protections by declaring a moratorium on clearing super-high-carbon intact peatland. That adds to the number of concessions that are covered by the existing moratorium.

-Walmart, the largest company by revenue and the largest private-sector employer in the world announced its science-based target on the same day as the Paris Agreement came into force.

[...] Walmart will work with suppliers to reduce emissions by 1 Gigaton by 2030, equivalent to taking more than 211 million passenger vehicles off US roads and highways for a year”.

United Nations Framework Convention on Climate Change (UNFCCC)

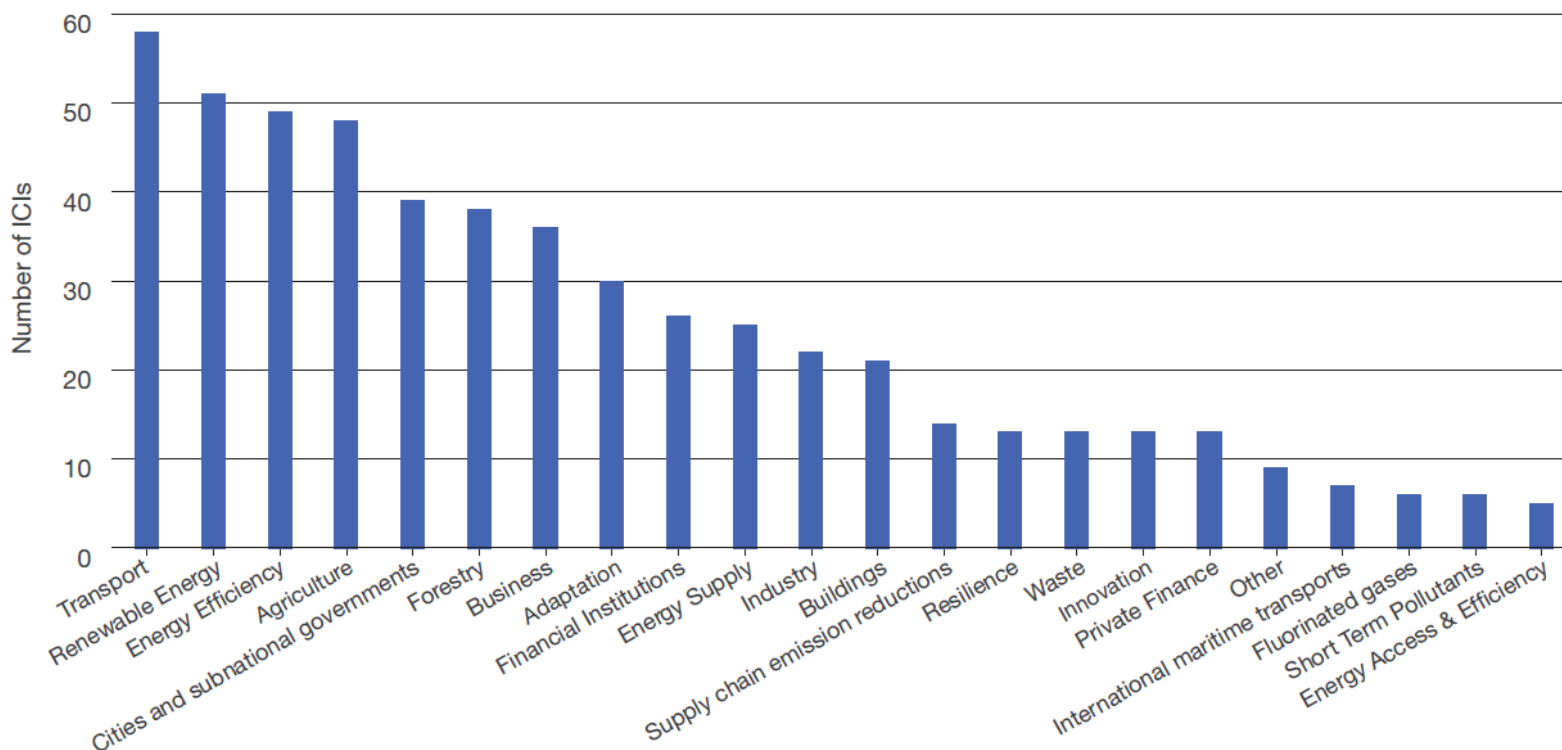


Source: Bultheel et al., November 2016

ICIs: plenty of, pending for a rigorous monitoring system



FIGURE N°1 – INTERNATIONAL COOPERATIVE INITIATIVES (ICIs) BY THEME*

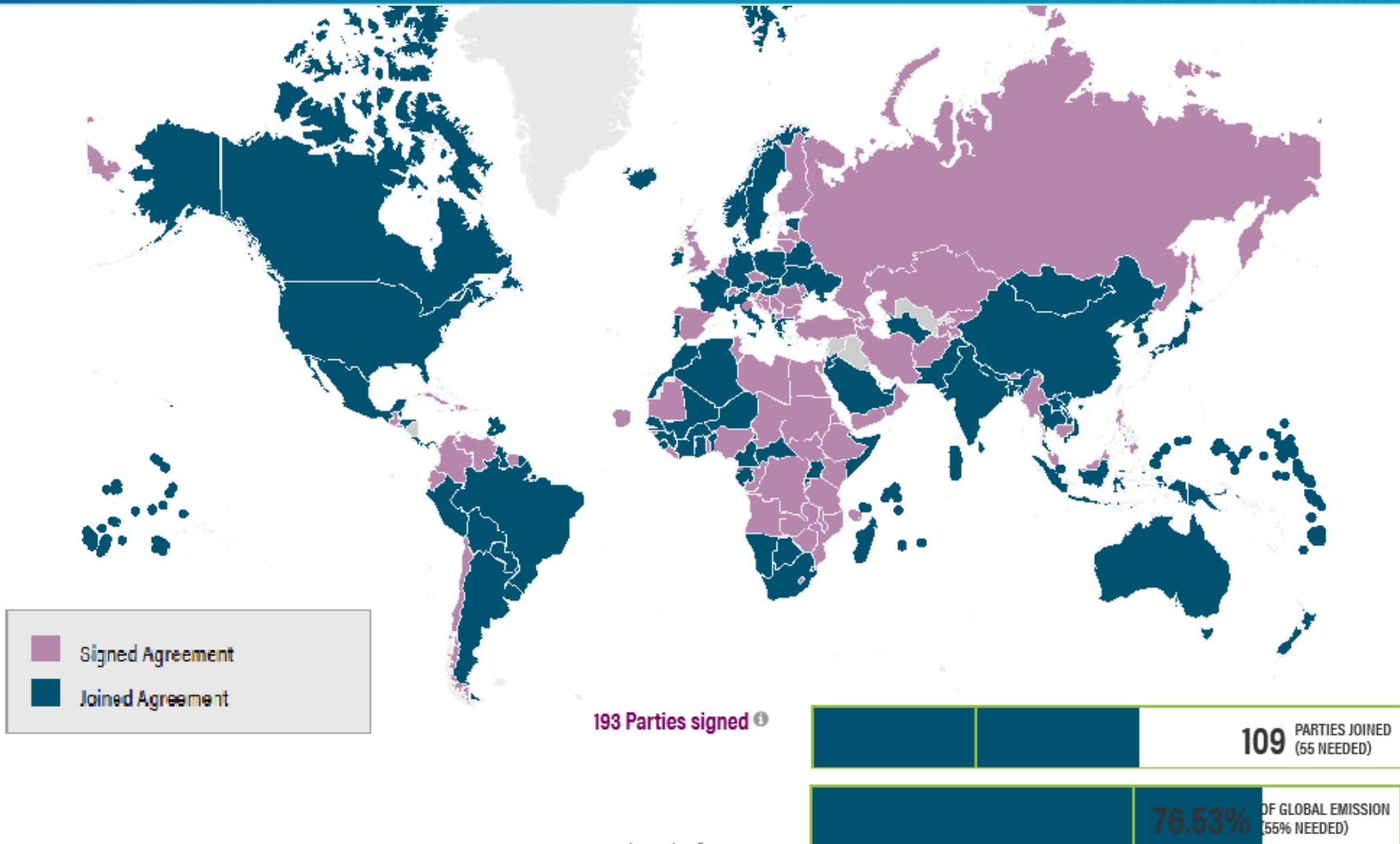


* Some of the 231 ICIs referenced in the platform regroup multiple themes.

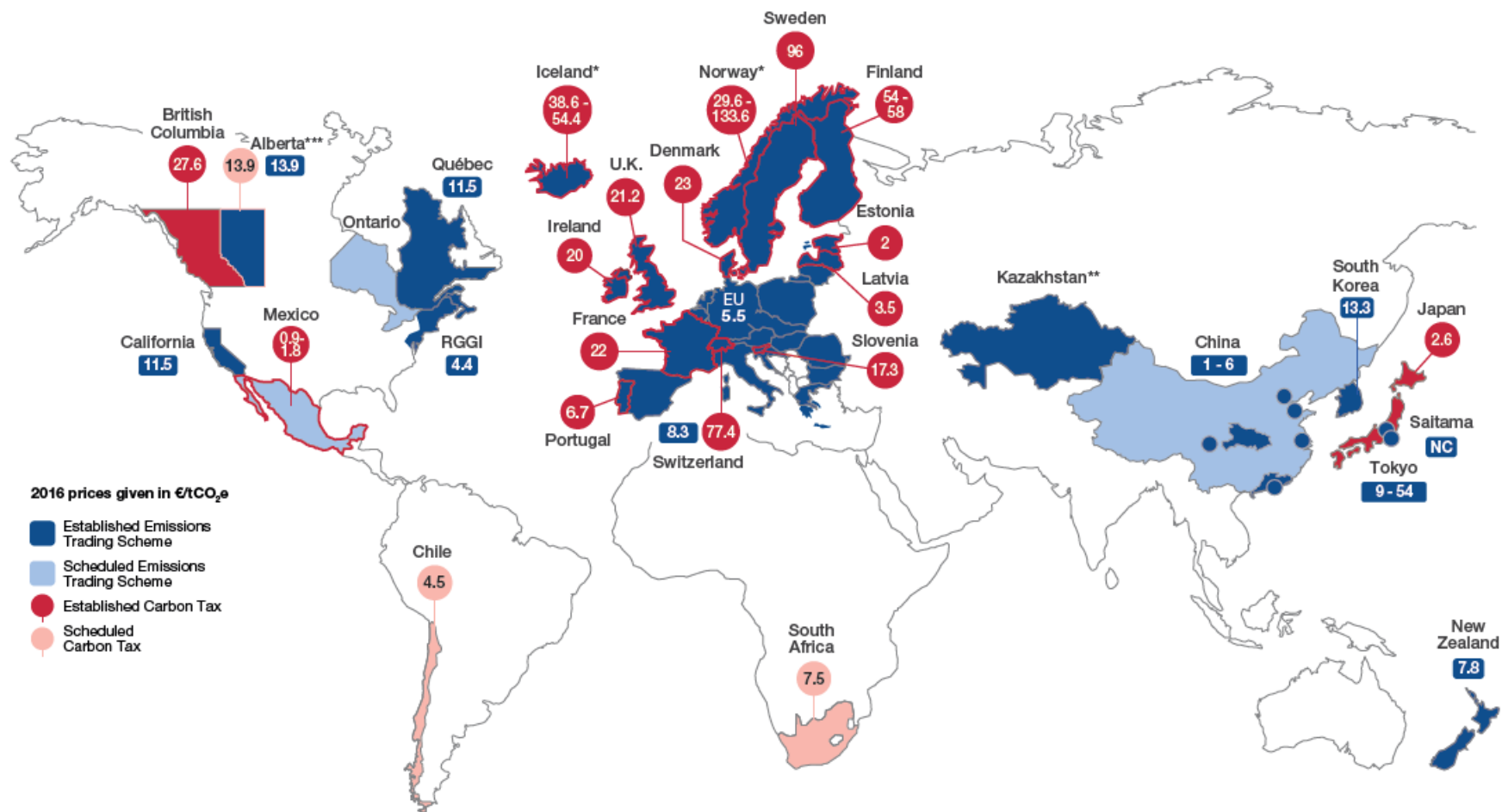
Source: I4CE according to data from the Climate initiatives platform, October 2016

Source: Bultheel *et al.*, November 2016

The Paris Agreement ratification: ¡Arriba! ¡Arriba!



Map of explicit carbon prices around the world (I4CE, 2016)



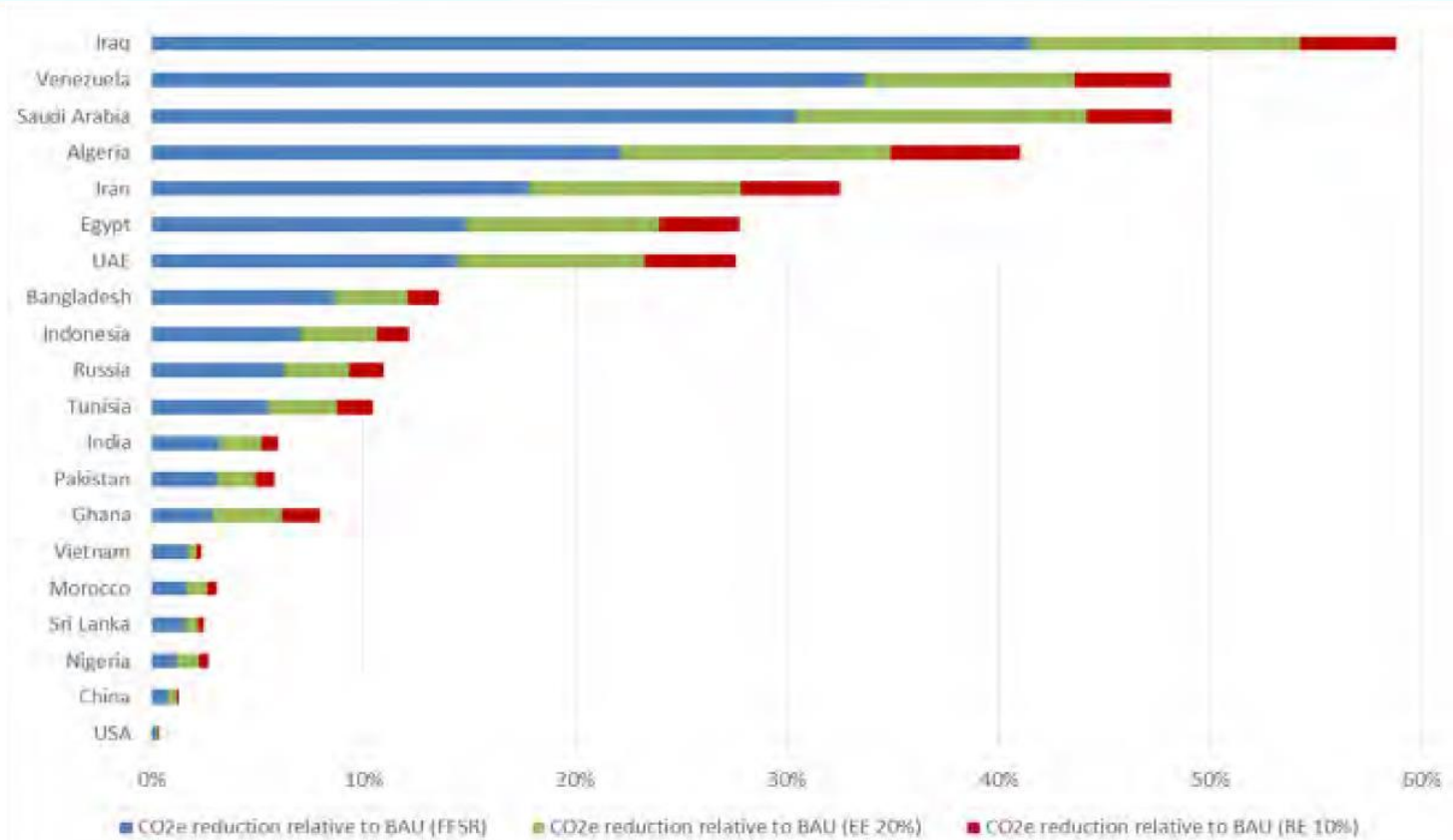
* Rate varies by sector/energy product

** ETS suspended until 2018

*** The 2015 Specified Gas Emitters Regulation (SGER) price is the fee paid into the Climate Change and Emissions Management Fund, set at €10.9/tCO_{2e}. The Carbon Competitiveness Regulation (CCR) will replace the SGER in 2018, at which point, an economy-wide carbon price of €21.8/tCO_{2e} will be set

Note: All prices are nominal values. ETS prices have been calculated as an average of prices between 1 January and 30 June 2016. Prices were calculated using exchange rates provided by XE.com on 8 July 2016.

Fossil fuels subsidies reform: a huge mitigation potential while cutting negative carbon pricing



Country results from GSI-IF model from removal of Fossil Fuel Subsidies from across 20 countries (blue) and investment in energy efficiency (green) and renewable energy (red) (as a % of national emissions reductions), in 2020 – Source: IISD Global Subsidies Initiative, octobere 2015

Avec tout ce retard, que pensez ?



« Les optimistes ont bien de la chance. Les pessimistes, bien du travail. » (Comte-Sponville)

Le pessimiste est un optimiste bien informé. (Comte-Sponville)

« L'optimiste et le pessimiste ne s'opposent que sur ce qui n'est pas. »
(Valéry).

« La seule différence entre un optimiste et un pessimiste, c'est que le premier est un imbécile heureux et que le second est un imbécile triste. » (Bernanos)

« Je suis pessimiste avec l'intelligence, mais optimiste par la volonté. » (Gramsci)