Deconstructing COP21
Towards a more robust implementation of the UNFCCC

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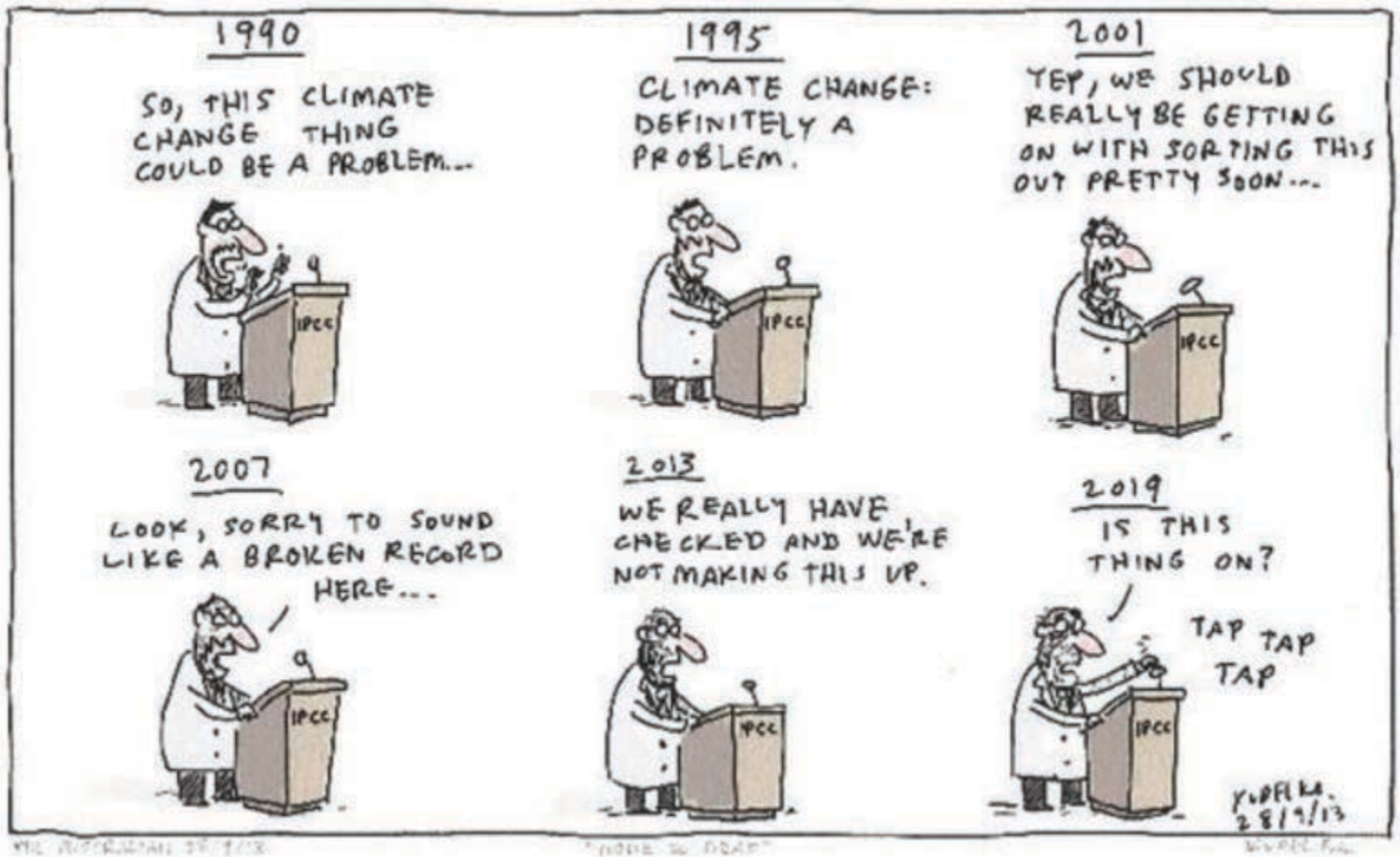
APNU & ULB, Brussels, 4 May 2016

Thanks to the Belgian Federal Science Policy Office (BELSPO), to my team at the Université catholique de Louvain for their support, and to Geert Fremout (Federal Climate Section) for some slides about COP21

None So Deaf



Auteur: @JohnKudelka

Why the IPCC ?

Established by WMO and UNEP in 1988

to provide **policy-makers** with an **objective source of information** about

- causes of climate change,
- potential environmental and socio-economic impacts,
- possible response options (adaptation & mitigation).

WMO=World Meteorological Organizatior

UNEP= United Nations Environment Programme

What is happening in the climate system?

What are the risks?

What can be done?

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INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

Key messages from IPCC AR5

- Human influence on the climate system is clear
- Continued emissions of greenhouse gases will increase the likelihood of severe, pervasive and irreversible impacts for people and ecosystems
- While climate change is a threat to sustainable development, there are many opportunities to integrate mitigation, adaptation, and the pursuit of other societal objectives
- Humanity has the means to limit climate change and build a more sustainable and resilient future

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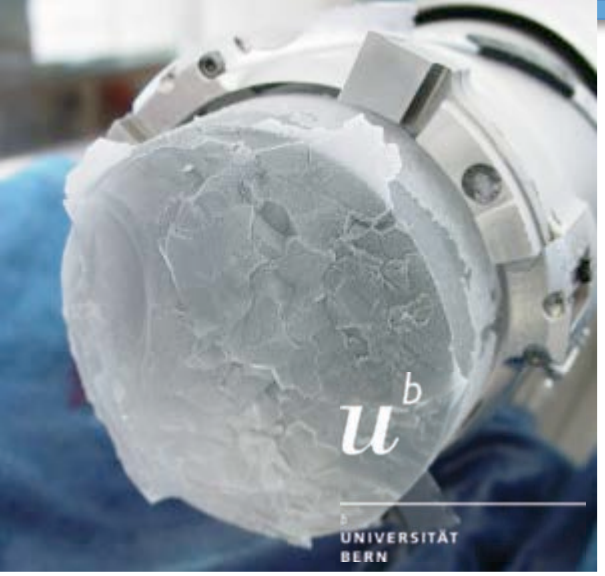
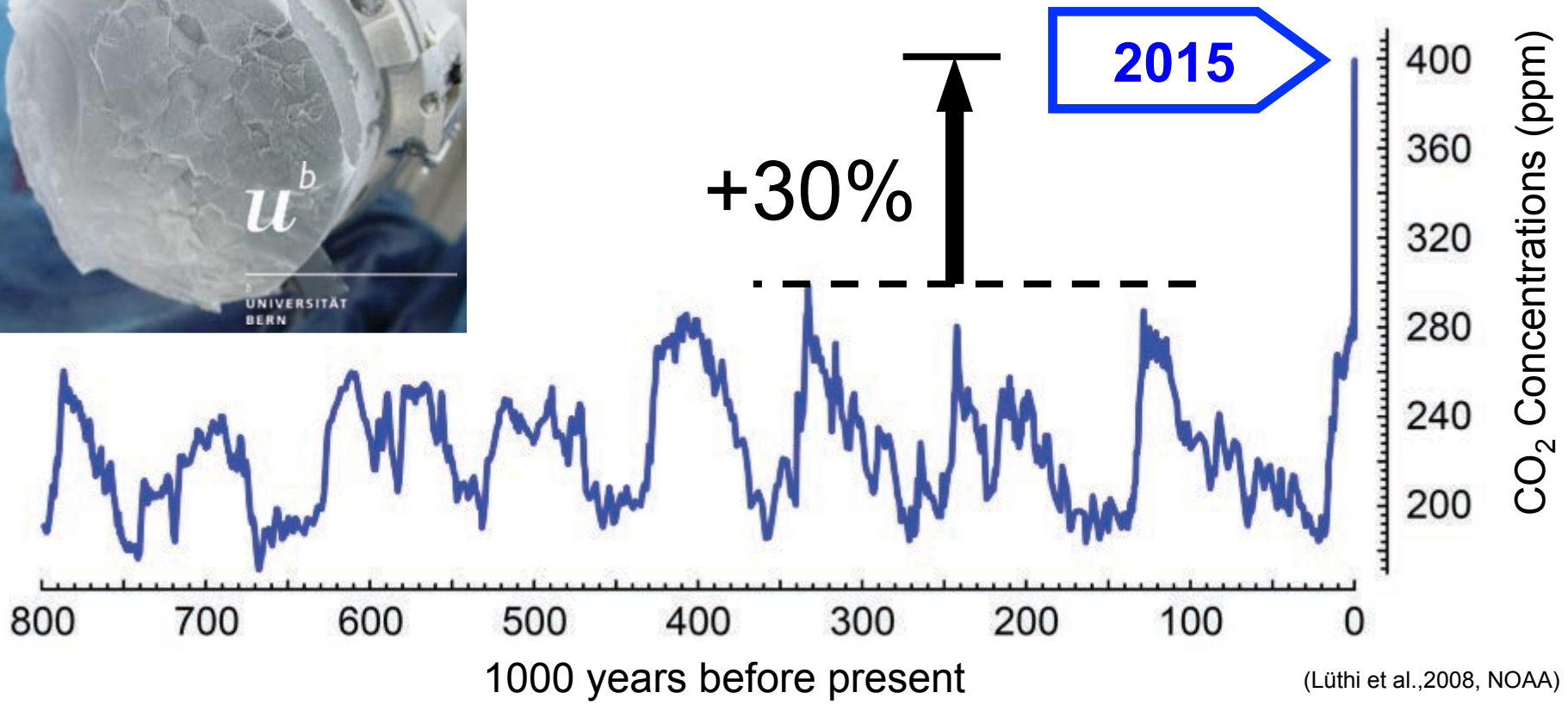


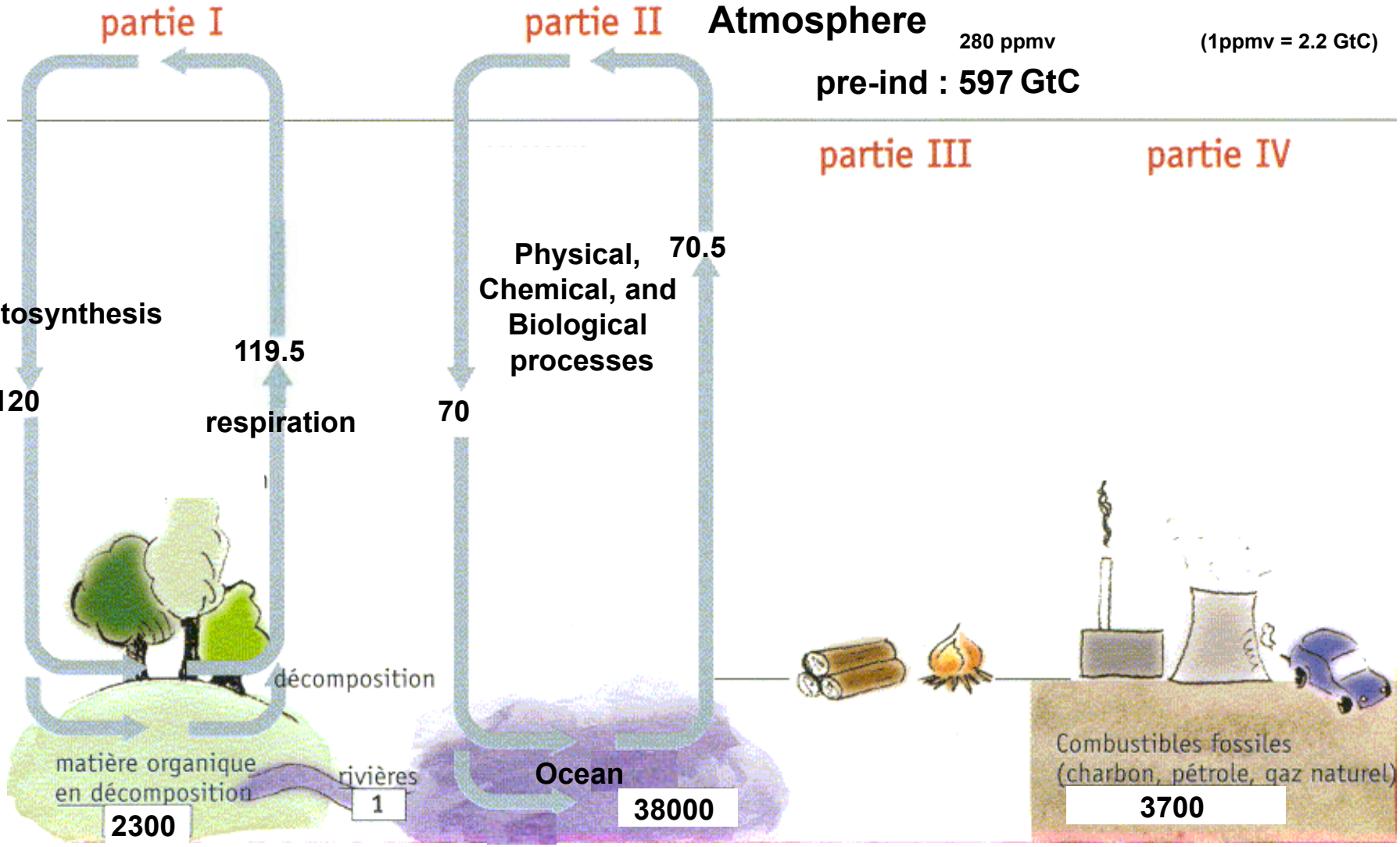
Atmospheric concentrations of CO_2



(Lüthi et al.,2008, NOAA)

The concentrations of CO_2 have increased to levels unprecedented in at least the last 800,000 years.

Carbon cycle: unperturbed fluxes

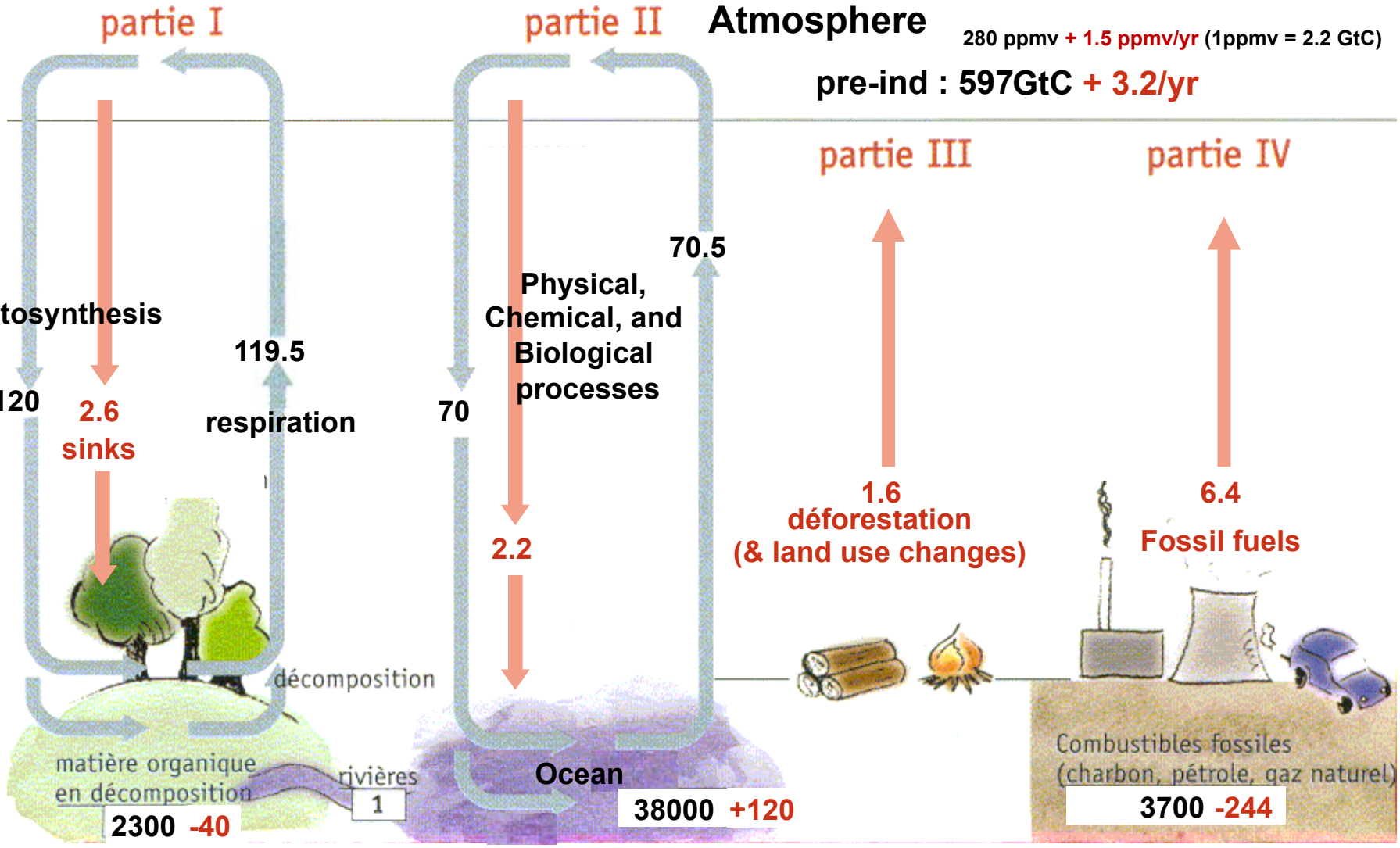


Units: GtC (billions tons of carbon) or GtC/year (multiply by 3.7 to get $GtCO_2$)

vanyp@climate.be

Carbon cycle: perturbed by human activities

(numbers for the decade 1990-1999s, based on IPCC AR4)



Units: GtC (billions tons of carbon) or GtC/year

Stocks!

vanyp@climate.be

The carbon cycle is policy-relevant

- **CO_2 accumulates in the atmosphere as long as human emissions are larger than the natural absorption capacity**
- **Historical emissions from developed countries therefore matter for a long time**
- **As warming is function of cumulated emissions, the carbon « space » is narrowing fast (to stay under 1.5 or 2°C warming)**

Impacts are already underway

- Tropics to the poles
- On all continents and in the ocean
- Affecting rich and poor countries (but the poor are more vulnerable everywhere)




AR5 WGII SPM

Risk = Hazard x Vulnerability x Exposure (Katrina flood victim)

AP Photo - Lisa Krantz (http://lisakrantz.com/hurricane-katrina/zspbn1k4cn17phidupe4f9x5t1mzdr)

Effets sur le Delta du Nil, où vivent plus de 10 millions de personnes à moins d'1 m d'altitude

(Time 2001)

En première ligne: les Maldives

Rue du Ministère de l’environnement, Maldives, août 2015

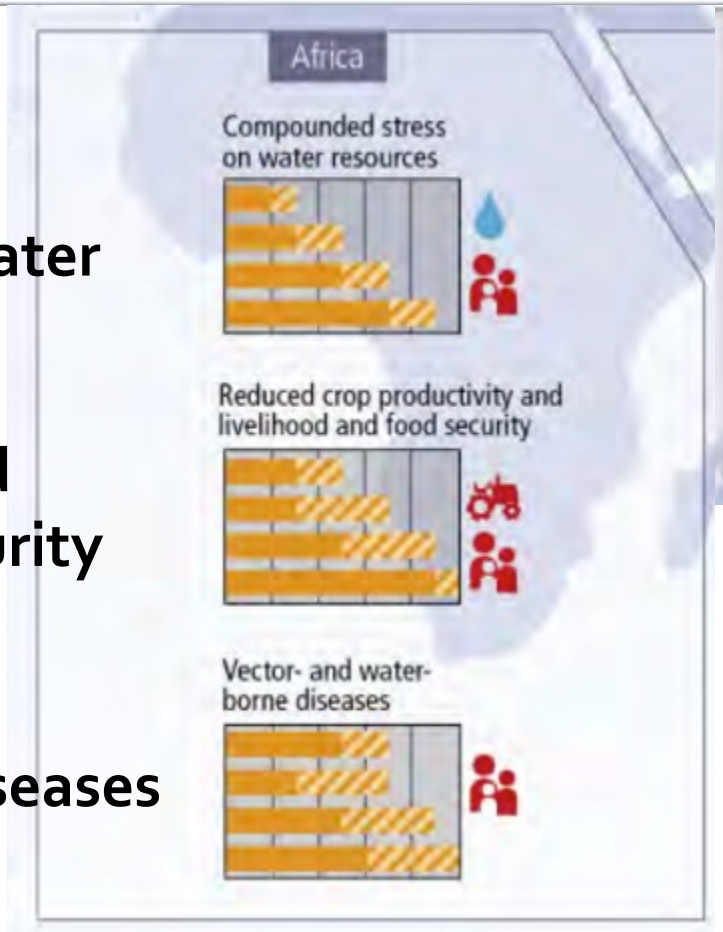
Devant le Ministère des Affaires étrangères, Maldives, août 2015


MINISTRY OF FOREIGN AFFAIRS

Flood risk adaptation in Bangladesh (example): cyclone shelters, awareness raising, forecasting and warning

photo: Dr Thorsten Klose/German Red Cross (2010), evaluation of the Community Based Disaster Preparedness Programme run by the Red Cross in1996-2002

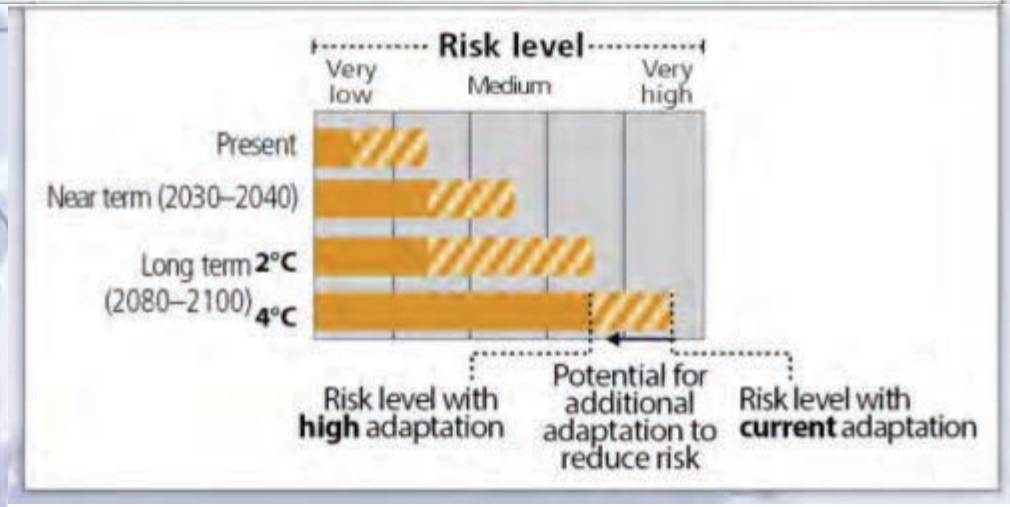
Regional key risks and risk reduction through adaptation



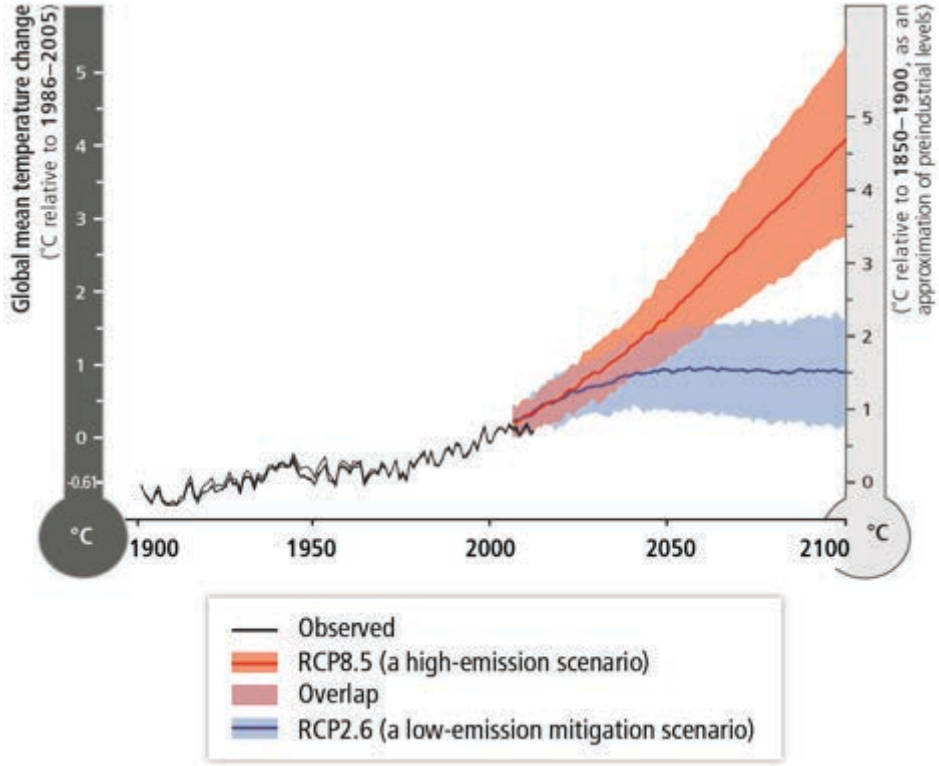
Water

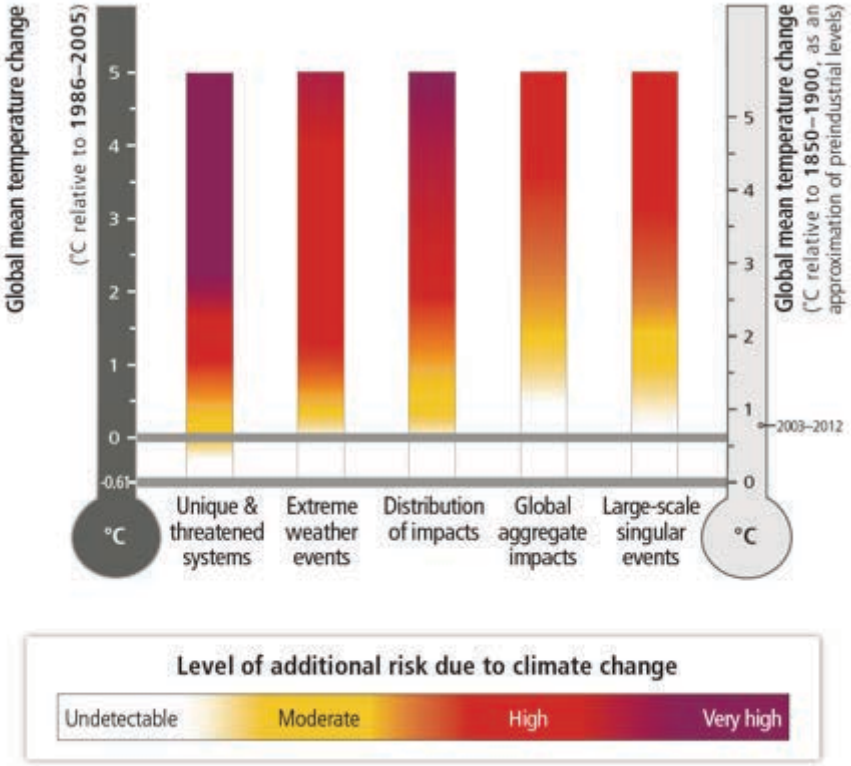
Food security

Diseases



IPCC, AR5, SPM, Figure SPM.8





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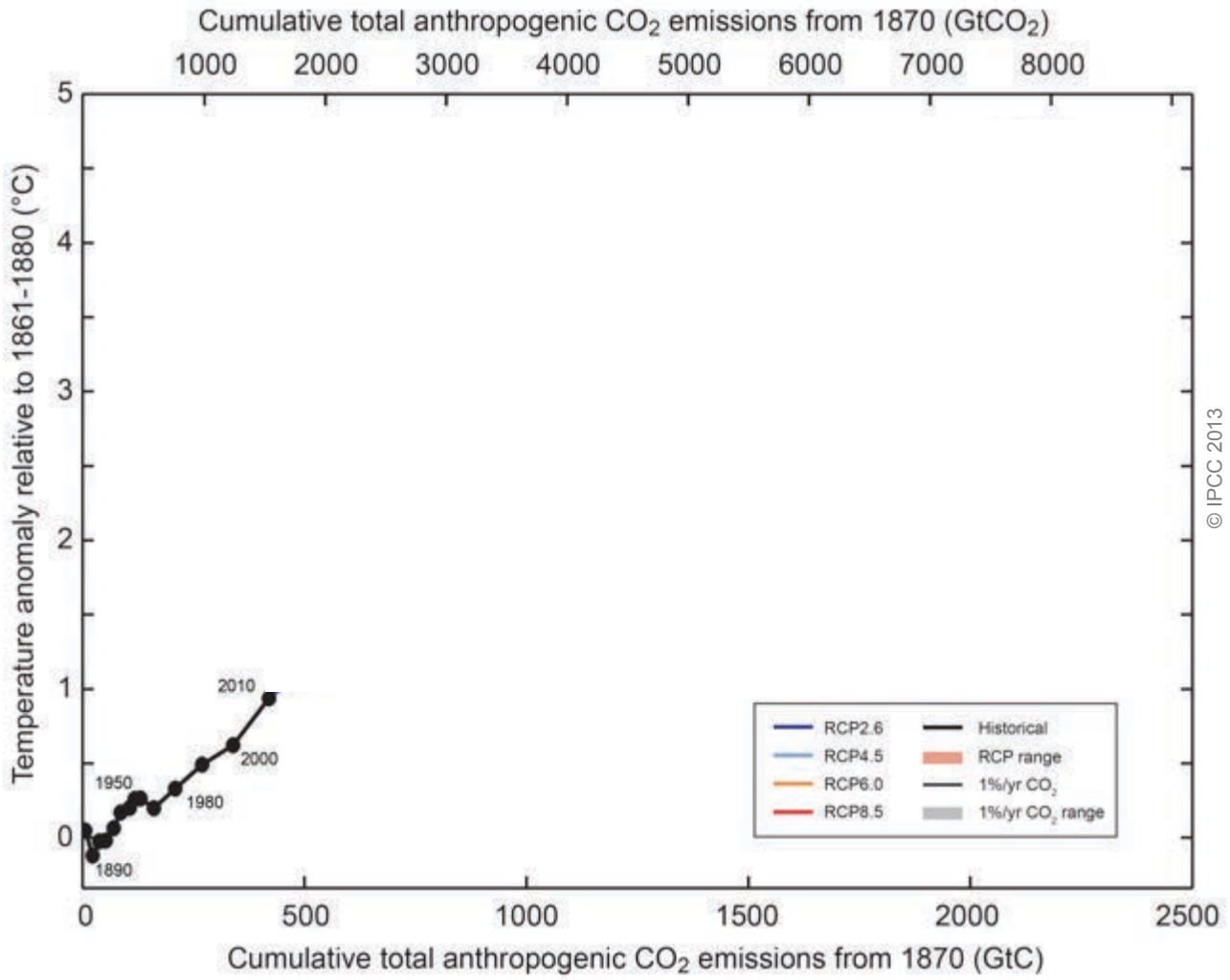


Fig. SPM.10

Cumulative emissions of CO_2 largely determine global mean surface warming by the late 21st century and beyond.

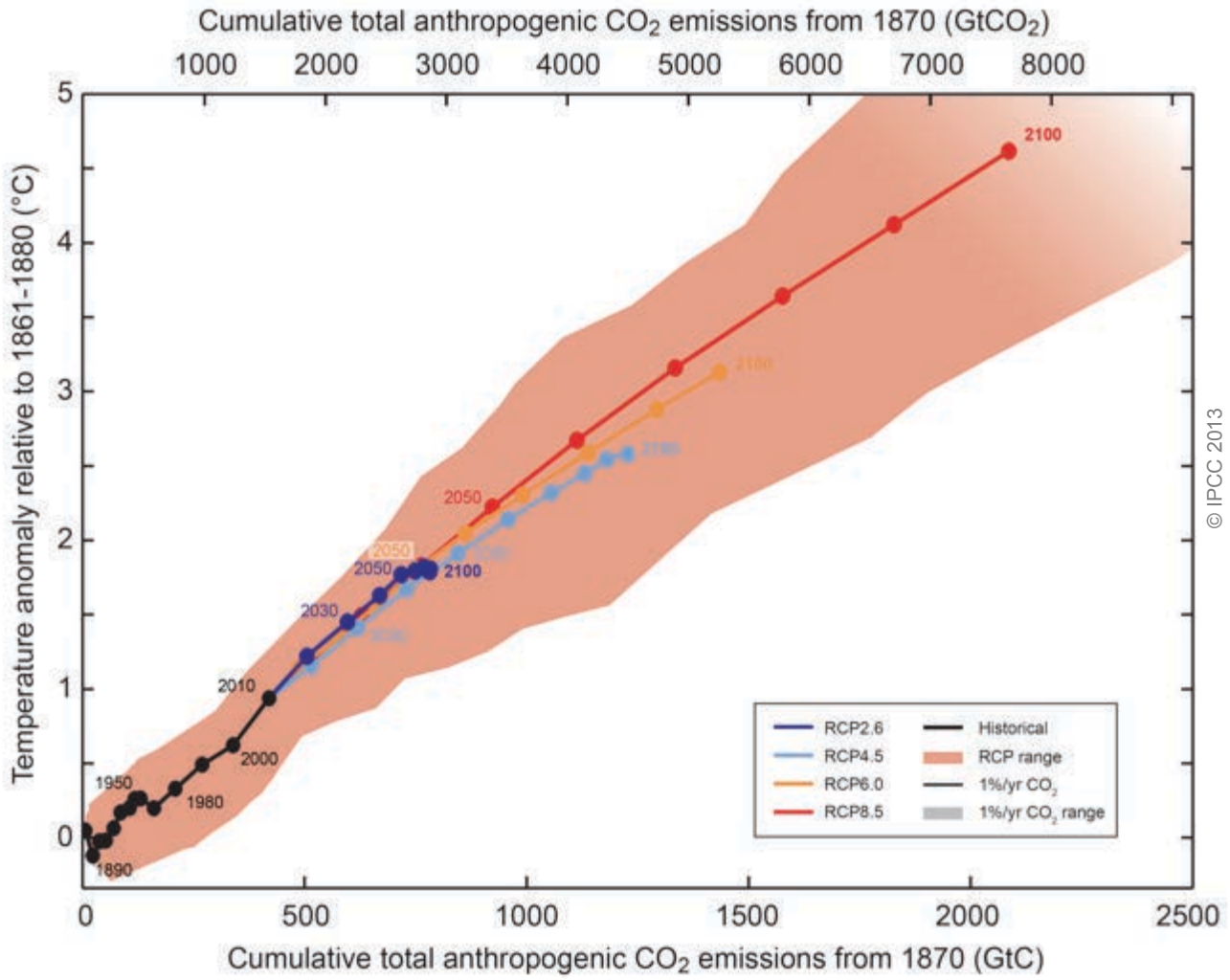
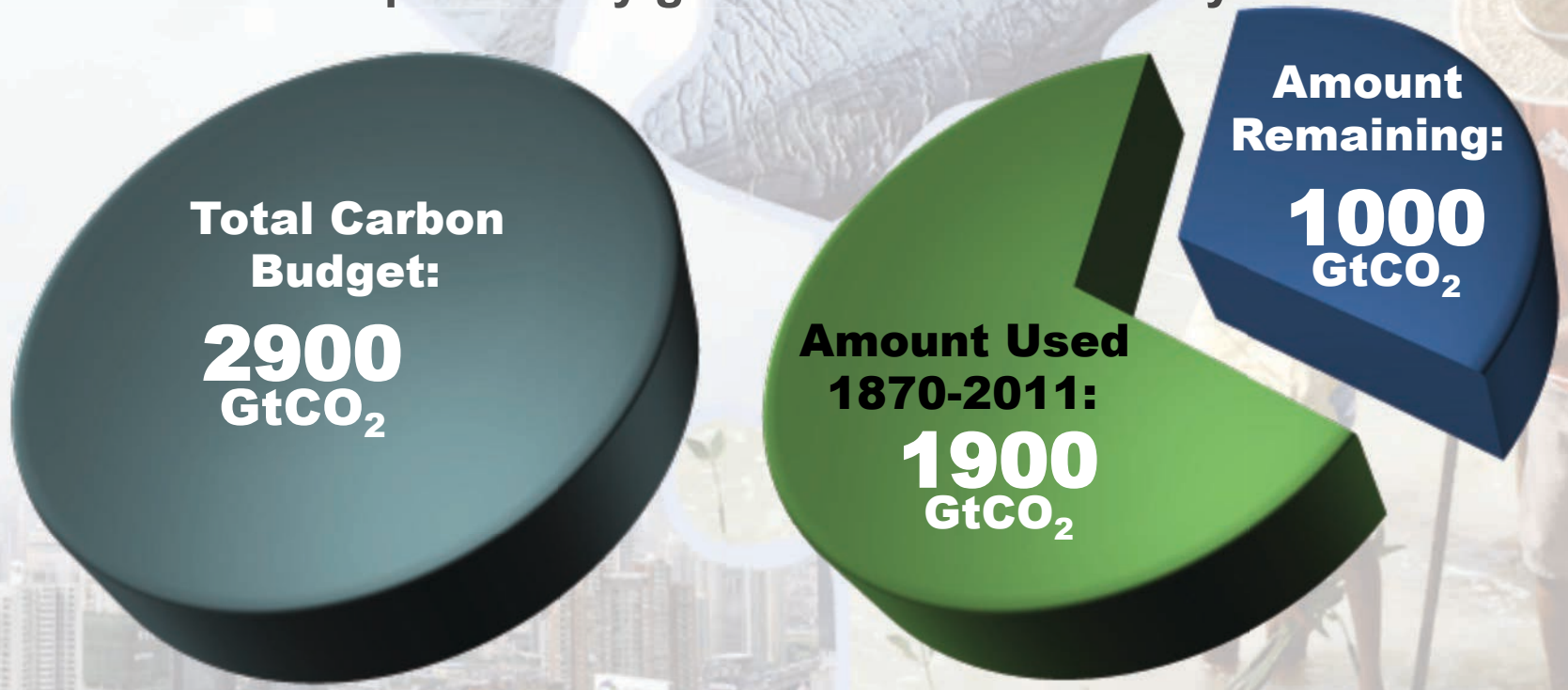


Fig. SPM.10

Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.

The window for action is rapidly closing

65% of the carbon budget compatible with a 2°C goal is already used
NB: this is with a probability greater than 66% to stay below 2°C



NB: Emissions in 2011: 38 GtCO2/yr

AR5 WGI SPM

Historical Responsibility

International cooperation on climate change involves ethical considerations, including equitable effort-sharing.

These questions include how much overall mitigation is needed to avoid **'dangerous interference with the climate system'**, how the effort or **cost of mitigating climate change should be shared among countries** and between the present and future, how to account for such factors as **historical responsibility for GHG emissions**, and how to choose among alternative policies for mitigation and adaptation. Ethical issues of well- being, **justice**, fairness, and rights are all involved. Ethical analysis can identify the different ethical principles that underlie different viewpoints, and distinguish correct from incorrect ethical reasoning.

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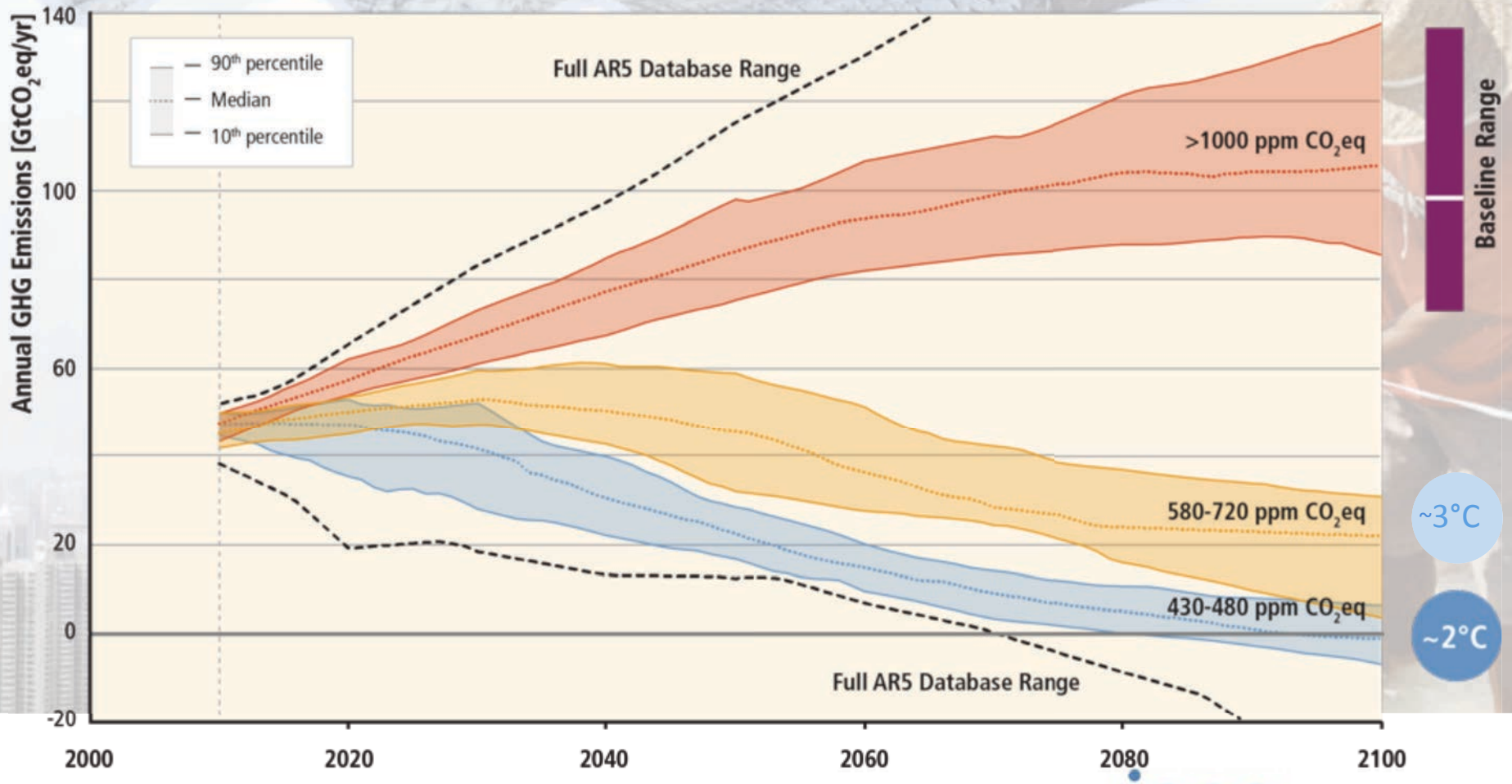
IPCC, AR5, WG III, TS, p. 39

Stabilization of atmospheric concentrations requires moving away from the baseline – regardless of the mitigation goal.



Based on Figure 6.7

AR5 WGIII SPM

IPCC AR5 Synthesis Report

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Can temperature rise still be kept below 1.5 or 2°C (over the 21st century) compared to pre-industrial ?

- **Many scenario studies confirm that it is technically and economically feasible to keep the warming below 2°C, with more than 66% probability ("likely chance").** This would imply limiting atmospheric concentrations to 450 ppm CO_2-eq by 2100.
- **Such scenarios** for an above 66% chance of staying below 2°C **imply reducing by 40 to 70% global GHG emissions compared to 2010 by mid-century, and reach zero or negative emissions by 2100.**

Mitigation Measures

More efficient use of energy

Greater use of low-carbon and no-carbon energy

- Many of these technologies exist today
- But worldwide investment in **research** in support of GHG mitigation is small…

Improved carbon sinks

- **Reduced deforestation** and improved forest management and planting of new forests
- **Bio-energy with carbon capture and storage**

Lifestyle and behavioural changes

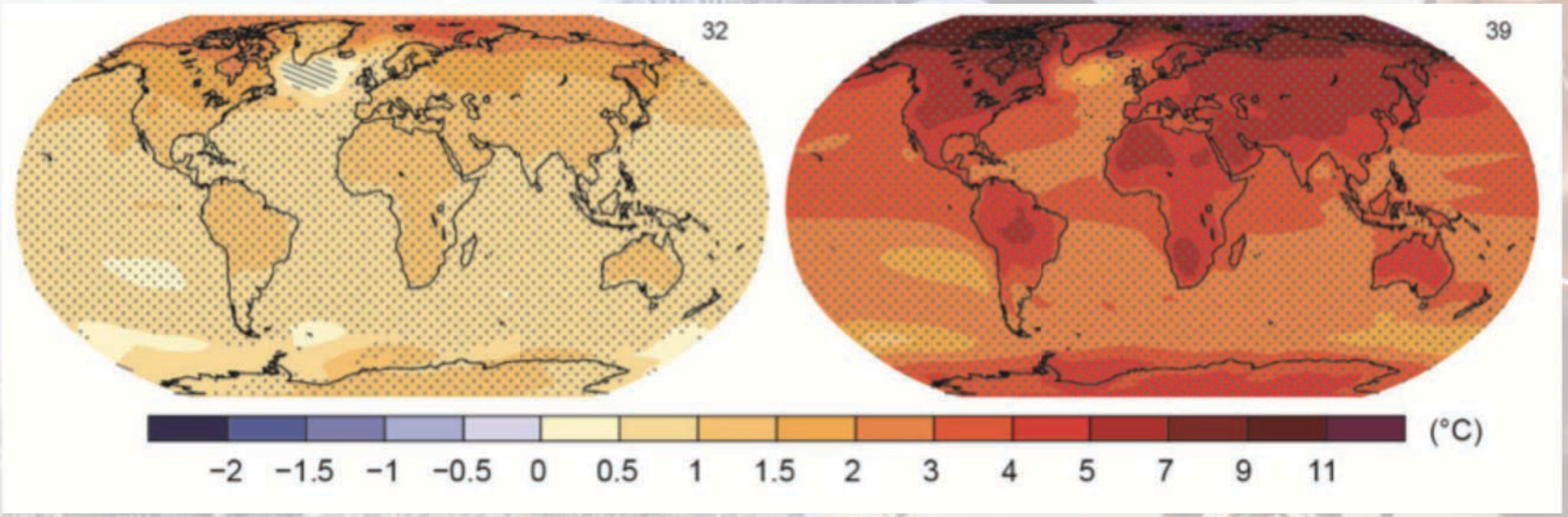
AR5 WGIII SPM

- **Substantial reductions in emissions would require large changes in investment patterns e.g., from 2010 to 2029, in billions US dollars/year:**
  (mean numbers rounded, IPCC AR5 WGIII Fig SPM 9)
- **energy efficiency: +330**
- **renewables: + 90**
- **power plants w/ CCS: + 40**
- **nuclear: + 40**
- **power plants w/o CCS: - 60**
- **fossil fuel extraction: - 120**

The Choices Humanity Makes Will Create Different Outcomes (and affect prospects for effective adaptation)

With substantial mitigation

Without additional mitigation



Change in average surface temperature (1986–2005 to 2081–2100)

AR5 WGI SPM

The Hidden IPCC Message:

- **If it's possible and not enough happens, what is lacking?**
- ***Political will, at the appropriate scale***

Isaac Cordal

Process

1992	United Nations Framework Convention on Climate Change
1997	Kyoto Protocol
2009/ 2010	Copenhagen Accord & Cancún Agreements
2011	Durban Platform Start Negotiation 2015 Agreement
2012	Kyoto Protocol : 2e verbintenissenperiode
2015	Akkoord van Parijs

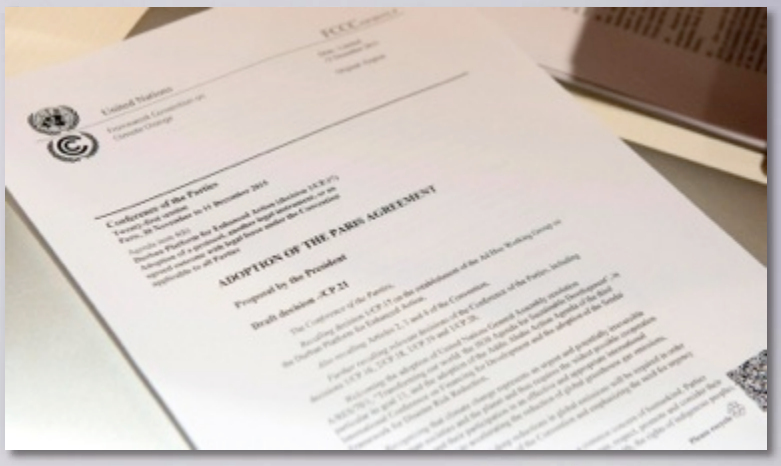
- **196 Parties**
- **150 Heads of State and Govt**
- **36.276 participants**

.be

ur les Changements Climatiques 2015

COP21/CMP11

Paris, France



Negotiating groups

Annex 1 ("NORTH")

EU 28+

EIG

Umbrella Group

Non-Annex 1 ("SOUTH")

G77+China

LDCs (48)

African Group (53)

AOSIS (39)

AILAC

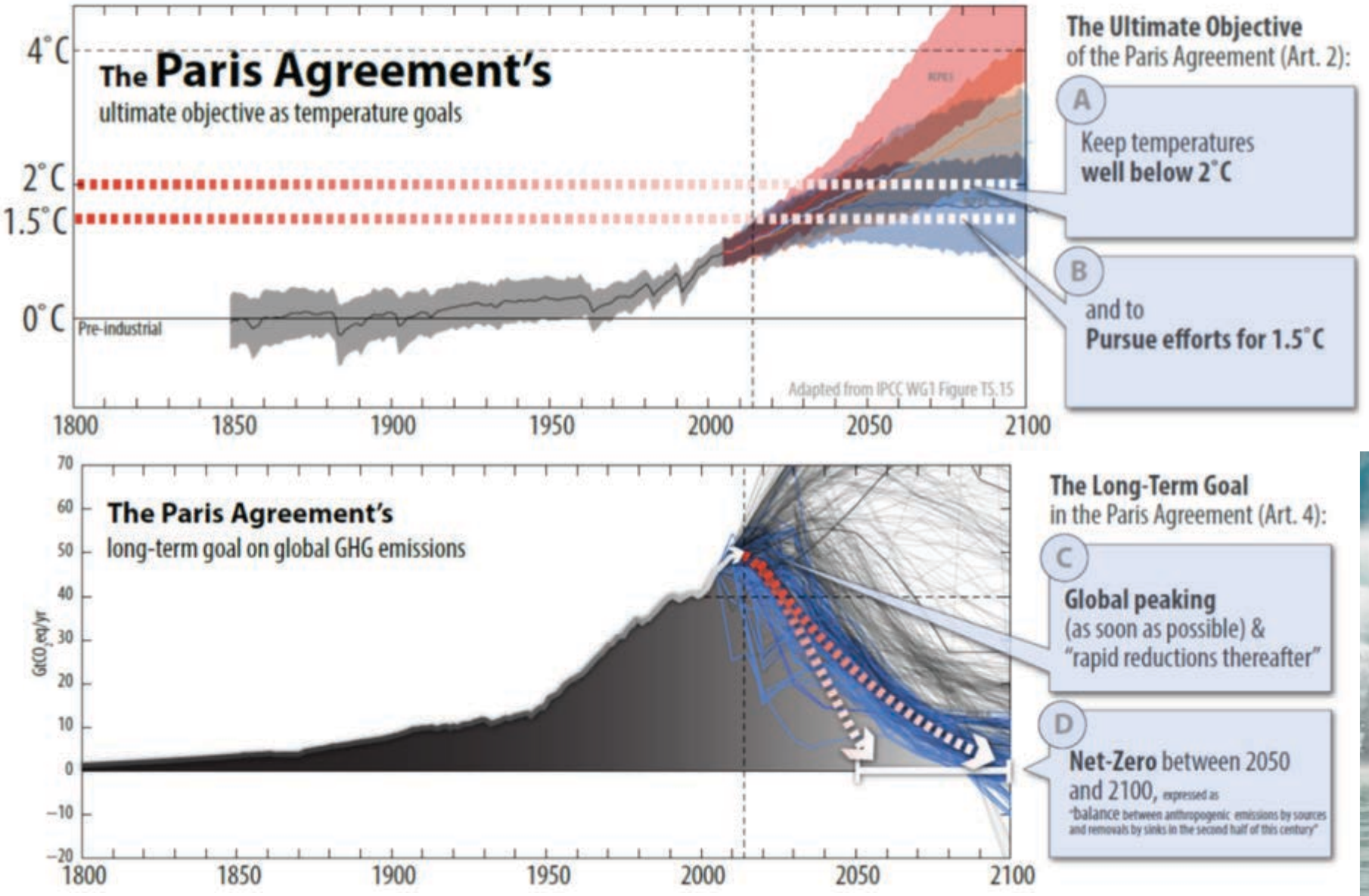
BASIC

LMDC

ALBA

Arab Group

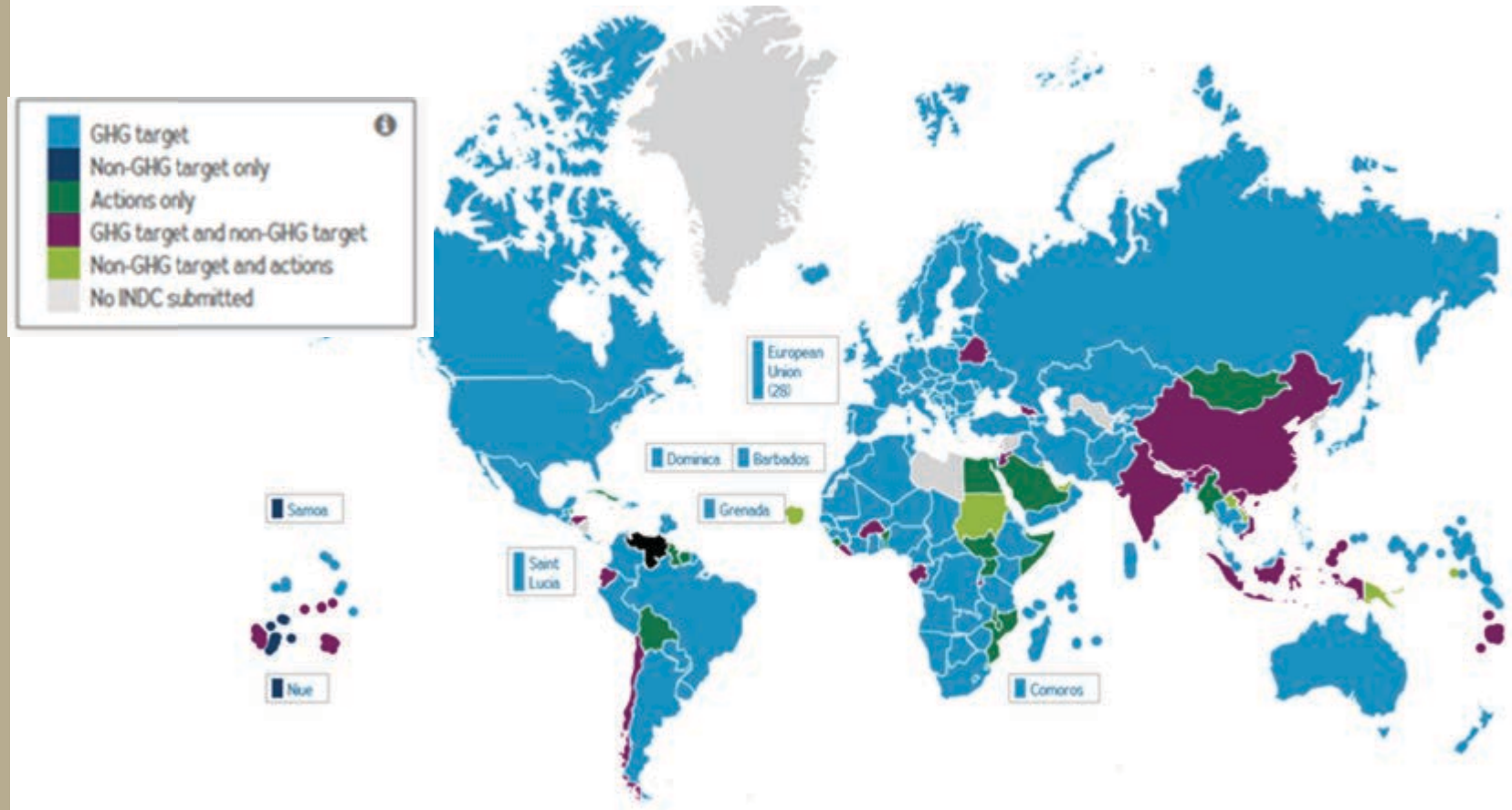
Long Term Goal



Source: M. Meinshausen, Australian-German Climate & Energy College, The University of Melbourne, climatecollege.unimelb.edu.au

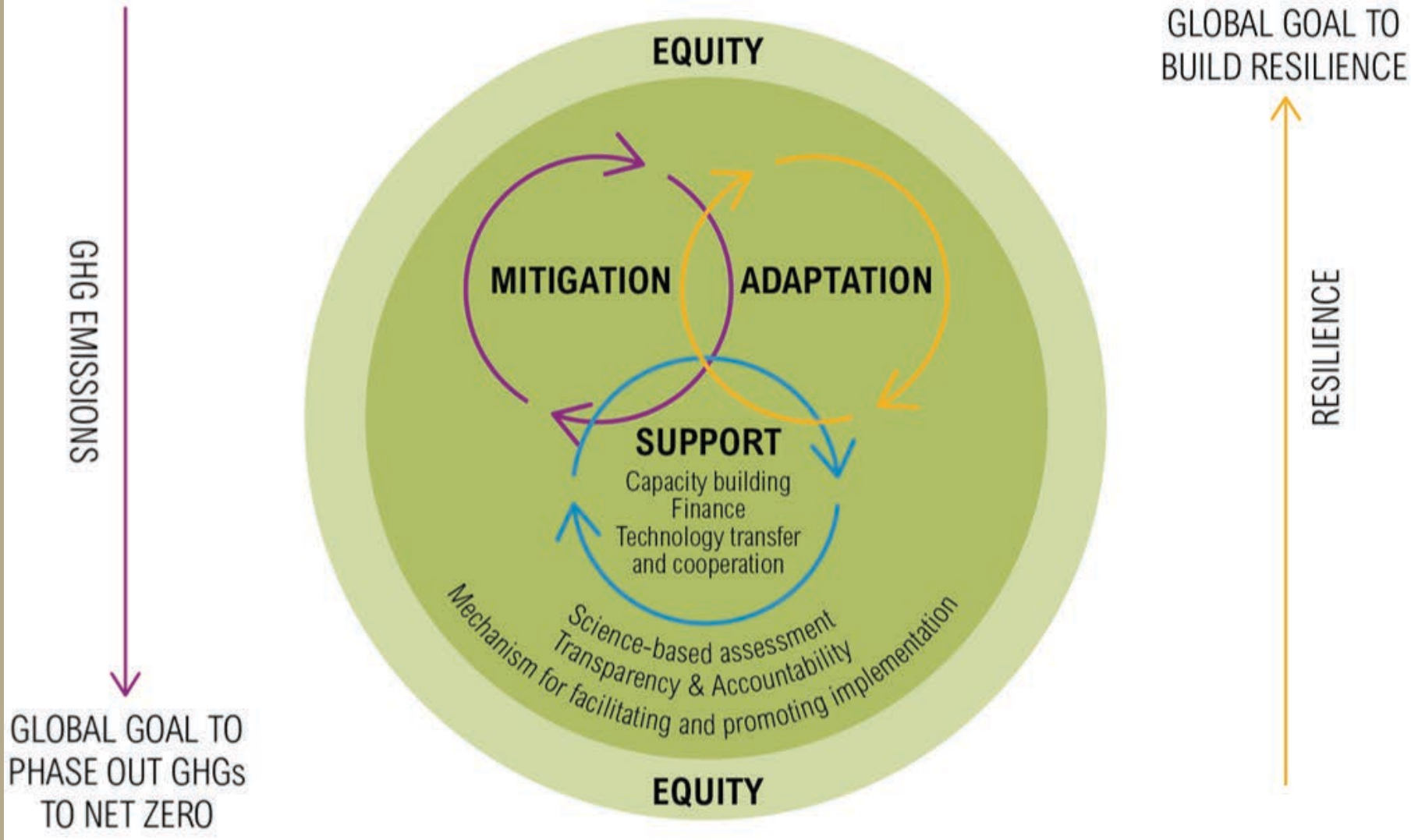
Paris agreement: universal, differentiated, transparent

- Obligation to maintain successive targets and to pursue domestic measures
- Obligation to report information necessary to track progress



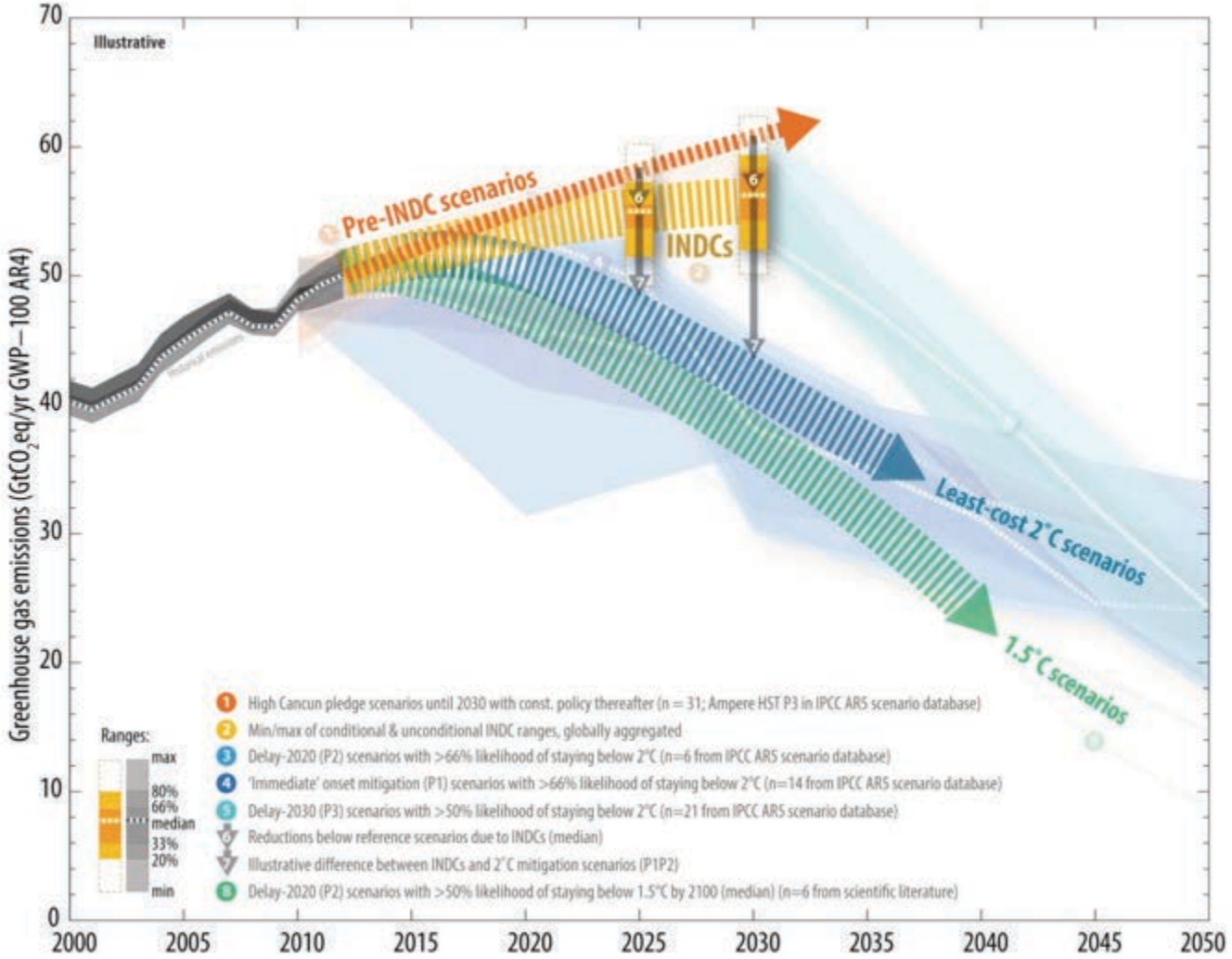
Source : World Resource Institute

Global stocktake : mitigation, adaptation and support



Source: ACT 2015 consortium, WRI

Comparison of global emission levels in 2025 and 2030 resulting from the implementation of the intended nationally determined contributions



UNFCCC, Aggregate effect of the intended nationally determined contributions: an update http://unfccc.int/resource/docs/2016/cop22/eng/02.pdf

Global stocktake : mitigation, adaptation and support

http://ow.ly/VUfYe

WORLD RESOURCES INSTITUTE

Paris Agreement

- Article 2:
  - (…) to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:
    - Holding the increase in the global average temperature to **well below 2 °C** above pre-industrial levels and to **pursue efforts** to limit the temperature increase to **1.5 °C** above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
    - **Increasing the ability to adapt** (…) and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;
    - Making **finance flows consistent** with a pathway towards low greenhouse gas emissions and climate-resilient development

Paris Agreement

- Article 3:
  - As nationally determined contributions to the global response to climate change, **all Parties** are to undertake and communicate ambitious efforts (…) with the view to achieving the purpose of this Agreement as set out in Article 2.
    The efforts of all Parties will represent **a progression over time**, while recognizing the **need to support developing country** Parties for the effective implementation of this Agreement.

Paris Agreement

- Article 4:
  - 1. (…) Parties aim to reach **global peaking** of greenhouse gas emissions **as soon as possible**, recognizing that **peaking will take longer for developing country Parties**,
  - and to undertake **rapid reductions thereafter in accordance with best available science**,
  - so as to achieve a **balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century**, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty
  - 3. **Each Party's successive nationally determined contribution will represent a progression**(…)

Paris Agreement

- Article 4 (cont.):
  - 4. Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets.
  - Developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances.
  - **Each Party shall communicate a nationally determined contribution every five years**
  - Parties shall take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties.

Paris Agreement

- Article 5:
  - Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases (…) including forests.
  - Parties are encouraged to take action to implement and support (…) policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation,
- Article 6
  - 4. A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development is hereby established under the authority and guidance of the Conference of the Parties (…) for use by Parties on a voluntary basis.
  -

Paris Agreement

- Article 7
  - Parties hereby establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change
- Article 8
  - Parties recognize the importance of averting, minimizing and **addressing loss and damage** associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage.

"Getting 196 Countries To Agree On Climate Change Was The Easy Part. Now comes the real work."

(C. Figueres, World Economic Forum 2016, Davos)

Leaders Aim to Put a Price on Half of All Global Carbon Emissions

http://www.worldbank.org/en/news/feature/2016/04/21/leaders-aim-to-put-a-price-on-half-of-all-global-carbon-emissions?CID=CCG_TT_climatechange_EN_EXT

Publié chez De Boeck supérieur,
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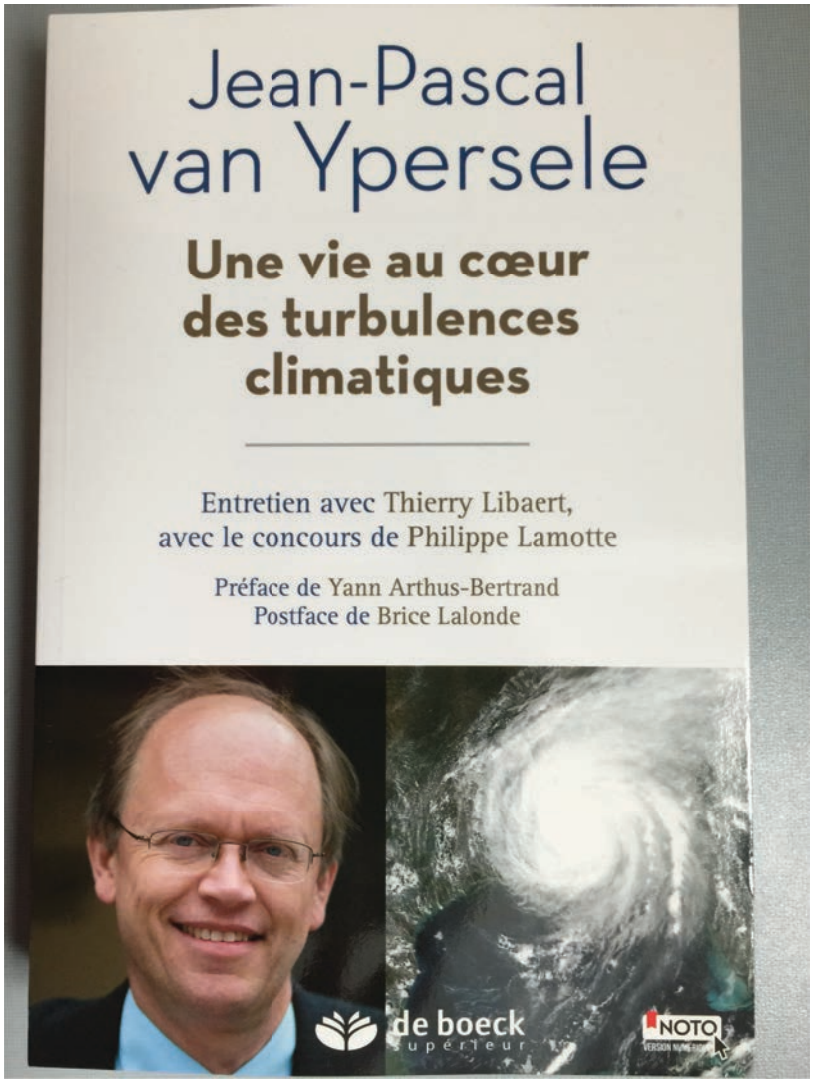
E-book: 13 euros



Useful links:

- www.ipcc.ch : IPCC (reports and videos)
- www.climate.be/vanyp : my slides and other documents
- www.skepticalscience.com: excellent responses to contrarians arguments
- **On Twitter: @JPvanYpersele and @IPCC_CH**