The Paris Agreement and Global Low Carbon Transition Towards 1.5^{o}C Target: A Perspective and an Update*

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*This presentation derives information from varied sources. The responsibility of the contents and views expressed are solely that of the presenter

1.5°C Target: History

1. Debates on the **adequacy** **of** **Long Term Global Goal (LTGG)** **in the light of the ultimate objective of the UNFCCC**

2. The IPCC ***Fourth Assessment Report (AR4) showed that*** "..**deep cuts in global greenhouse gas emissions are required..**" to hold "..**the increase in global average temperature below 2°C..**"

3. In 2010, UNFCCC **COP16** mandated that **"…Parties should take urgent action to meet this long-term goal, consistent with science and on the basis of equity"**.

Adequacy of LTGG and Review

The COP also decided to **periodically review**

- **the adequacy of this long-term global goal (LTGG) ..**
- overall progress towards achieving the long-term global goal ..

COP18 (2012) established **Structured Expert Dialogue**

The 2013–2015 review was also tasked with the consideration of the **strengthening the LTGG, referencing various matters presented by the science, including in relation to a temperature rise of 1.5 °C.**

Outcomes of SED

The 2 °C limit should be seen as a defense line.

While the science on the 1.5 °C warming limit is less robust, efforts should be made to push the defense line as low as possible

1.5 °C Target: The Paris Agreement (Article 2)

This Agreement…. aims to strengthen the global response to the threat of climate change ...by:

a) 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;

.....

Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development

IPCC & 1.5°C Target

- In decision 1/CP.21 of the Paris Agreement, Parties invited the IPCC to provide by 2018, **a Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways.**

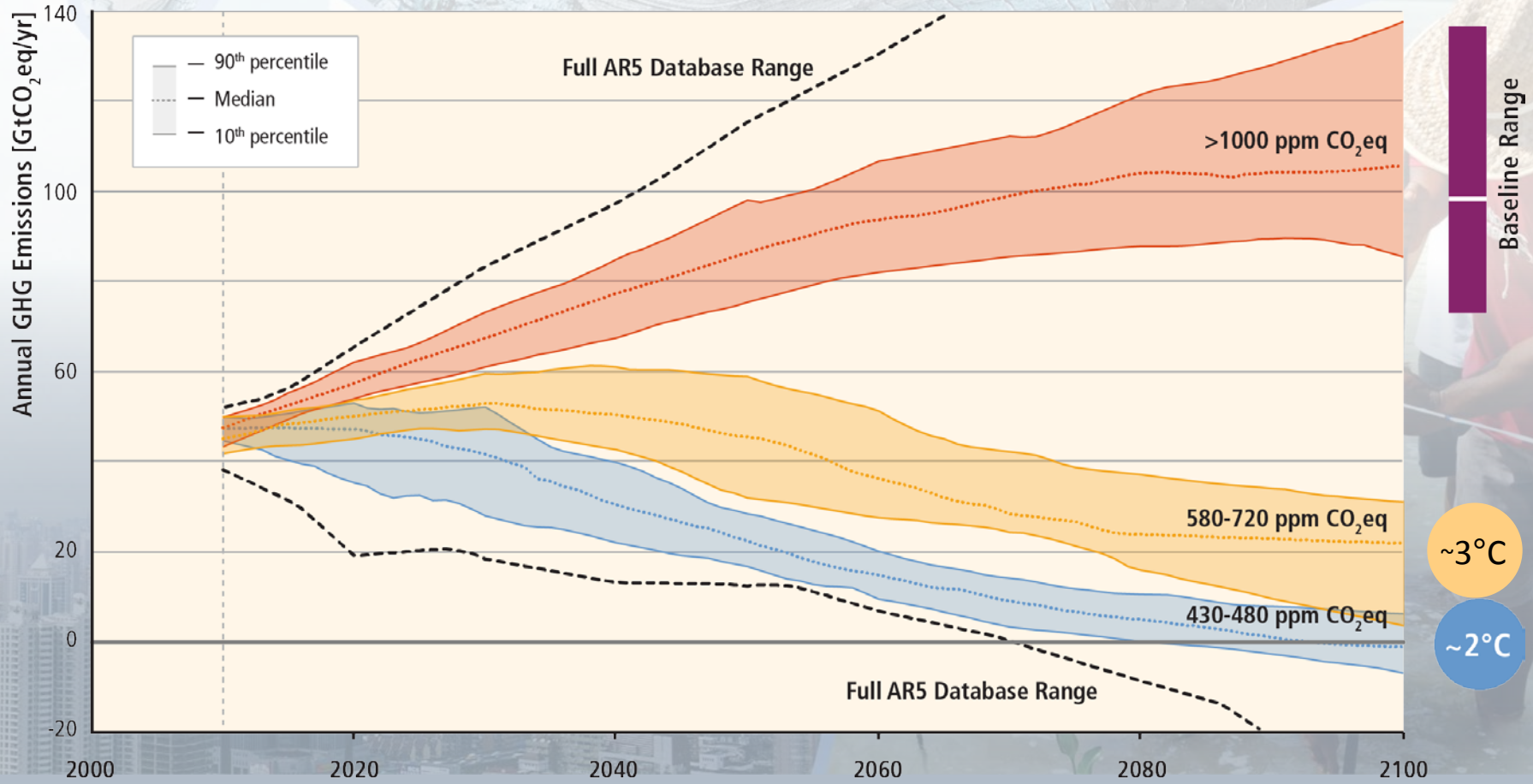
- The Special Report will be finalized in **September 2018 in time for the initial facilitative dialogue**, which will be a first informal review under the global stocktake process.

Main Findings from IPCC WGIII AR5 2014: Brief Summary

Working Group III contribution to the
IPCC Fifth Assessment Report

WMO UNEP

Stabilization of atmospheric concentrations requires moving away from the baseline – regardless of the mitigation goal (IPCC AR5)



Based on Figure 6.7

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ipcc INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

Mitigation Measures (IPCC AR5)

More efficient use of energy

Greater use of low-carbon and no-carbon energy

- Many of these technologies exist today

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

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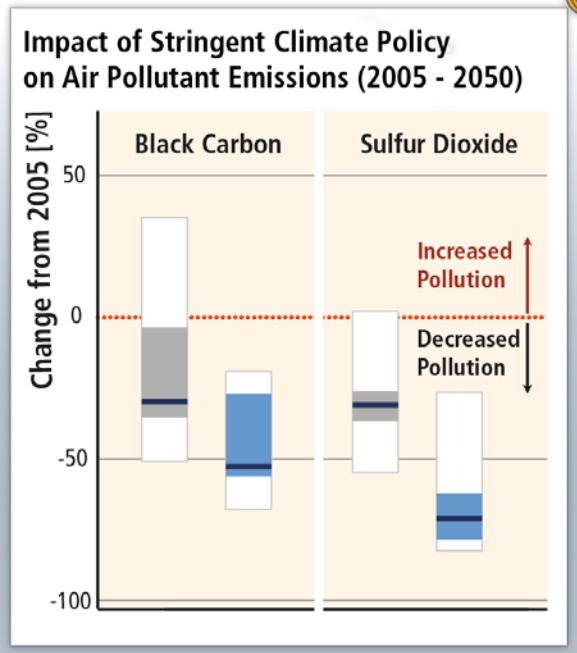
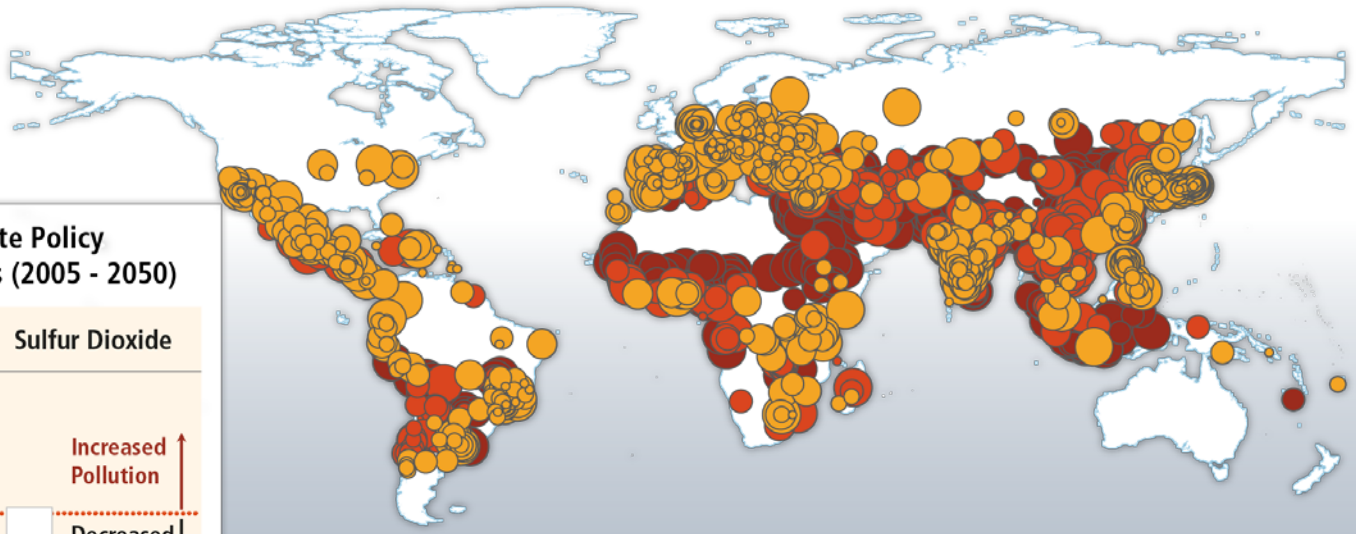
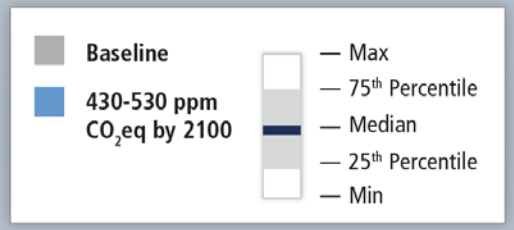
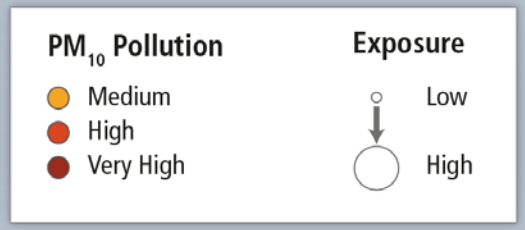
Climate change mitigation can bring co-benefits – health, energy security and other societal goals (IPCC AR5).





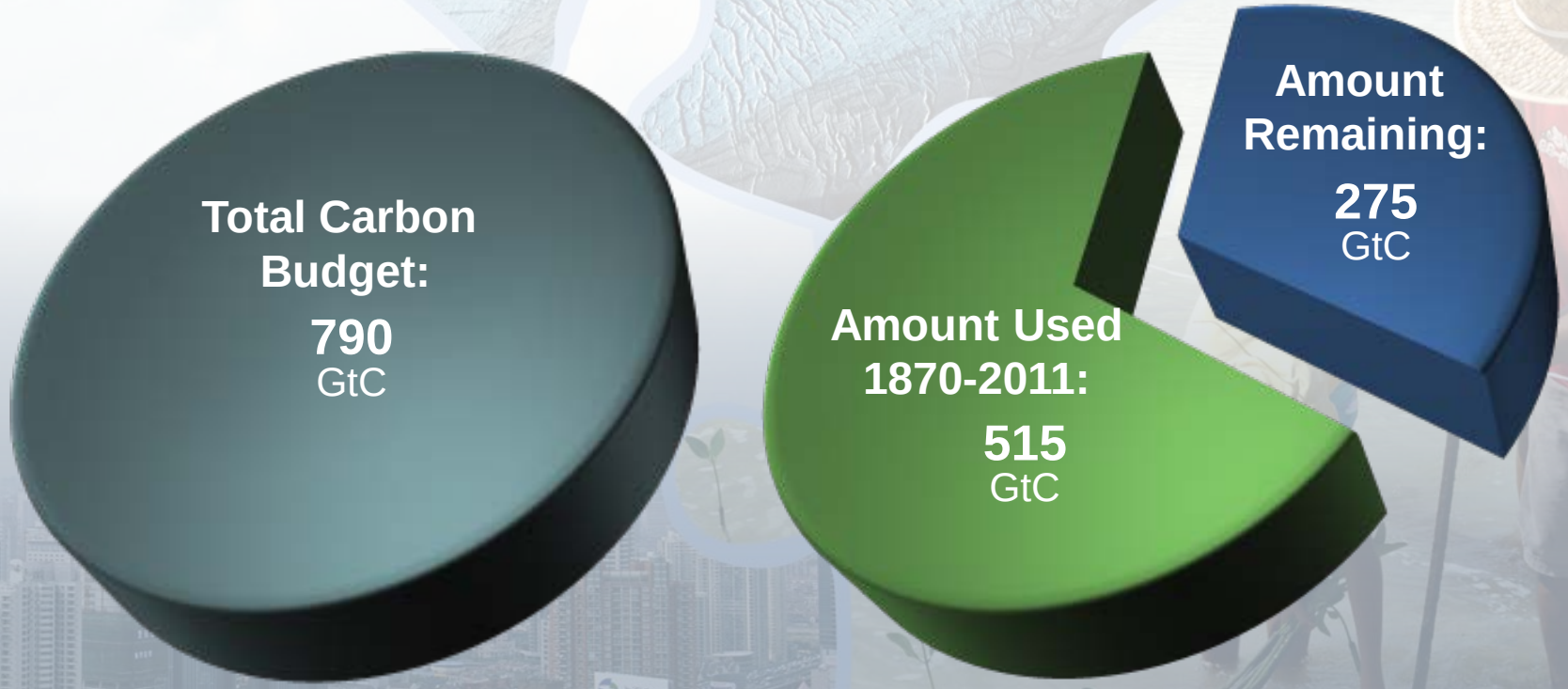




Based on Figures SPM.6 and 12.23

The window for action is rapidly closing (IPCC AR5)

65% of our carbon budget compatible with a 2°C goal already used



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Differences between pathways for 1.5°C and 2°C (Post IPCC AR5 Studies)

Framing of Decarbonization Scenarios (e.g. Energy Sector)

Updated synthesis report on aggregate effect of INDCs - published 2 May 2016, FCCC/CP/2016/2, UNFCCC, http://unfccc.int/focus/indc_portal/items/9240.php

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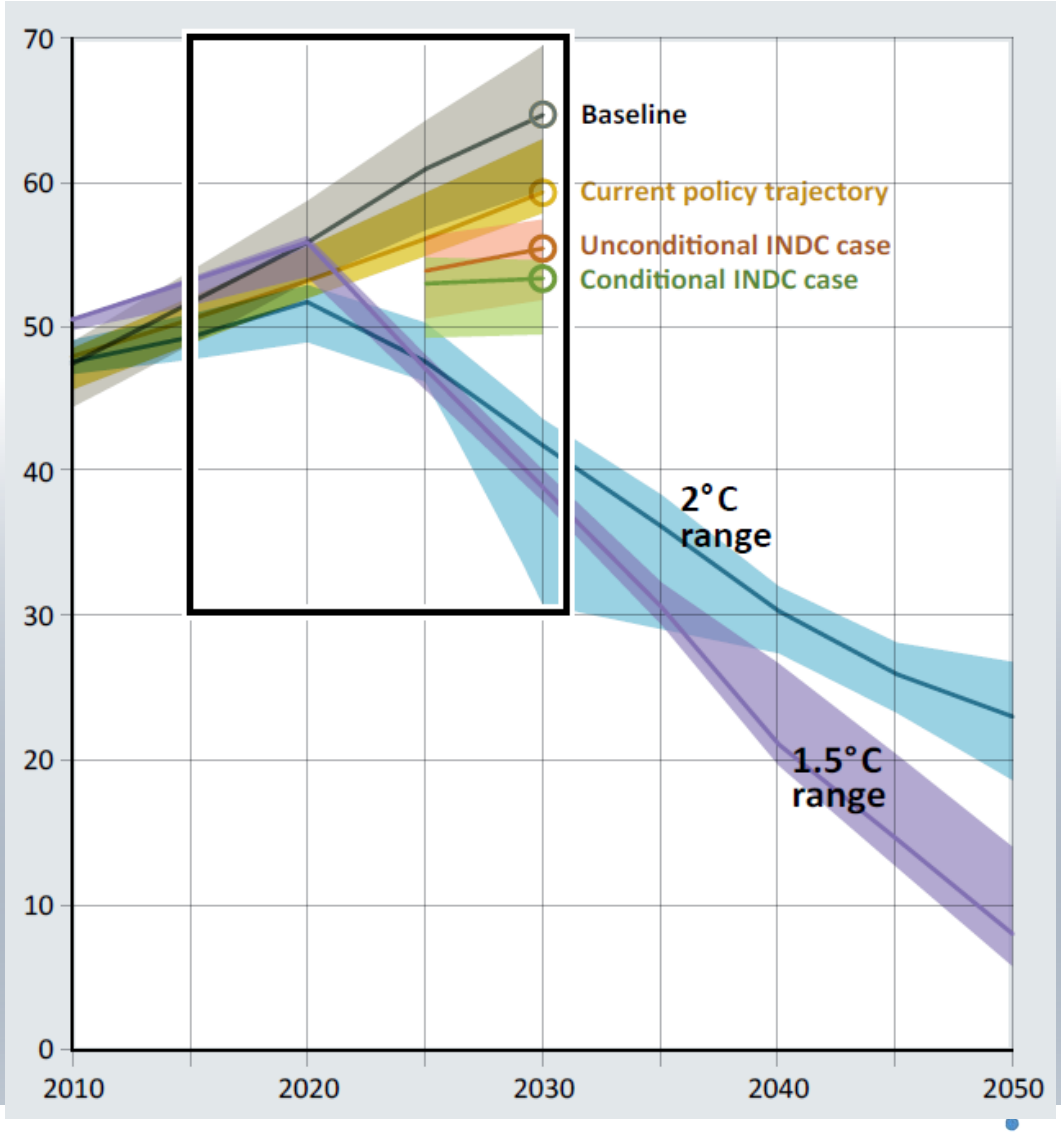
UNEP Emissions Gap Report: 2ºC & 1.5º C Pathways

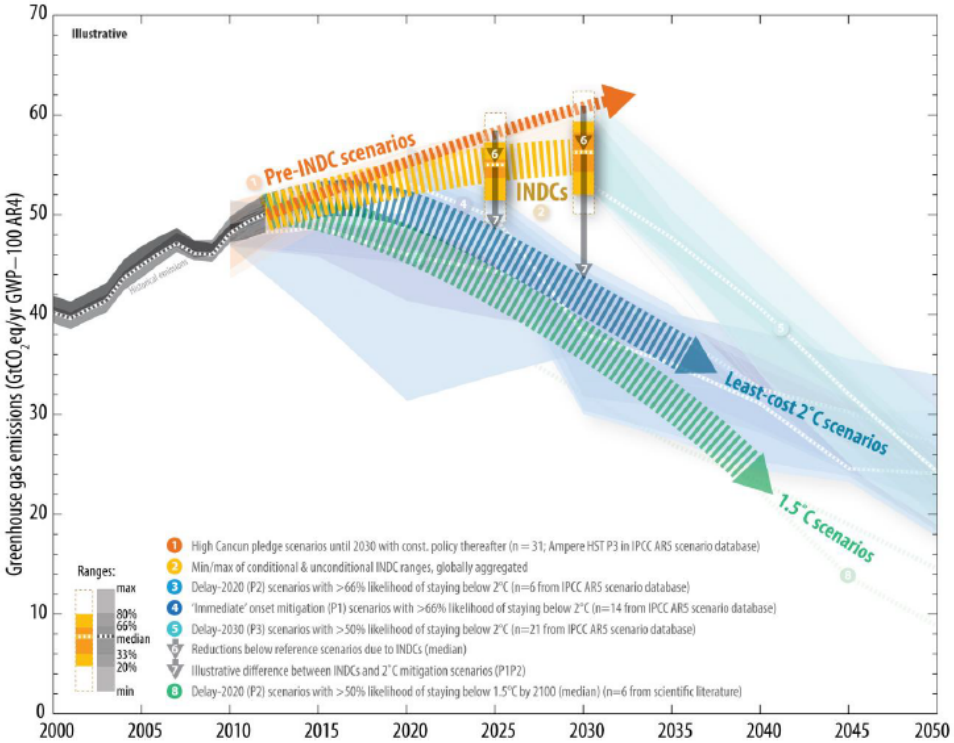


INTERGOVERNMENTAL PANEL ON climate change

Global Emissions: INDC vs. 2 ^{o}C & 1.5 ^{o}C Scenarios

Figure 2

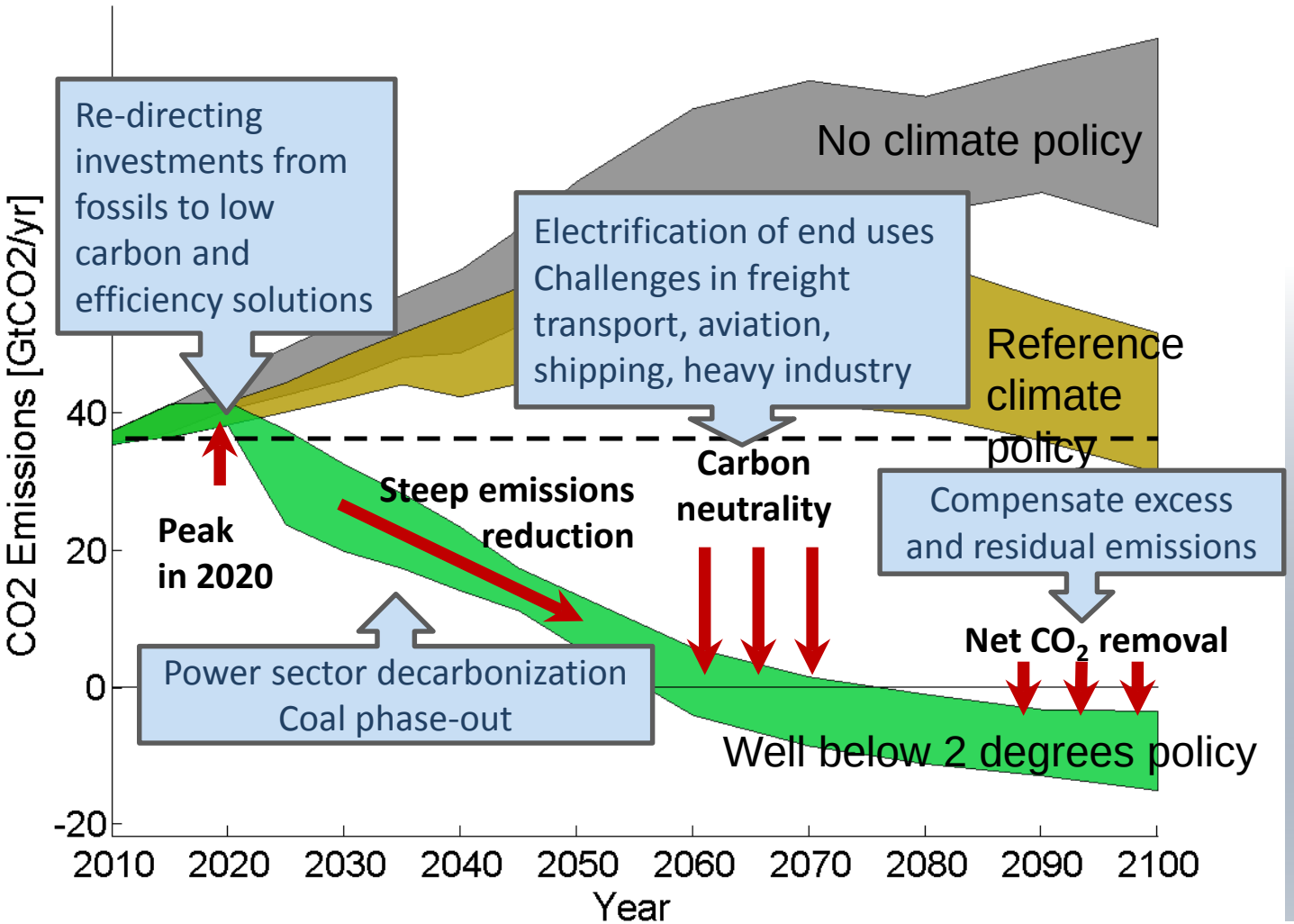
Comparison of global emission levels in 2025 and 2030 resulting from the implementation of the intended nationally determined contributions and under other scenarios



Sources: Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report scenario database, 1.5 °C scenarios from scientific literature (see footnote 18), IPCC historical emission database and intended nationally determined contribution quantification.

Abbreviations: AR4 = Fourth Assessment Report of the Intergovernmental Panel on Climate Change, GWP = global warming potential, INDC = intended nationally determined contribution, IPCC AR5 = Fifth Assessment Report of the Intergovernmental Panel on Climate Change, n = number of scenarios, yr = year.

Well Below 2°C policy: Energy Sector Responses



LIMITS Study: *www.feem-project.net/limits*

CO_2 Emissions Budget for Staying Below 2 ^oC

Figure 11

Comparison of cumulative CO_2 emissions under different scenarios

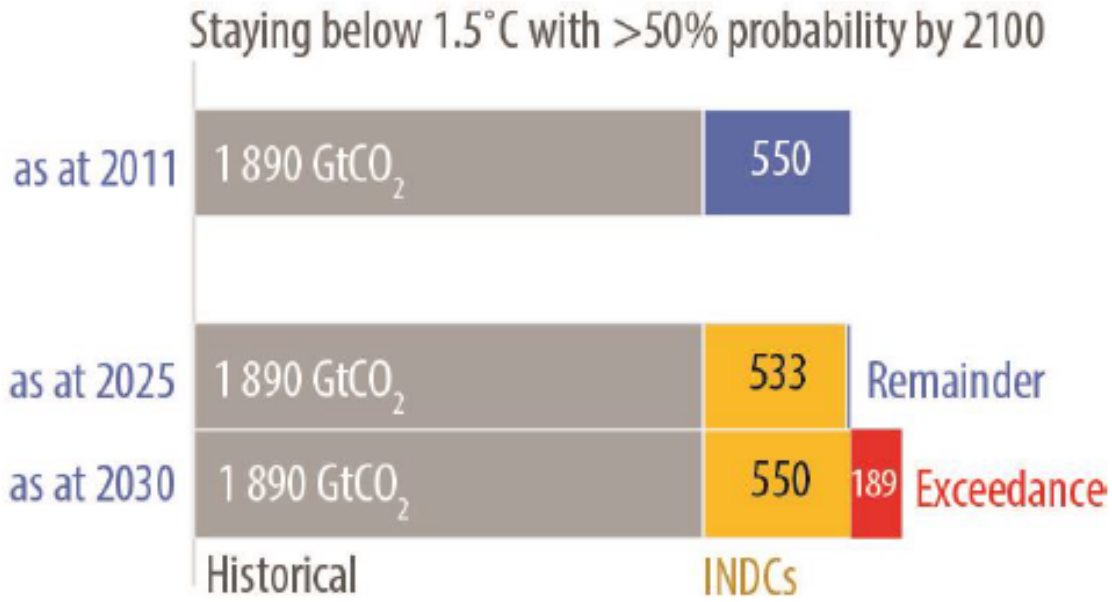
Source: Intergovernmental Panel on Climate Change Fifth Assessment Report scenario database and own aggregation.

Abbreviation: INDCs = intended nationally determined contributions.

CO_2 Emissions Budget for Staying Below 1.5°C

Figure 13

Cumulative CO_2 emissions consistent with the goal of keeping global average temperature rise below 1.5 °C



Source: Intergovernmental Panel on Climate Change Fifth Assessment Report scenario database and own aggregation.

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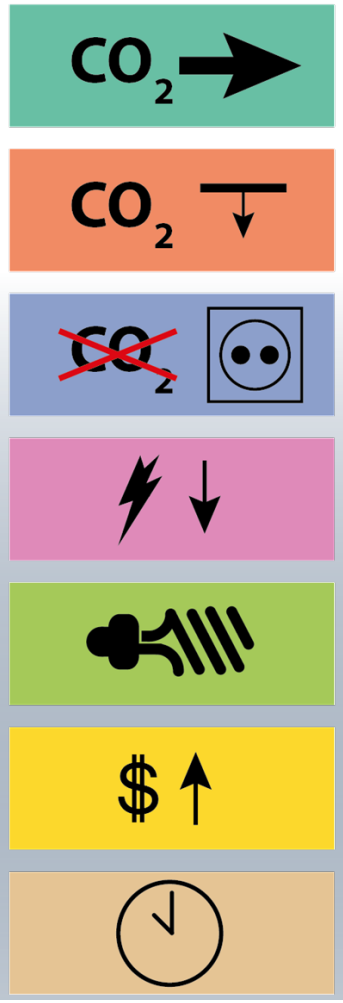
Review of 1.5°C pathways

Key differences with 2°C scenarios



additional GHG reductions, mainly from CO2

CO2 reductions beyond net zero

rapid near-term decarbonisation of energy supply

greater demand side mitigation efforts

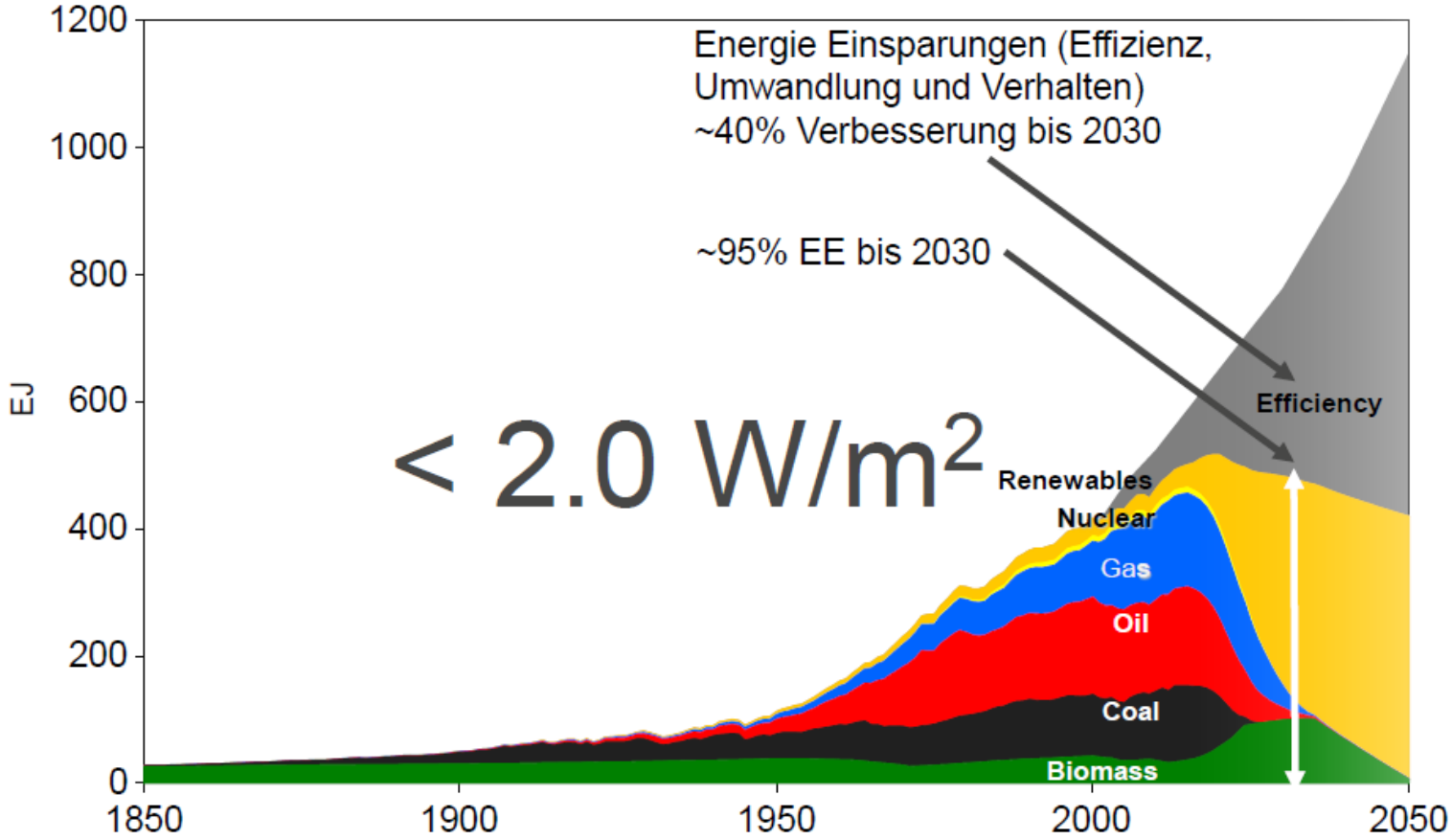
energy efficiency improvements are crucial

higher mitigation costs

comprehensive reductions in the coming decade

Rogelj et al (2015) Nature CC

What does 1.5 °C Scenario mean to the Energy System?



Source: Sterner et al. 2016 after WBGU, 2011

#10

Mitigation Risks of 1.5 °C versus 2 °C?

- How much higher are mitigation costs?
- Impacts on sustainable development including poverty eradication
- Technology needs (e.g. negative emissions & risks not to meet them)
- Impacts on food security and biodiversity, e.g. by BECCS
- Impacts on carbon cycle by more ambitious mitigation (e.g. forests)
- Overshoot risks (temperature, atmos. GHG conc.), irreversibility

Proposed outline of WG III AR6

Framing (1 chapter)

1. Introduction and framing

High-level assessment of emission trends, drivers and pathways (3 chapters)

2. Past emissions trends and drivers
3. Long-term mitigation goals and pathways
4. Mitigation and development pathways in the near- to mid-term

Sectoral chapters (8 chapters)

5: Demand, services and social aspects of transformation
6: Energy systems
7. AFOLU
8. Urban systems and other settlements
9. Buildings
10. Transport
11. Industry
12. Responses across and beyond sectors

Institutional drivers (2 chapters)

13. National and sub-national policies and institutions
14. International cooperation

Financial and technological drivers (2 chapters)

15. Mobilising finance
16. Innovation, technology development and technology

Synthesis (1 chapter)

17. Accelerating the transition in the context of sustainable development

Set up sustainable development as key framing concept

Balancing sources and sinks/warming levels

NDCs, emissions peaking, mid-century long-term low greenhouse gas emission development strategies

Orients sectors to human needs

The sectoral core: maps on to inventories

Responses not captured by sectoral framing

Institutions, policies and cooperation

Financial flows + technological innovation

Synthesis sustainable development in different geographical scales

Timeline for WGIII contribution to AR6

26-28 April 2017	Expert Meeting on Mitigation, Sustainability and Climate Stabilization Scenarios
1-5 May 2017	AR6 Scoping Meeting
6-10 Sept	Panel consideration of outline for AR6
11 Sept – 22 Oct 2017	**Call for CLA/LA/RE Nominations**
29 Jan – 4 Feb 2018	Decision on selection of CLA/LA/RE
1-5 Apr 2019	1st Lead Author Meeting (LAM1)
30 Sep – 4 Oct 2019	2nd Lead Author Meeting (LAM2)
9 Dec 19 – 31 Jan 20	1st Order Draft (FOD) Expert Review
30 Mar – 3 Apr 3 2020	3rd Lead Author Meeting (LAM3)
1 Jun – 24 Jul 2020	2nd Order Draft (SOD) Expert Review
19-23 Oct 2020	4th Lead Author Meeting (LAM4)
1 Feb – 26 Mar 2021	FGD Government Review of SPM
12-14 Jul 2021	IPCC acceptance/adoption/approval

Scoping Review

Selection

Author Drafting and

AR6 Approval

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Head of TSU (Science)

Renee van Diemen
Scientist

IPCC WGIII: www.mitigation2014.org

WG III links

www.ipcc.ch

www.ipcc-wg3.ac.uk

Thank you