United Nations Framework Convention on Climate Change

Final report of the structured expert dialogue on the 2013–2015 review

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UNFCCC, 2 June 2015

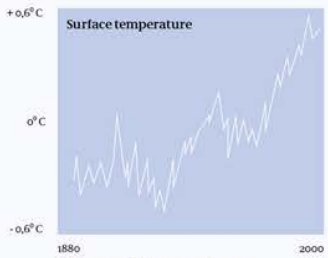
I. Introduction

Nature of the 2013-2015 review

What we know

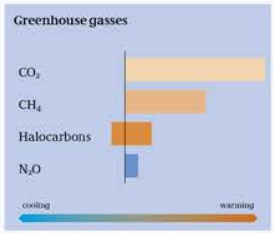
The UNFCCC calls on national governments to promote and cooperate in research and systematic observation of the global climate system – a key prerequisite for advancing scientific knowledge on climate change.

Observe



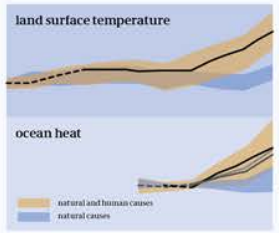
The world is warming
Global average temperature has been increasing since 1870 by 0.85°C.

Driver of changes



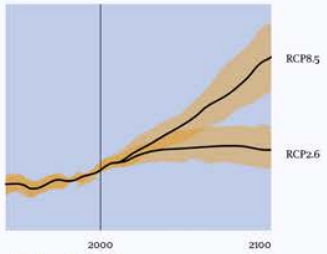
CO_2 remains the main driver
Natural and human-caused substances and processes that alter the Earth's energy budget are drivers of climate change.

Understand changes



Human influence is clear
It is clear that human influence has been the dominant cause of the observed warming since the mid-20th century.

Future changes



The heat is on!
Global average temperature change by the end of the 21st century is likely to rise 1.5°C above pre-industrial levels.

Policy response

In 2010 national governments agreed to set the upper limit of acceptable global warming at 2°C.

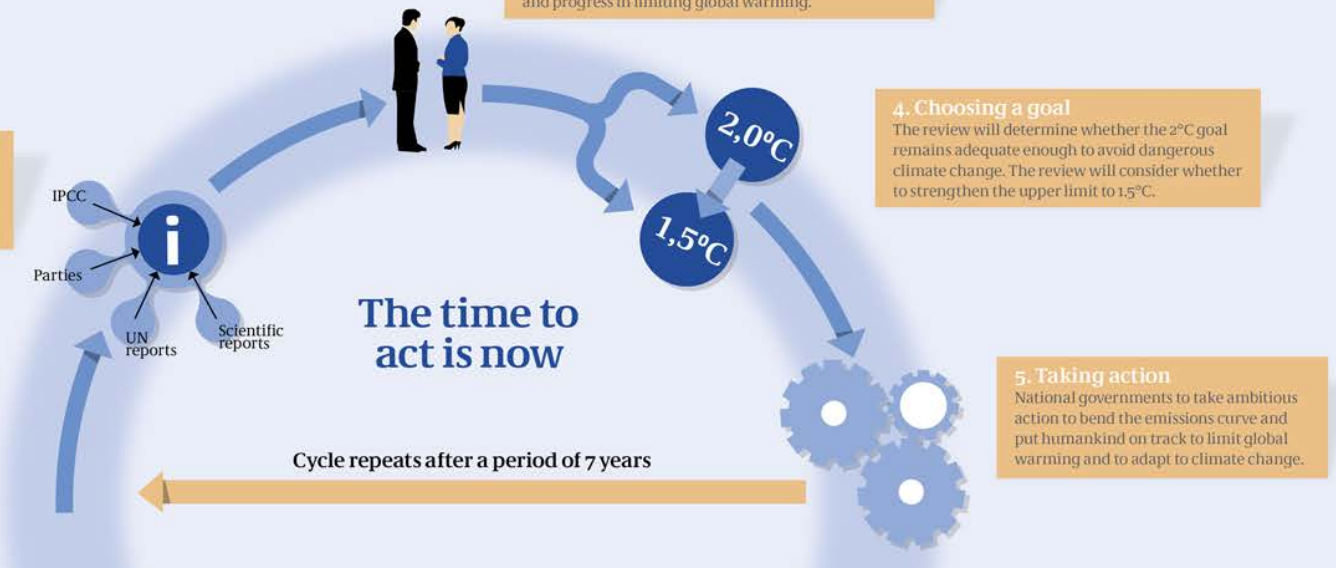
1. Making decisions
National governments decided to:
a) Review the adequacy of the 2°C limit of global warming; and
b) Assess the progress in limiting global warming.

2. Gathering information
Reports from the IPCC, national governments, the UN system and regional agencies will be gathered and compiled to carry out technical assessments.

3. Assessing the adequacy and progress
A dialogue between governments and scientists is underway to assess current and future risks and impacts and progress in limiting global warming.

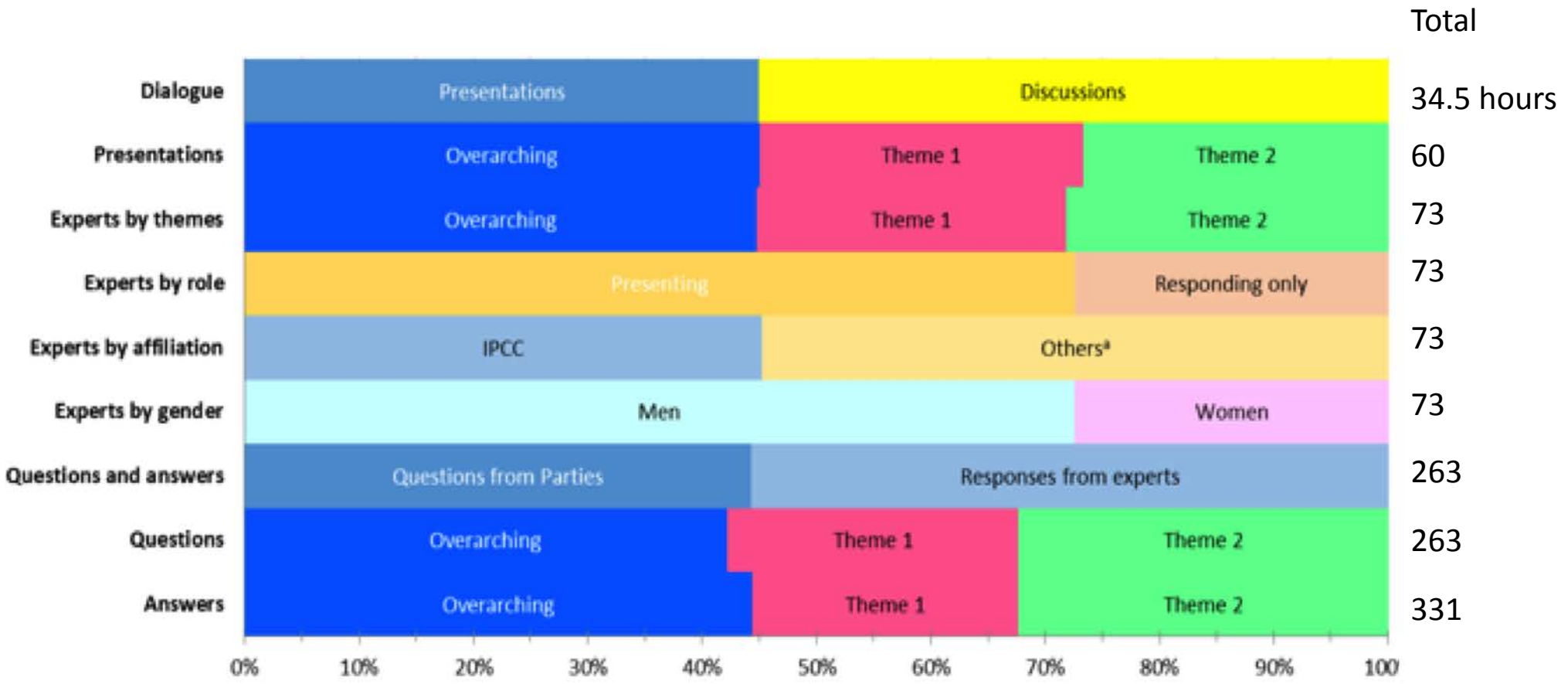
4. Choosing a goal
The review will determine whether the 2°C goal remains adequate enough to avoid dangerous climate change. The review will consider whether to strengthen the upper limit to 1.5°C.

5. Taking action
National governments to take ambitious action to bend the emissions curve and put humankind on track to limit global warming and to adapt to climate change.



II. Proceedings

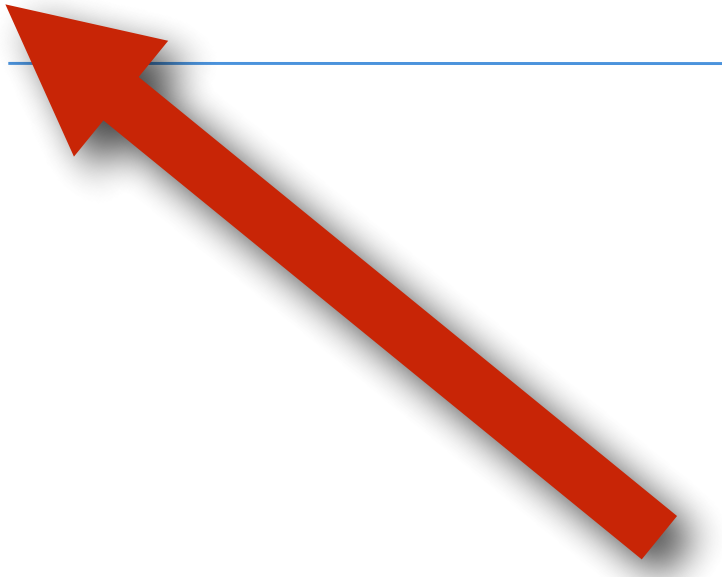
SED Work - Balancing all at the same time

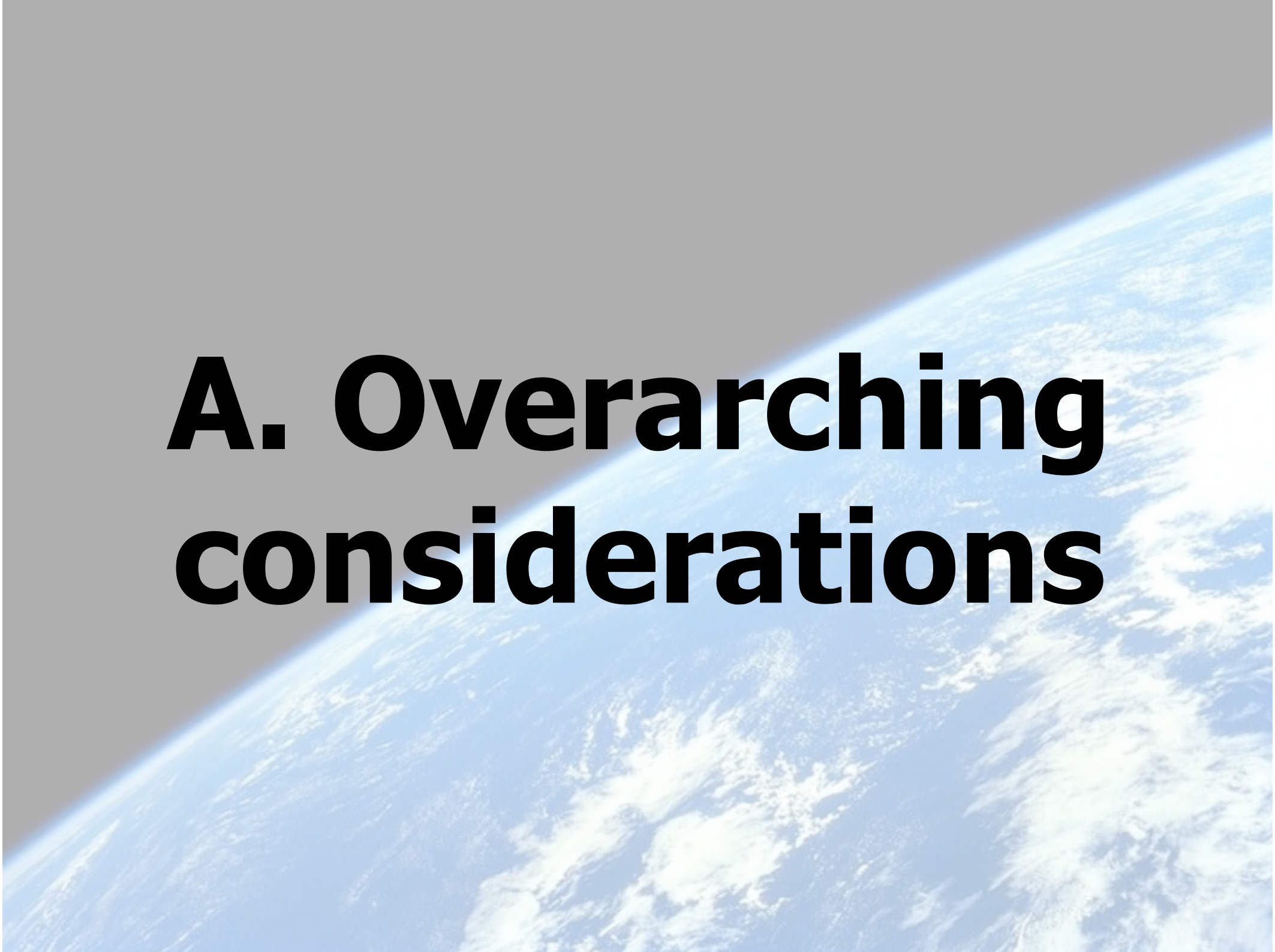


SED Report Figure 1

III. Dialogue

1





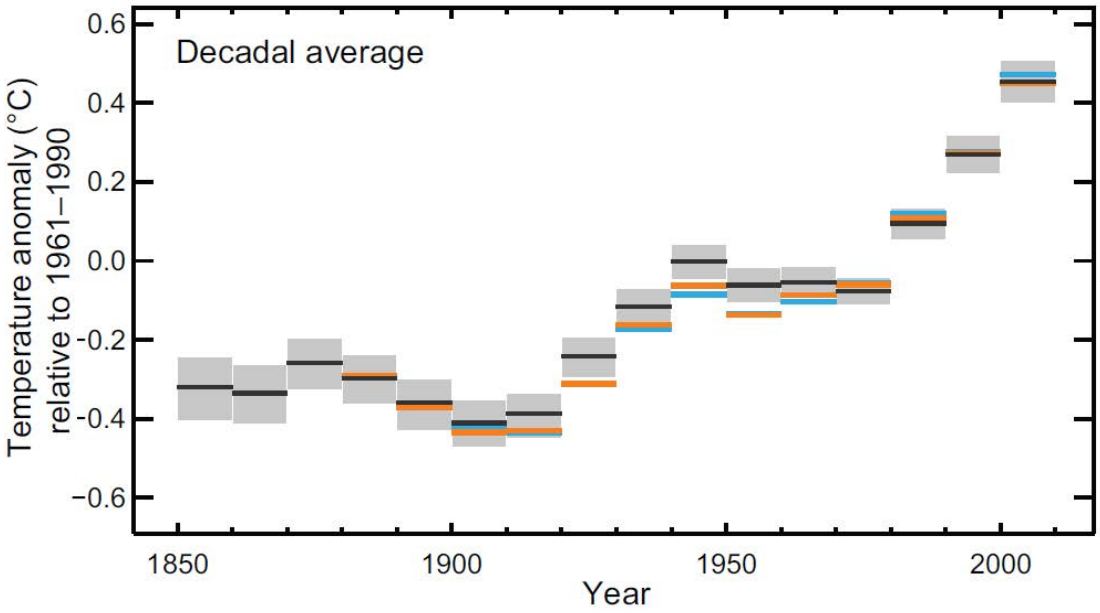
A. Overarching considerations

Message 1

1 Patient planet Earth…

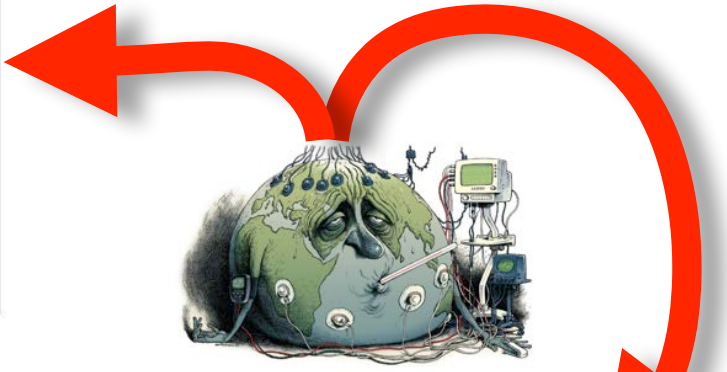
Victor & Kennel, Nature Climate Change, 2014

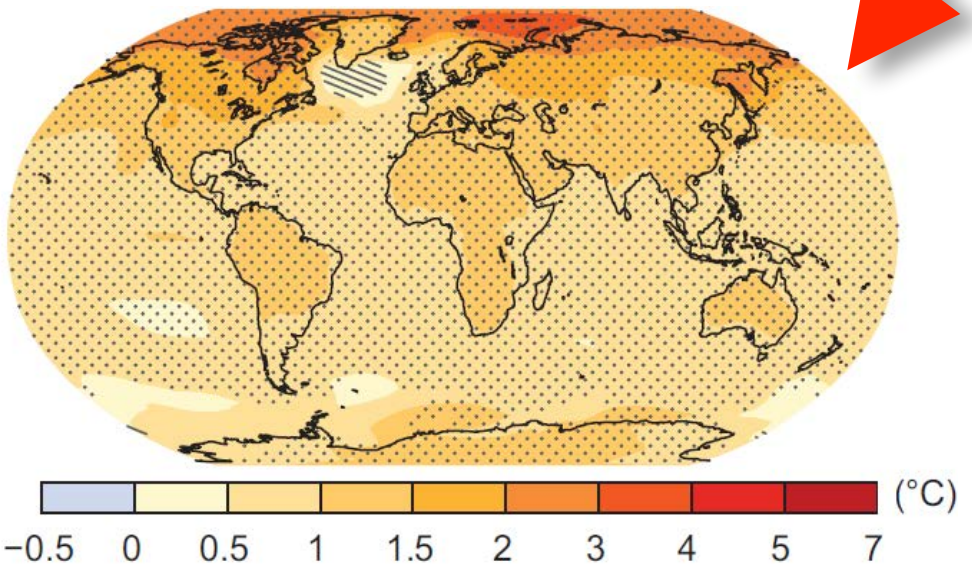
1 Temperature: Observations and projections



SED Report Figure 2

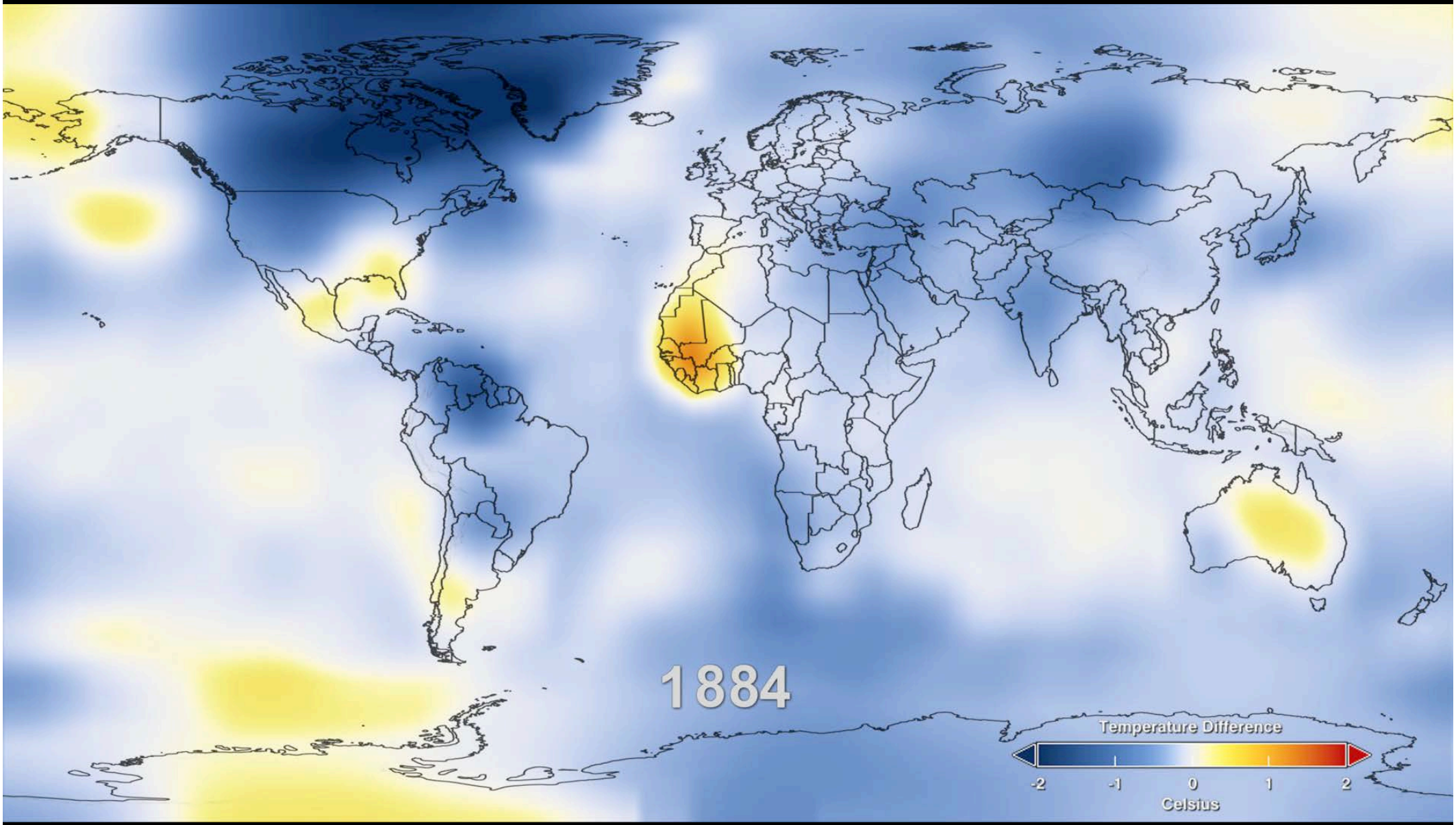
Observed global mean of combined land and ocean surface temperatures from 1850 to 2012, from three datasets





Map of projected change in average surface temperature for RCP2.6 (1986–2005 to 2081–2100)

SED Report Figure 3



NASA Goddard Space Flight Center Scientific Visualization Studio

1 Temperature as long-term global goal useful?

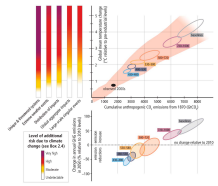
A long-term global goal defined by a temperature limit serves its purpose well

- Parties have agreed on max. global warming of 2 °C
- Science has provided a wealth of information
- Cutting emissions now, avoids future warming
- Extant warming is irreversible unless CO_2 is removed from the atmosphere
- Adding **other limits** such as sea level rise or ocean acidification **reinforces basic finding: we need to take urgently strong action**
- Limitations of a temperature limit could be taken into account, by **reducing the value of the limit further**

Message 2

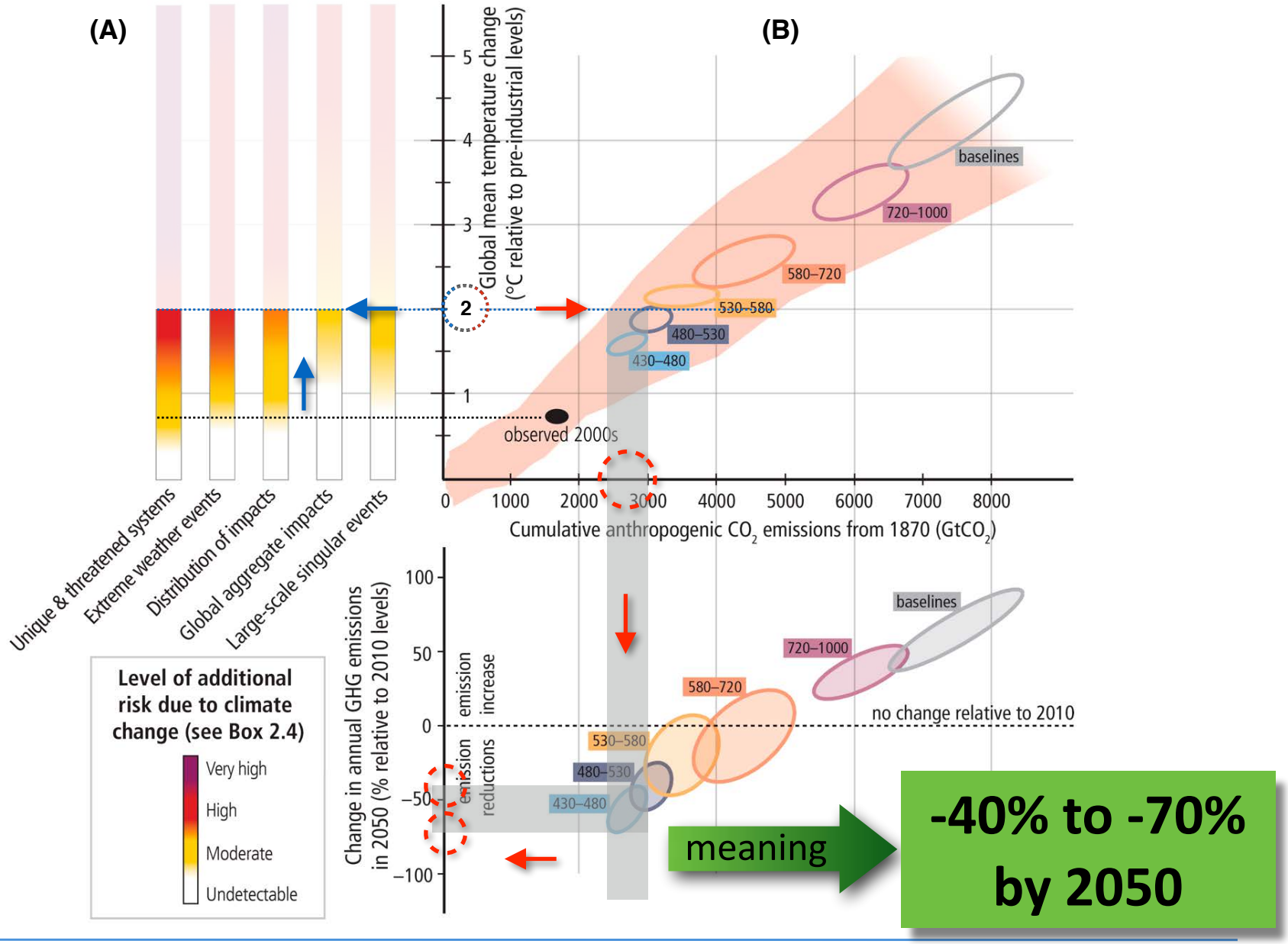
2 What needs to be done?

Imperatives of achieving the long-term global goal are explicitly articulated and at our disposal, and demonstrate the cumulative nature of the challenge and the need to act soon and decisively



SED Report Figure 4

2 What needs to be done?



2 What needs to be done?

Imperatives of achieving the long-term global goal are explicitly articulated and at our disposal, and demonstrate the cumulative nature of the challenge and the need to act soon and decisively

- The 2 °C limit implies: deep cuts in global emissions in short to medium term; global CO_2 neutrality shortly after 2050; negative global GHG emissions towards 2100
- The longer we wait to cut emissions now, the deeper we have to cut them afterwards, even with negative emissions
- **The 2 °C limit necessitates a radical transition, not merely a fine-tuning of current trends**

B. Theme 1 (adequacy of LTGG)

Message 3

First step: Risk assessment

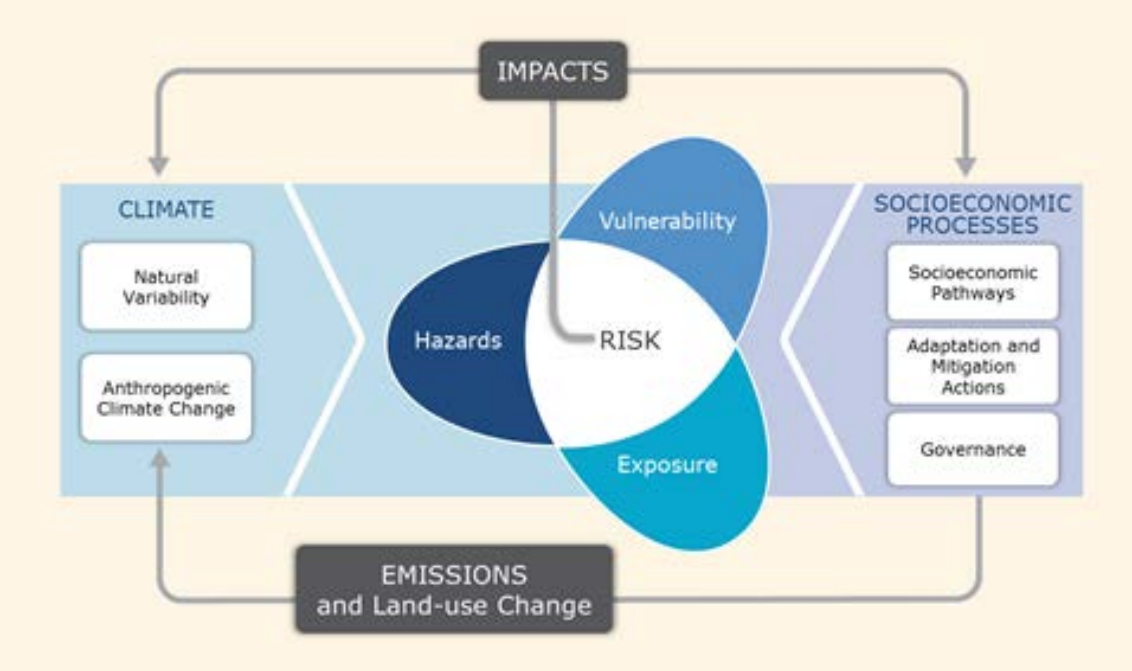
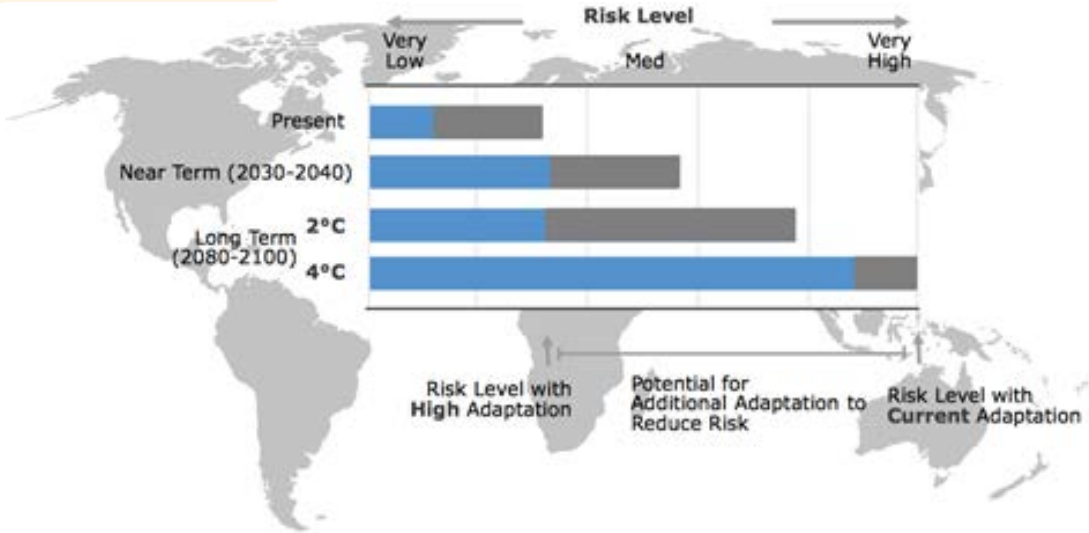


Illustration of the core concept of climate risks

SED Report Figure 5

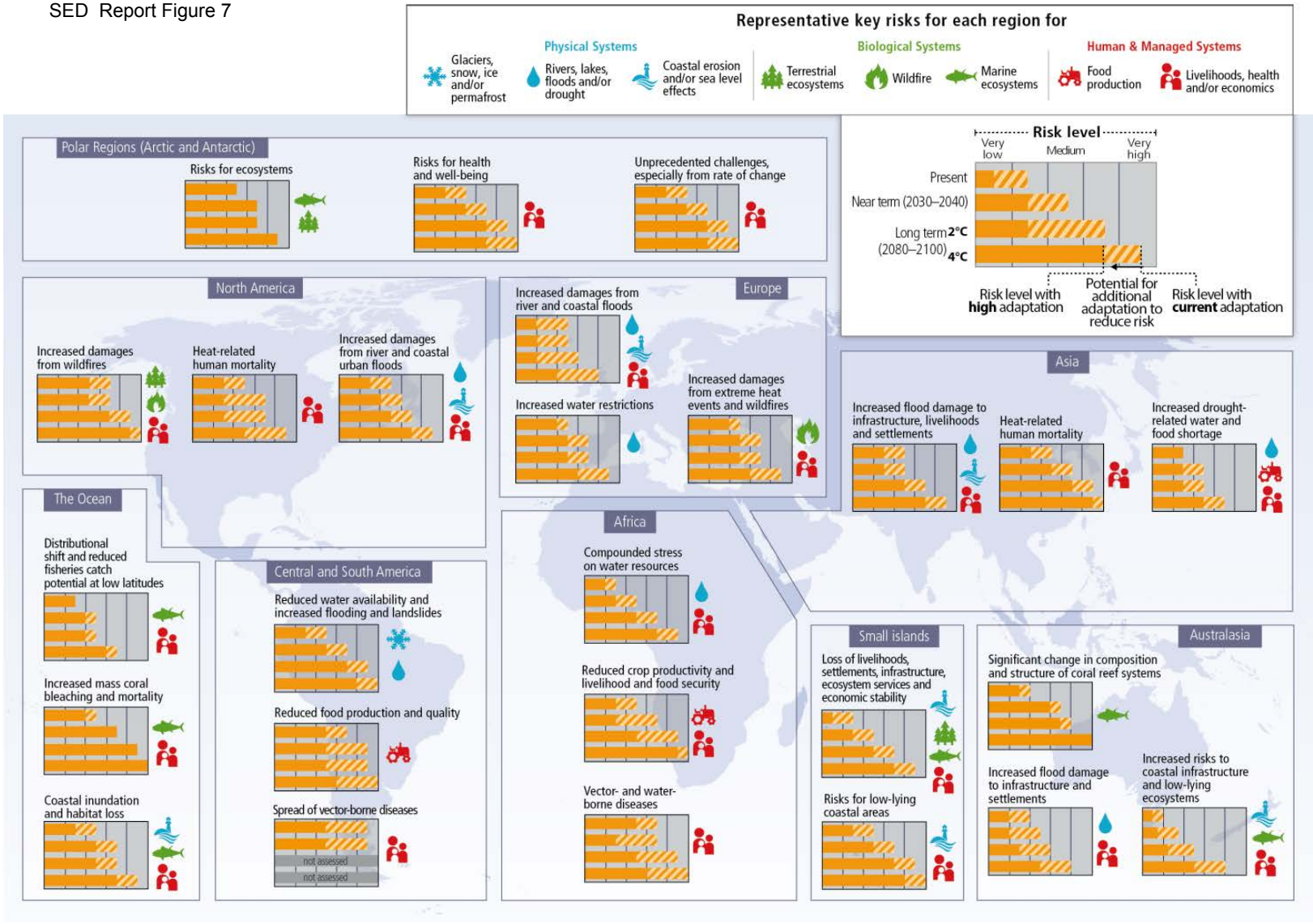
Assessing climate risk by considering 102 global, regional and sectoral key risks

SED Report Figure 6



Risks assessed for all regions, sectors

SED Report Figure 7



3 How to assess the adequacy of the LTGG?

Assessing the adequacy of the long-term global goal implies risk assessments and value judgments not only at the global level, but also at the regional and local levels

- Risks are experienced regionally while global assessments inform global policy choices
- Local judgment of critical switching (time/scale) from 'acceptable' to 'unacceptable'
- Greater appreciation of role played by all decision makers, including subnational authorities and cities

Message 4

Do we already have climate change impacts?

Climate change impacts are hitting home

- Significant climate impacts occur at the current level of warming

+0.85 °C

4

4

4


4


MVFD

4

1941

4

2004

Do we already have climate change impacts?

Climate change impacts are hitting home

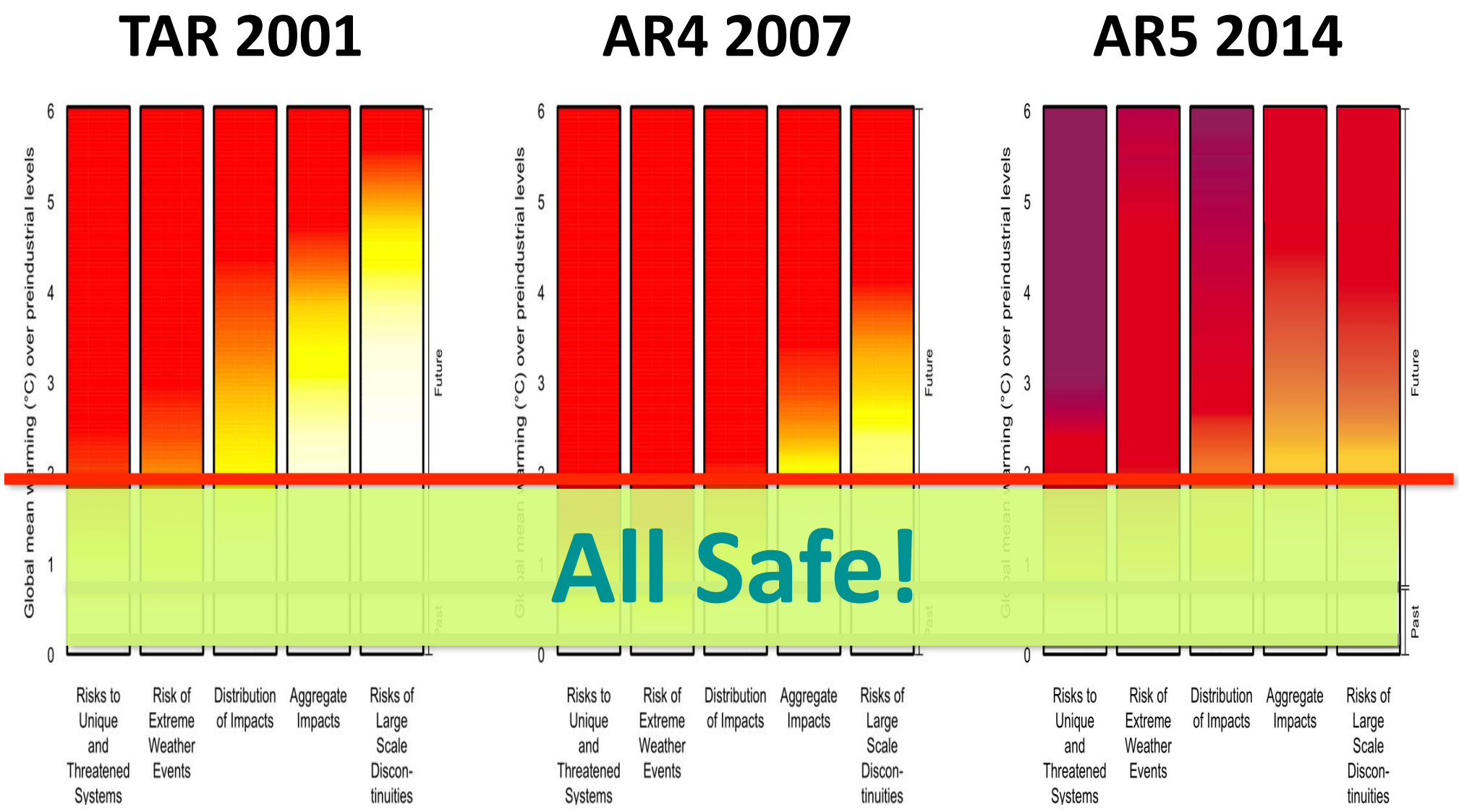
- Significant climate impacts occur at the current level of warming
- Additional warming increases risks of severe, pervasive and irreversible impacts
- The 2 °C limit can hardly seen as a ‘guardrail’ protecting us fully from dangerous anthropogenic interference
- Instead we need consideration of what acceptable risks are

Message 5

Long-term global goal of 2°C?

The 2 °C limit should be seen as a defence line

Evolution of guard-rail concept of 2°C



Long-term global goal of 2°C?

The 2 °C limit should be seen as a defence line

- 2 °C limit would significantly reduce the projected high and very high risks from impacts (4 °C ~ BAU scenario) and enhance adaptation potential
- Many systems and people (poor, disadvantaged) with limited adaptive capacity still at very high risk
- Some risks (e.g. extreme weather events) remain high
- Risks of global aggregated impacts and large-scale singular events become moderate

Long-term global goal of 2°C?

The 2 °C limit should be seen as a defence line

- Adaptation could reduce some risks (e.g. food production -> 'medium') but risks to crop yields and water availability are unevenly distributed
- The 'guardrail' concept considering warming up to **2 °C of warming** to be safe is inadequate
- 2 °C limit **better be seen as an upper limit, a defence line that needs to be stringently defended, while less warming would be preferable**

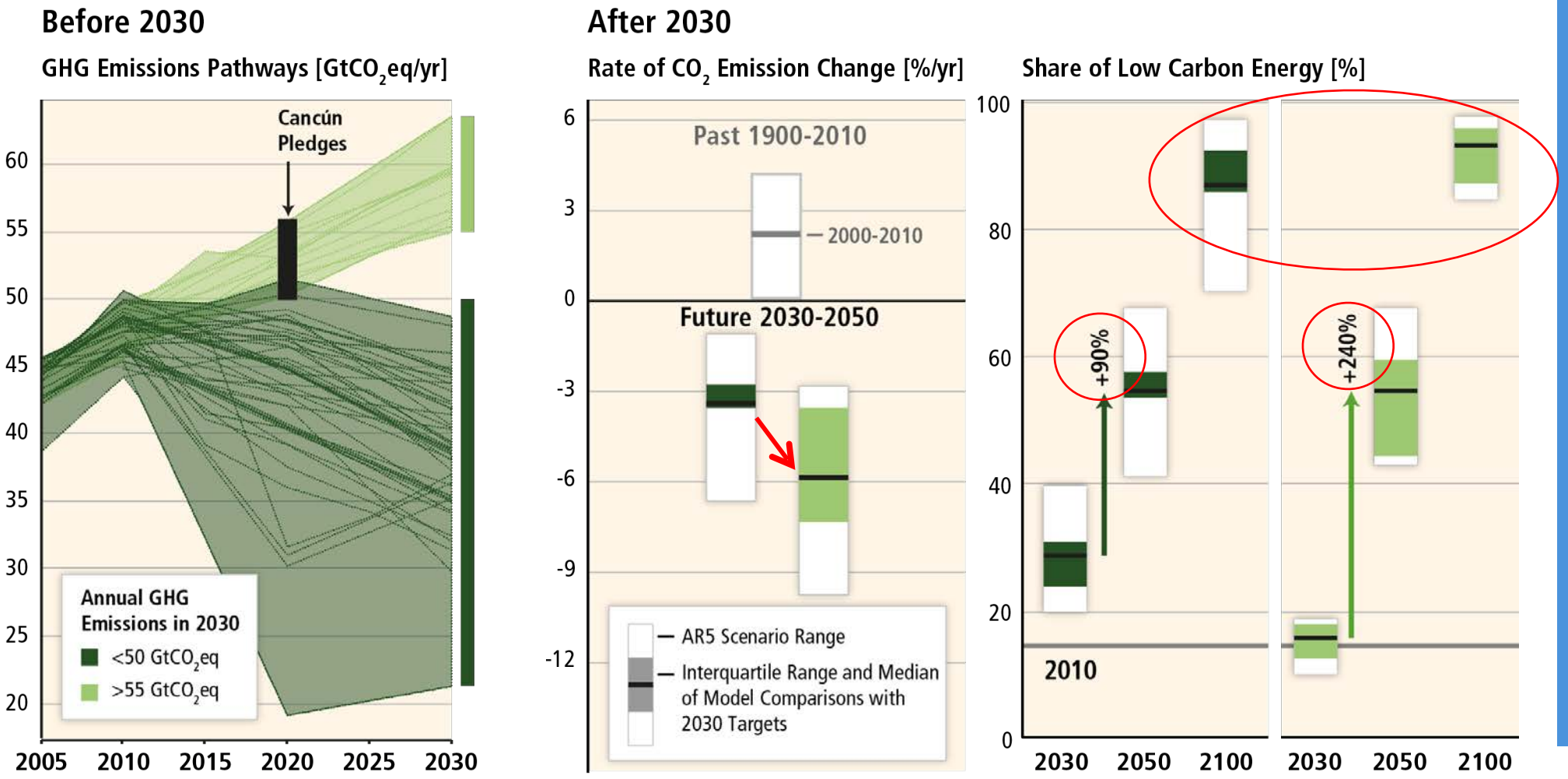
Message 6

What to do to limit warming below 2°C?

Limiting global warming to below 2 °C is still feasible and will bring about many co-benefits, but poses substantial technological, economic and institutional challenges

E.g. near term mitigation

SED Report Figure 8



What to do to limit warming below 2°C?

Limiting global warming to below 2 °C is still feasible and will bring about many co-benefits, but poses substantial technological, economic and institutional challenges

- Costs are manageable
- Iteratively reassessing feasibility
- Periodic reviews would provide opportunity to (re)assess overall progress

C. Theme 2 (progress towards LTGG)

Message 7

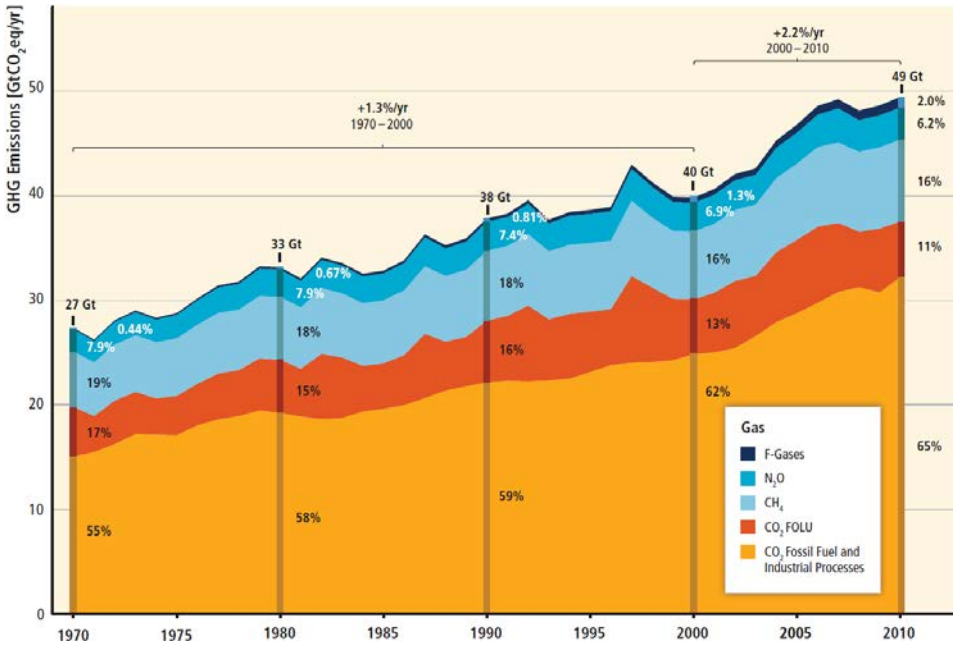
What progress have we made so far?

We know how to measure progress on mitigation but challenges still exist in measuring progress on adaptation

- Accepted metric exists for aggregating and measuring progress on mitigation
- No similar metric exists to quantify and aggregate progress on adaptation
- Since mitigation as well as adaptation can help to reduce risks, both metrics would be needed in a global risk management framework

Message 8

Some observations on progress made so far

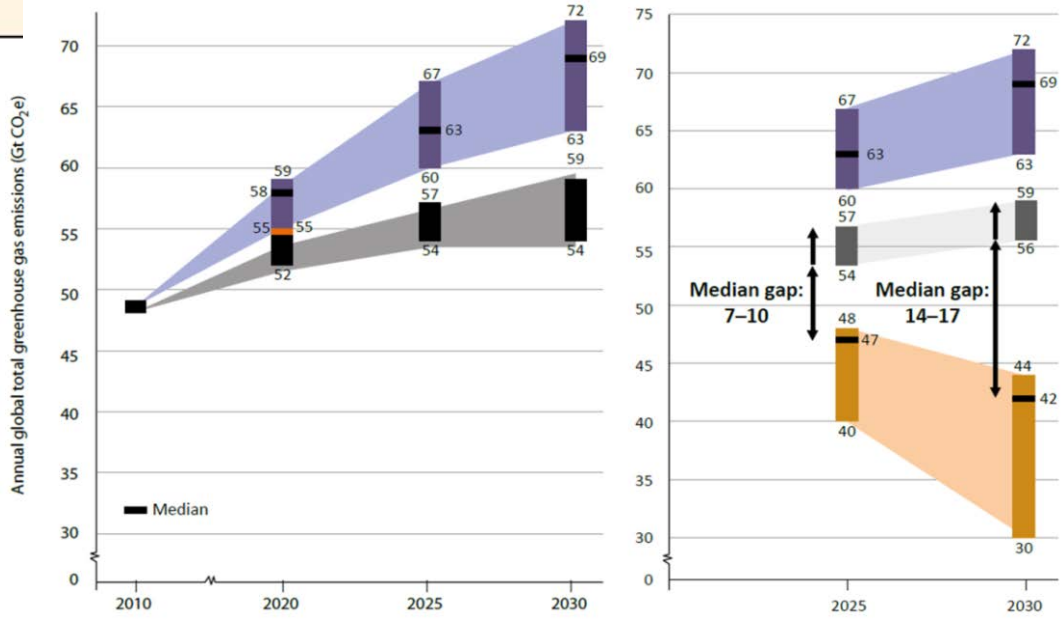


Total annual anthropogenic greenhouse gas emissions by groups of gases, 1970–2010

SED Report Figure 9

The emissions gap in 2025 and 2030

SED Report Figure 10



Are we on track?

The world is not on track to achieve the long-term global goal, but successful mitigation policies are known and must be scaled up urgently

- GHG emission growth has accelerated
- So far mitigation policies have had limited impact
- Yet, successful mitigation policies have been identified and scaling up of them is in progress (carbon pricing, promoting low-carbon technologies)
- **Benchmarks for sound climate policy in the light of national circumstances.**
- Balanced national information was not available for SED (=> future)

Message 9

Many efforts exist and are ongoing

We learned from various processes, in particular from those under the Convention, about efforts to scale up provision of finance, technology and capacity-building for climate action

- Technologies required for LTGG exist, only deployment is not on track
- Climate finances escape simple definitions and tracking faces considerable uncertainties (notably adaptation, private finances)
- Discussions are ongoing under UNFCCC on resources required to reach the LTGG

D. Strengthe-ning LTGG (to 1.5°C)

Message 10

Strengthening the LTGG to 1.5°C?

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

- A 1.5 °C limit would come closer to a ‘guardrail’
- Less risks (e.g. food, coral reefs, cryosphere, sea level rise)
- More negative emissions (land use; higher costs; overshoot)
- Uncertainties whether difference between 2 °C and 1.5 °C of warming is gradual or non-linear (cf. palaeo-record)

IV. Remarks and Observations

Concluding remarks and possible next steps

- Valuable addition to the science–policy interface
- LTGG is rather a ‘defence line’ than a ‘guardrail’ up to which all is safe

- We are not on track to meet the LTGG

Concluding remarks and possible next steps

- To get back on track:
  - Cut emissions significantly and immediately (to remain cost-effective)
  - Scale up climate finance (mitigation, adaptation, technology and capacity-building)
  - Achieve carbon neutrality in second half of this century
- Link review with other UNFCCC processes and assessment cycles (e.g. IPCC) to consider both IPCC reports and national information


http://unfccc.int/7521.php