A glance on mitigation in the report of IPCC-WGIII ar5

In the occasion of the meeting:

OUTREACH EVENT ON THE ACTIVITIES AND FINDINGS OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE – THE IPCC

Tehran, IR Iran
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The Islamic Republic of Iran Meteorological Organization (IRIMO)

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Working Group III contribution to the IPCC Fifth Assessment Report

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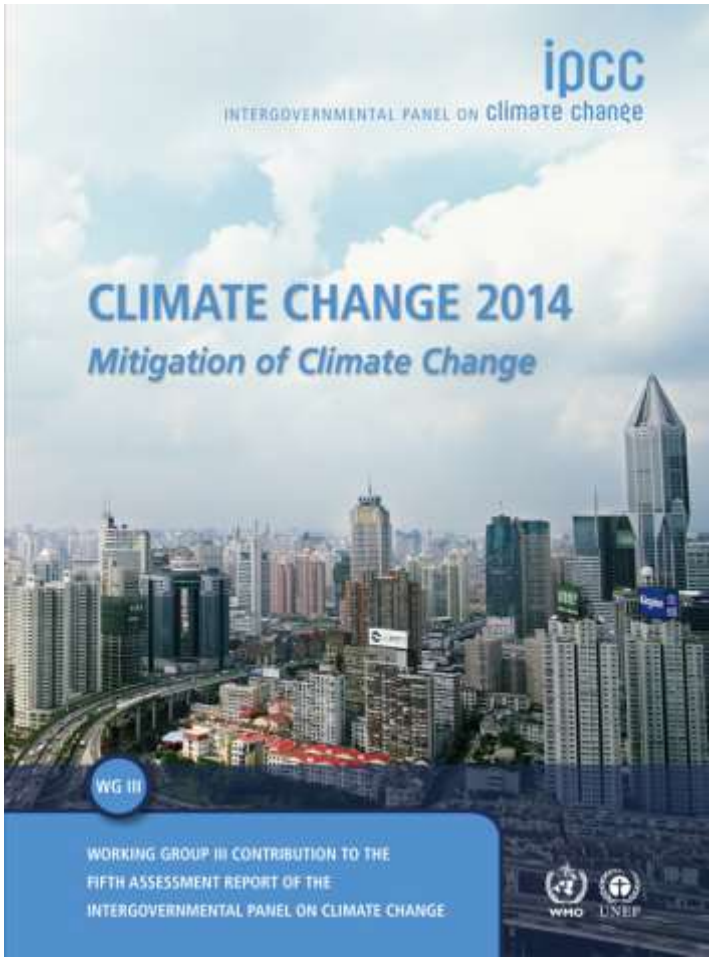
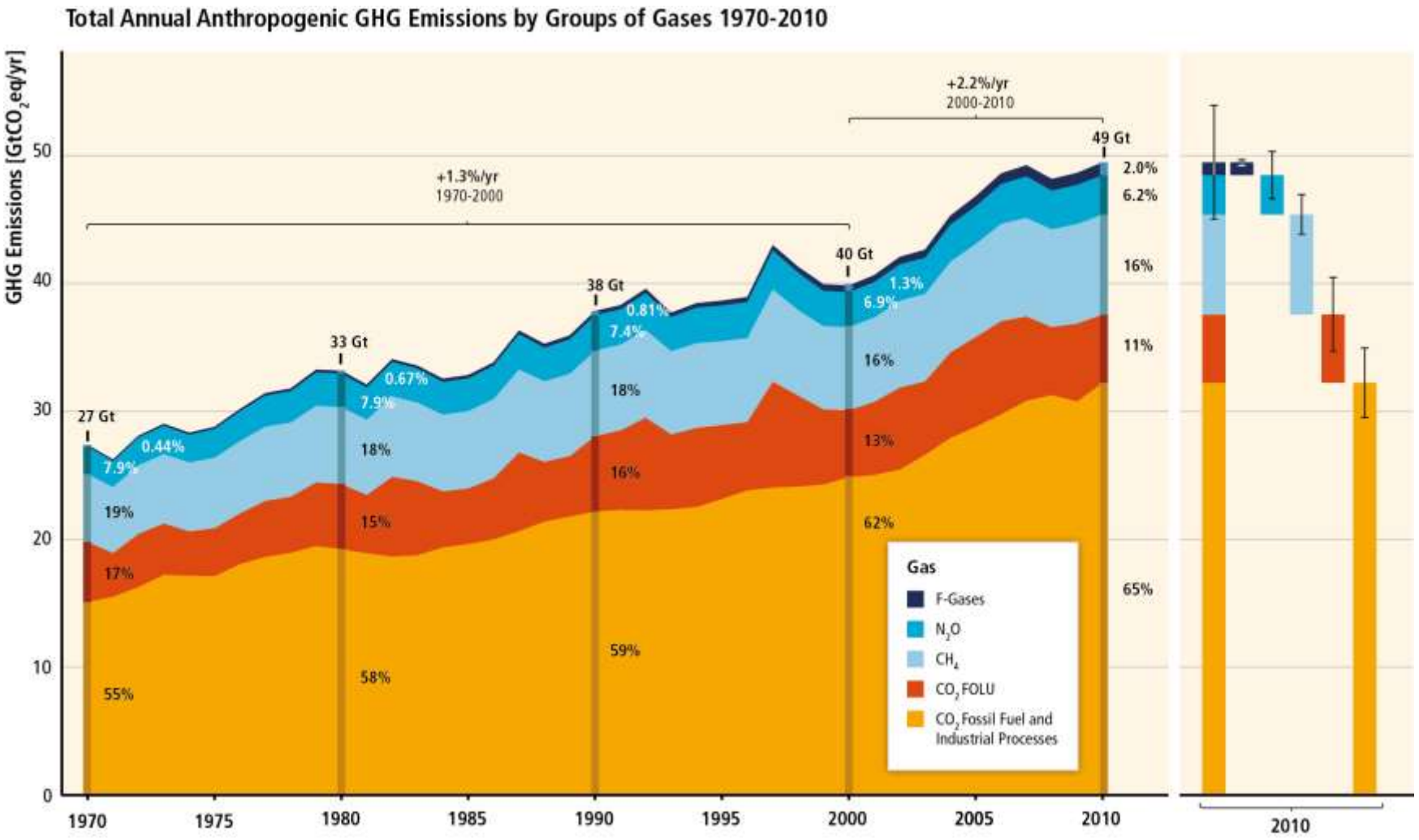
IPCC reports are the result of extensive work from scientists around the world.

1 Summary for Policymakers
1 Technical Summary

16 Chapters
235 Authors
900 Reviewers
More than **2000** pages
Close to **10,000** references
More than **38,000** comments



GHG emissions accelerate despite reduction efforts. Most emission growth is CO_2 from fossil fuel combustion and industrial processes.



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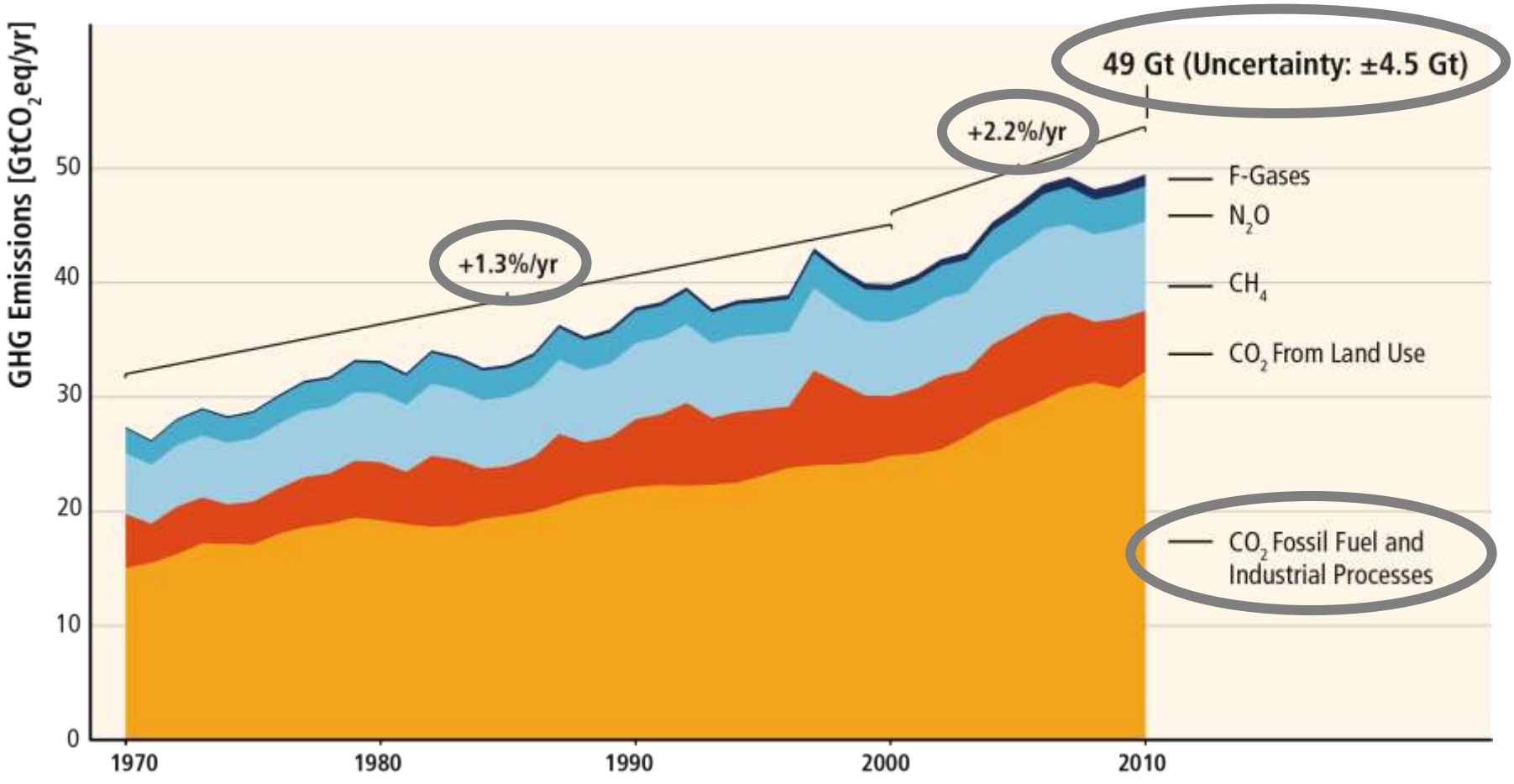
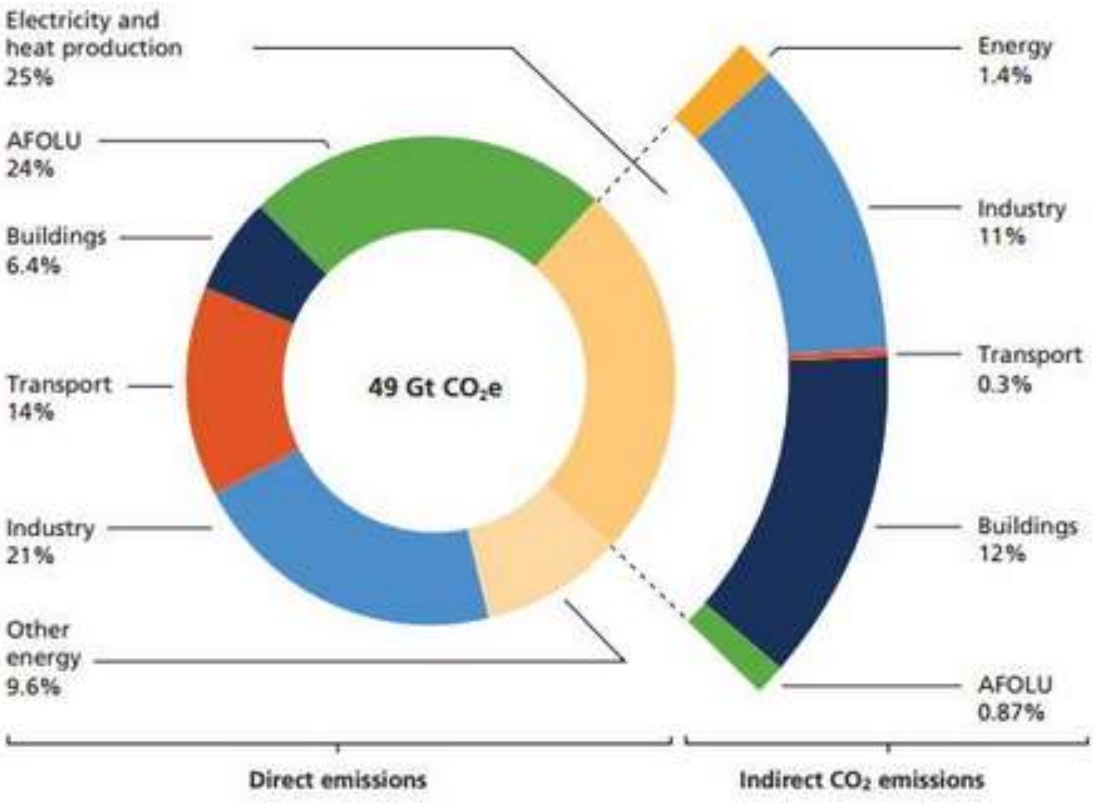
GHG emissions growth between 2000 and 2010 has been larger than in the previous three decades.



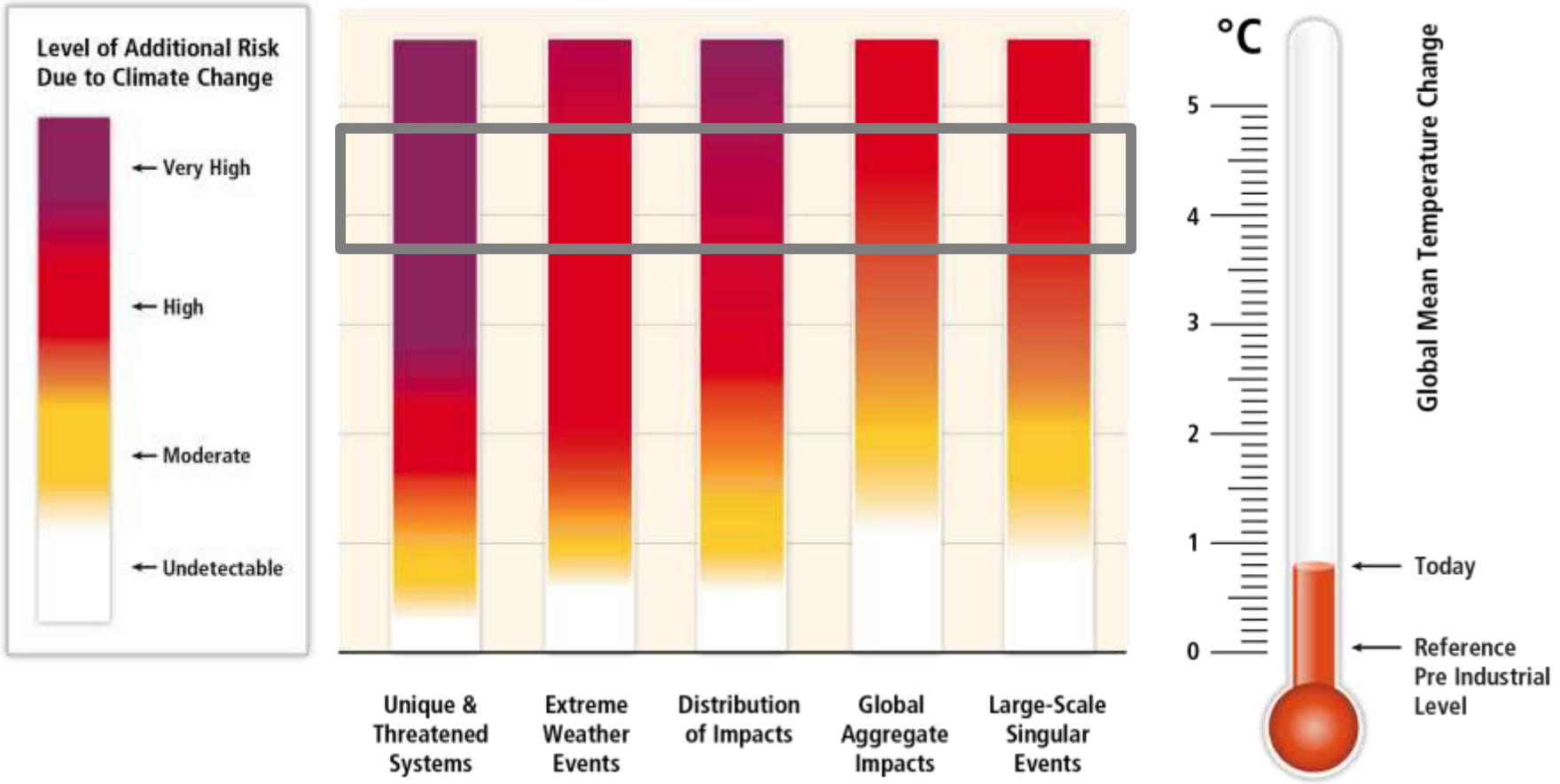
Based on Figure SPM.1

FIGURE 1
Global carbon emissions budget by sector, 2010



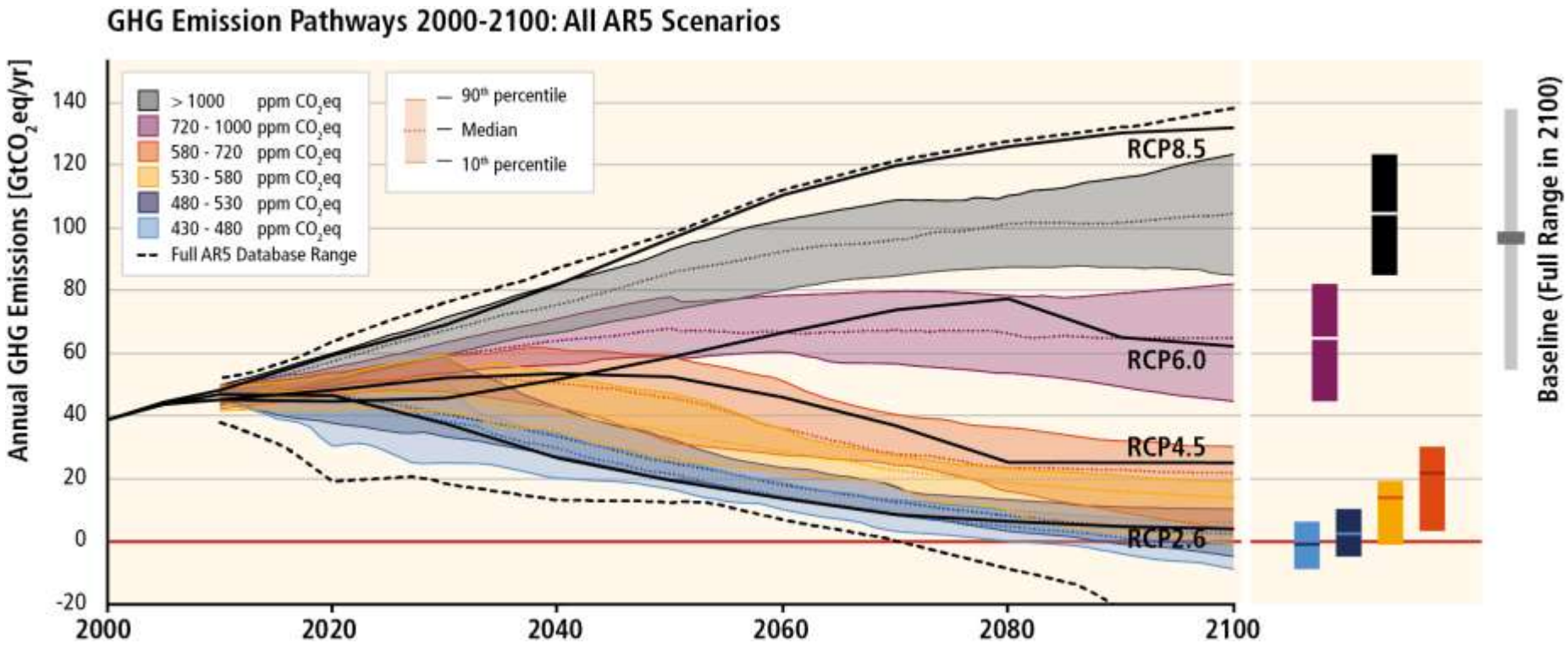
Source: IPCC, 2014b

Without additional mitigation, global mean surface temperature is projected to increase by 3.7 to 4.8°C over the 21st century.

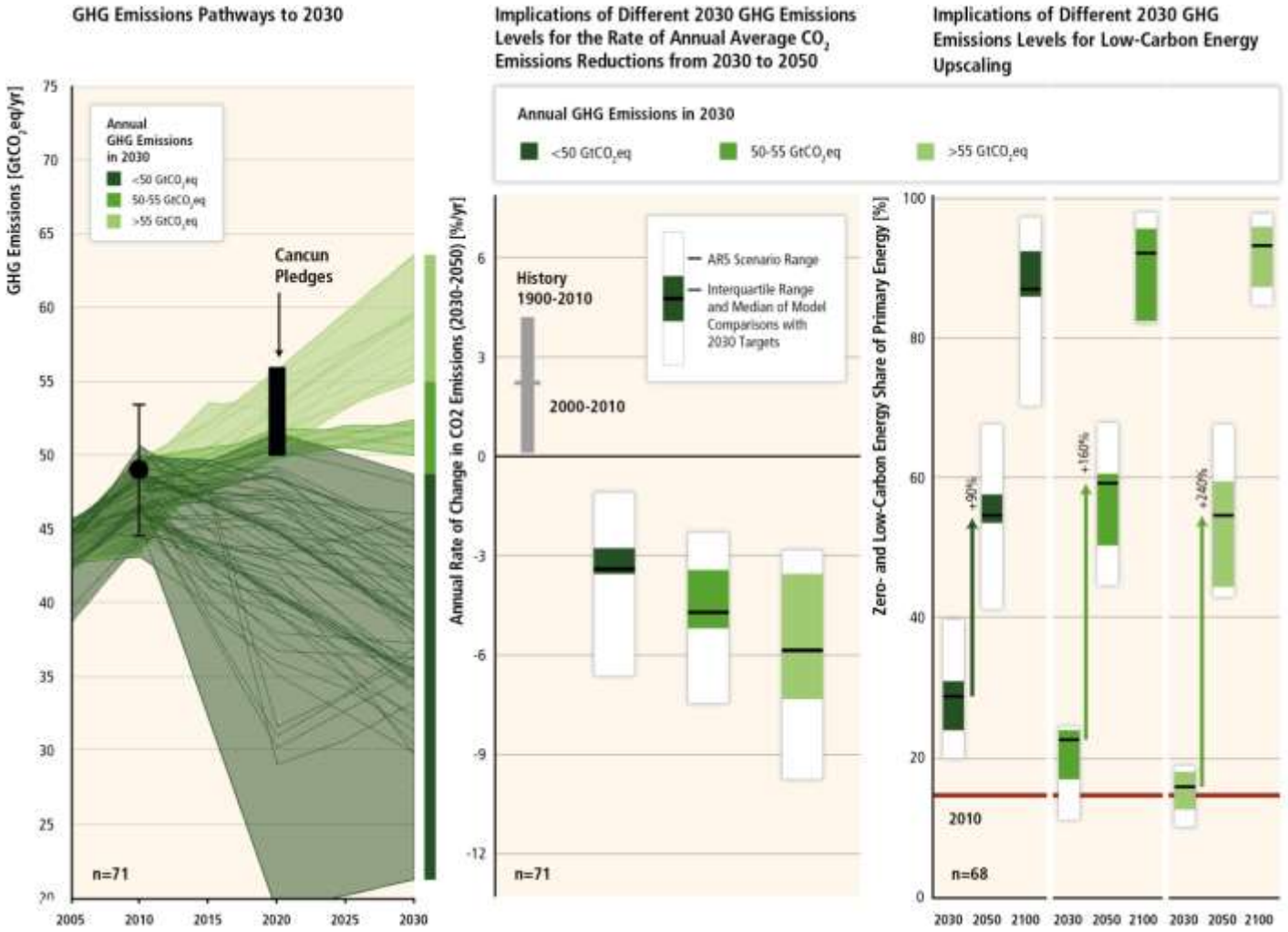


Based on WGII AR5 Figure 19.4

Without more mitigation, global mean surface temperature might increase by 3.7° to 4.8°C over the 21st century.



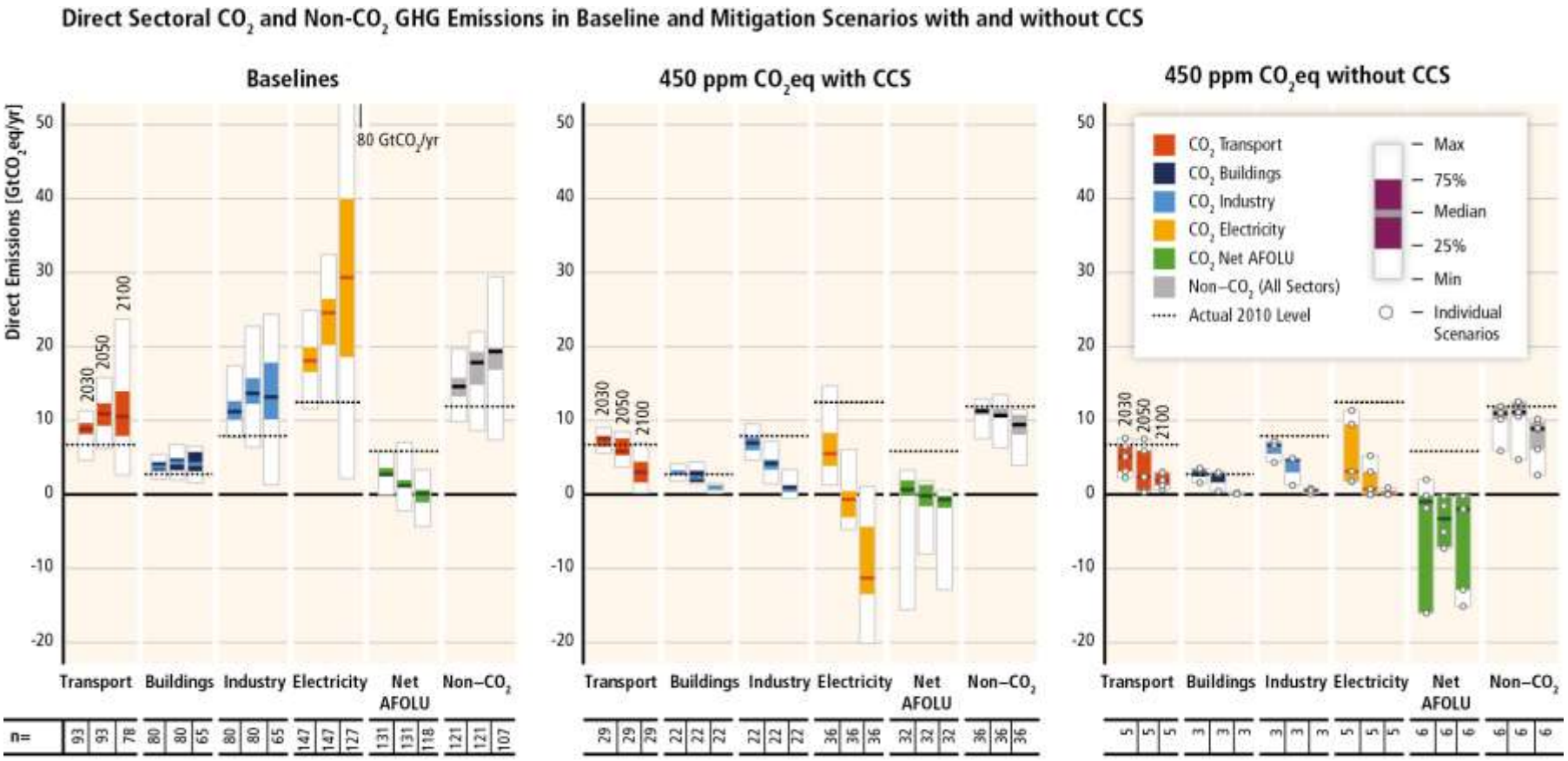
Delaying mitigation is estimated to increase the difficulty and narrow the options for limiting warming to 2°C.



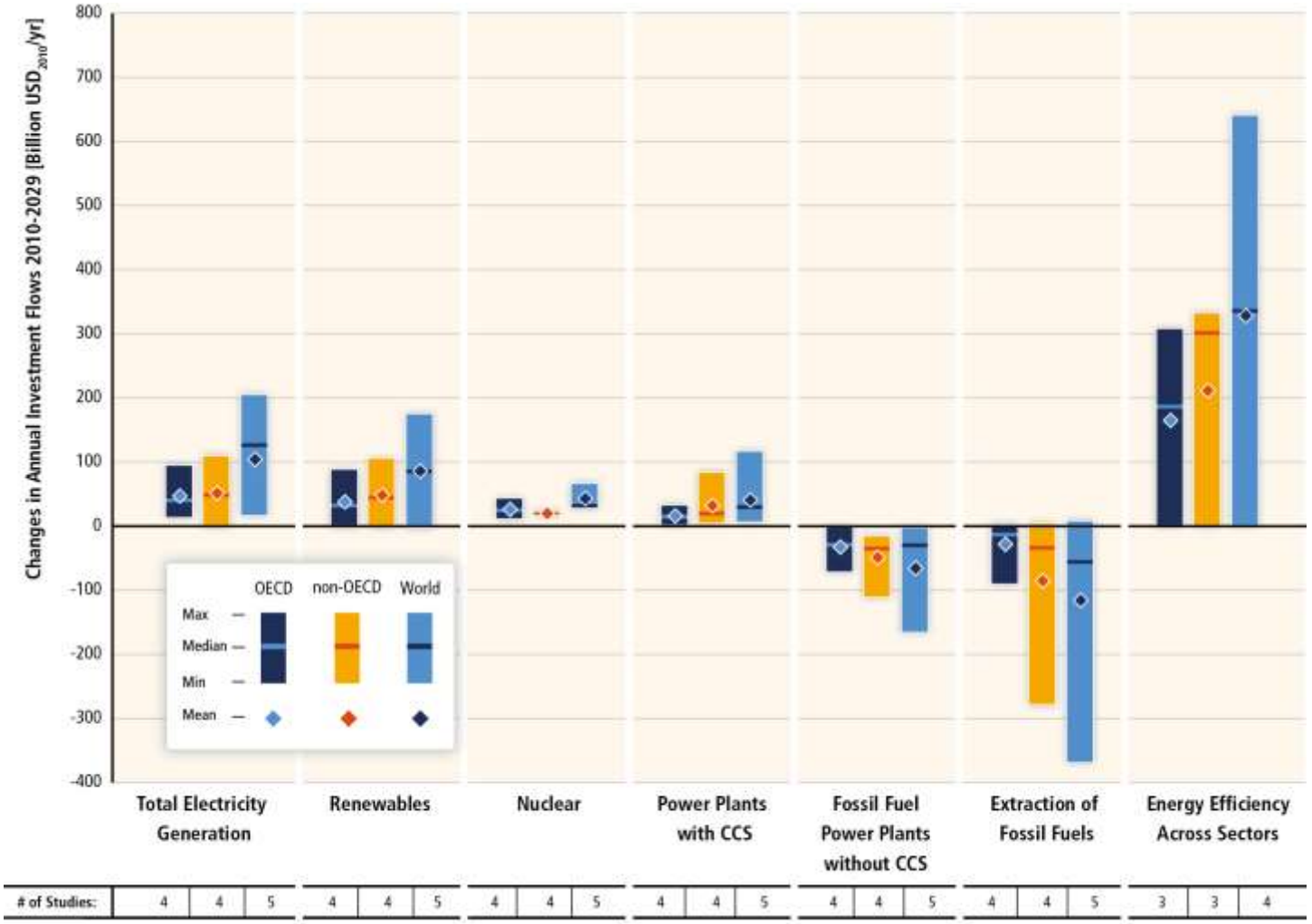
Estimates for mitigation costs vary widely.

- Reaching 450ppm CO_2eq entails consumption losses of 1.7% (1%-4%) by 2030, 3.4% (2% to 6%) by 2050 and 4.8% (3%-11%) by 2100 relative to baseline (which grows between 300% to 900% over the course of the century).
- This is equivalent to a reduction in consumption growth over the 21st century by about 0.06 (0.04-0.14) percentage points a year (relative to annualized consumption growth that is between 1.6% and 3% per year).
- Cost estimates exlude benefits of mitigation (reduced impacts from climate change). They also exclude other benefits (e.g. improvements for local air quality).
- Cost estimates are based on a series of assumptions.

Mitigation requires changes throughout the economy. Efforts in one sector determine mitigation efforts in others.



Substantial reductions in emissions would require large changes in investment patterns.



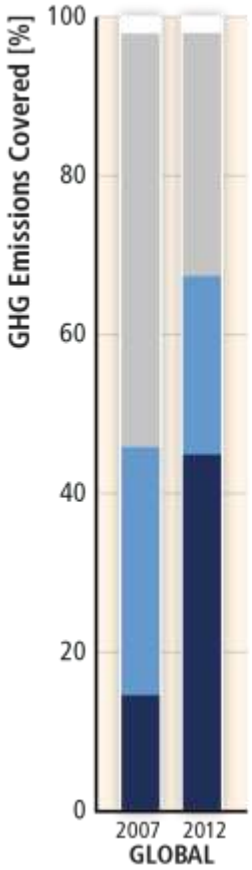
Since AR4, there has been an increased focus on policies designed to integrate multiple objectives, increase co-benefits and reduce adverse side-effects.

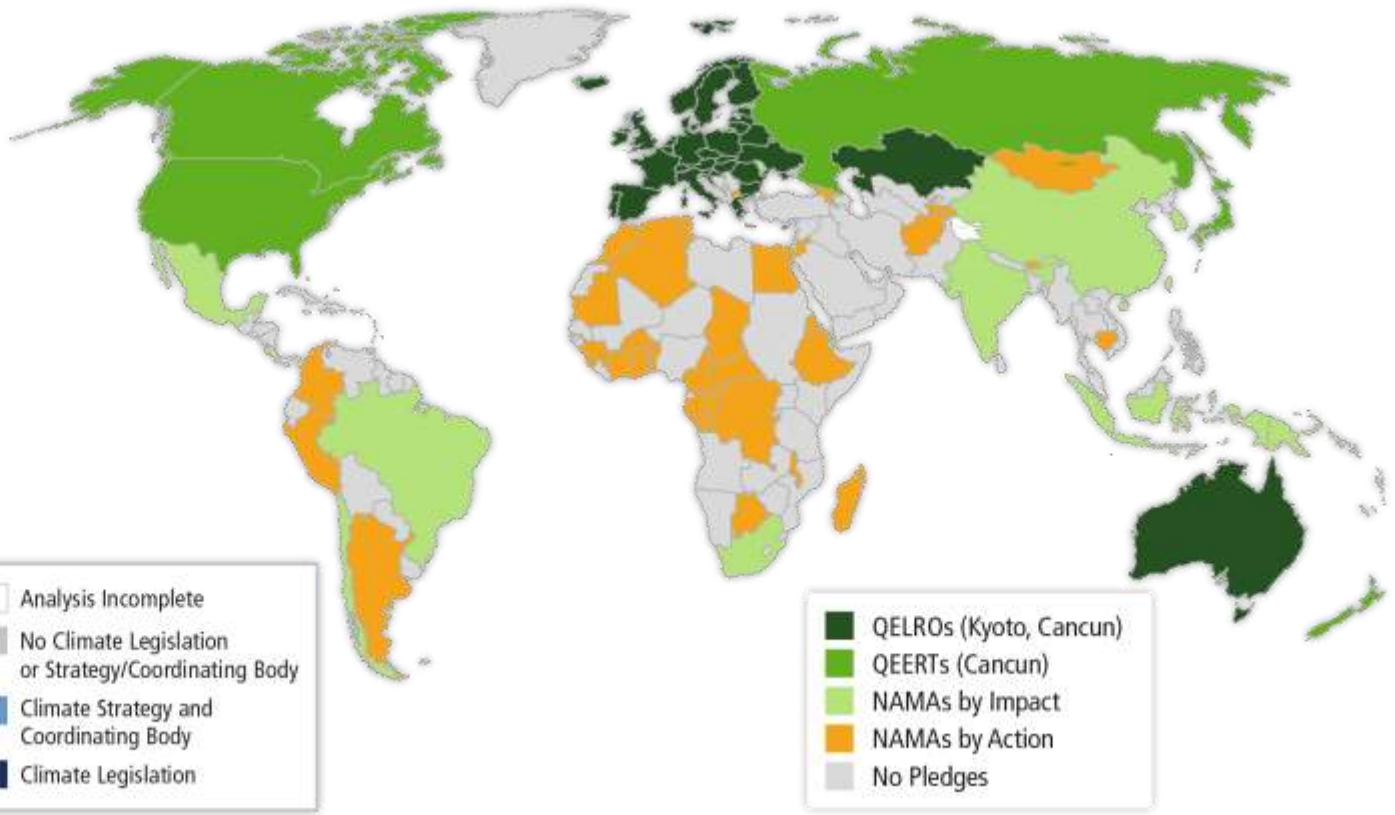
- Sector-specific policies have been more widely used than economy-wide policies.
- Regulatory approaches and information measures are widely used, and are often environmentally effective.
- Since AR4, cap and trade systems for GHGs have been established in a number of countries and regions.
- In some countries, tax-based policies specifically aimed at reducing GHG emissions–alongside technology and other policies–have helped to weaken the link between GHG emissions and GDP
- The reduction of subsidies for GHG-related activities in various sectors can achieve emission reductions, depending on the social and economic context.

Effective mitigation will not be achieved if individual agents advance their own interests independently.

- Existing and proposed international climate change cooperation arrangements vary in their focus and degree of centralization and coordination.
- Issues of equity, justice, and fairness arise with respect to mitigation and adaptation.
- Climate policy may be informed by a consideration of a diverse array of risks and uncertainties, some of which are difficult to measure, notably events that are of low probability but which would have a significant impact if they occur.

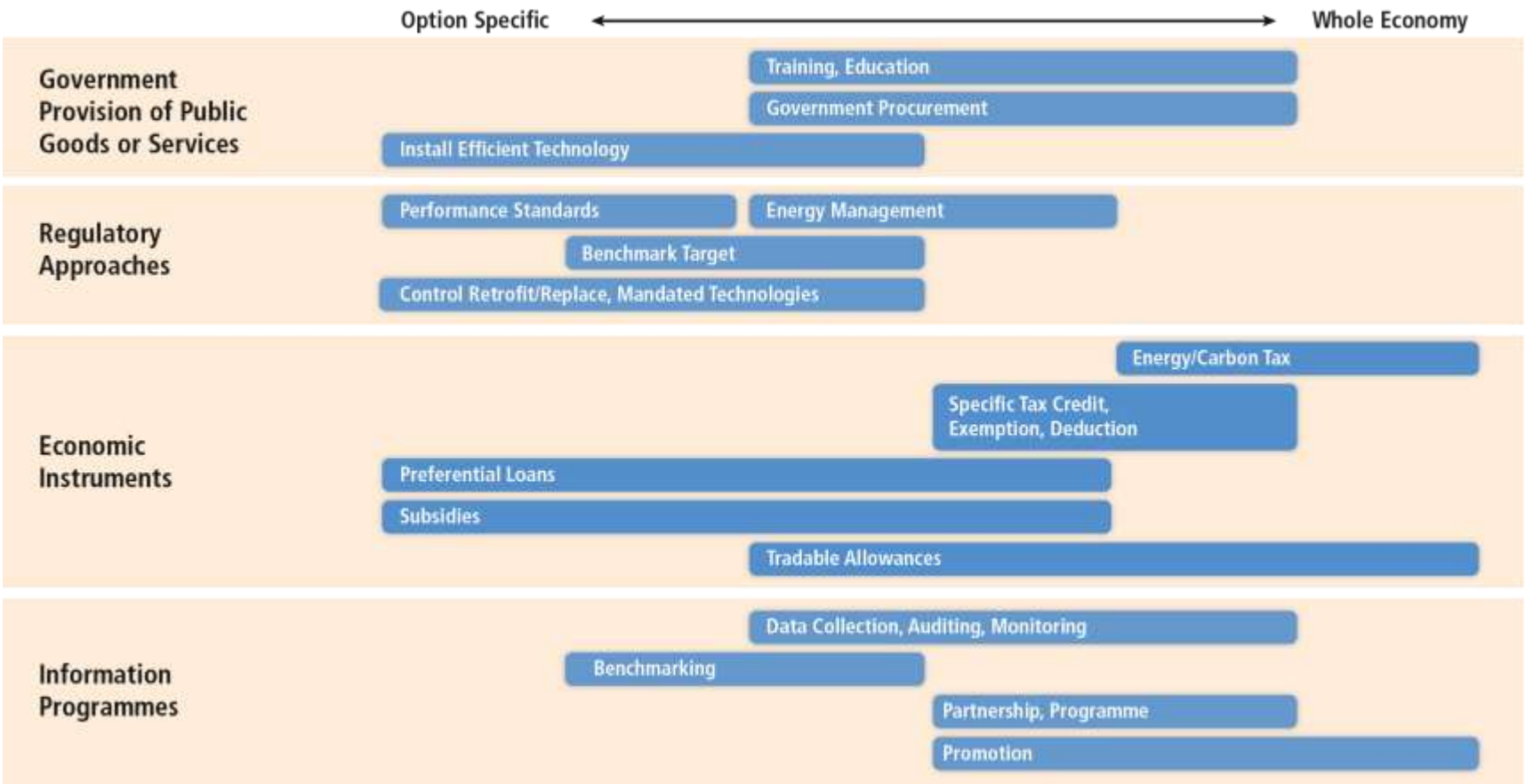
There has been a considerable increase in national and sub-national mitigation policies since AR4.





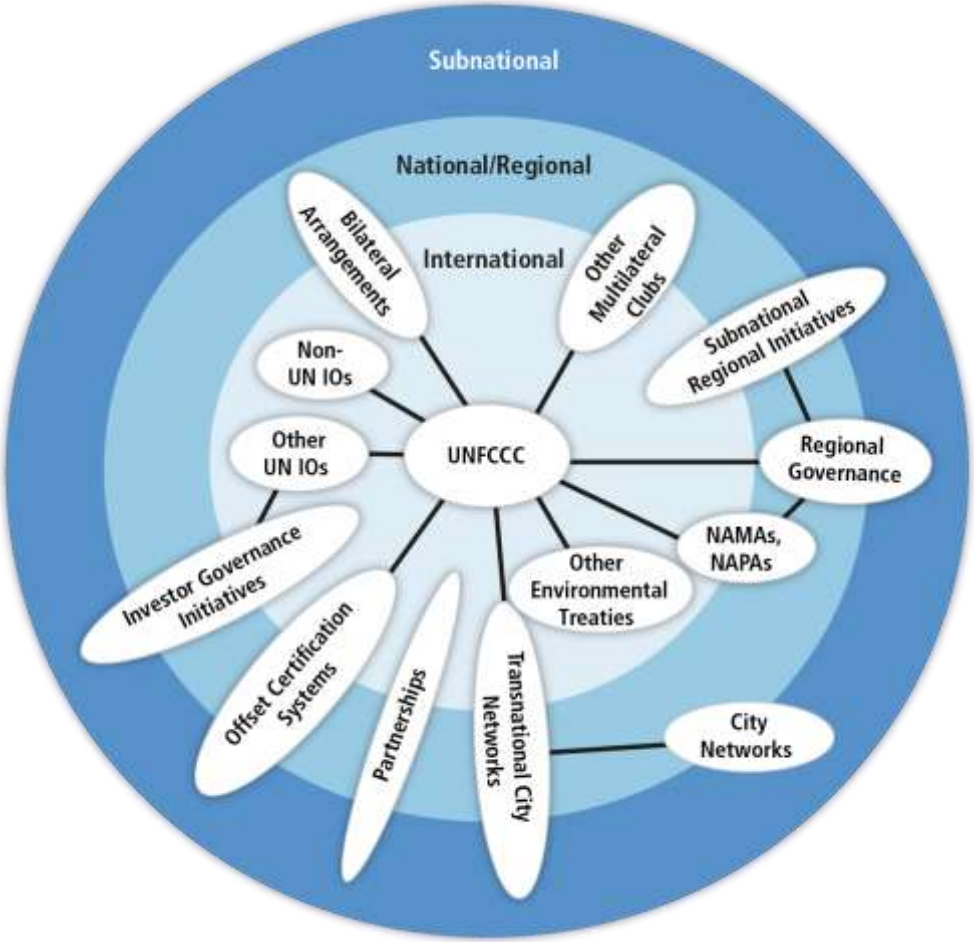
Based on Figures 15.1 and 13.3

Sector-specific policies have been more widely used than economy-wide policies.



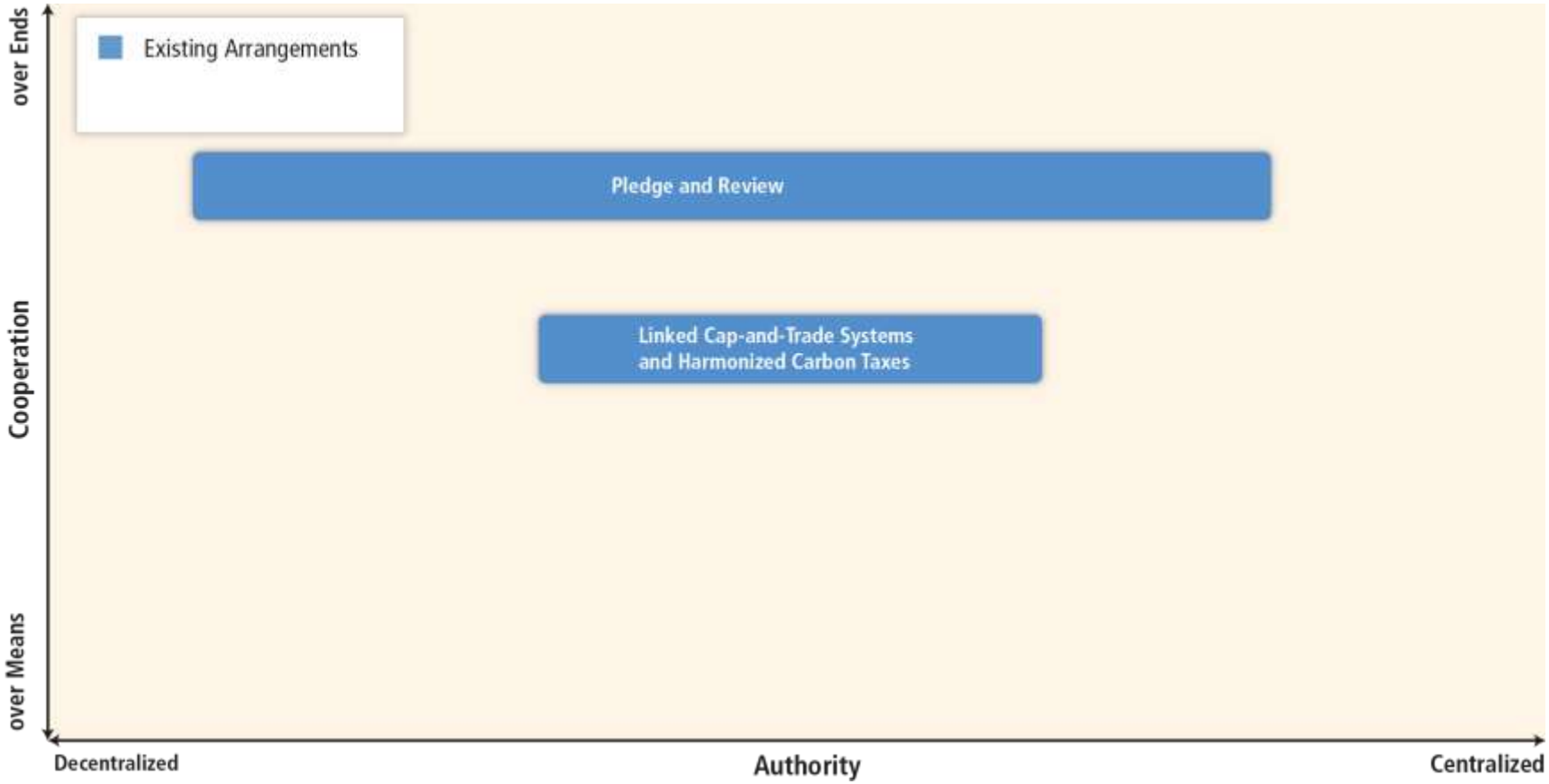
Based on Figure 10.15

Climate change mitigation requires international cooperation across scales.



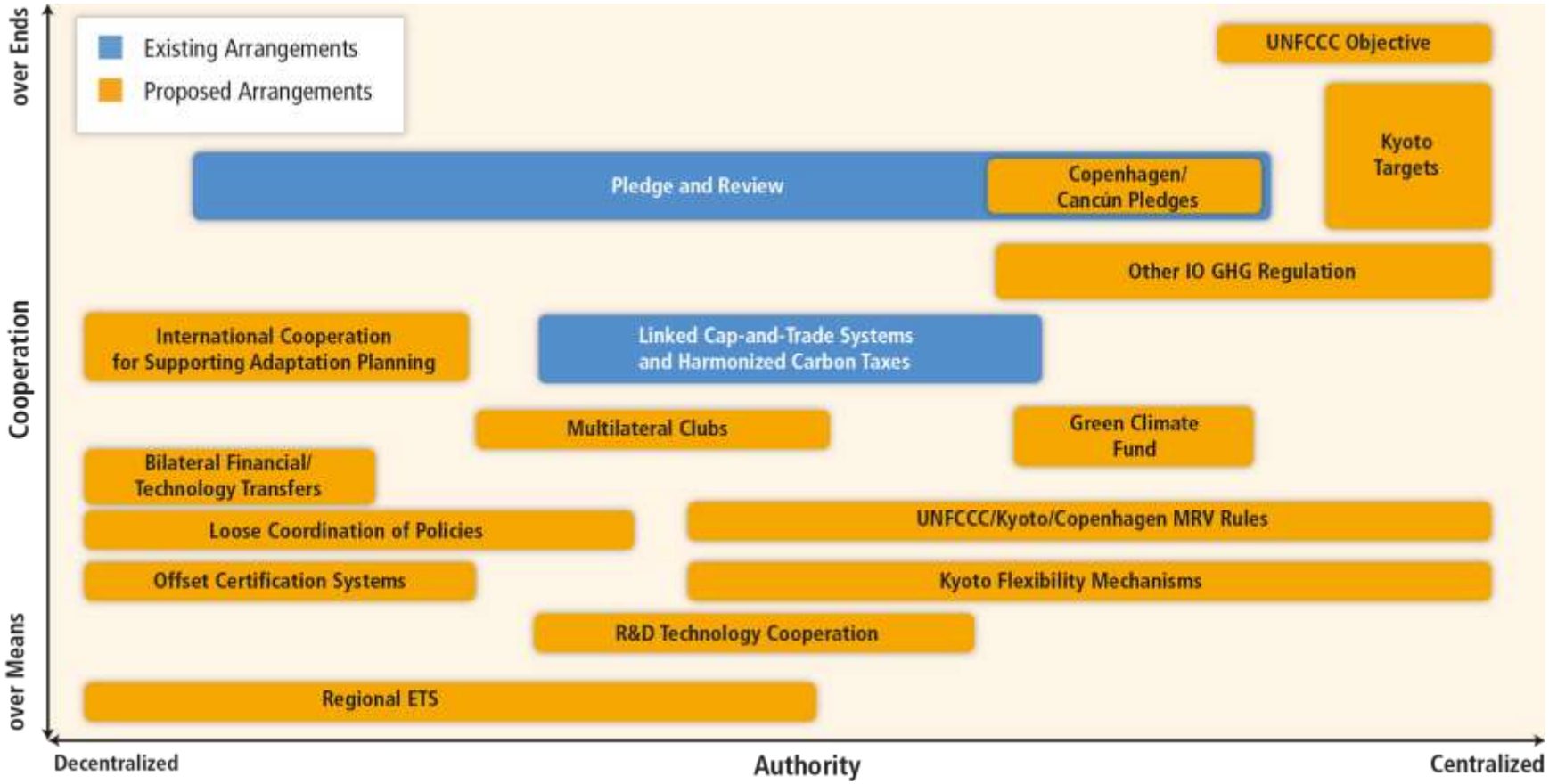
Based on Figure 13.1

International cooperation can focus on the ends or means and vary in the degree of centralization.



Based on Figure 13.2

Effective mitigation will not be achieved if individual agents advance their own interests independently.



Based on Figure 13.2

IPCC reports are relevant

Sustainable Development and Mitigation

There is growing emphasis in the literature on the two-way relationship between **climate change mitigation** and **sustainable development**. The relationship may not always be mutually beneficial.

In most instances, mitigation can have ancillary benefits or co-benefits that contribute to other sustainable development goals (climate first).

Development that is sustainable in many other respects can create conditions in which mitigation can be effectively pursued (development first) (high agreement, much evidence).

Ref.: Climate Change 2007: Working Group III: Mitigation of Climate Change
AR4 WGIII Chapter 12 Sustainable Development and mitigation

International cooperation and Mitigation

International cooperation is necessary to significantly **mitigate climate change impacts** (robust evidence, high agreement).

This is principally due to the fact that greenhouse gases (GHGs) mix globally in the atmosphere, making anthropogenic climate change a global commons problem. International cooperation has the potential to address several challenges: multiple actors that are diverse in their perceptions of the costs and benefits of collective action, emissions sources that are unevenly distributed, heterogeneous climate impacts that are uncertain and distant in space and time, and mitigation costs that vary. [Section 13.2.1.1, 13.15]

Ref.: AR5 WGIII Chapter 13 International Cooperation: Agreements and Instruments

General Conclusions on SD and Mitigation

Some general conclusions emerging from the case studies of how changes in development pathways at the sectoral level have or could lower emissions are reviewed in this chapter (high agreement, medium evidence):

■ Greenhouse gas (GHG) emissions are influenced by but not rigidly **linked to economic growth**: policy choices make a difference. Sectors where effective production is far below the maximum feasible with the same amount of inputs - sectors far from their production frontier - have opportunities to adopt 'win-win-win' policies. These policies free up resources and bolster growth, meet other sustainable development goals, and also reduce GHG emissions relative to baseline.

■ Sectors where production is close to optimal given available inputs – sectors that are closer to the **production frontier** - also have opportunities to reduce emissions by meeting other sustainable development goals. However, the closer to the production frontier, the more trade-offs are likely to appear.

■ To truly have an effect, what matters is that not only a 'good' choice is made at a certain point, but also that the **initial policy is sustained for a long period** - sometimes several decades.

■ It is often not one policy decision, but an **array of decisions that are necessary to influence emissions**. This raises the issue of coordination between policies in several sectors, and at various scales.

Ref.: Climate Change 2007: Working Group III: Mitigation of Climate Change
AR4 WGIII Chapter 12 Sustainable Development and mitigation

Thank You

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CLIMATE CHANGE 2014

Mitigation of Climate Change

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