IPCC reports are the result of extensive work of many scientists from 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
Climate change is a global commons problem.
There is far more carbon in the ground than emitted in any baseline scenario.

Based on SRREN Figure 1.7
GHG emissions growth has accelerated despite reduction efforts.
GHG emissions growth between 2000 and 2010 has been larger than in the previous three decades.

Based on Figure 1.3

49 Gt (Uncertainty: ±4.5 Gt)

+2.2%/yr

+1.3%/yr

CO₂ Fossil Fuel and Industrial Processes

CO₂ From Land Use

CH₄

N₂O

F-Gases

GHG Emissions [GtCO₂ eq/yr]


Based on Figure 1.3
Regional patterns of GHG emissions are shifting along with changes in the world economy.

Based on Figure 1.6
GHG emissions rise with growth in GDP and population; long-standing trend of decarbonisation of energy reversed.

Based on Figure 1.7
Low stabilization scenarios are dependent upon a full decarbonization of energy supply in the long term.
Stabilization of atmospheric concentrations requires moving away from the baseline – regardless of the mitigation goal.

Based on Figure 6.7
Baseline scenarios suggest rising GHG emissions in all sectors, except for CO₂ emissions in the land-use sector.

Based on Figure TS.17
Transport scenarios in integrated assessment models
Mitigation efforts in transport sector challenging.

Based on Figure TS.17
In 2050 about equal contribution from efficiency and fuel shift. In the short term efficiency gains & hybridization trump full-blown fuel shift.
Reducing energy demand through efficiency enhancements and behavioural changes are a key mitigation strategy.

Based on Figure 6.37
Demand side mitigation in integrated assessment models

Absolute Values

Passengers

Freight

Relative to 2010 Values

Passengers

Freight

Average p/k Kilometres per Capita

2020 2030 2040 2050

2020 2030 2040 2050

430-530 ppm CO₂eq

530-650 ppm CO₂eq

Global

LAM

MAF

ASIA

EIT

OECD-1990
Local solutions: more than one objective.
Mitigation can result in large co-benefits for human health and other societal goals.
Mitigation can result in large co-benefits for human health and other societal goals.

Based on Figures 6.33 and 12.23
Characterizing sustainability

Climate change of high relevance, but not dominating.

**Beijing:** Air pollution & congestion

**Barcelona:** Congestion, accidents and noise

$\$/cap/year

Beijing
Barcelona

Creutzig and He
*Transportation Research D*
14, 120 (2009)

A more fine-grained dissection:
subtle differences between communities
Model resolution indicates emphasis in objectives.

Integrated assessment models

Transport-specific models

Place-specific models

Metric measured: Frequency in word count

Model resolution determines emphasis in solution space.

Integrated assessment models

Transport-specific models

Place-specific models

Metric measured: Frequency in word count

Highest uncertainty in baseline demand – Place-specific solutions space underrepresented?

Local solutions emphasize multiple objectives.

How much can idiosyncratic local infrastructure, modal shift and behavioral measures contribute to global mitigation?

Behavioral research emphasizes that transport end users often deviate from “rational decision making”.

Should policies “correct” for bias in decision making? How to treat the endogeneity of preferences resulting from infrastructures?

See P3 “The behavioral climate change economics of mobility”, Linus Mattauch