



Mercator Research Institute on
Global Commons and Climate Change gGmbH



P I K

POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH

Experience from the IPCC Fifth Assessment Report – from the perspective of a former Co-Chair

Prof. Dr. Ottmar Edenhofer

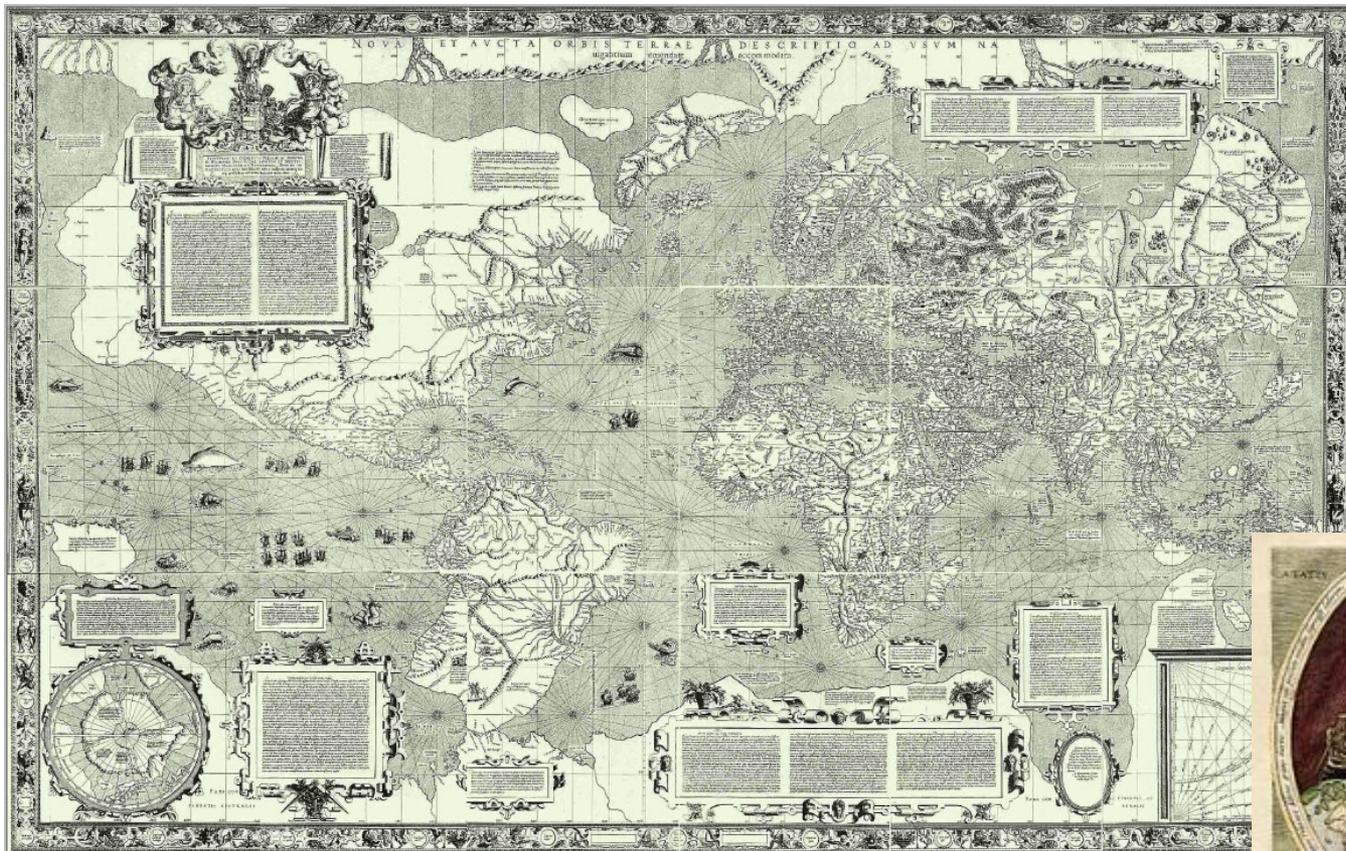
The IPCC at a Crossroads: Enhancing the Usefulness
of IPCC to the UNFCCC Process

COP21, Paris, 9 December 2015

What we tried to achieve: Provide a map for policymakers



*“Nova et aucta orbis terrae descriptio ad usum navigantium
emendate accommodata”*



Outline of the WGIII Contribution to AR5



I: Introduction

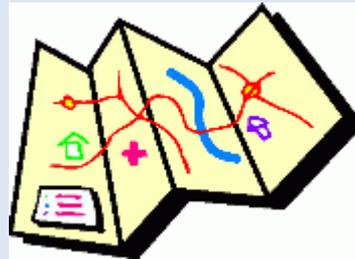
II: Framing Issues



Concepts & methods (e.g. values, uncertainties, risks, multi-objectives)

Compass & legend for assessment

III: Pathways for Mitigating Climate Change



Map of consistent, feasible transformation pathways

Exploration of costs, benefits, uncertainties, risks, value judgements

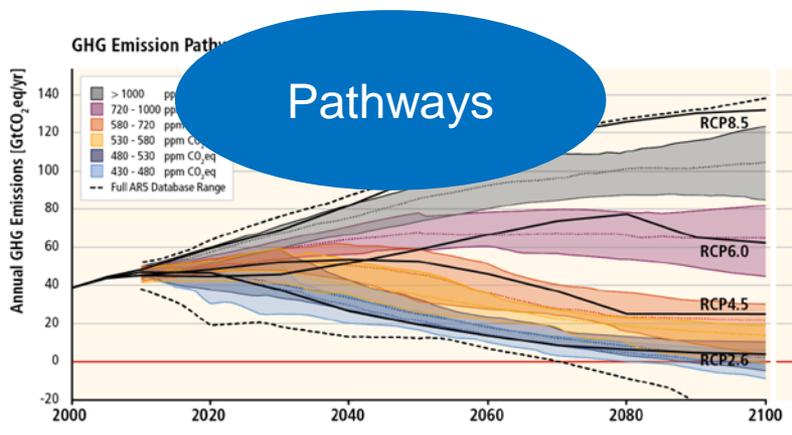
IV: Assessment of Policies, Institutions and Finance



Exploration of policy instruments and institutions

Exploring alternative mitigation pathways

- Feasibility of 2°C: Exploring the whole solution space between 1.5°C and 4°C in terms of costs, risks, (co-)benefits and institutional requirements



CO ₂ eq Concentrations in 2100 (CO ₂ eq)	Subcategories	Relative position of the RCPs ⁵	Cumulative CO ₂ emission ² (GtCO ₂)		Change in CO ₂ eq emissions compared to 2010 in (%) ⁴		Temperature change (relative to 1850-1900) ¹⁴			
			2011-2050	2011-2100	2050	2100	2100 Temperature change (°C) ⁷			
							Likelihood of staying below temperature level over the 21 st century ⁸			
Category label (concentration range) ⁹							1.5°C	2.0°C	3.0°C	4.0°C
< 430	Only explored levels below 430 ppm CO ₂ eq									
450 (430-480)	Total range ¹⁰	RCP2.6	1260-1640	1870-2440	-58 to -24	-134 to -50	2.3-2.6 (1.5-4.2)	Unlikely	More likely than not	Likely
500 (480-530)	No overshoot of 530 ppm CO ₂ eq		1310-1750	2570-3340	-11 to 17	-54 to -21	2.6-2.9 (1.8-4.5)	Unlikely	More likely than not	Likely
550 (530-580)	No overshoot of 580 ppm CO ₂ eq		1420-1860	2780-3550	-11 to 17	-54 to -21	2.6-2.9 (1.8-4.5)	Unlikely	More likely than not	Likely
(580-650)	Total range	RCP4.5	1260-1640	1870-2440	-58 to -24	-134 to -50	2.3-2.6 (1.5-4.2)	Unlikely	More likely than not	Likely
(650-720)	Total range	RCP6.0	1570-1940	3620-4990	18 to 54	-7 to 72	3.1-3.7 (2.1-5.8)	Unlikely ¹¹	Unlikely ¹¹	More unlikely than likely
(720-1000)	Total range	RCP8.5	1840-2310	5350-7010	52 to 95	74 to 178	4.1-4.8 (2.8-7.8)	Unlikely ¹¹	Unlikely ¹¹	More unlikely than likely

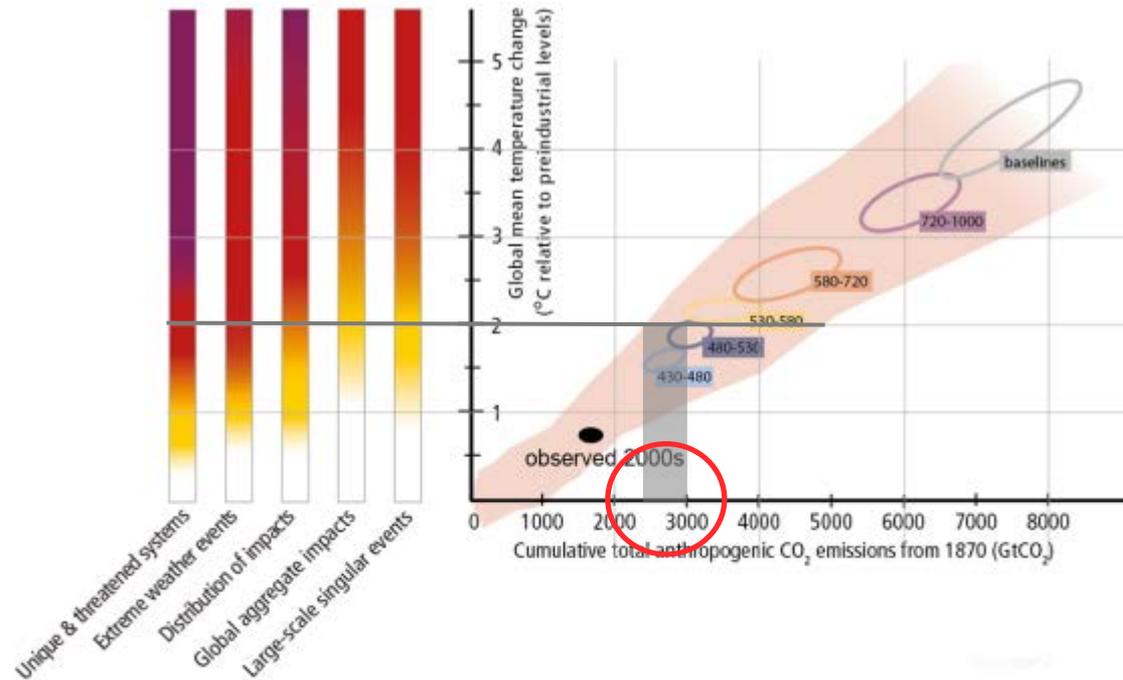
Costs

2100 Concentration (ppm CO ₂ eq)	Consumption losses in cost-effective implementation scenarios			Increase in total discounted mitigation costs in scenarios with limited availability of technologies				Increase in mid- and long term mitigation costs due delayed additional mitigation up to 2030				
	[% reduction in consumption relative to baseline]		[percentage point reduction in annualized consumption]	[% increase in total discounted mitigation costs (2015-2100) relative to default technology]		[percentage point reduction in annualized consumption]		[% increase in mitigation costs relative to immediate mitigation]		[percentage point reduction in annualized consumption]		
	2030	2050	2100	[percentage point reduction in annualized consumption]		[percentage point reduction in annualized consumption]		[percentage point reduction in annualized consumption]		[percentage point reduction in annualized consumption]		
450 (430-480)	1.7 (1.0-3.7) [N: 14]	3.4 (2.1-6.2)	4.8 (2.9-11.1) [N: 8]	0.06 (0.03-0.17)	39 (18-78) [N: 11]	13 (2-23) [N: 10]	8 (5-15) [N: 10]	18 (4-66) [N: 12]	3 (5-16) [N: 14]	4 (-4-11)	15 (3-32) [N: 10]	16 (5-24)
500 (480-530)	1.7 (0.6-2.1) [N: 32]	2.7 (1.5-4.2)	4.7 (2.4-10.6)	0.06 (0.03-0.17)	39 (18-78) [N: 11]	13 (2-23) [N: 10]	8 (5-15) [N: 10]	18 (4-66) [N: 12]	3 (5-16) [N: 14]	4 (-4-11)	15 (3-32) [N: 10]	16 (5-24)
550 (530-580)	0.6 (0.2-1.3) [N: 46]	1.7 (1.2-3.3)	3.8 (1.2-7.3)	0.04 (0.01-0.09)	39 (18-78) [N: 11]	13 (2-23) [N: 10]	8 (5-15) [N: 10]	18 (4-66) [N: 12]	3 (5-16) [N: 14]	4 (-4-11)	15 (3-32) [N: 10]	16 (5-24)
580-650	0.3 (0-0.9) [N: 16]	1.3 (0.5-2.0)	2.3 (1.2-4.4)	0.03 (0.01-0.05)	39 (18-78) [N: 11]	13 (2-23) [N: 10]	8 (5-15) [N: 10]	18 (4-66) [N: 12]	3 (5-16) [N: 14]	4 (-4-11)	15 (3-32) [N: 10]	16 (5-24)

Technologies

IPCC WGIII (2014)

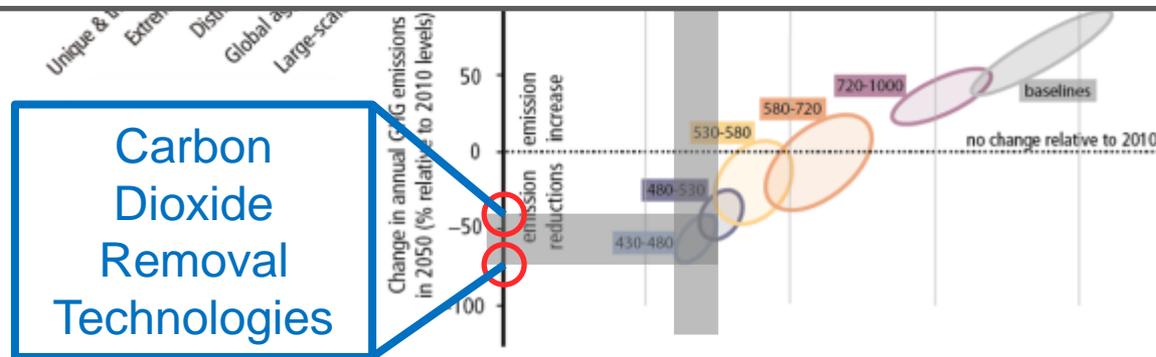
Grand synthesis across Working Groups



Grand synthesis across Working Groups



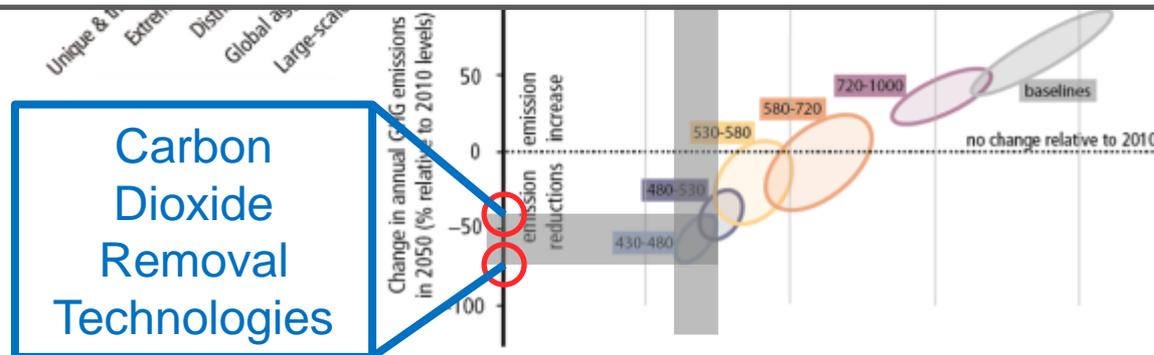
Result of a dedicated self-organization process of different scientific communities



Grand synthesis across Working Groups



- Better interaction between WGs has to be institutionalized
- Evaluation of differential impacts (WGII) and differential mitigation costs and technology risks (WGIII) between 1.5°C / 2°C / 3°C / 4°C is essential for AR6



Science Policy Interface: Berlin WGIII SPM Plenary



INSIGHTS | PERSPECTIVES

CLIMATE POLICY

IPCC lessons from Berlin

Did the “Summary for Policymakers”
become a summary by policy-makers?



4 JULY 2014 • VOL 345 ISSUE 6192 sciencemag.org **SCIENCE**

Science Policy Interface: The Structured Expert Dialogue



- A rewarding experience from a Co-Chair perspective
- Is it also useful for government representatives?
- What are lessons for the IPCC?
 - IPCC responding to questions formulated by policymakers
 - More frequent direct interactions between researchers and policymakers during assessment cycle



Structured Expert Dialogue 4,
COP 20 Lima, Peru
2-3 December 2014

Future Priorities and Options

- **Develop better assessment and scoping tools to manage exponentially increasing literature and knowledge base**
- **IPCC could make more use of formats that enable more timely and rapid delivery of products addressing specific policy-relevant questions (e.g. expert workshops & reports)**
- **Working Group III will be essential for the future of the IPCC.**
 - It can significantly contribute to developing the globally shared knowledge base informing the emerging global multi-level climate policy regime
- **The IPCC should focus on developing policy maps and pathways building on strong *ex post* and *ex ante* policy analysis**
 - **Domestic policy packages:** Ex post evaluation applying multiple criteria; evaluating alternative future policy pathways (multiple criteria); support international policy diffusion
 - **International policies:** Ex post evaluation applying multiple criteria; evaluation of alternative future policy pathways (multiple criteria)

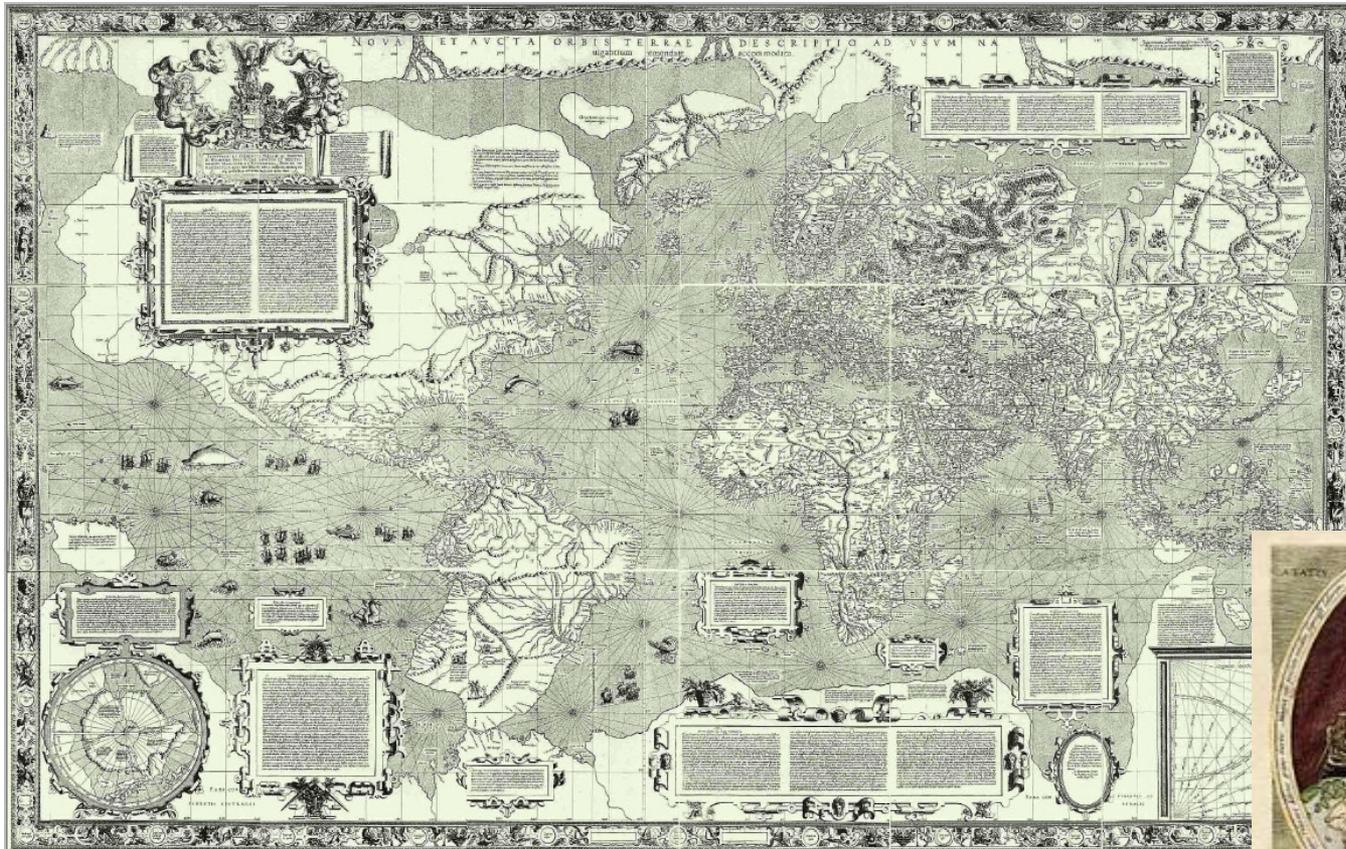
Claudius Ptolemy World Map (1482)



Gerald Mercator: World Map (1569)



*“Nova et aucta orbis terrae descriptio ad usum navigantium
emendate accommodata”*



Towards 21st Century Mapmaking

