For Our Environment

Umwelt Bundesamt

New Findings of the IPCC Special Report “Global Warming of 1.5°C

23 November 2018, 10:30 to 12:00 CET

Hosted by Kati Mattern
Section I 2.1 Climate Protection

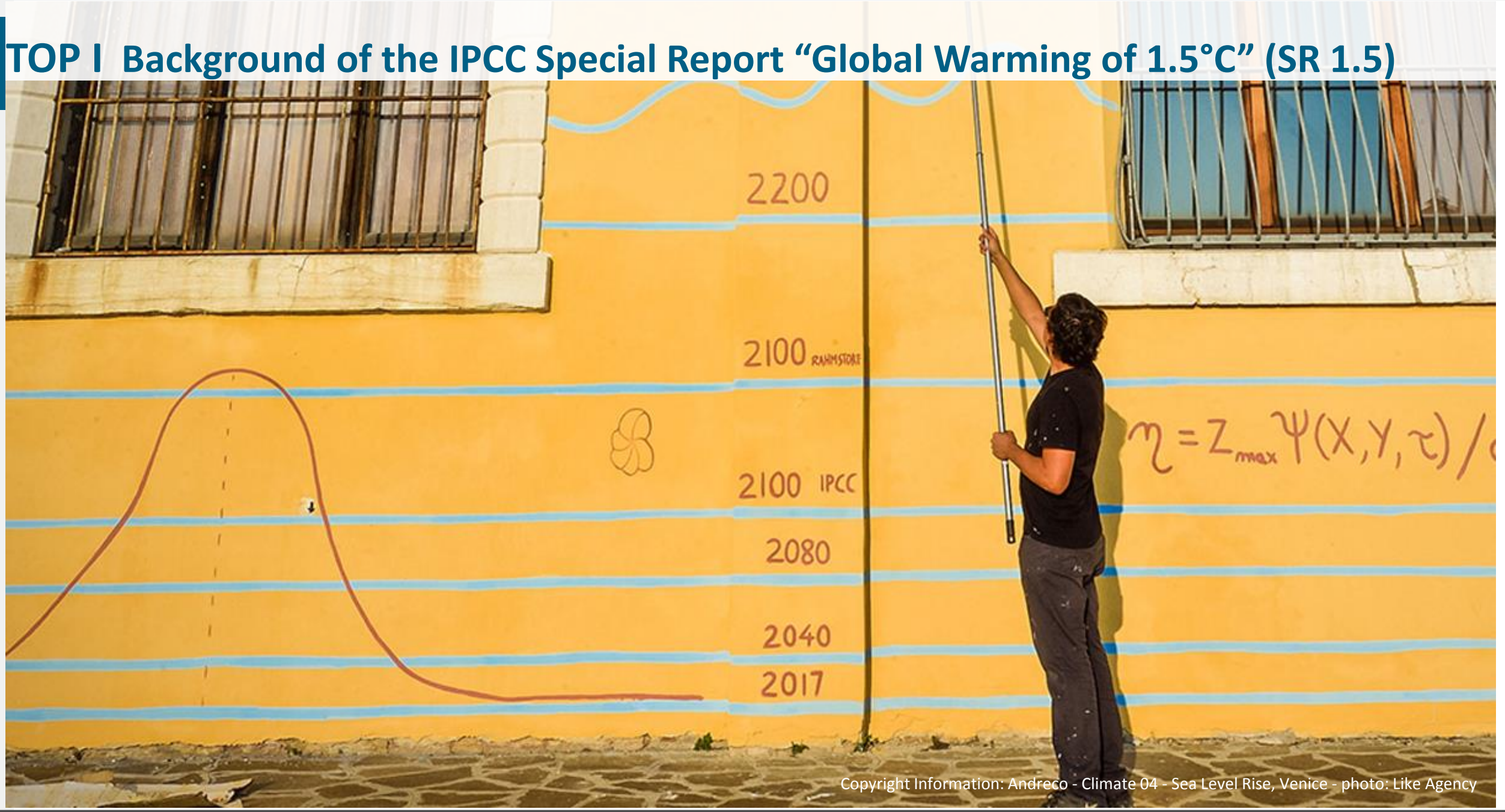
The role of the German Environment Agency in the IPCC processes

Development of the report

Adoption of the reports in IPCC negotiations

Source: UBA, 2018

TOP I Background of the IPCC Special Report “Global Warming of 1.5°C” (SR 1.5)

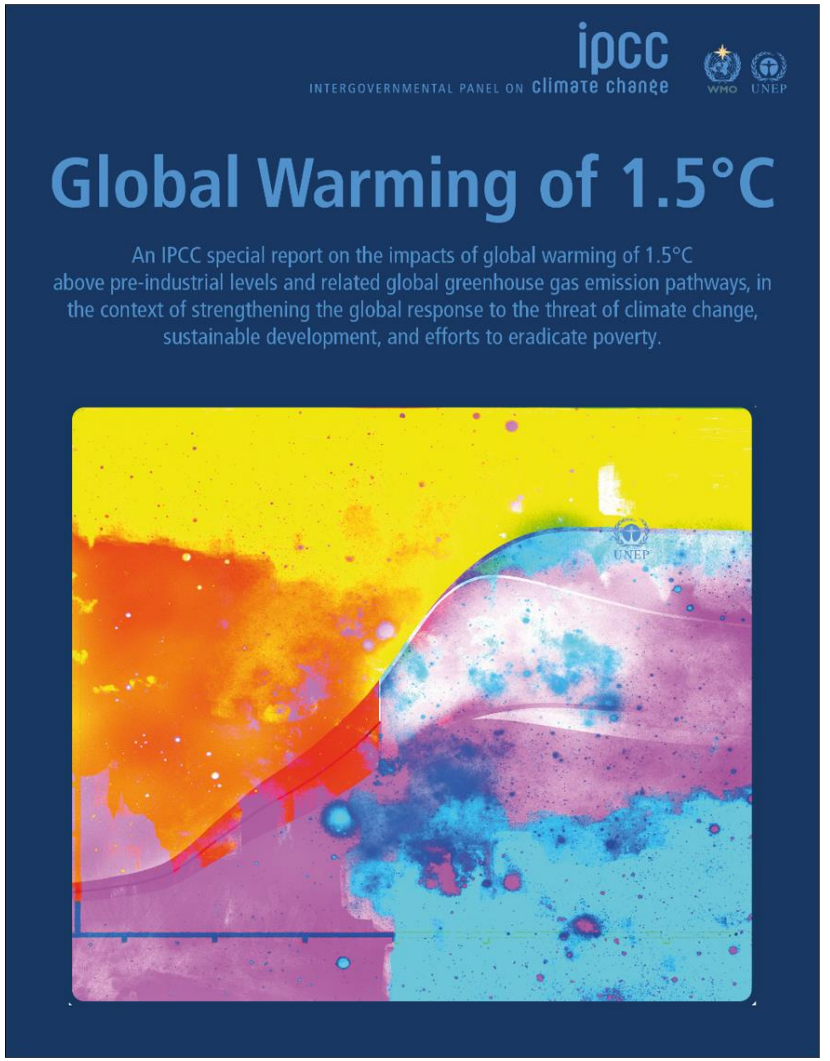


Background of the IPCC Special Report "Global Warming of 1.5° C"

COP21 · CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

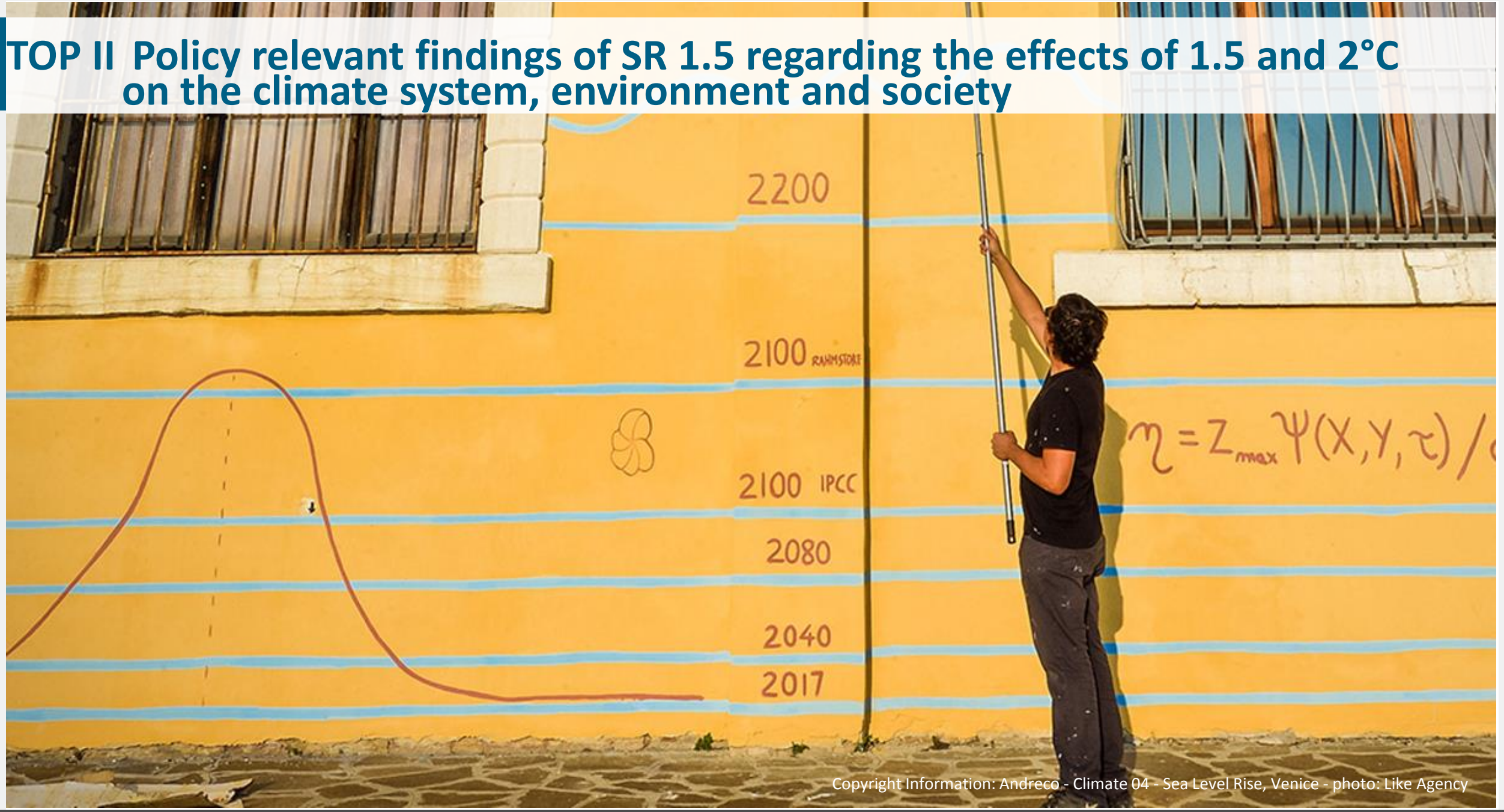
Source: UNFCCC, 2015

Order to IPCC

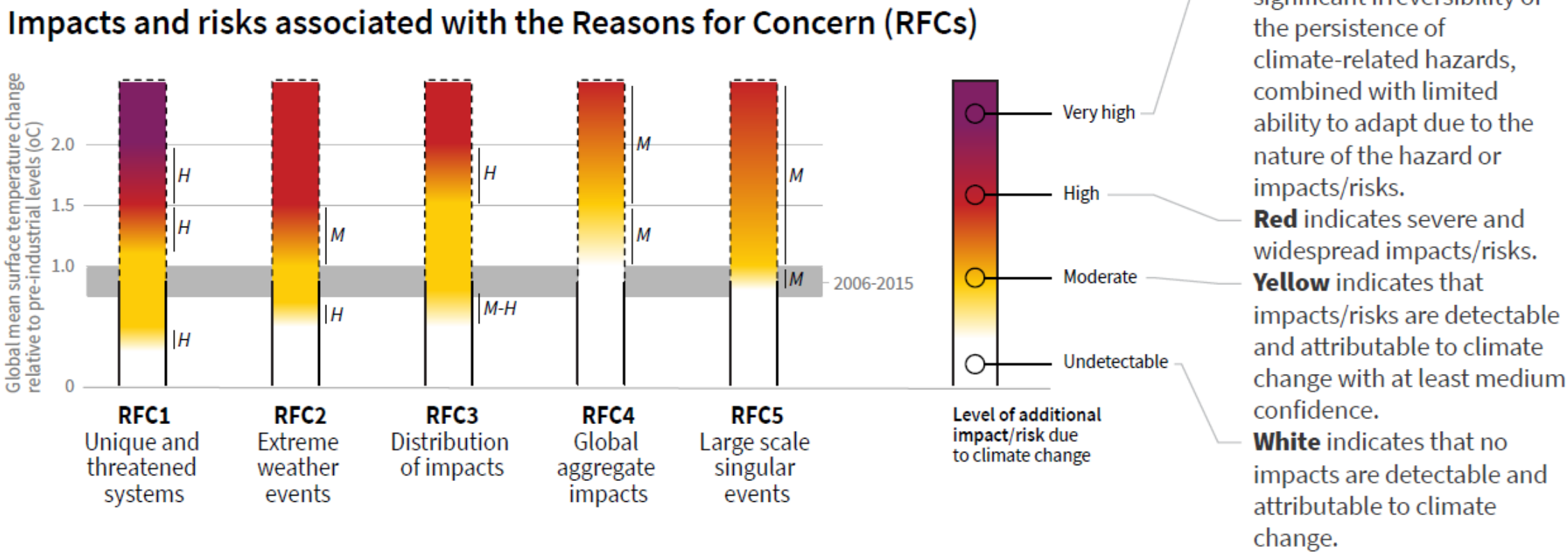


Source: IPCC 2018

TOP II Policy relevant findings of SR 1.5 regarding the effects of 1.5 and 2°C on the climate system, environment and society

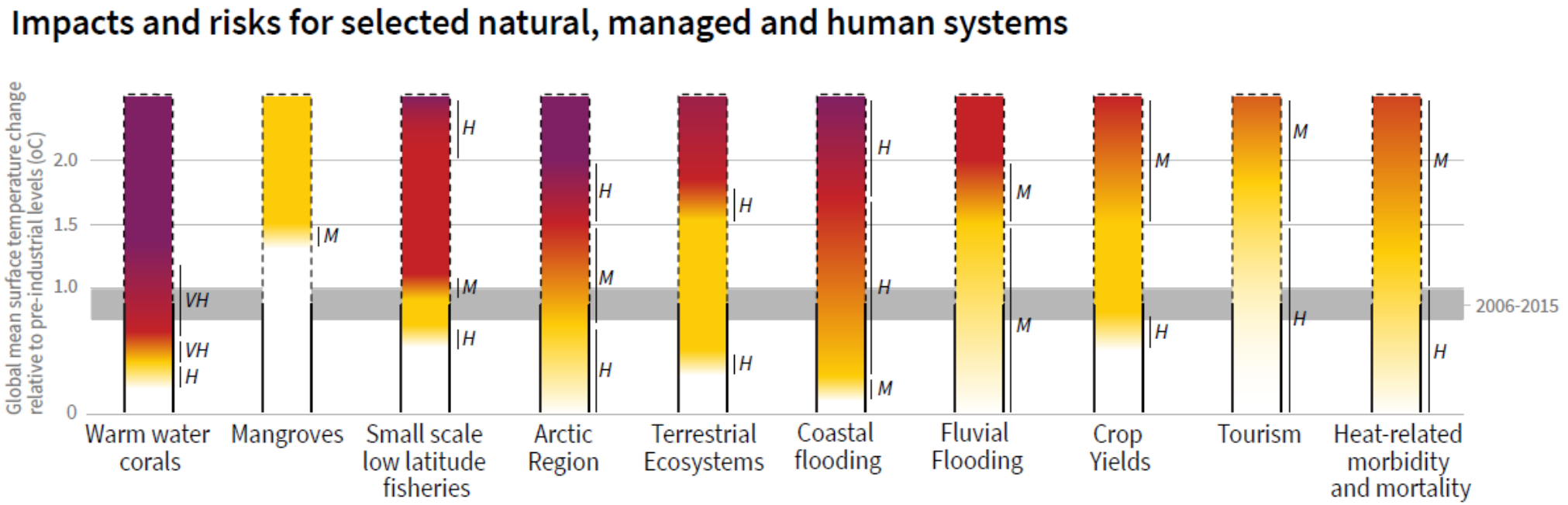


Change in the risk assessment for the reasons for concern in SR 1.5



Source: IPCC SR1,5, SPM.2

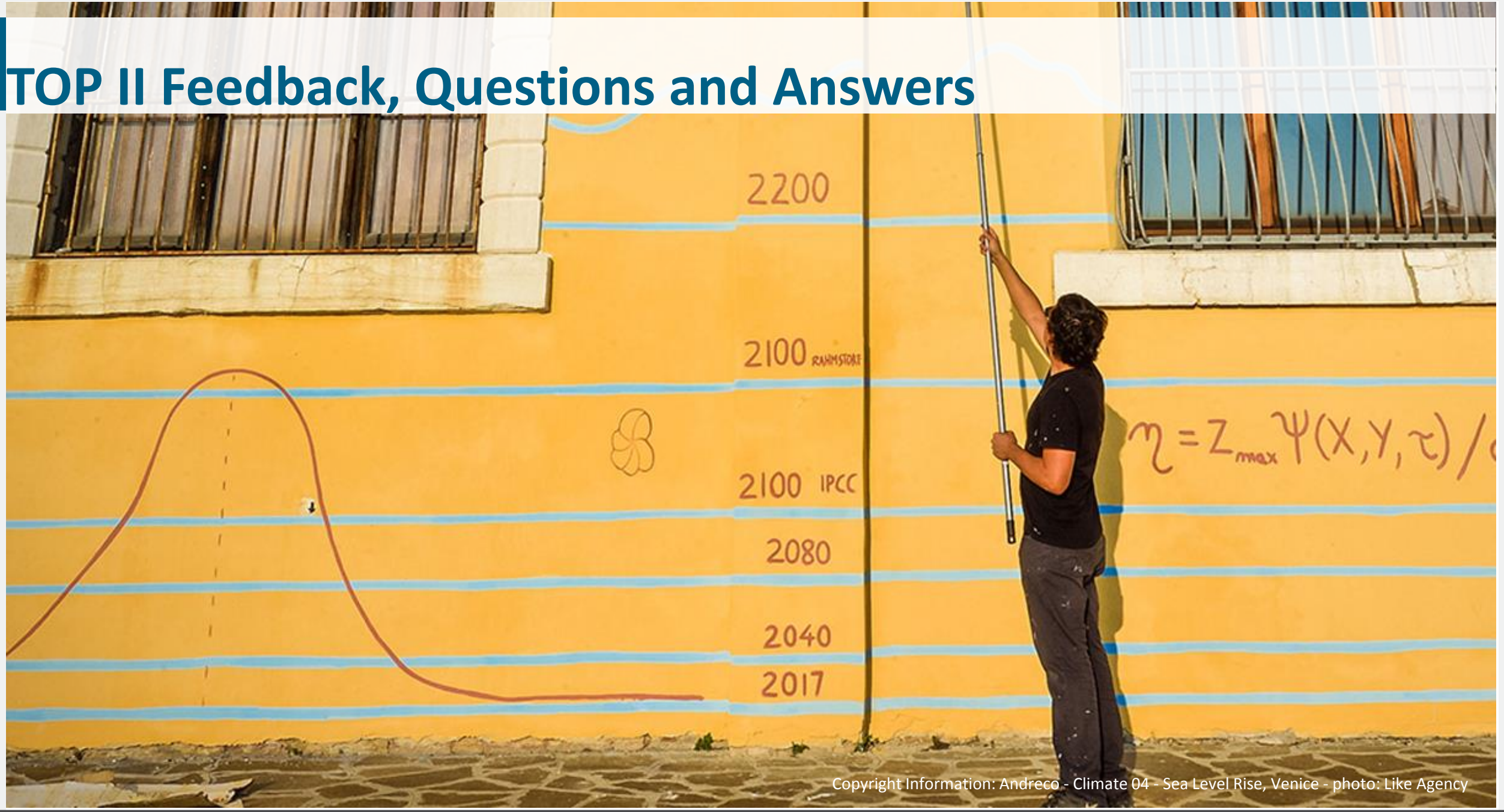
Examples for risk assessments in SR 1.5



Coral Reefs	Fisheries	Arctic Region	Global Sea Level Rise	Food Security
• Total loss at + 2.0 ° C • 70-90% loss at + 1.5 ° C	• Lower reduction of fishery fees at + 1.5 ° C • (Reduction of losses up to 50% at + 1.5 ° C)	• Increased risk of permafrost and Greenland ice sheet at + 2.0 ° C	• By 2100 about 0.1 m lower increase at + 1.5 °C than at + 2.0 ° C	• Stable crop yields and lower risk for livestock at + 1.5 ° C

Source: IPCC SR1,5, SPM.2, modified

TOP II Feedback, Questions and Answers



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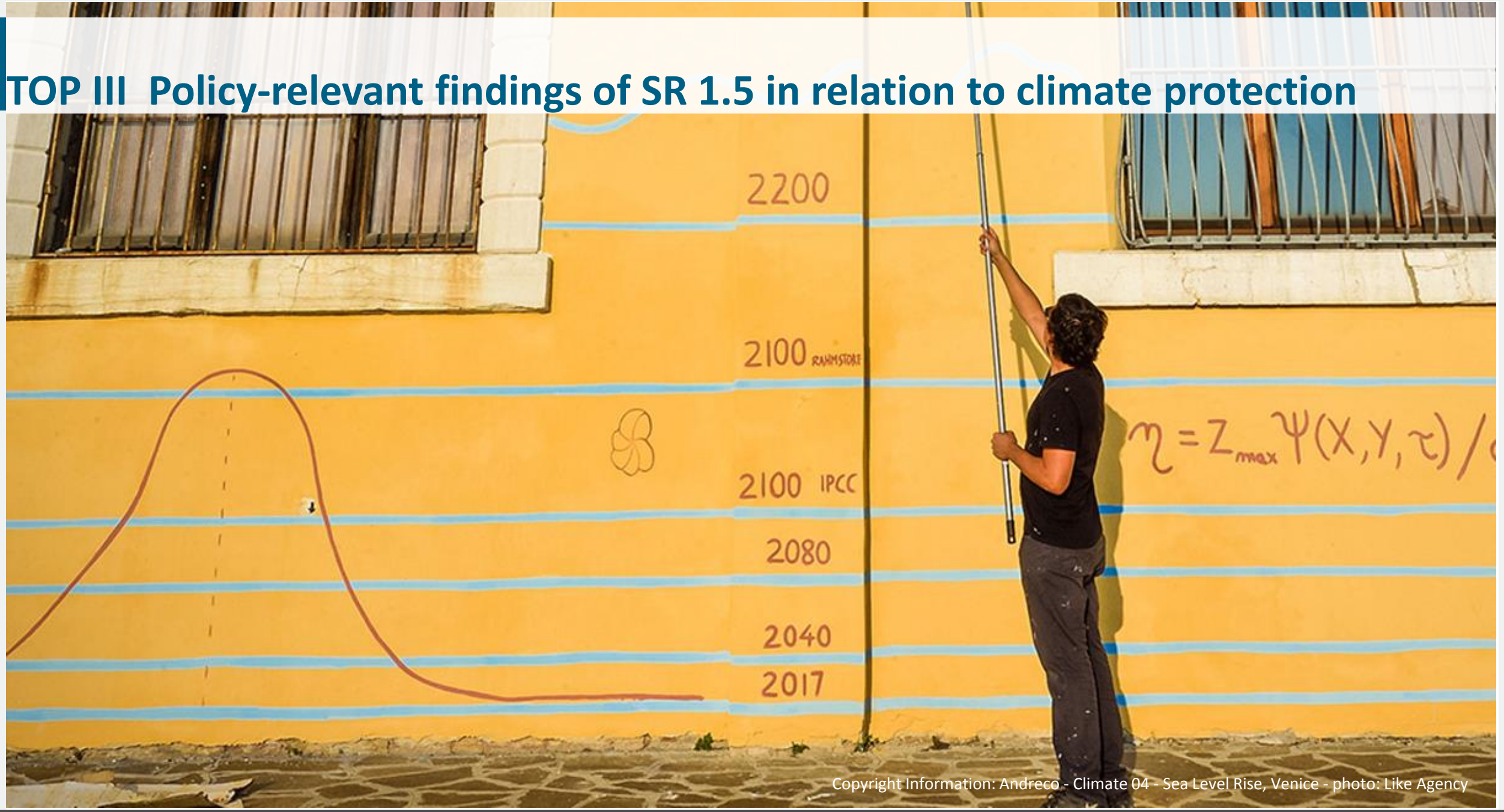
TOP III Policy-relevant findings of SR 1.5 in relation to climate protection



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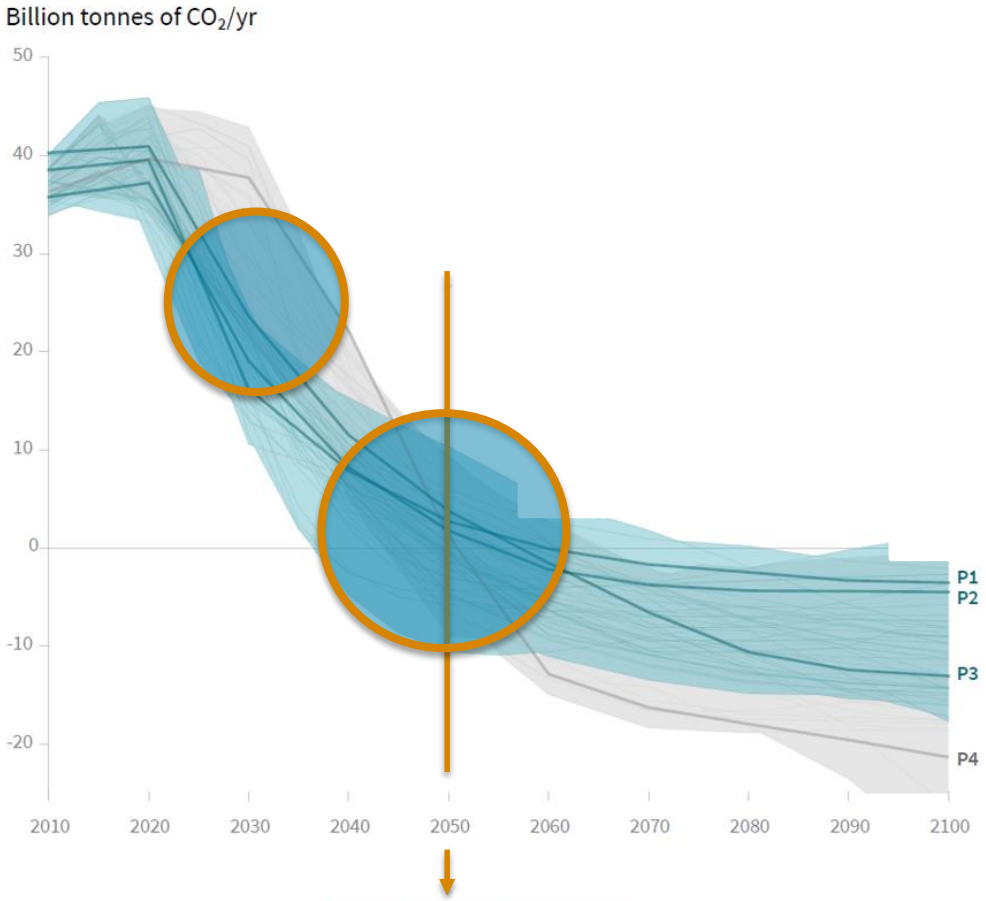
Necessary emission reductions for different time horizons



	1.5 degrees scenarios	2 degrees scenarios
Decrease by 2030	-45% (-40 to -60%) compared to 2010	-20% (-10 to -30%) compared to 2010
Reaching net zero	~ 2050 (2045 – 2055)	~ 2075 (2065 – 2080)

Time of net zero CO2
Line widths show the 5-95 percentile and the 25-75 percentile of the scenarios

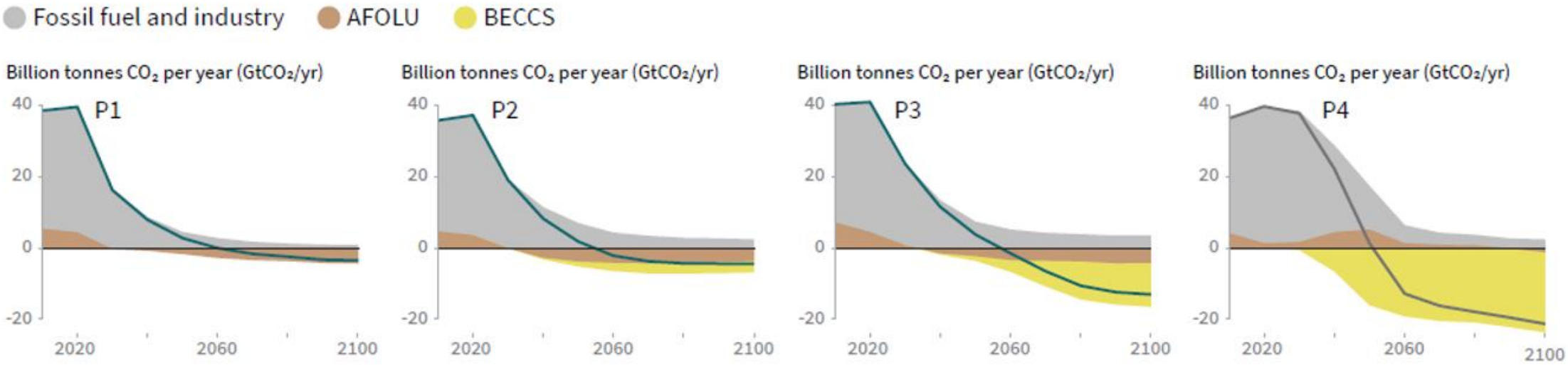
Scenarios that limit global warming to 1.5 ° C and with little or no overshoot

Scenarios with high overshoot

Scenarios that limit global warming to 2 °C

Source: IPCC SR 1,5, SPM.2, modified

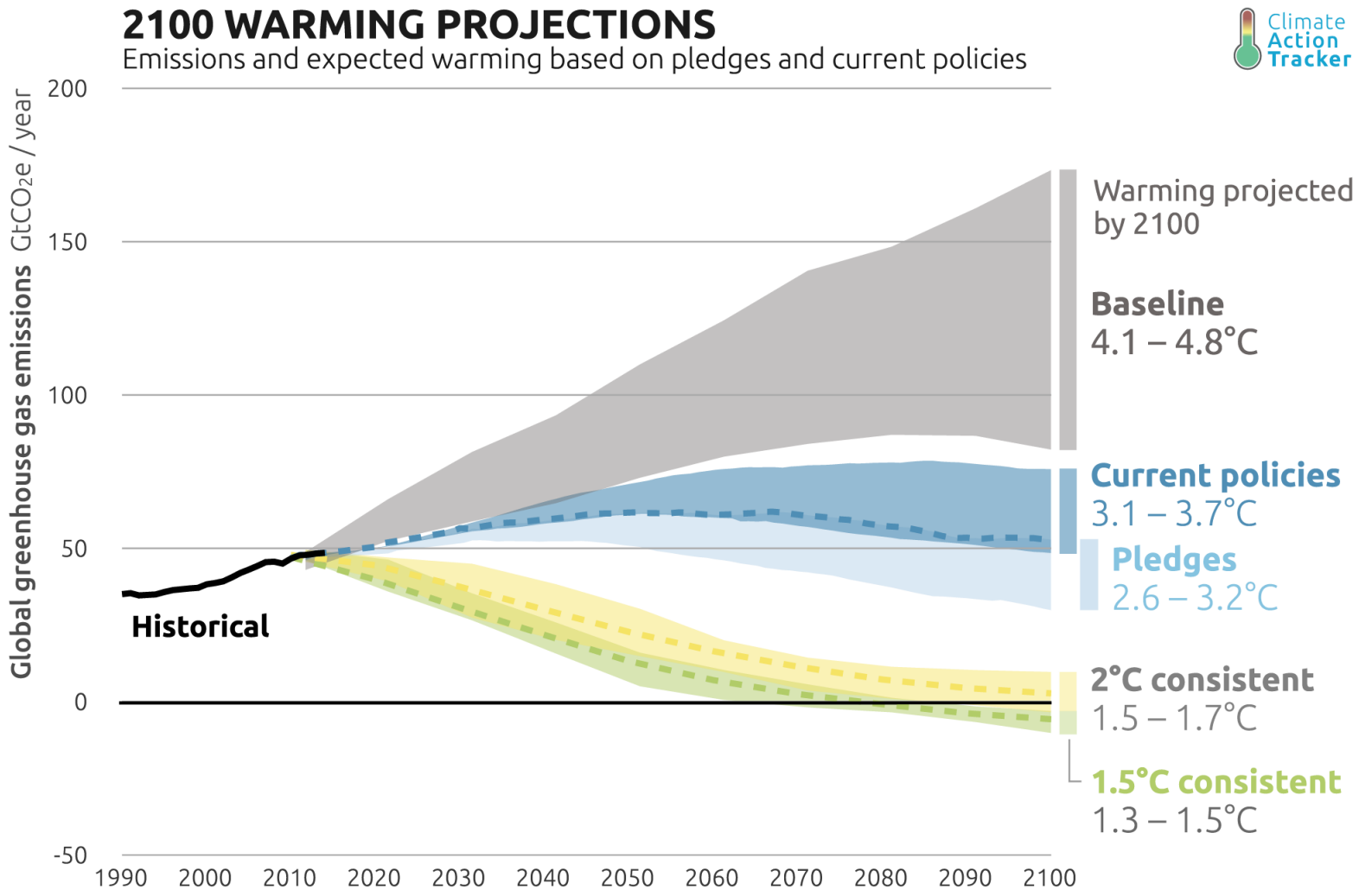
Breakdown of contributions to global net CO_2 emissions in four illustrative model pathways



P1: LED low energy demand (limited / without exceeding)	P2: Nachhaltigkeitsorientiert (begrenzte oder ohne Überschreitung)	P3: Mittlere Herausforderung (begrenzte oder ohne Überschreitung)	P4: Ressourcen- und energieintensives Szenario (erhebliche Überschreitung (fast 2°C))
Innovations in different areas result in lower energy demand up to 2050 Living standards rise, especially in the global South. Down-sized energy system enables rapid decarbonisation Afforestation is the only CDR option considered	Broad focus on sustainabilty: Energy intensity, human development, economic convergence Shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems Limited societal acceptability for BECCS	Societal as well as technological development follows historical Patterns Emissions reductions are mainly achieved by changing the way in which energy and products are produced, and to a lesser degree by reductions in demand.	Resource and energy-intensive Scenario: Economic growth and globalization lead to widespread adoption of greenhouse-gas intensive lifestyles Emissions reductions are mainly achieved through technological Means (CDR, BECCS)

Source: IPCC SR1,5, SPM 3b, modified

Current State



Quelle: climateactiontracker.org

Which need for action arises from the necessary emission reductions?

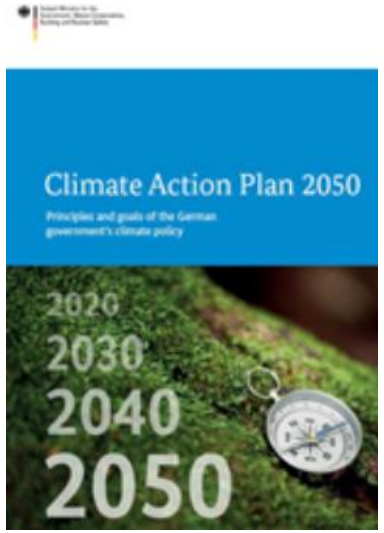
Global Primary Energy Supply in 1,5C Compatible Pathways

Energy carrier *(primary energy)*	**Median 2020**	**Range 2020**	**Median* 2030**	range* 2030	**Median 2050**	**range 2050**
Renewables	15%	11-20%	28%	27-37%	61%	28-88%
Coal	26%	17-31%	10%	3-24%	5%	0-13%
Oil	34%	28-42%	35%	16-43%	16%	3-27%
Gas	23%	18-28%	24%	7-28%	13%	3-35%
Nuclear	2%	1,5-3,4%	3%	2,8-6%	4%	0-14%

* Relative shares after own calculation of absolute values for 2030 in SPM Table 2.6

Source: Primary energy in 1.5C pathways (Table 2.6 SPM; modified)

What need for action arises from the necessary emission reductions?



Politics

[...]

Transformation

Technologies

Society

Source: UBA, 2018

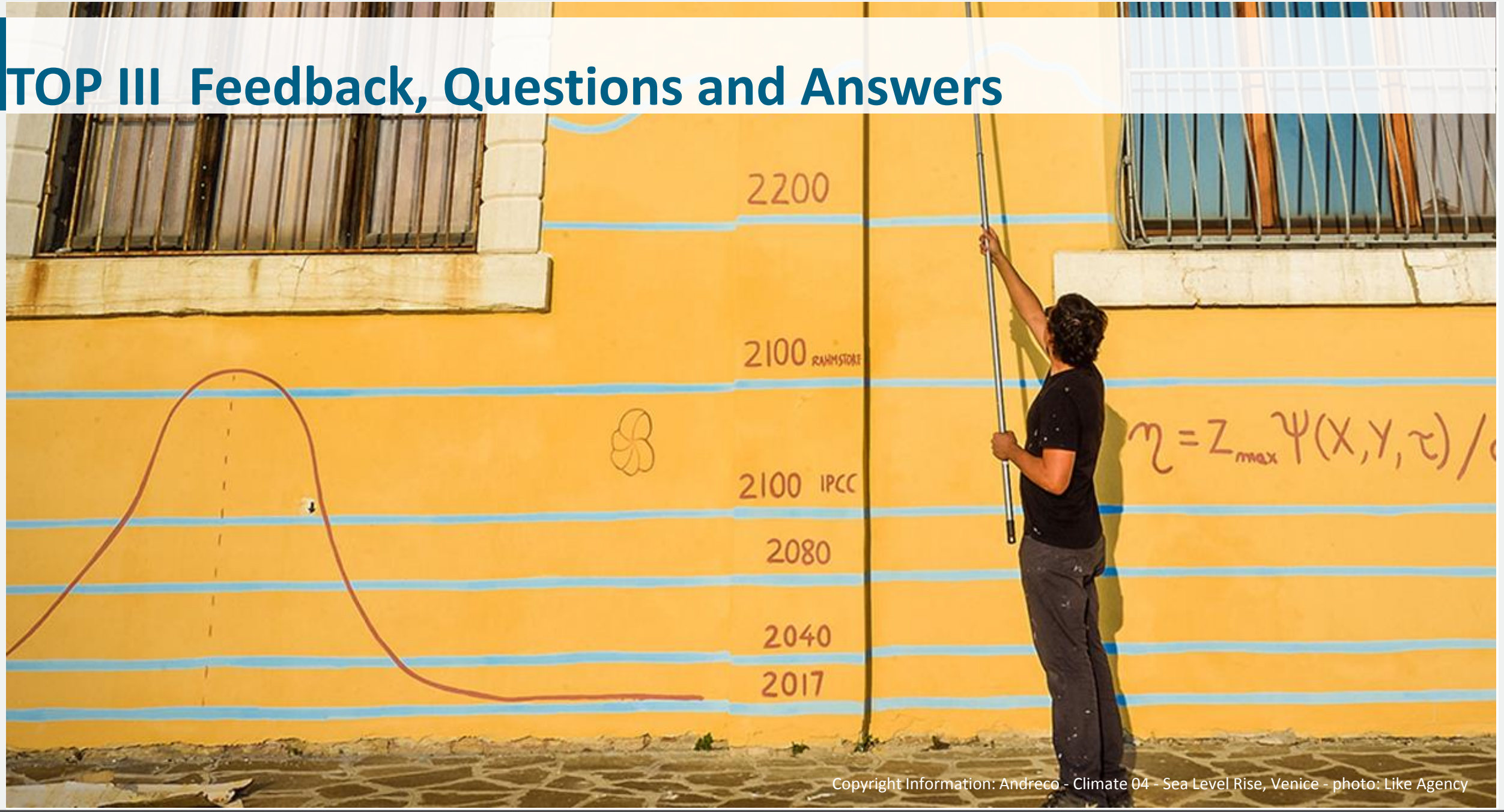
Implications for the EU? – the UBA perspective

Re-aligning the EU Climate Policy to the Paris Agreement

- **greenhouse gas-neutrality by 2050**
- **enabling environment to strengthen 2030 NDC to reductions towards 60% and more** (rel. to 1990) to minimize cumulative emissions adequately & exemplarily
- compensating residual emissions only by CDR or additional reduction measures outside the EU
- market mechanisms (Article 6 PA) only to contribute to additional climate ambition abroad.
- **high-level engagement by the EU Council**

Source: UBA, 2018

TOP III Feedback, Questions and Answers



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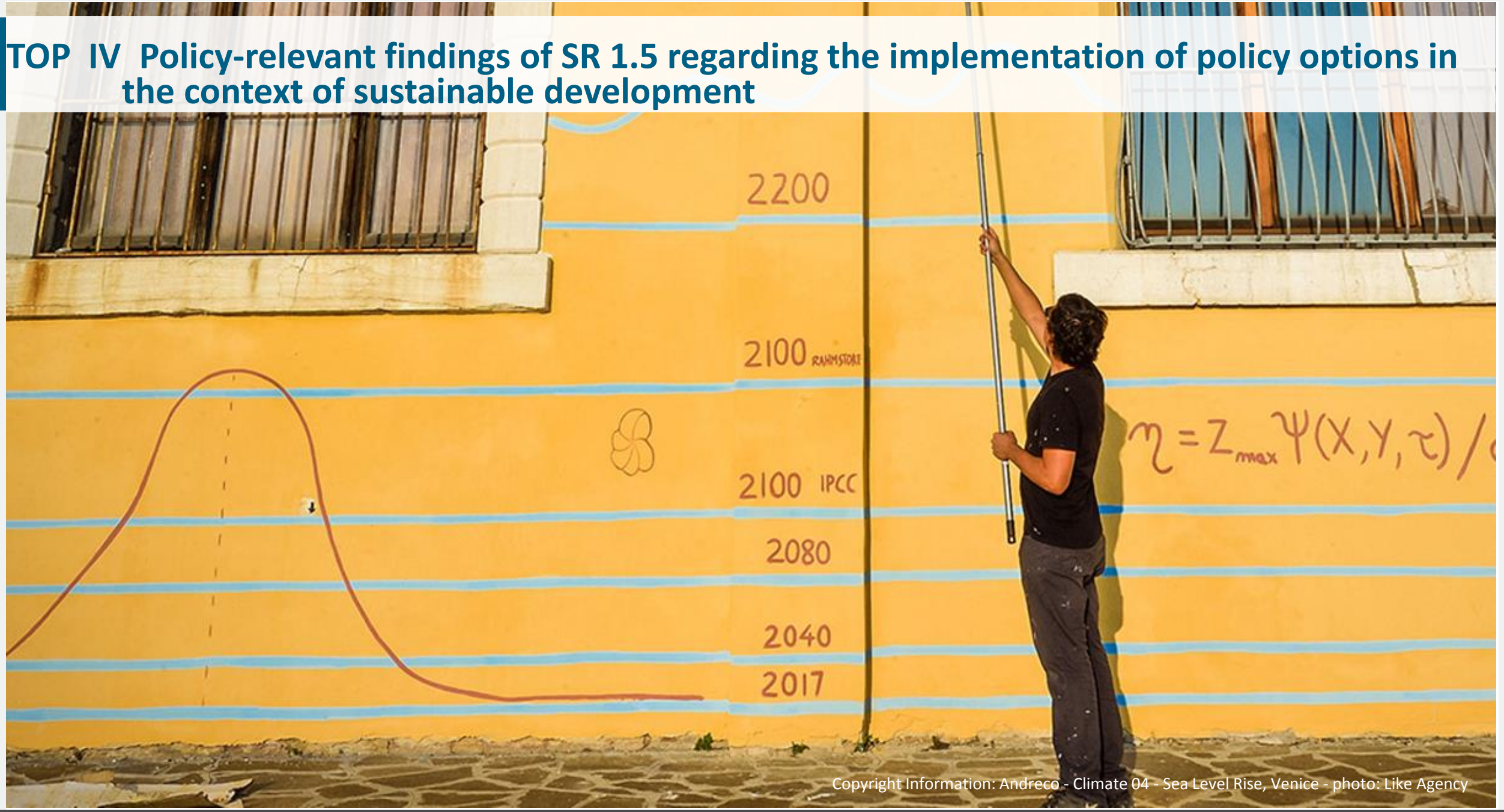
TOP IV Policy-relevant findings of SR 1.5 regarding the implementation of policy options in the context of sustainable development



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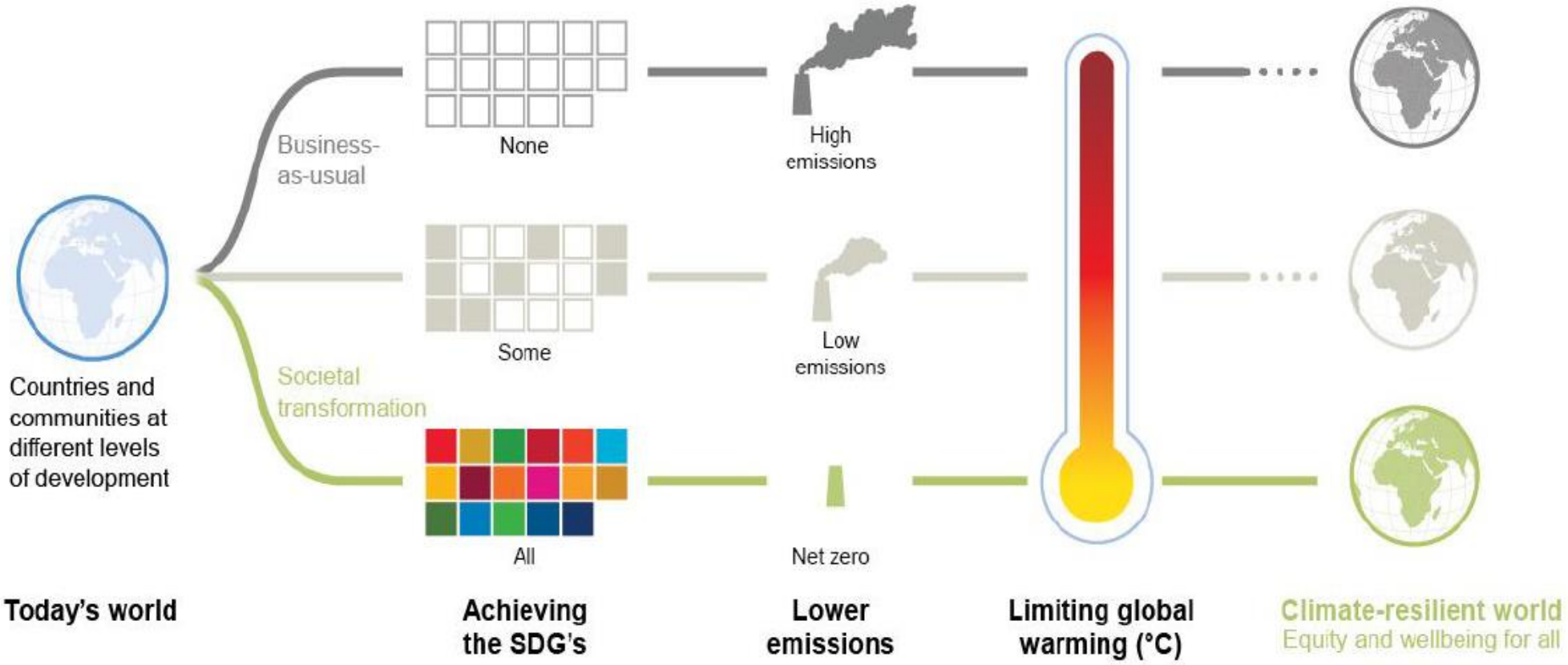
Climate-resilient development pathways



Source: SR1,5 Kapitel 5 FAQ 5.2

Do we need a limitation to 1.5 degrees global warming to achieve the SDGs?

Effects of global warming up to 1.5 °C

→ **significant consequences for the achievement of SDGs**

(e.g. coral reefs)

Limitation to 1.5 °C global warming

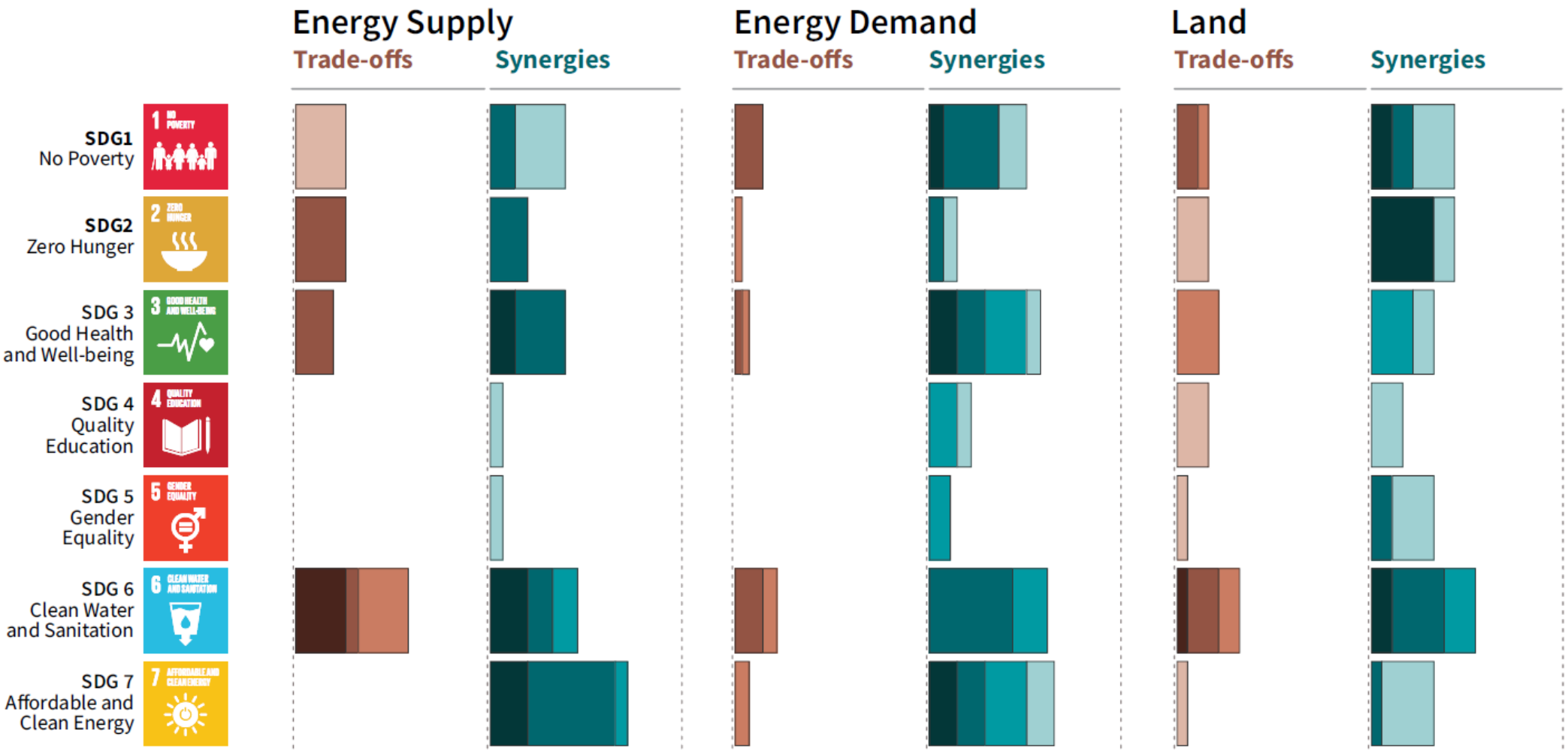
→ **avoidance of further negative impacts**

or significant reduction (e.g. Reasons for Concern)

Implementation of the SDGs is significantly facilitated by a limitation to 1.5 °C global warming.

Source: UBA, 2018

Impact of climate change measures on sustainable development



Quelle: IPCC SR 1,5, SPM.4

Impact of Carbon Dioxide Removal measures on sustainability

Measures to remove CO_2 from the atmosphere (CDR) can lead to resource conflicts, depending on the type and scale of the measure (e.g. for water, energy, land, nutrients)

Large-scale use of bioenergy and CCS (BECCS) or afforestation can lead to land use conflicts (food security, ecosystem functions)

Some CDR measures can enable synergies with Sustainable Development Goals (eg. carbon sequestration in soils, restoration of ecosystems)

Measures to reduce pressure on land resources can reduce conflicting goals (e.g. reduced post-harvest food loss)

UBA views rapid mitigation as essential to minimize CDR implementation and related conflicts.

Source: UBA, 2018

Supporting the rapid transition towards a sustainable climate-resilient development

Enabling factors (SR 1.5):

International cooperation - a critical factor in empowering developing and vulnerable regions

Strengthening capacities to act at all levels and with all actors

Use policyinstruments for accompanying measures to ensure climate justice

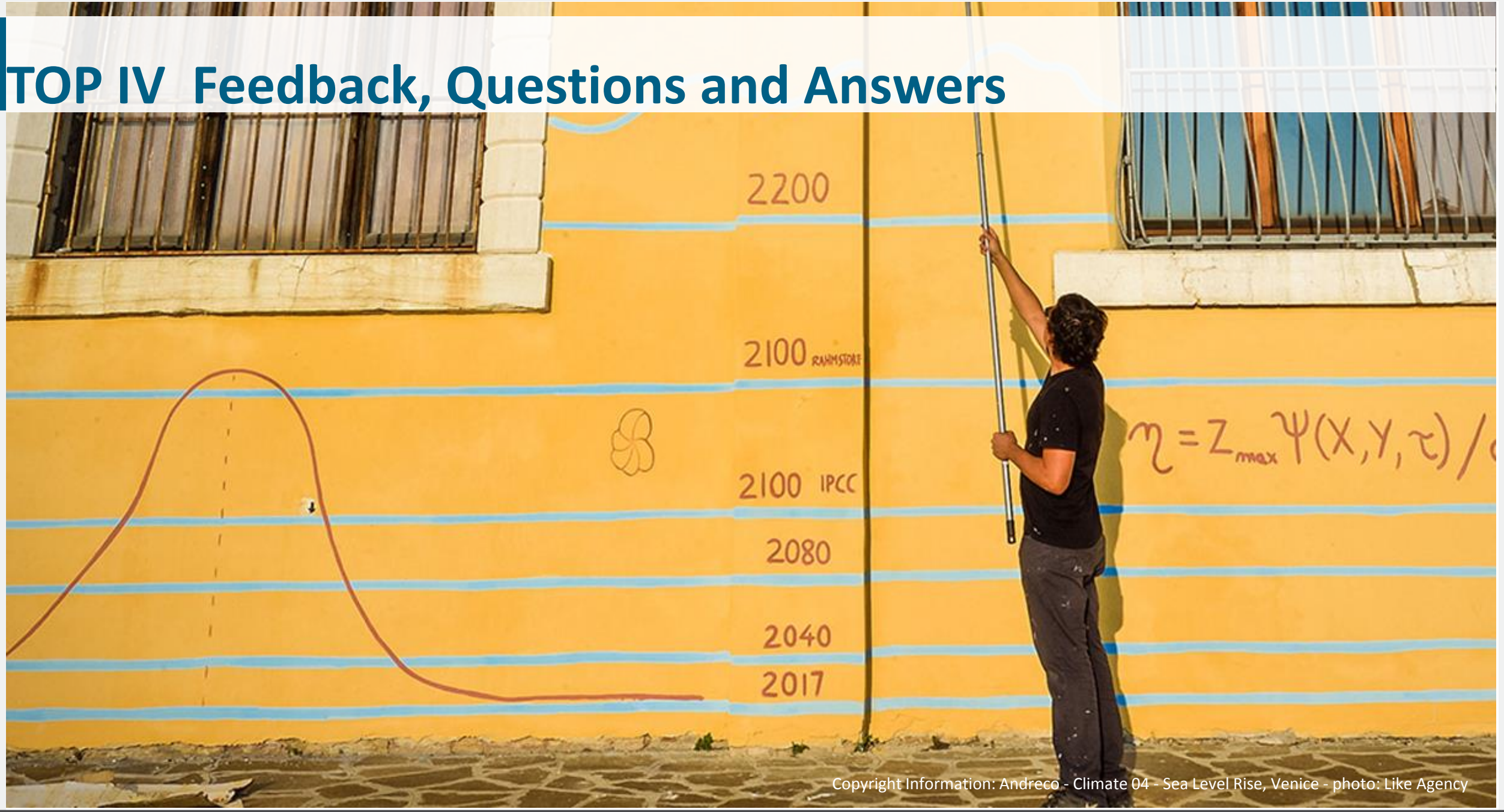
Example:
Sharing of knowledge on adaptation

Source: EEA, 2018

Source: KliVo, 2018

Example:
Improving effective action at municipal level

TOP IV Feedback, Questions and Answers



TOP V Outlook/Next steps

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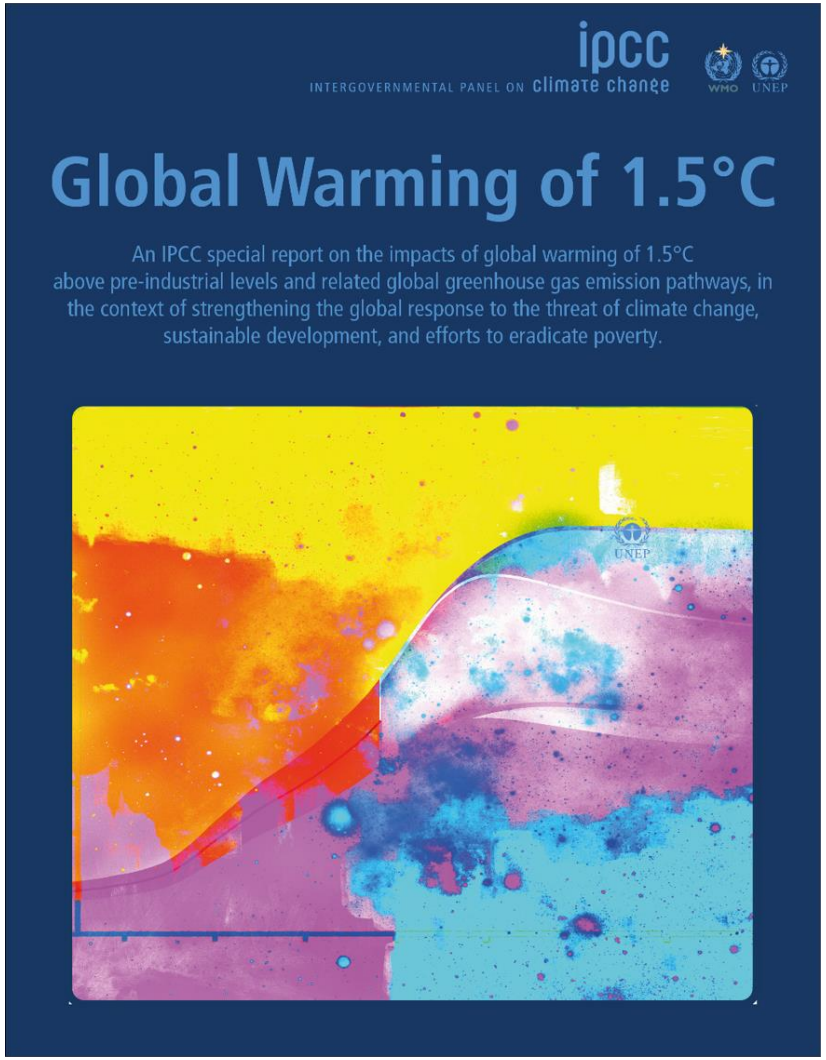
New Findings of the SR 1.5 degrees - Summary and Outlook

- **Risks** for climate system, nature and humans between 1.5 ° C and 2 ° C global warming **higher than previously known.**
- 1.5 ° C-compatible emission pathways require **radical reduction** of greenhouse gas emissions worldwide in the next decade. Existing climate protection commitments under the Paris Agreement are insufficient.
- All emission pathways usually involve the **removal of CO_2 from the atmosphere** to a considerable extent with unproven risky technologies.
- Exceeding warming by more than 1.5 ° C and the dependency on large scale use of CO_2 depletion can only be avoided if global CO_2 emissions begin to drop **well before 2030.**
- Synergies and goal conflicts with **sustainable development** depend on the reduction and adaptation portfolio.
- Implementation of the rapid social transformation is supported by **improved governance.**



Source: IPCC, 2018

UBA: Communicating policy-relevant information of IPCC SR 1.5

Policy advice

Informing the public

Webinar 1

(26/10/2018)

Experts supporting decision making

Webinar 2

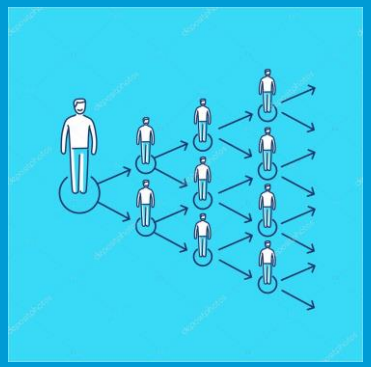
(23/11/2018)

German Experts in the context of climate negotiations

Webinar 3

(03/2019)

Multiplipliers



Source: UBA, 2018

Thank you for your attention!

German Environment Agency – Climate Protection Section

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