The IPCC Special Report on Global Warming of 1.5°C – What it means for us

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Climate “How“: How to Engage Society and Deploy Decarbonization – 5th International Symposium
Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.
Impacts of global warming at 1.5°C are significantly lower than at 2°C

• By 2100, global mean sea level rise will be around 10 cm lower, irreversible loss of Greenland ice sheet could be triggered between 1.5°C and 2°C.

• Less extreme weather where people live, including extreme heat and rainfall.

• Global population exposed to water shortages up to 50% less

• Up to several hundred million fewer people exposed to climate-related risk and susceptible to poverty by 2050
How the level of global warming affects impacts and/or risks associated with the Reasons for Concern (RFCs) and selected natural, managed and human systems.

Confidence level for transition: L=Low, M=Medium, H=High and VH=Very high
Tipping Elements in the Earth System
Interaction of Tipping Elements: “Hothouse Earth”

Trajectories of the Earth System in the Anthropocene

We explore the risk that self-reinforcing feedbacks could push the Earth System to a planetary threshold that, if crossed, could prevent stabilization of the climate at intermediate temperature rises and cause continued warming on a “Hothouse Earth” pathway even as human emissions are reduced. Crossing the threshold would lead to a much higher global average temperature than any interglacial in the past 1.2 million years and to sea levels significantly higher than at any time in the Holocene. We examine the evidence that such a threshold might exist and where it might be. If the threshold is crossed, the resulting trajectory would likely cause serious disruptions to ecosystems, society, and economies. Collective human action is required to steer the Earth System away from a potential threshold and stabilize it in a habitable interglacial-like state. Such action entails stewardship of the entire Earth System—biosphere, climate, and societies—and could include decarbonization of the global economy, enhancement of biophere carbon sinks, behavioral changes, technological innovations, new governance arrangements, and transformed social values.

(Steffen et al., 2018)
Emission Pathways and System Transitions Consistent with 1.5°C Global Warming
Global emissions pathway characteristics

- NDCs in 2030: 52-58 GtCO₂e/yr
- 1.5°C pathways: 25-30 GtCO₂e/yr
- 40-60% reductions of CO₂ wrt to 2010
upscaled by roughly a factor of six (range of factor of 4 to 10) by 2050 compared to 2015.

- 2016-2050 total annual average investment (Billion US$2010/yr)
- 830 billion USD (12%)

Legend:
- Fossil Electricity and Hydrogen w/o CCS
- Fossil Fuels Extraction and Conversion
- Electricity T&D and Storage
- Nuclear and CCS
- Renewables
- Energy Efficiency
Strengthening the Global Response in the Context of Sustainable Development and Efforts to Eradicate Poverty
Climate change and people

- Close links to United Nations Sustainable Development Goals (SDGs)
- Mix of measures to adapt to climate change and reduce emissions can have benefits for SDGs
- National and sub-national authorities, civil society, the private sector, indigenous peoples and local communities can support ambitious action
- International cooperation is a critical part of limiting warming to 1.5°C
From mitigation pathways to sustainable development pathways

“The World in 2050” Framework (www.twi2050.org)

Thank you very much for your attention!