



# Climate Change and International Justice: On the Universal Destiny of Created Goods

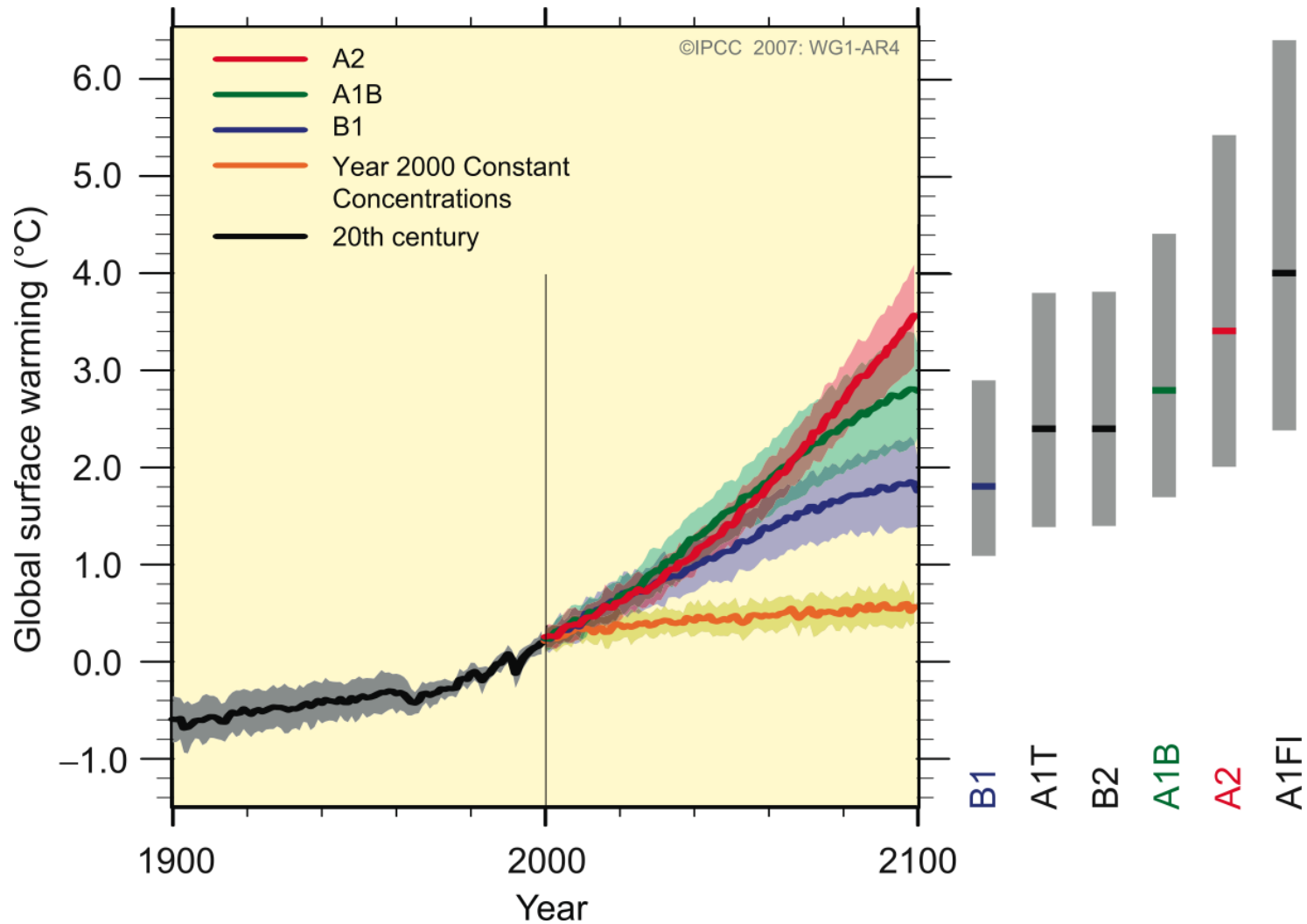
Conference on Climate Change in Asia:  
Global Warming and Climate Change and Its Impact on Asia  
Challenges and the Response of the Church

Bangkok, 19 and 20 October 2011

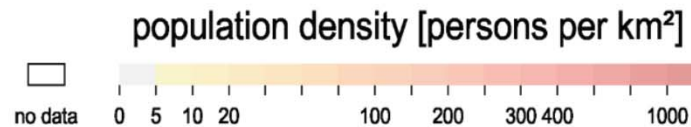
Prof. Dr. Ottmar Edenhofer



# What are the Impacts on Climate?

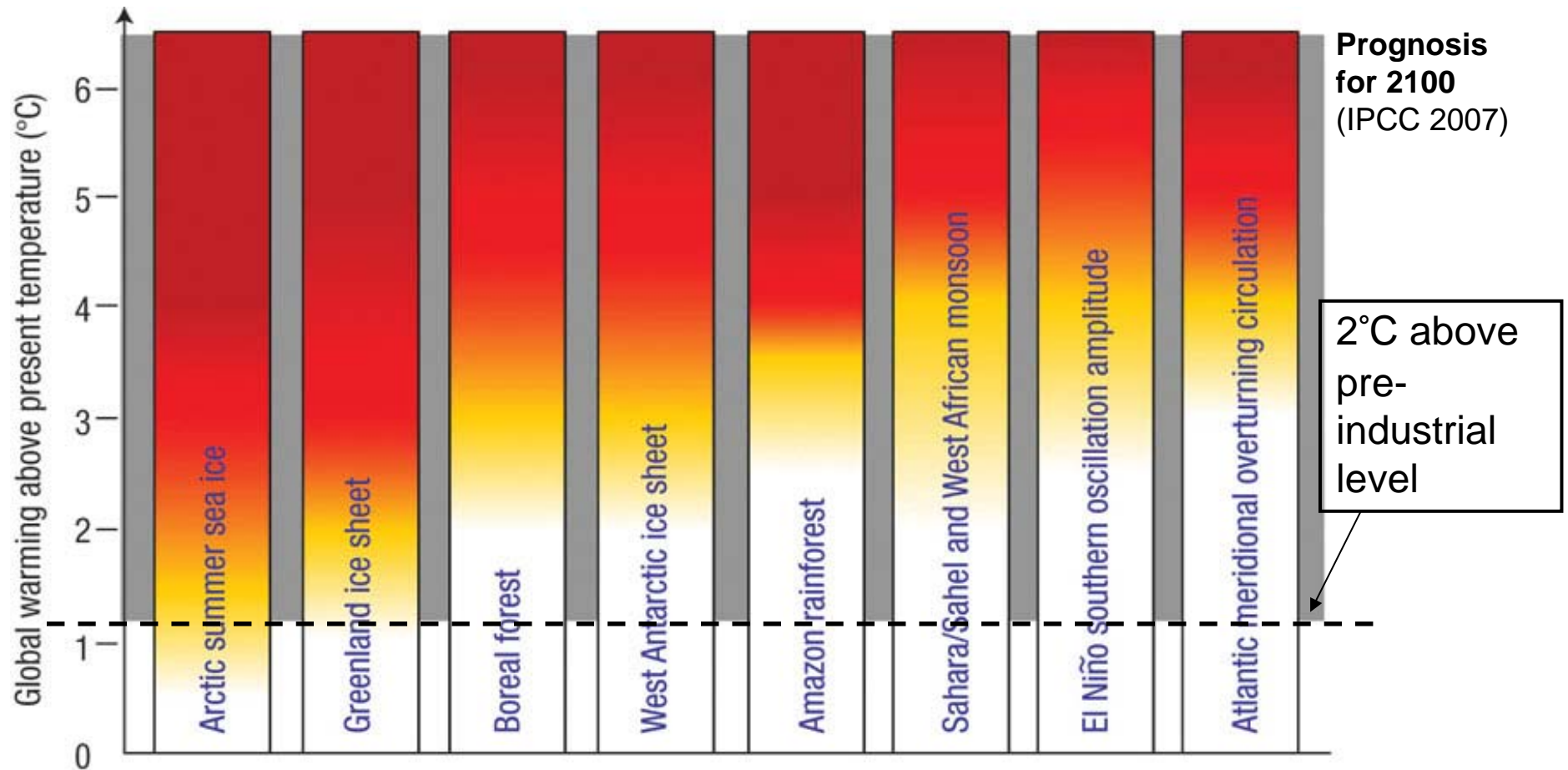


# Tipping Points in the Earth System



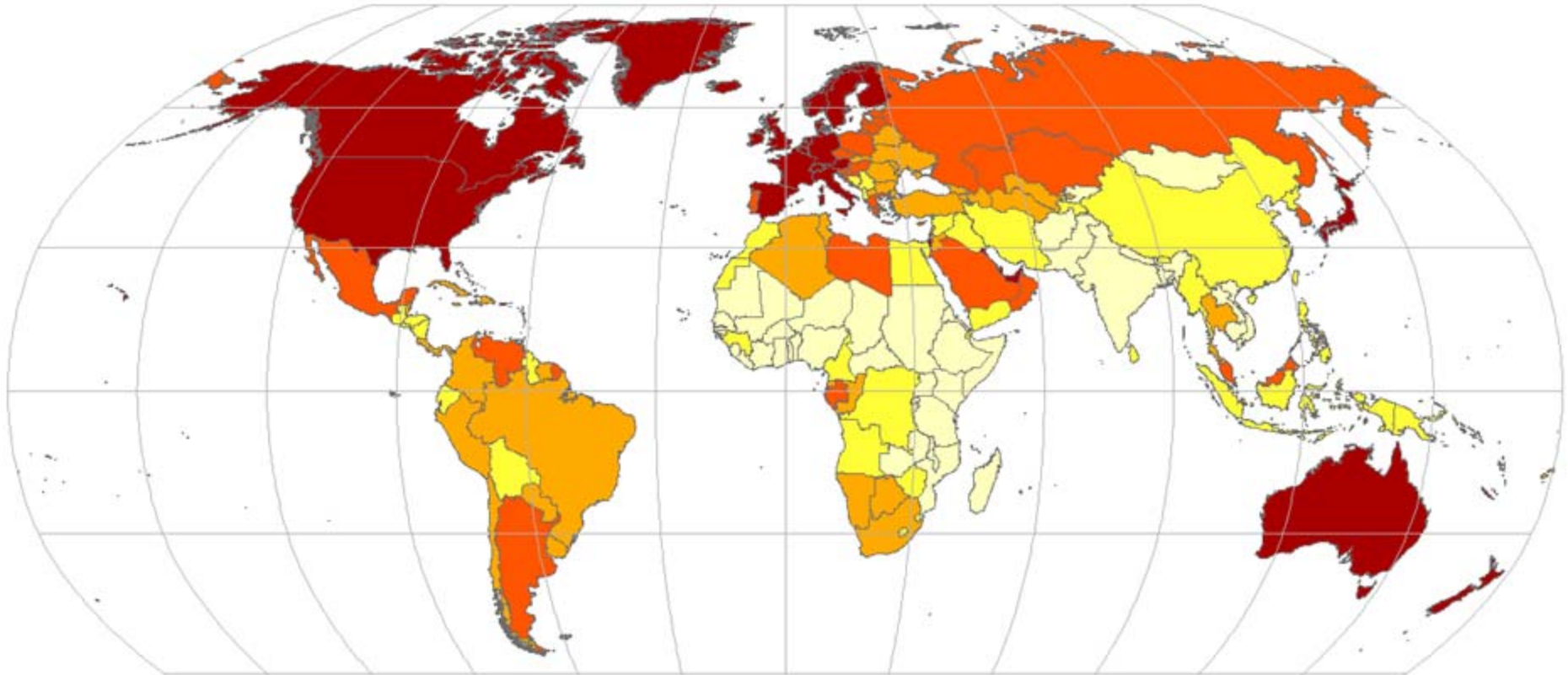
**“Tipping processes of the climate system” show a strong reaction already to small climate changes**

# Burning Embers Diagram

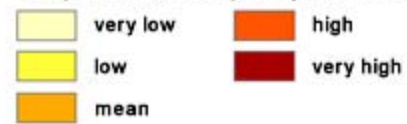


# World Map of wealth

---



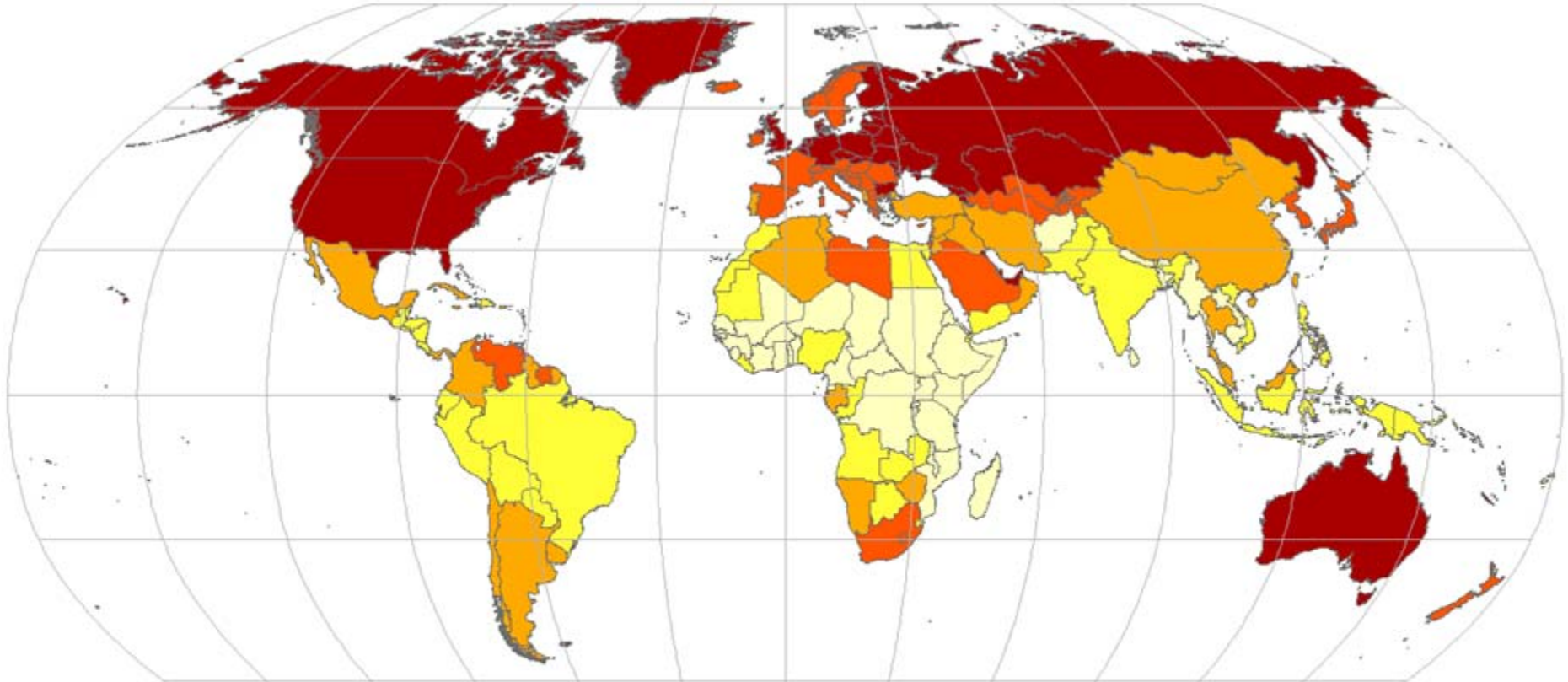
## Capital stock per person



Source: Füssel (2007)

# World Map of Carbon Debt

---

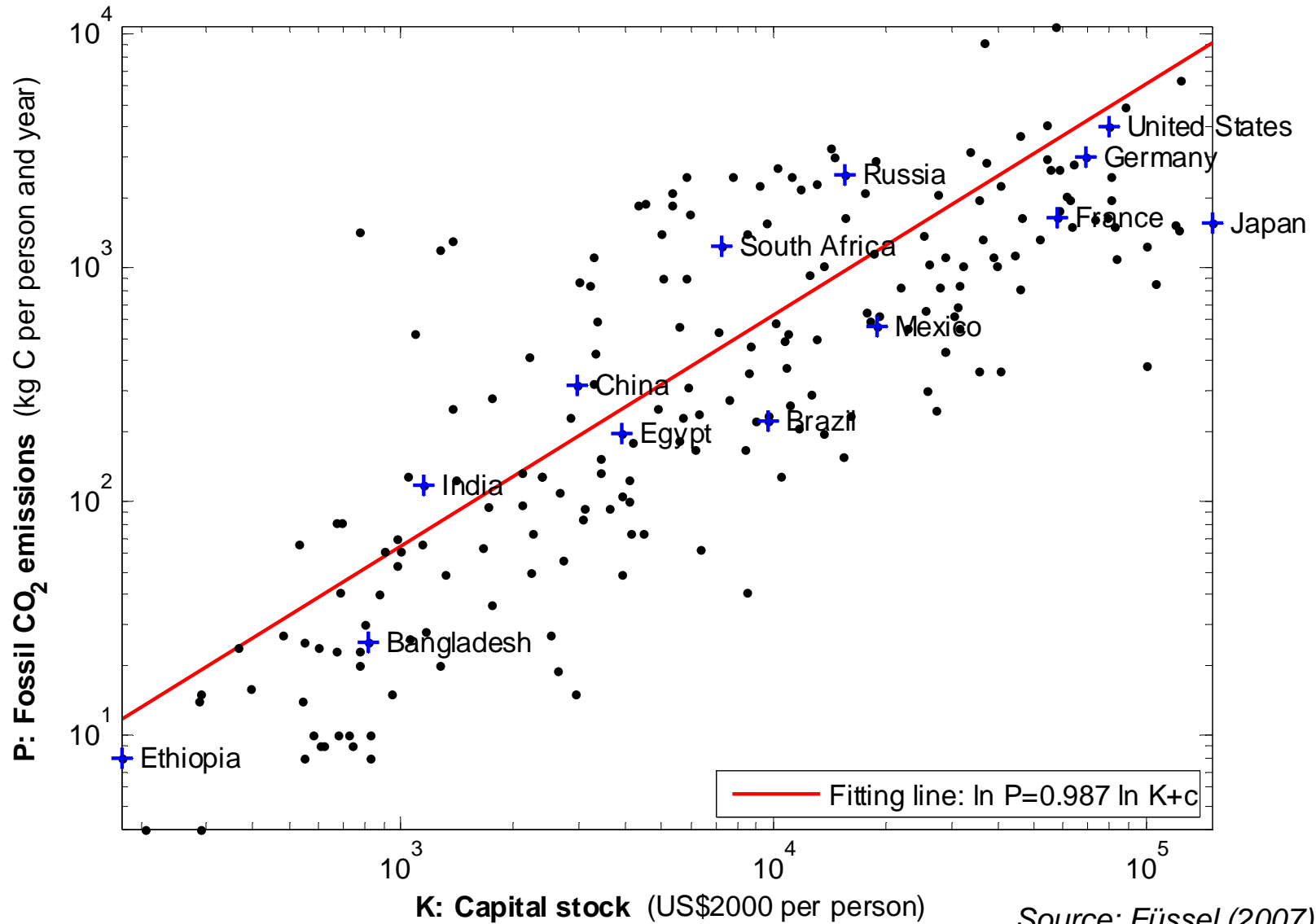


Fossil CO2 emissions per person (1950-2003)



Source: Füssel (2007)

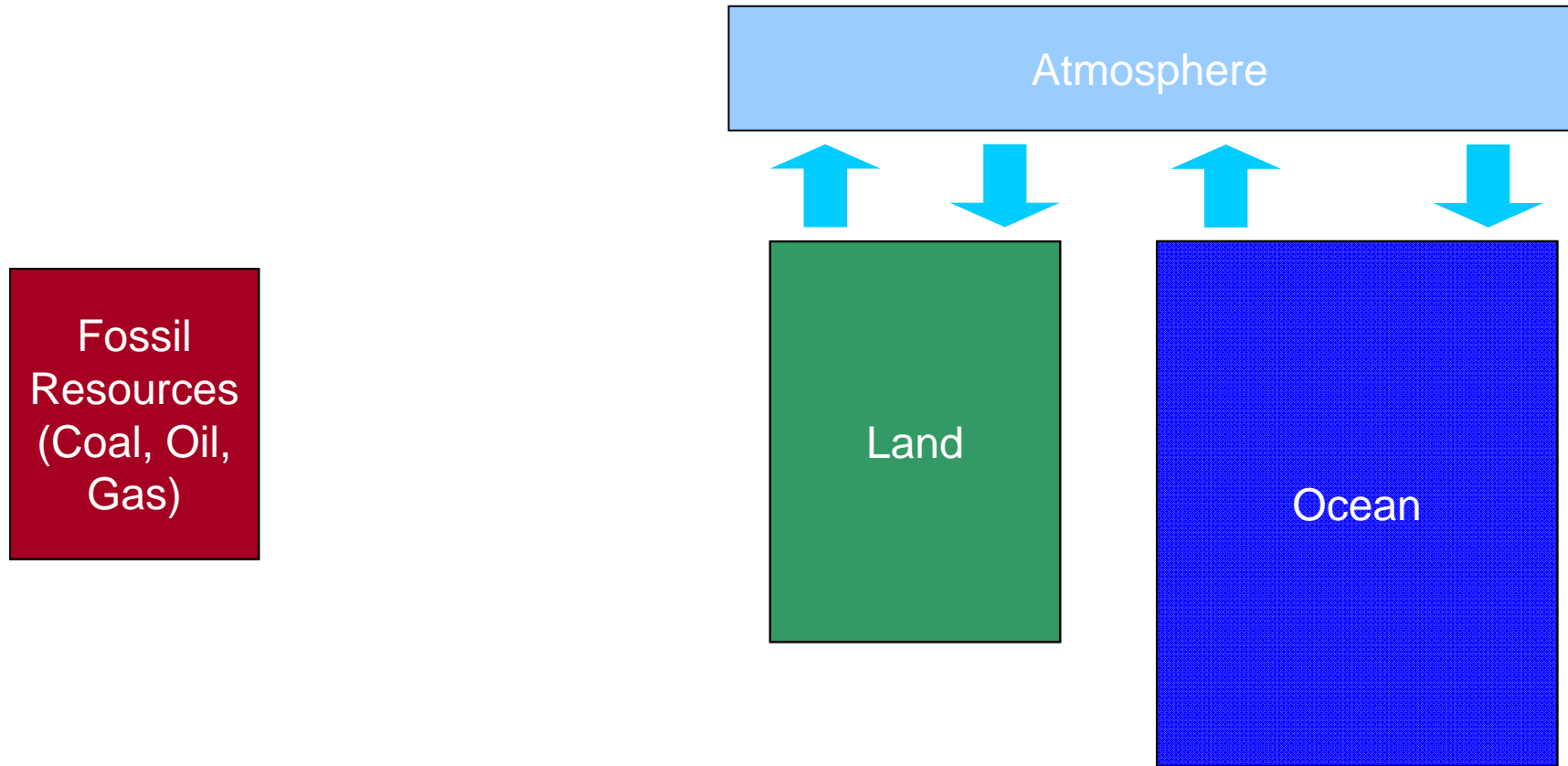
# Carbon Debt and Wealth



Source: Füssel (2007)

# The Preindustrial Earth System – A Sketch

---

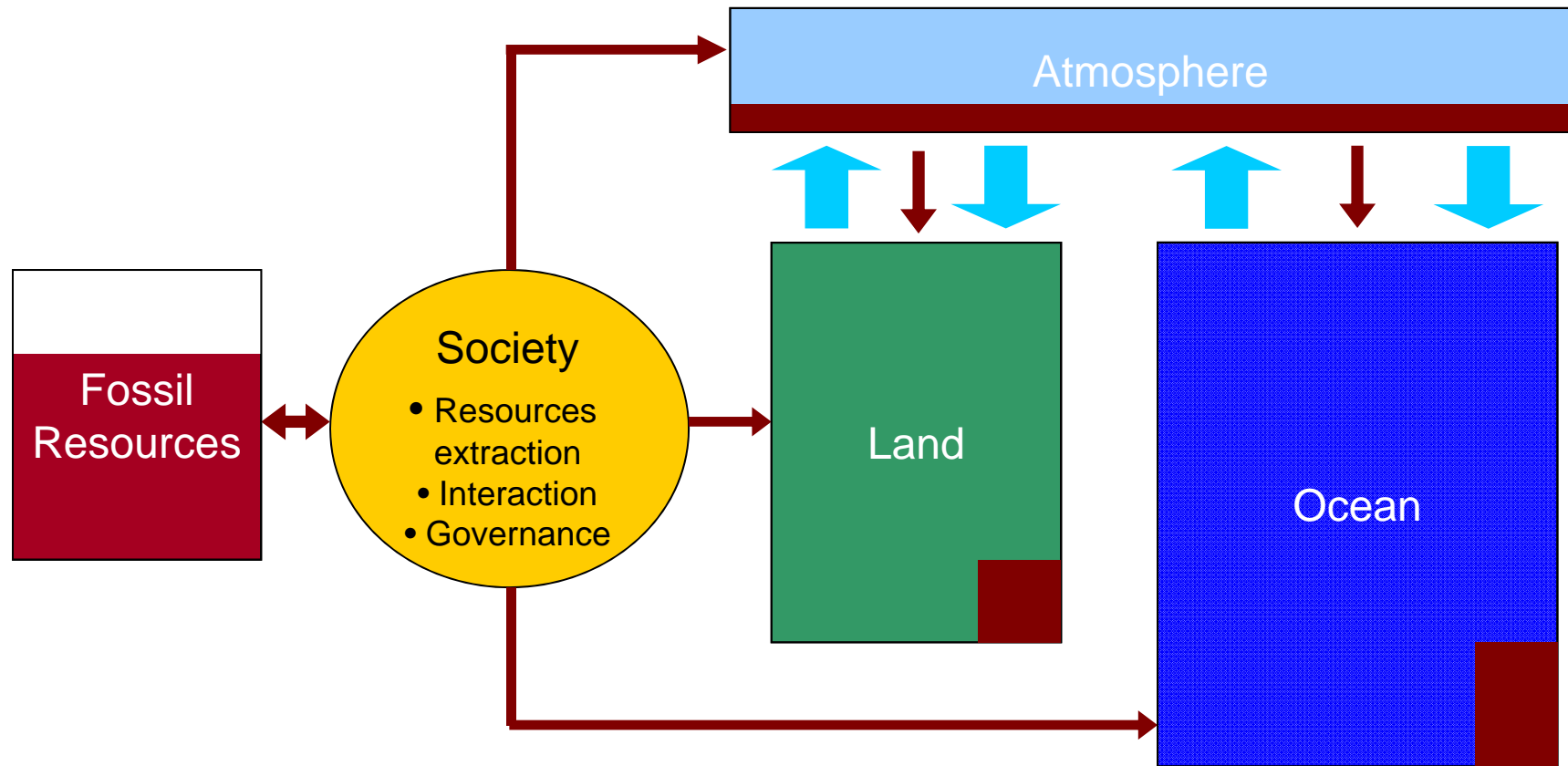


According to Lenton (2011)

# From a Solar to a Fossil Stock Economy

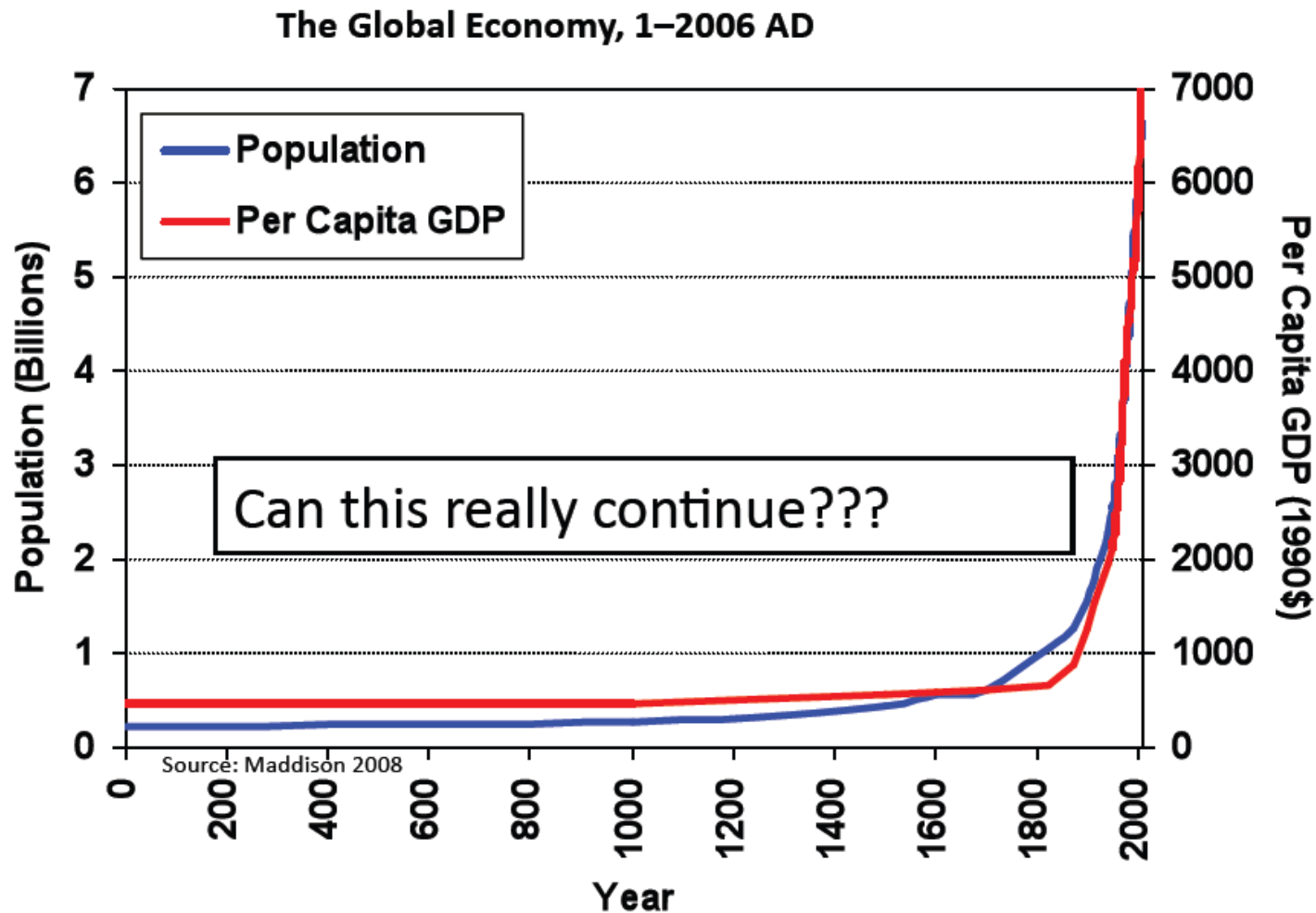
## The Earth System of the Anthropocene

---



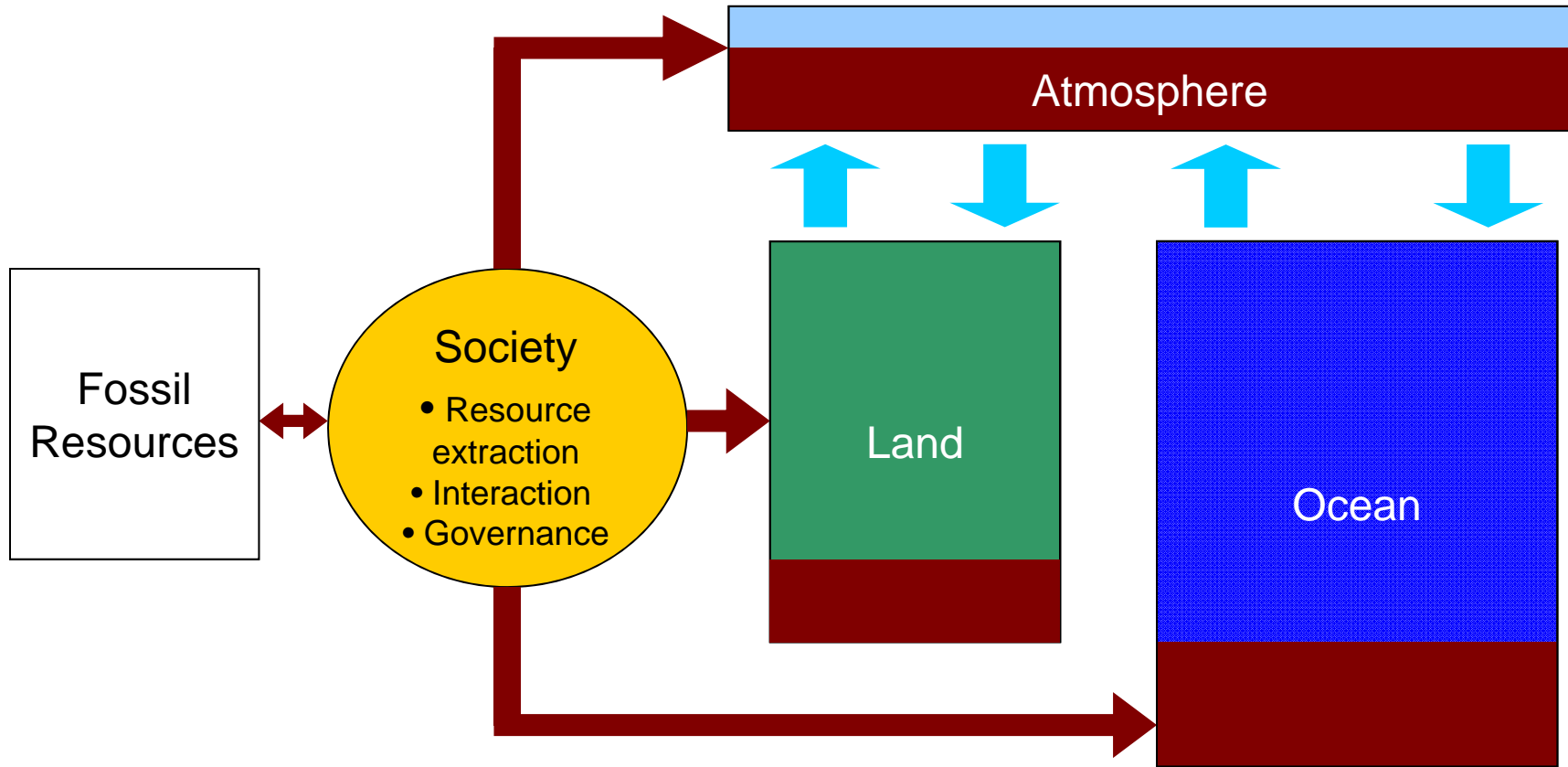
According to Lenton (2011) and Ostrom (2011)

# Fossil Resources Stock – A Lottery Prize!



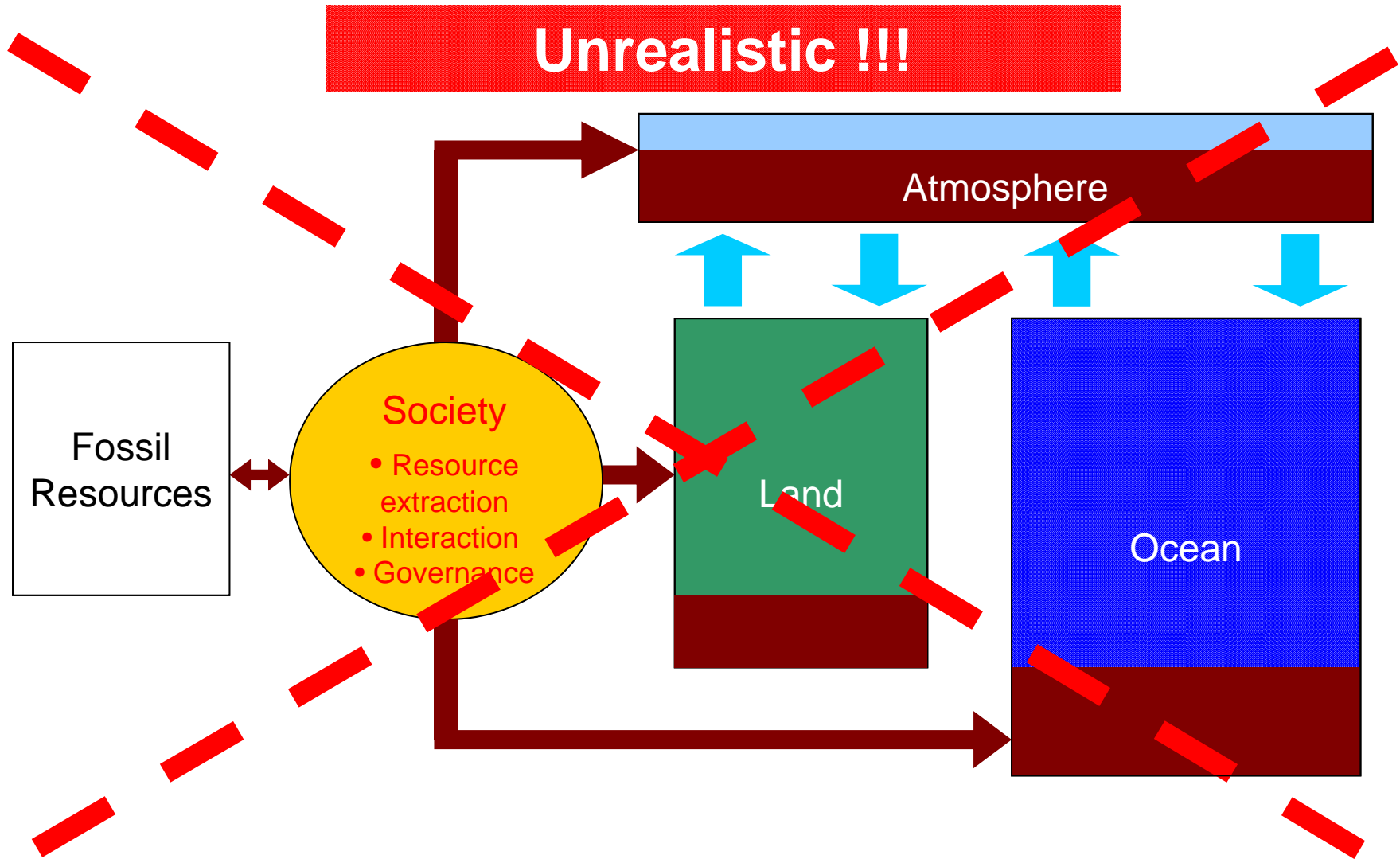
# Facing which Future?

---



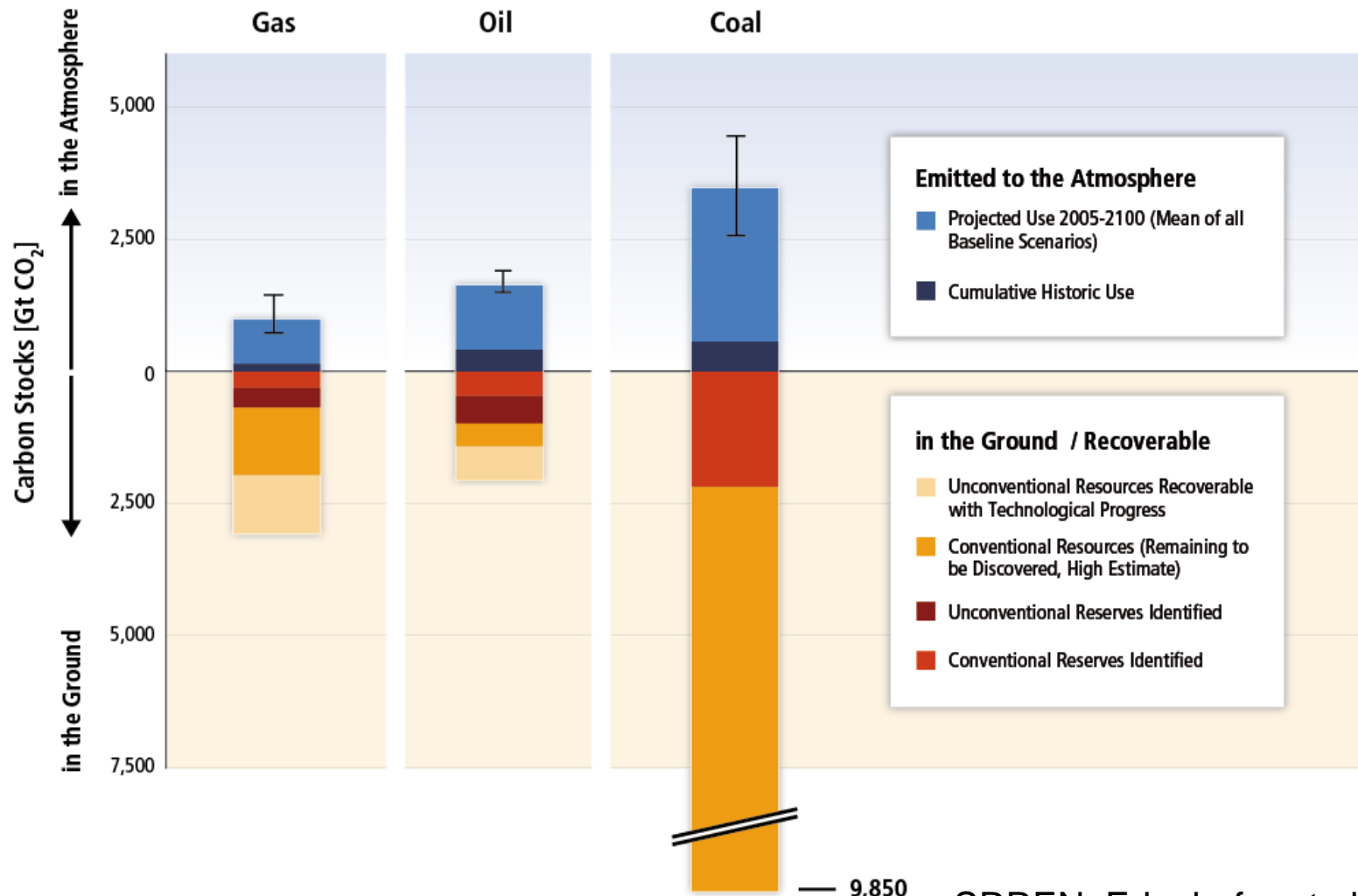
According to Lenton (2011) and Ostrom (2011)

# Facing Which future?



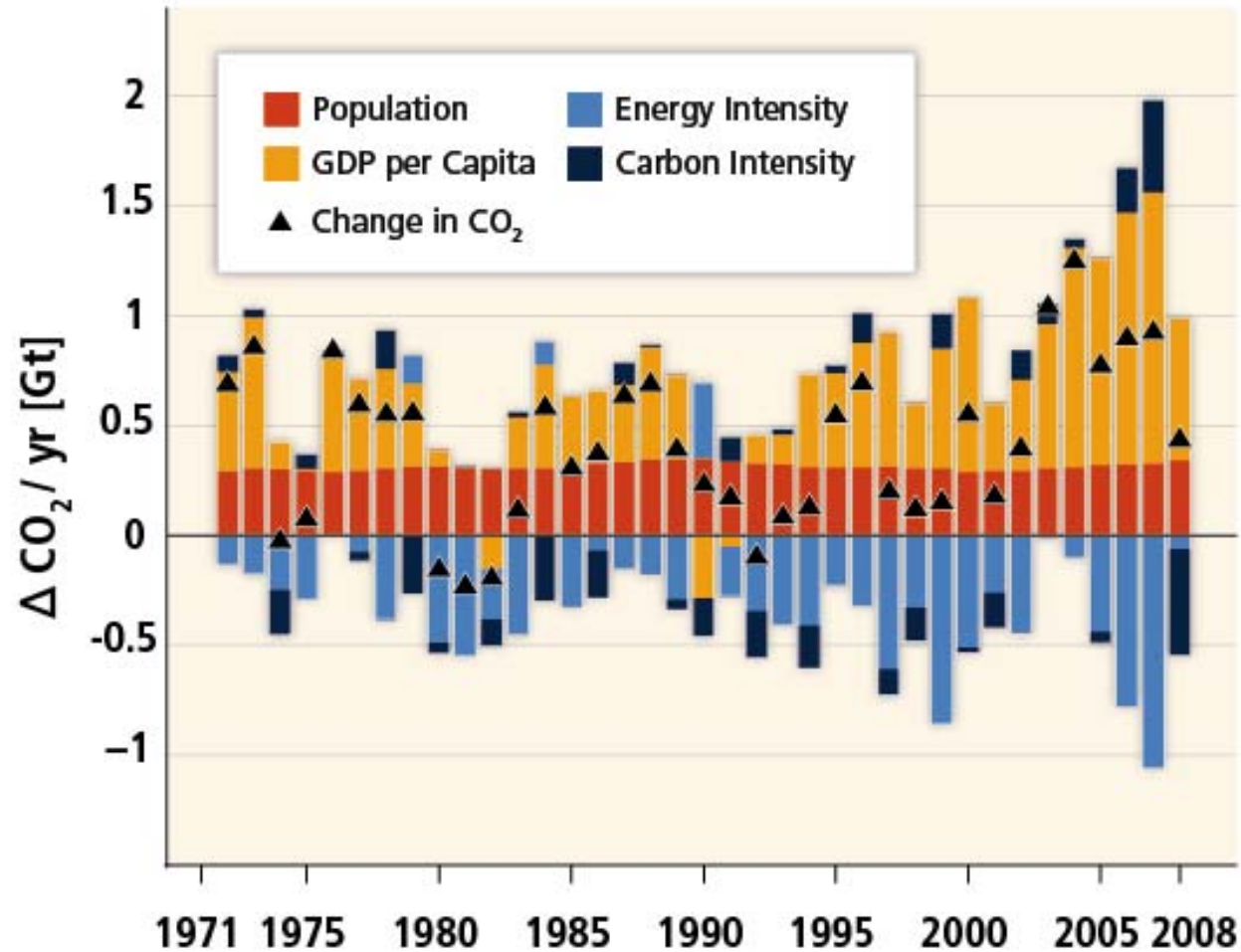
According to Lenton (2011) and Ostrom (2011)

# The BAU Scenarios Could Exceed the Level of Greenhouse Gas Concentration of 600ppm (~4°C Temperature Increase)



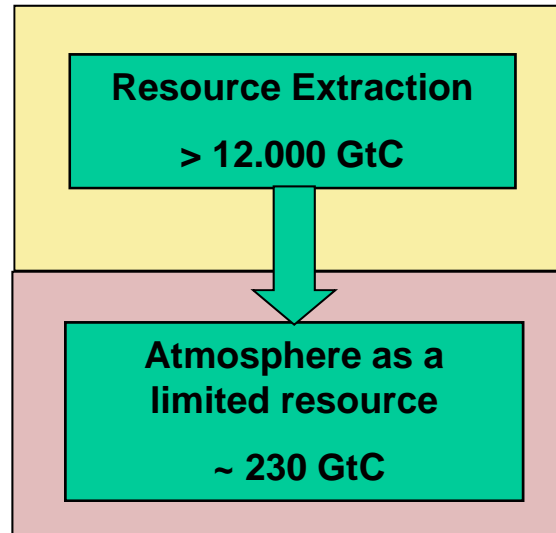
SRREN, Edenhofer et al. (2011)

# We are not on track – Renaissance of Coal!



# Atmosphere as a Global Common

---



- Atmosphere is a scarce resource – fossil carbon is not

# Social Teaching of the Catholic Church

---

**Stewardship** refers to a responsibility to take care of something owned by someone else. In that sense, future generations and the Unborn has to be represented within decision making processes.

**Universal Destiny of the Goods of Creation:** The Global Commons like the atmosphere, the forests, oceans are at risk to be destroyed when common property rights cannot be established due to an extremely unequal distribution of wealth.

**Solidarity:** Without a vision of a unified humankind, global cooperation remains infeasible; the **preferential option for the poor** offers a new perspective in evaluating governance and policies.

**Subsidiarity** is a fundamental principle of good governance: the central authority should perform only those tasks which cannot be performed effectively at a local level. In addition, the central authority should entitle the local level to carry out its own tasks.

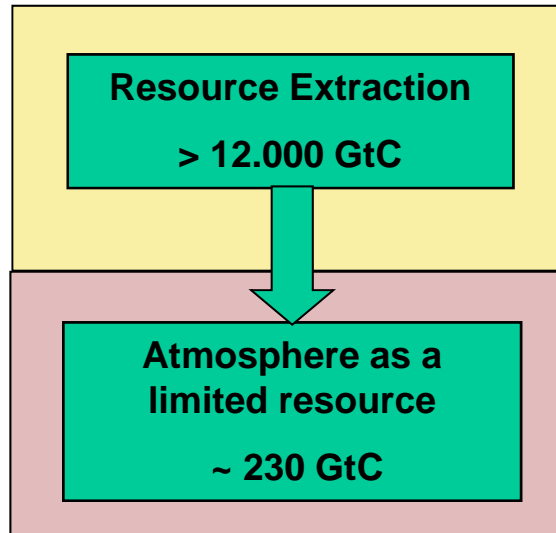
# **The Social Teaching of the Church...**

---

**...the church's best kept secret**

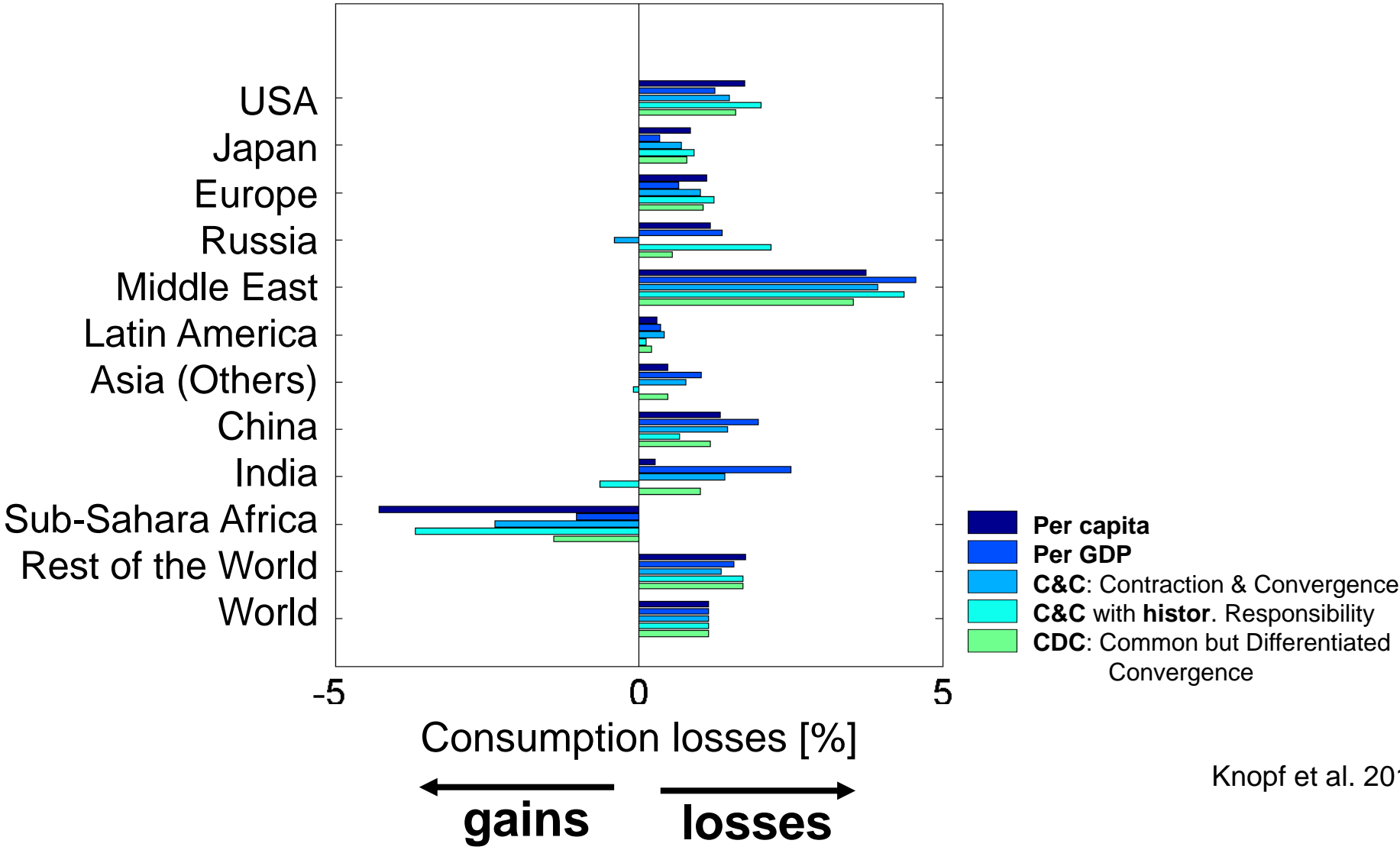
# Atmosphere as a Global Common

---



- Atmosphere is a scarce resource – fossil carbon is not
- Rules for good stewardship:
  - Assigning property rights according to the scarcity of the atmosphere
  - Distributing the emission rights according to principles of fairness and justice

# Allocation of Emission Rights



Knopf et al. 2010

# Social Teaching of the Church

---

Universal Destiny of the Goods of Creation

Private Property can be justified if a clear responsibility is assigned to stewards

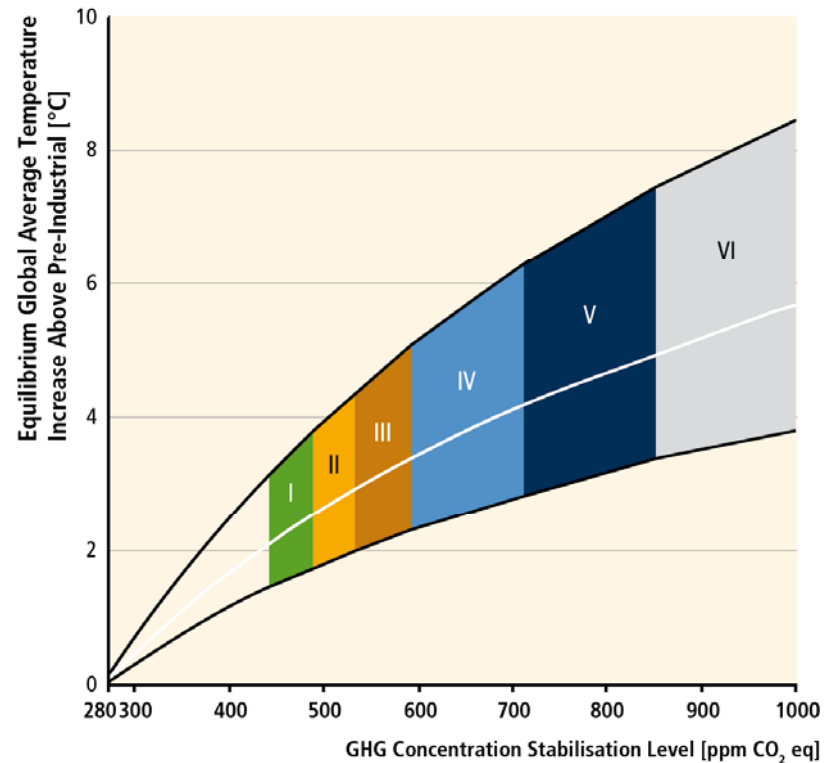
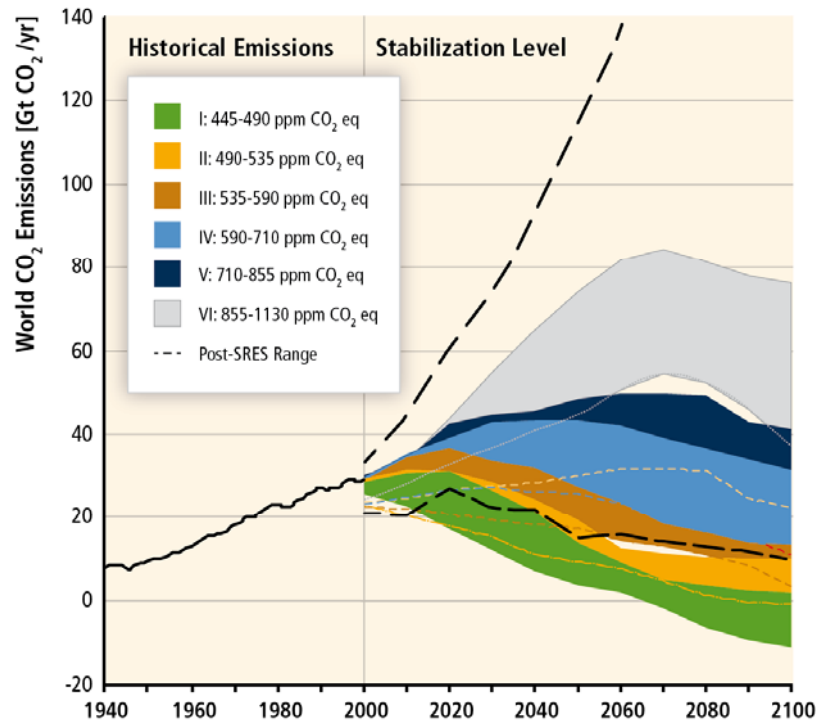
Emissions Trading is not about the commercialisation of the atmosphere but about

- Protecting the global commons (e.g. reduction of emissions)

- Assigning responsibilities to stewards

- Distributing the emission rights according to fairness

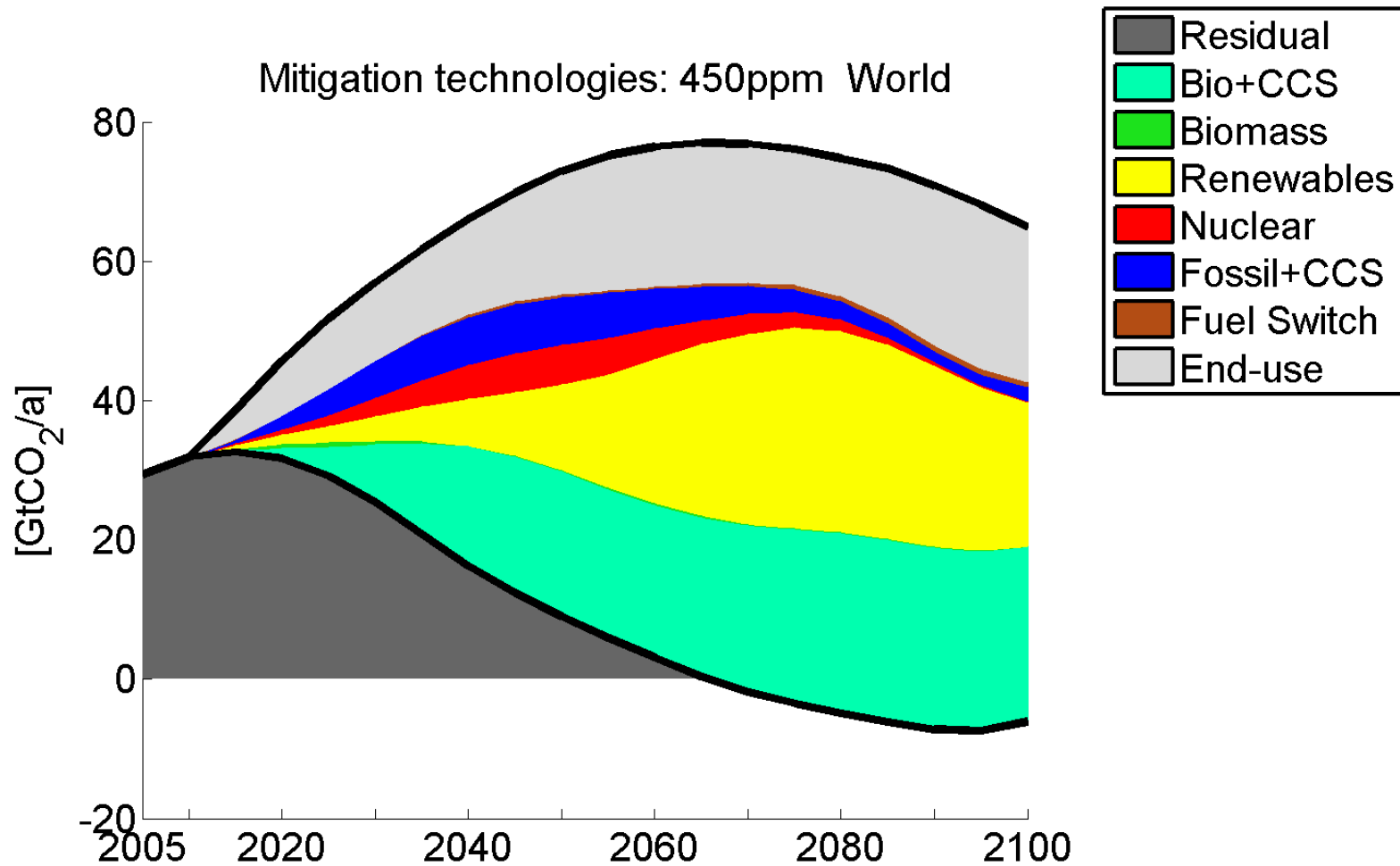
# Climate Policy as an Insurance



GHG emissions resulting from the provision of energy services contribute significantly to the increase in atmospheric GHG concentrations.

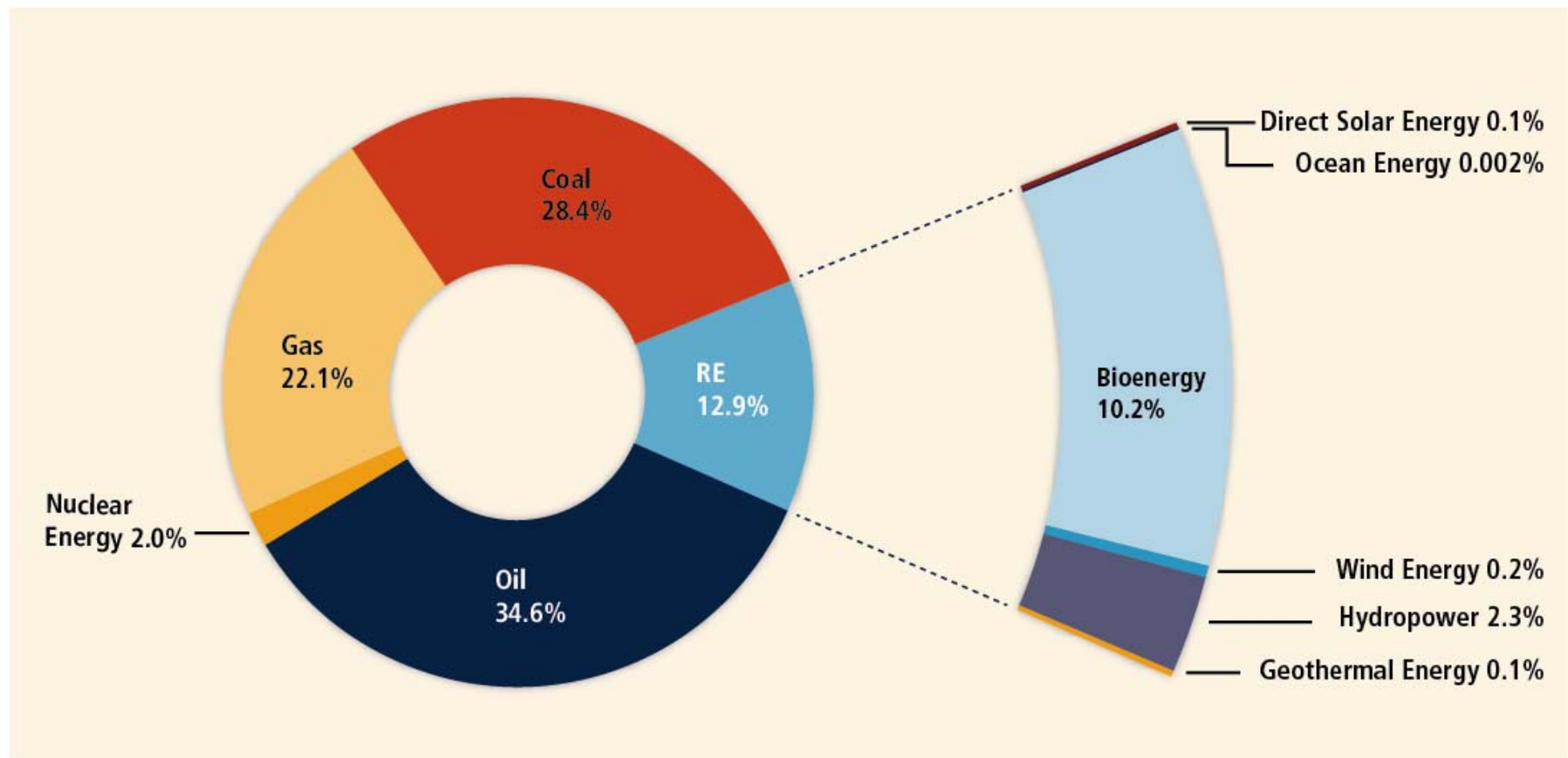
SRREN, Edenhofer et al. (2011)

# The Great Transformation



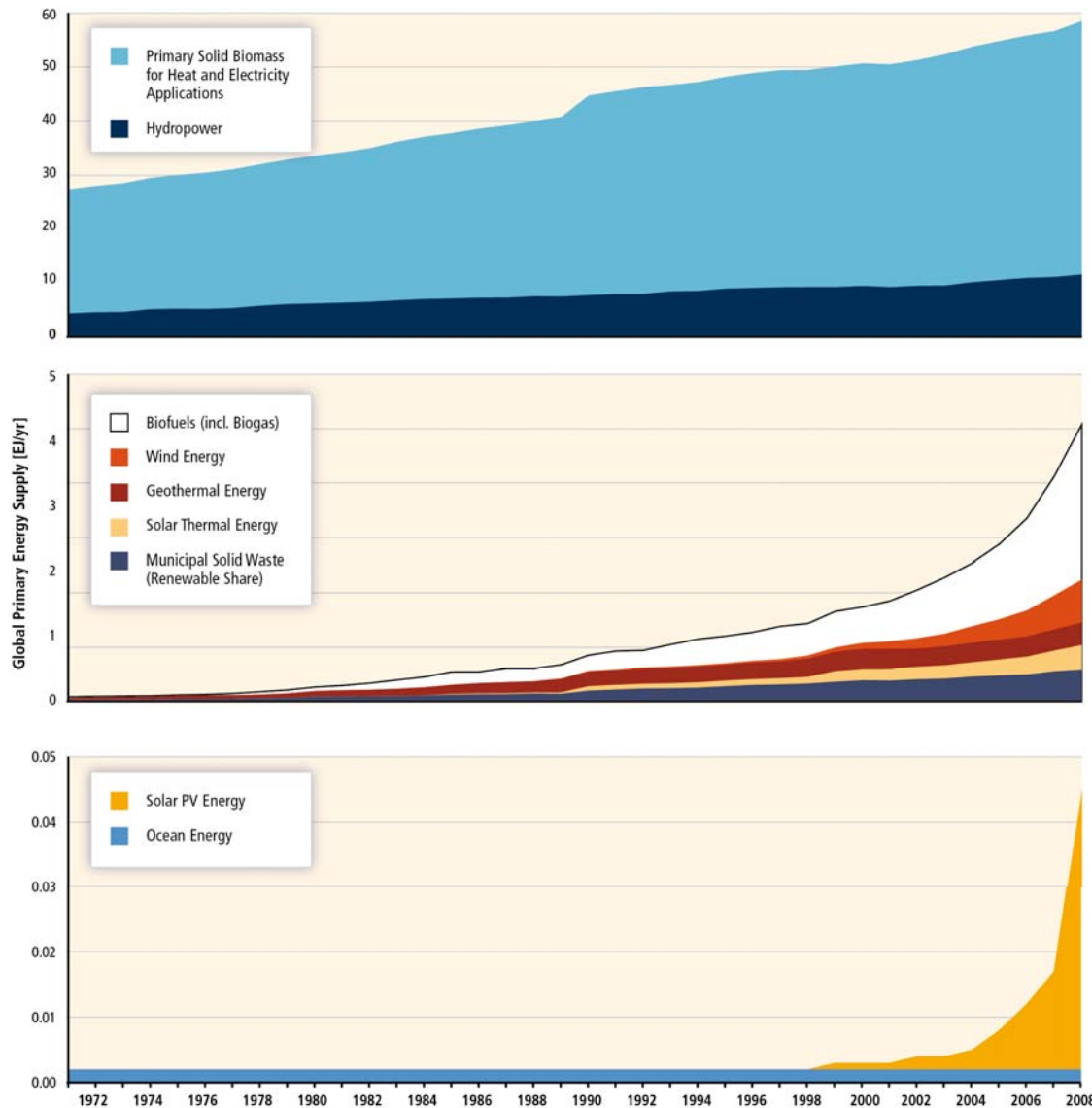
# The current global energy system is dominated by fossil fuels.

---



Shares of energy sources in total global primary energy supply in 2008

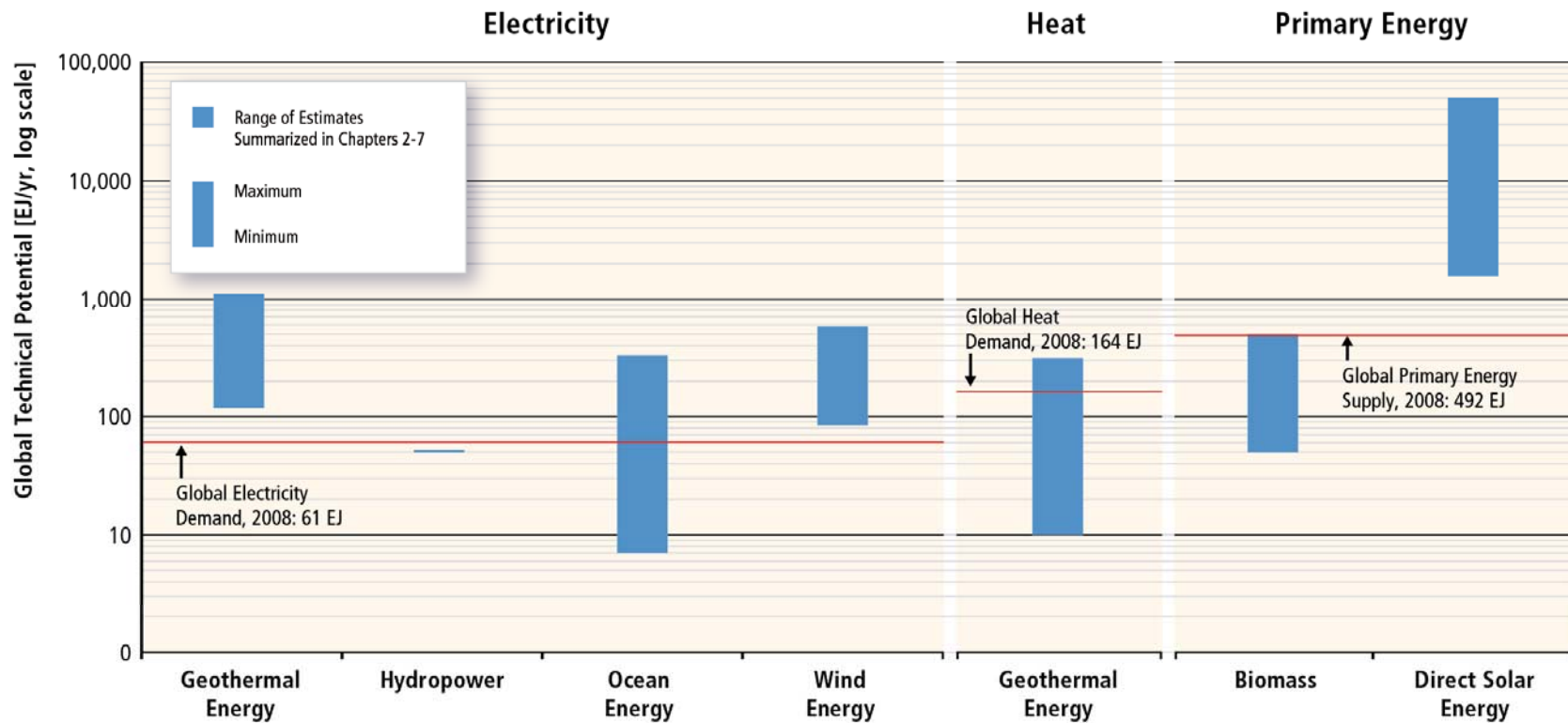
# RE growth has been increasing rapidly in recent years



150 GW of new RE power plant capacity was built in 2008-2009.

This equals 50% of all power plants built during that period.

# The Technical Potential of Renewable Energies

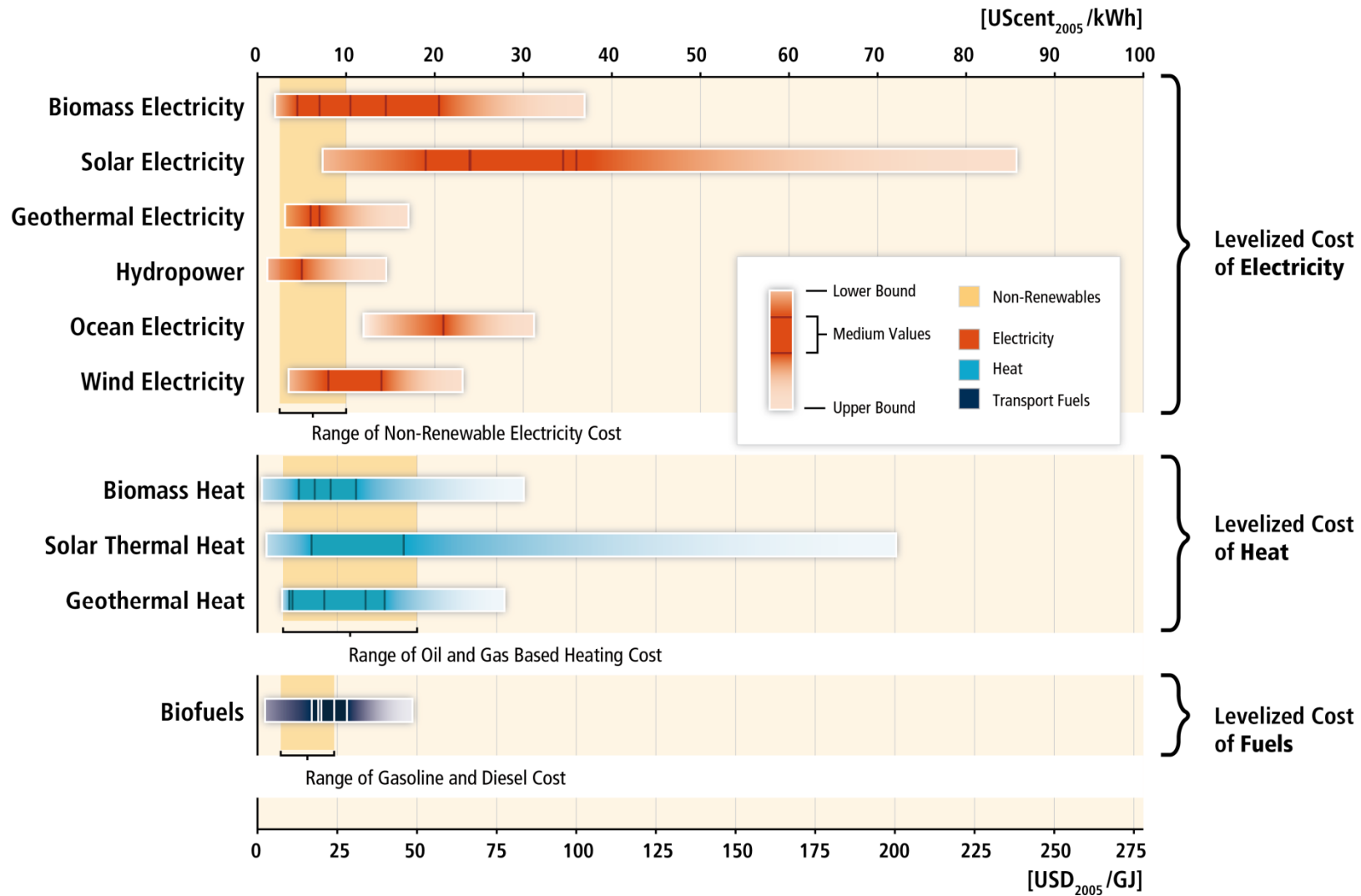


Range of Estimates of Global Technical Potentials

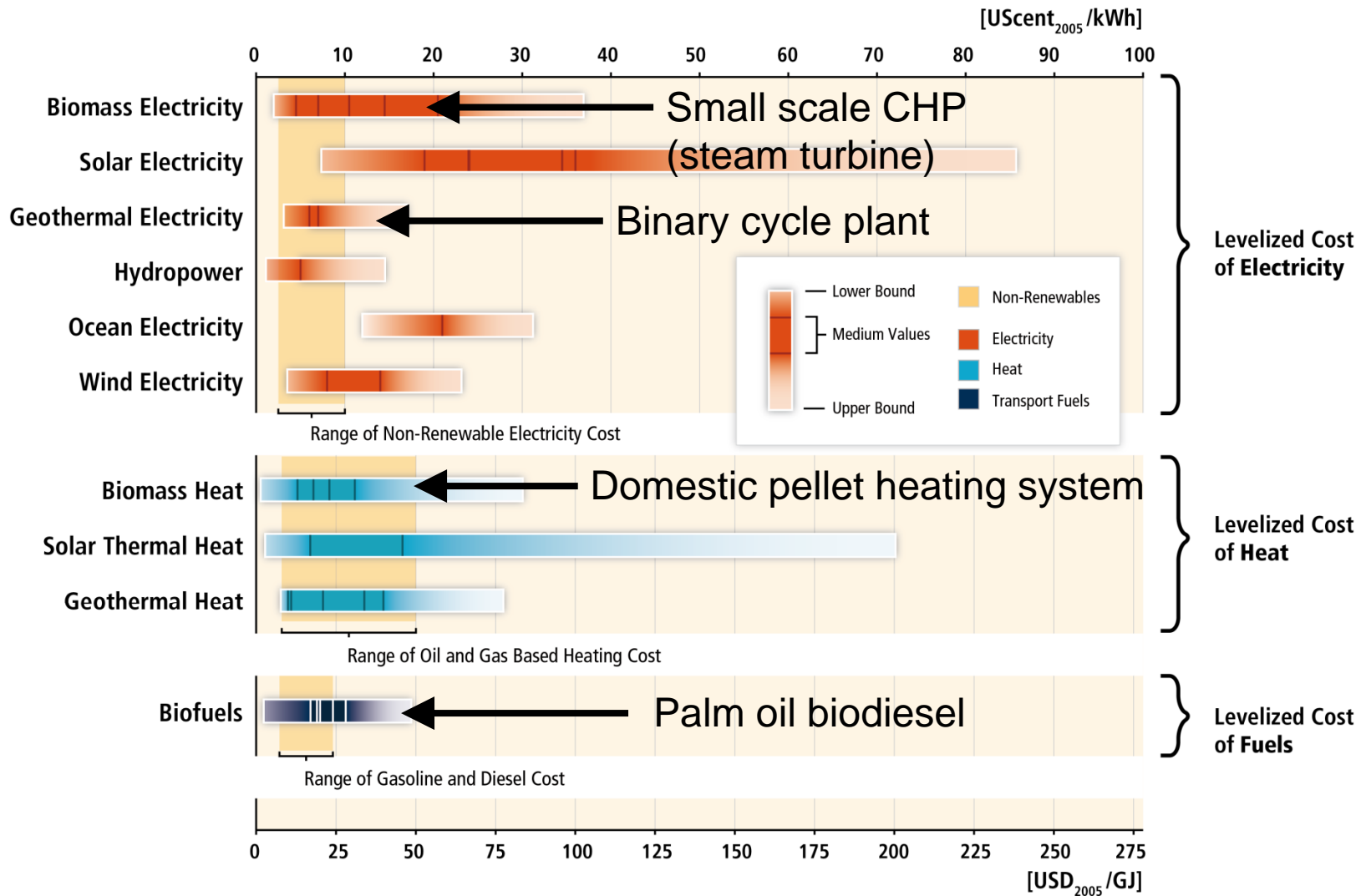
Max (in EJ/yr)	1109	52	331	580	312	500	49837
Min (in EJ/yr)	118	50	7	85	10	50	1575

SRREN, Edenhofer et al. (2011)

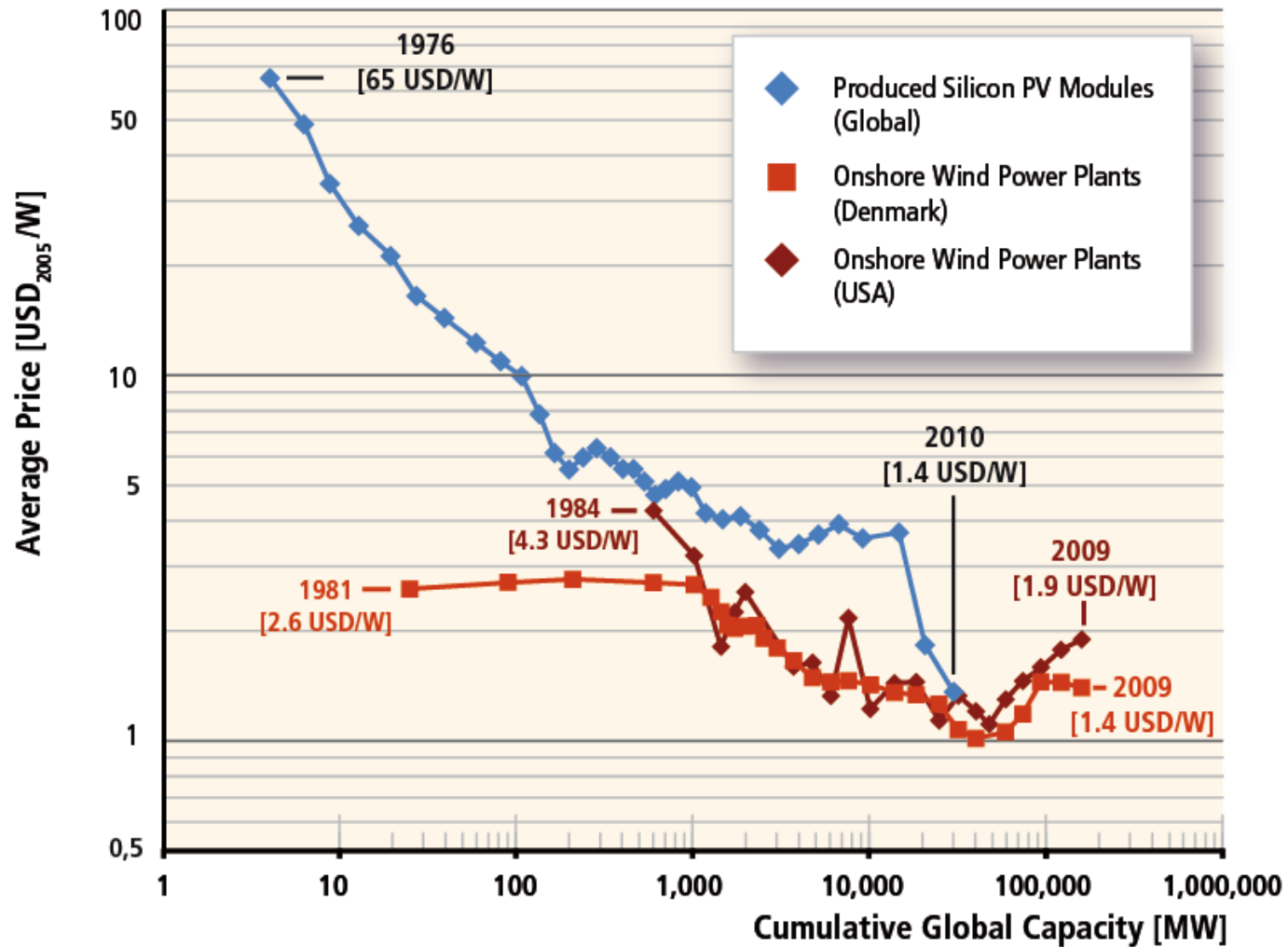
# The Costs of Renewables Are Often Still Higher Than Those of Non-Renewables But...



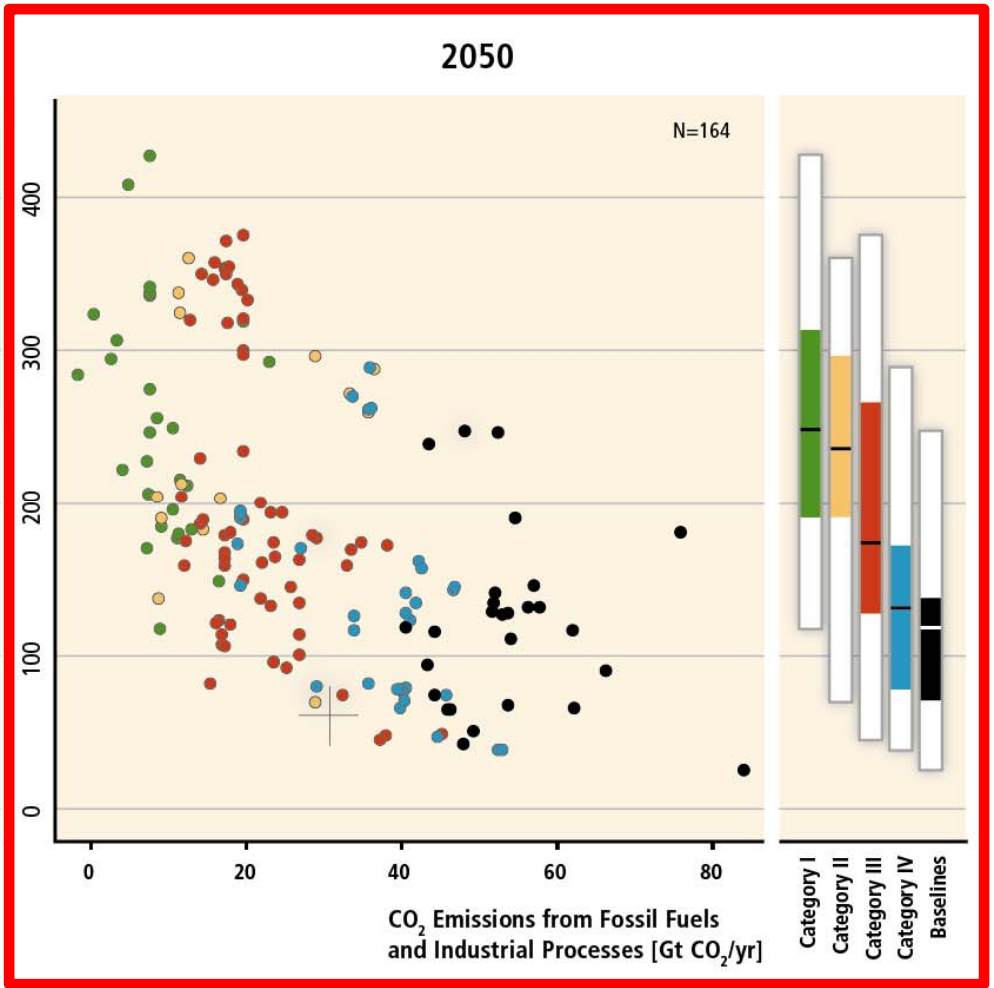
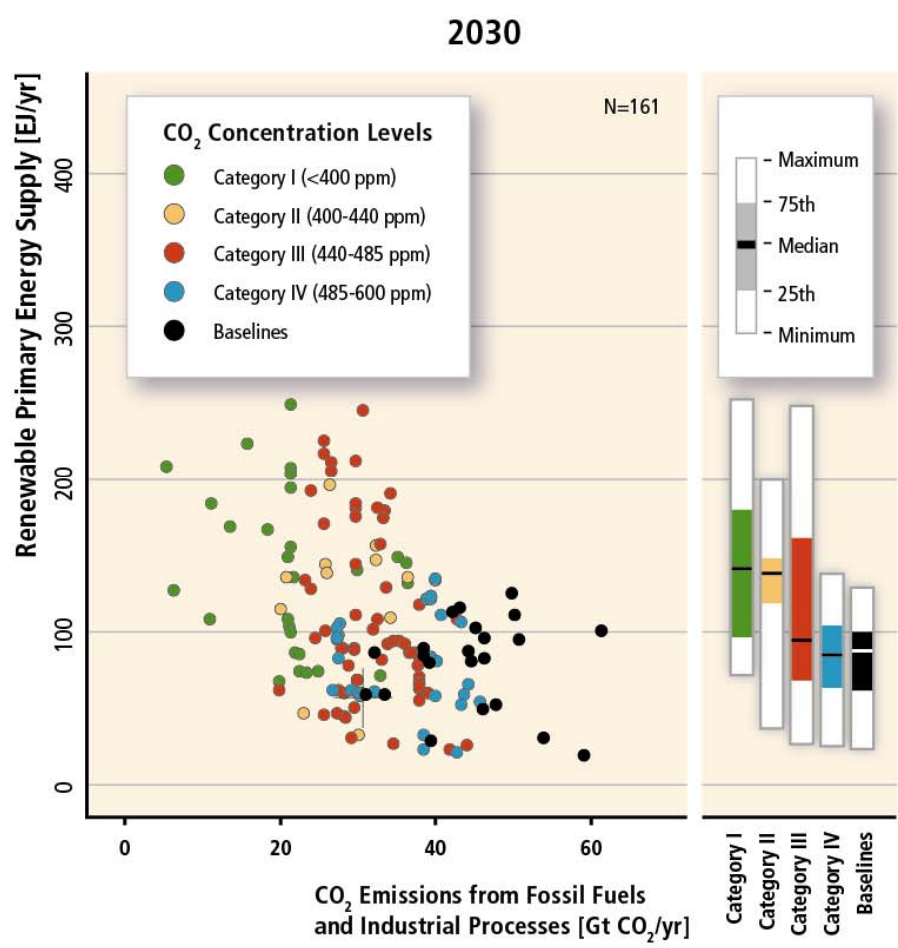
# ...Some RE Technologies Are Already Competitive



# Renewable Energies Have a Potential to Lower Costs



# Global RE Primary Energy Supply from 164 Long-Term Scenarios versus Fossil and Industrial CO<sub>2</sub> Emissions

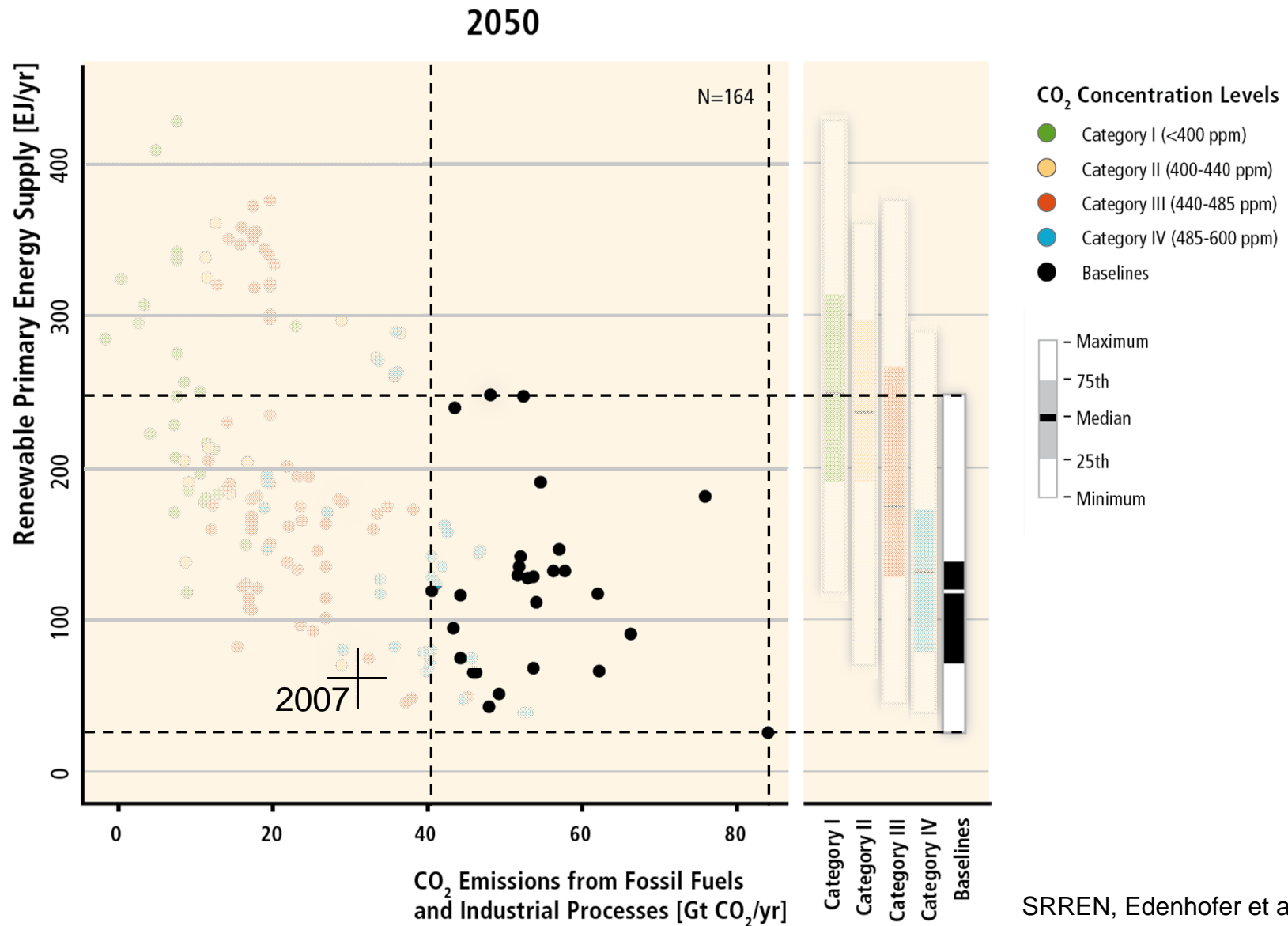


## RE can contribute to sustainable development

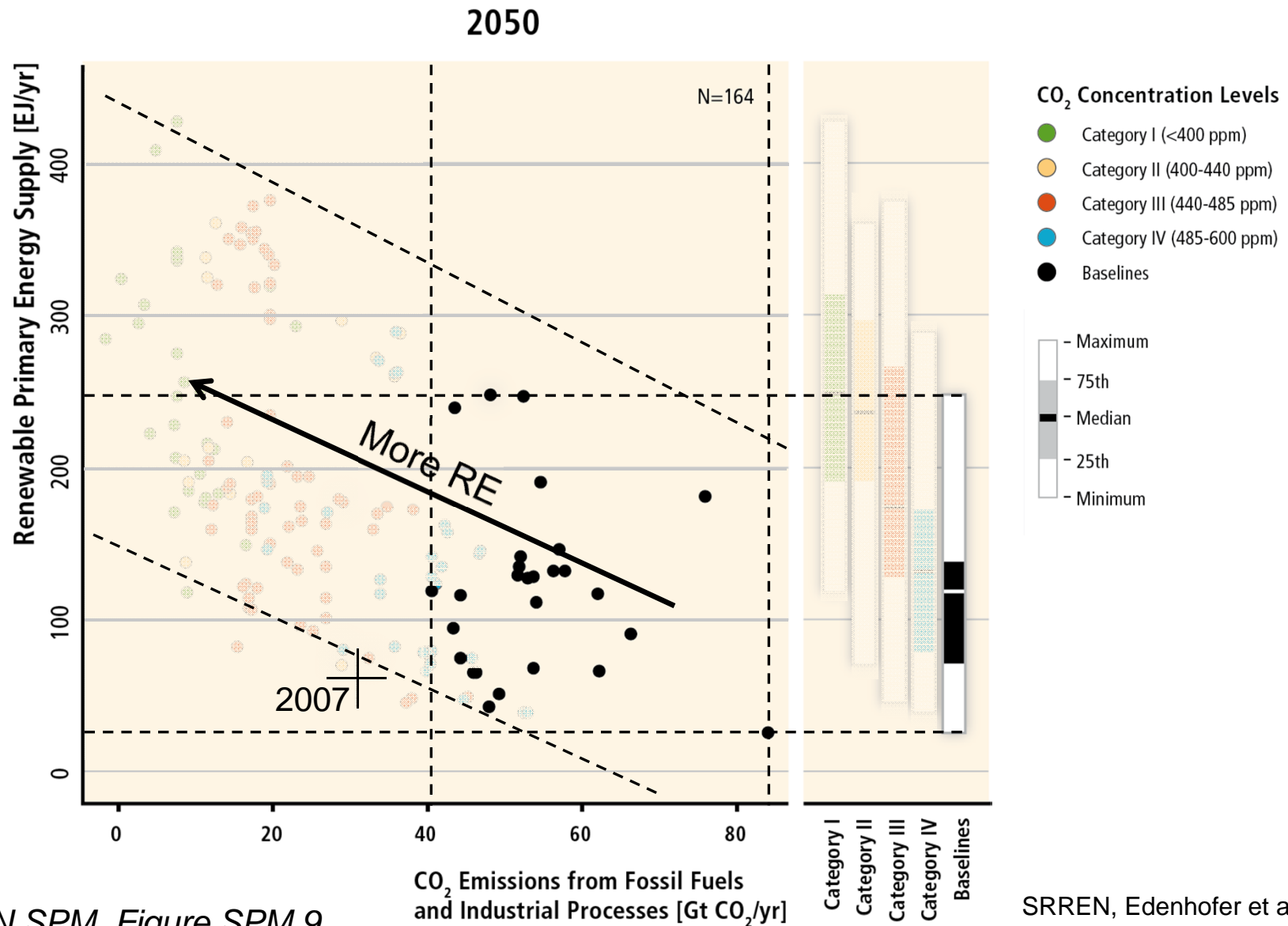
---

- RE can accelerate access to energy, particularly for the 1.4 billion people without access to electricity and the additional 1.3 billion people using traditional biomass
- RE deployment can reduce vulnerability to supply disruptions and market volatility
- Low risk of severe accidents
- Environmental and health benefits

# Global RE Primary Energy Supply from 164 Long-Term Scenarios versus Fossil and Industrial CO<sub>2</sub> Emissions

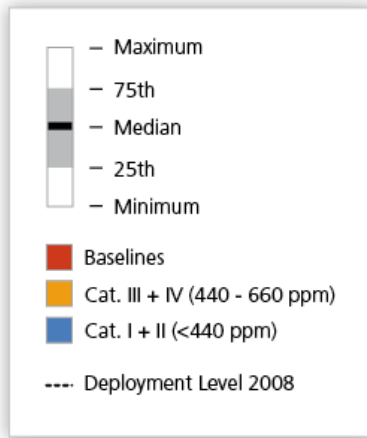
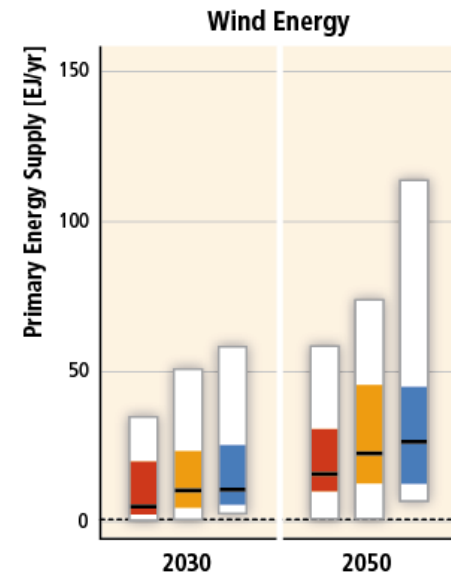
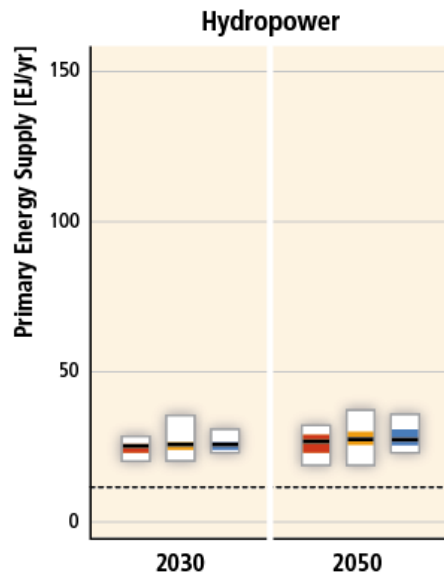
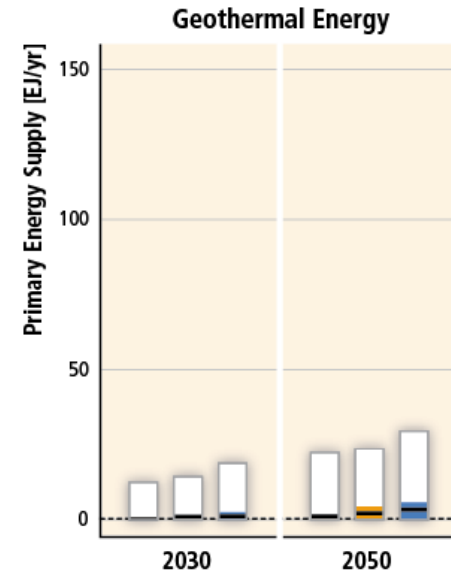
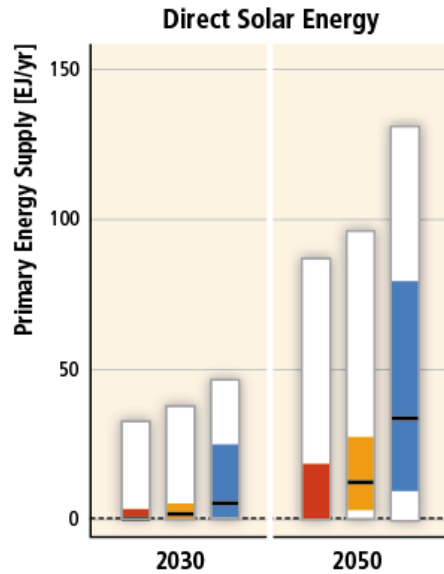
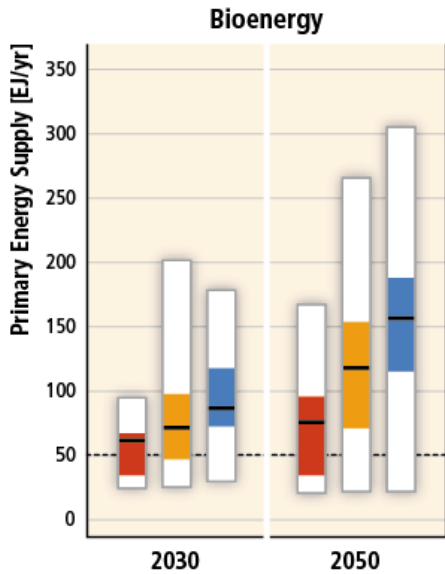


# Global RE Primary Energy Supply from 164 Long-Term Scenarios versus Fossil and Industrial CO<sub>2</sub> Emissions



SRREN SPM, Figure SPM.9

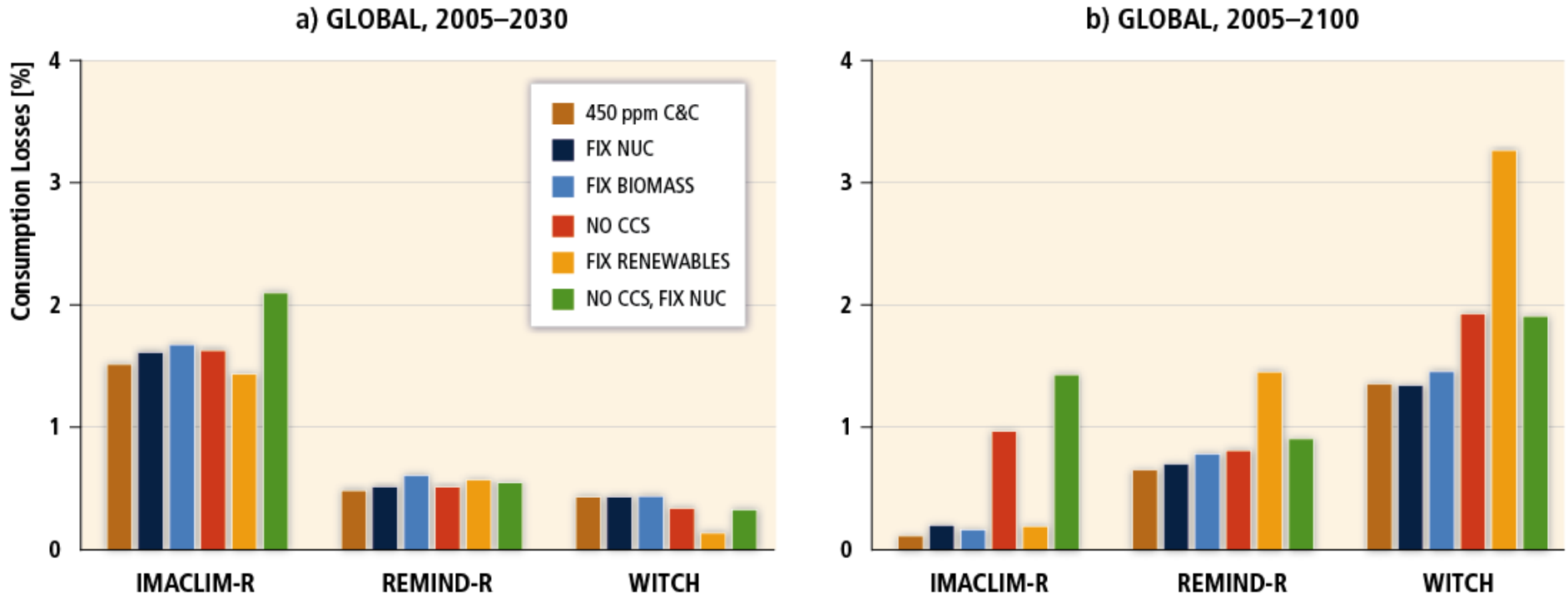
# Potential Role of Renewables



Bioenergy Supply is Accounted for Prior to Conversion

Primary Energy Supply is Accounted for Based on Secondary Energy Produced SRREN, Edenhofer et al. (2011)

# Macroeconomic Costs



Limited availability of technologies

# Options of Integration

---

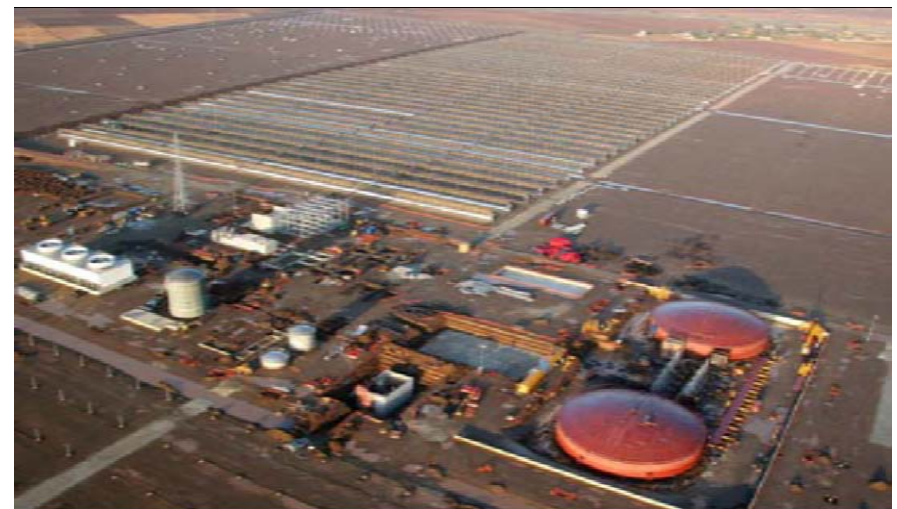
- Demand management
- Network expansion
- Improvement of weather forecast
- Flexible power plants
- Energy storages

# New Storage Technologies

---

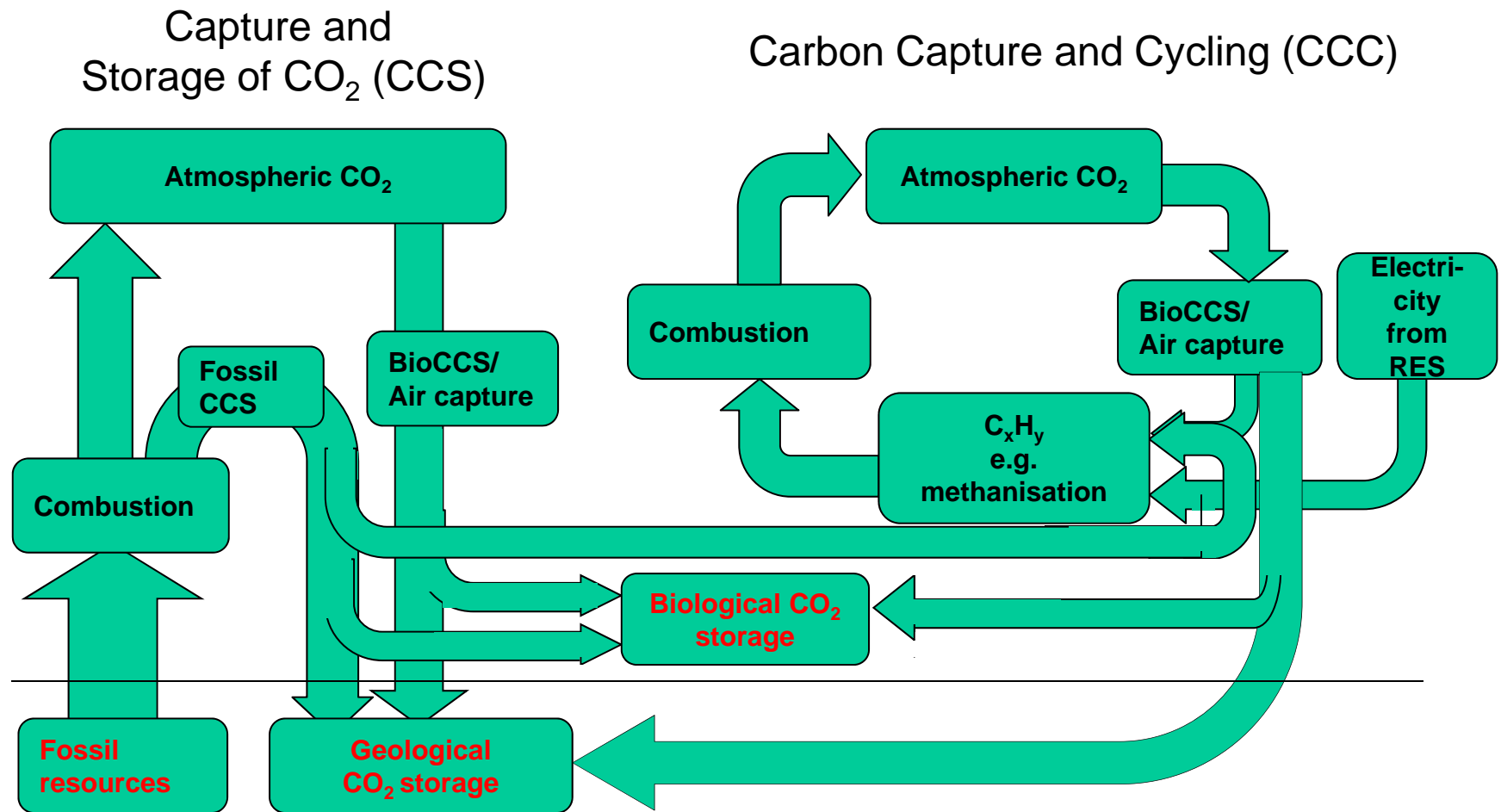


**Andasol I, Spain**

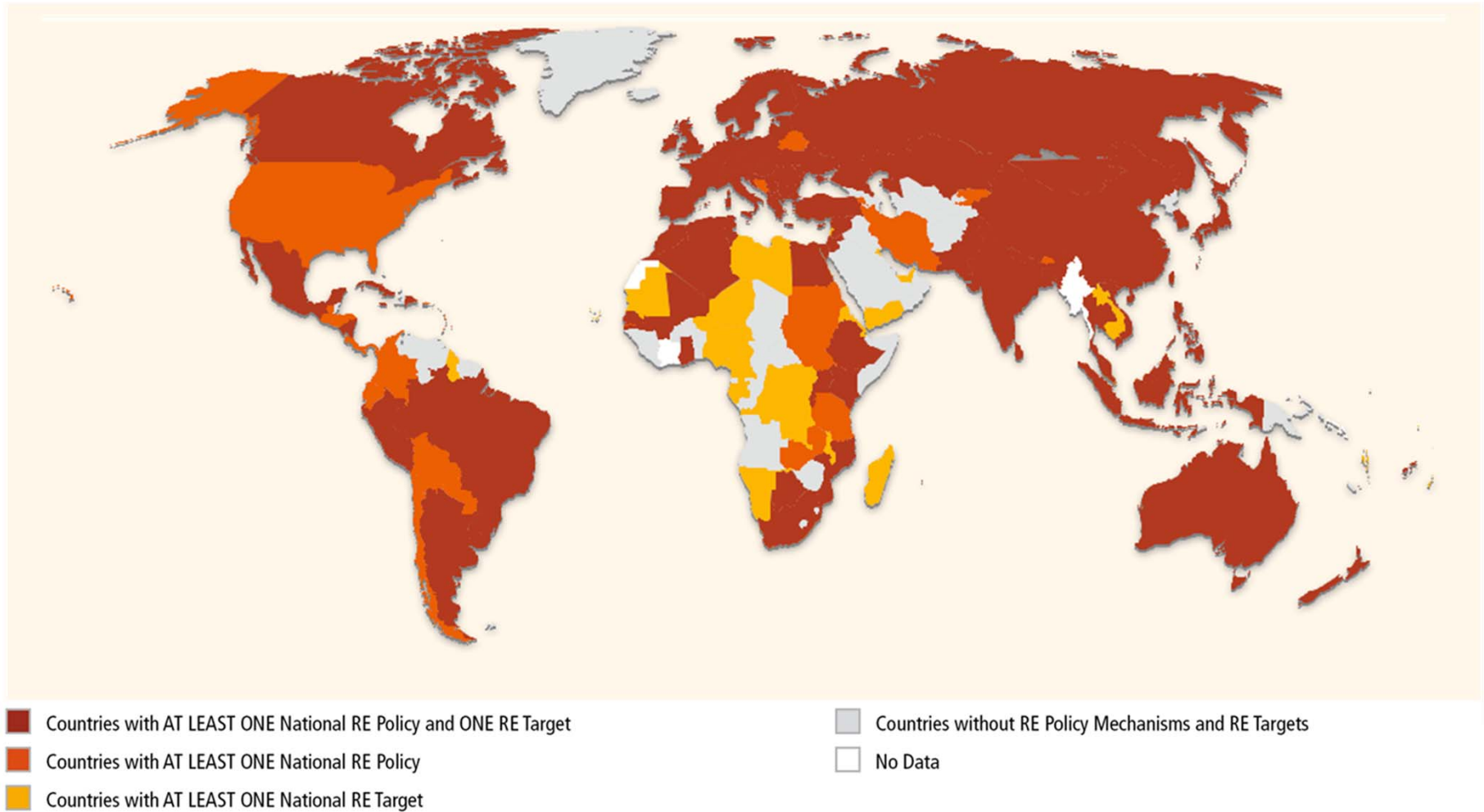


# CCX

X = **C**ycling, **S**torage, **U**tilitization



## RE-Specific Policies and RE Targets (2011)



## Recommendable Literature

---

<http://srren.ipcc-wg3.de/report>

# GLOBAL ABER GERECHT

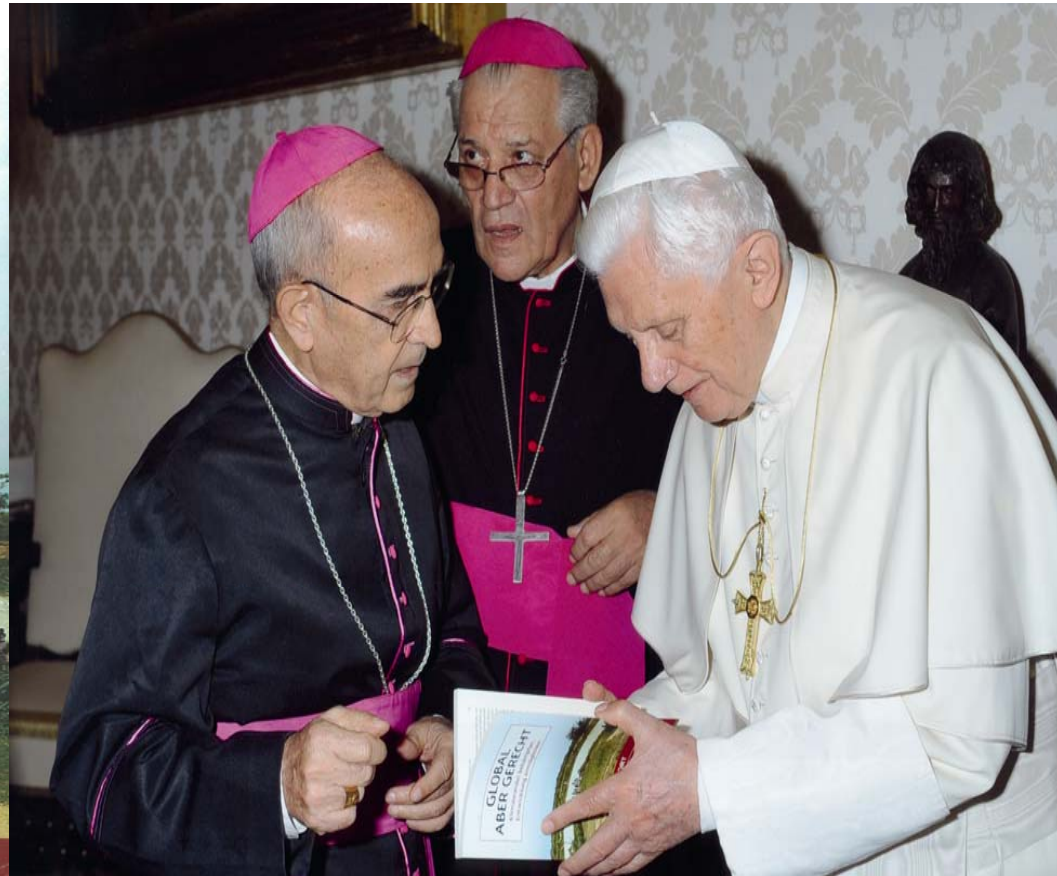
Klimawandel bekämpfen,  
Entwicklung ermöglichen



## EIN REPORT

Potsdam-Institut für Klimafolgenforschung,  
Institut für Gesellschaftspolitik München,  
Misereor und Münchener Rück Stiftung

C.H.BECK



<http://www.klima-und-gerechtigkeit.de/>