

# The Paris Agreement – a paradigm shift in international climate politics



SCCER School – Shaping the Energy Transition, Engelberg, 18 Oct 2017

Prof. Dr. Tobias Schmidt, Energy Politics Group, ETH Zurich [www.epg.ethz.ch](http://www.epg.ethz.ch)

# Agenda

## § From Rio to Paris

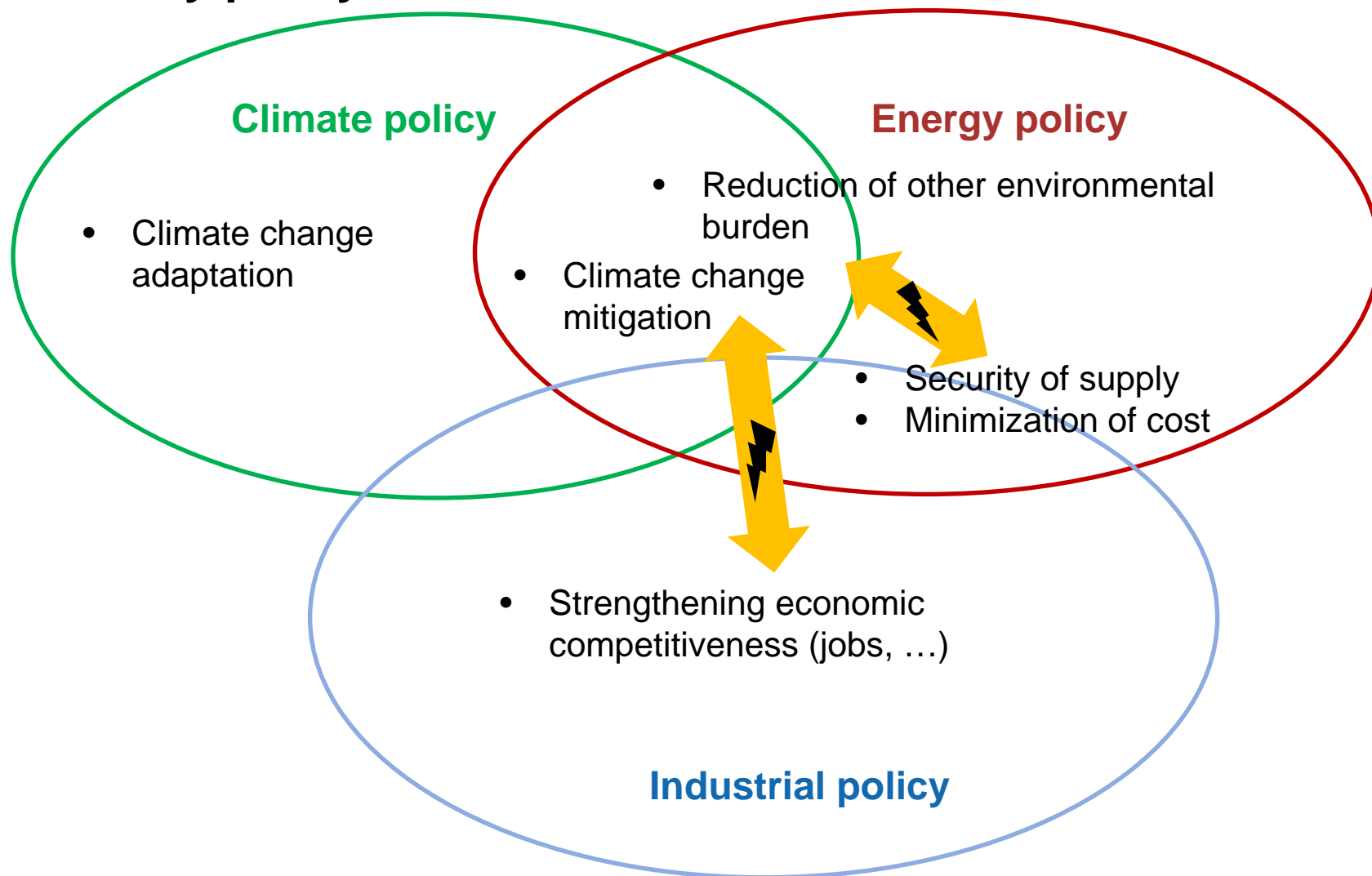
- Kyoto
- Copenhagen
- Paris

## § Paris Agreement institutions and mechanisms

## § Conclusion

# (Potentially conflicting) targets of energy, climate, and industry policy

Exemplary (not exhaustive)



# Agenda

## § From Rio to Paris

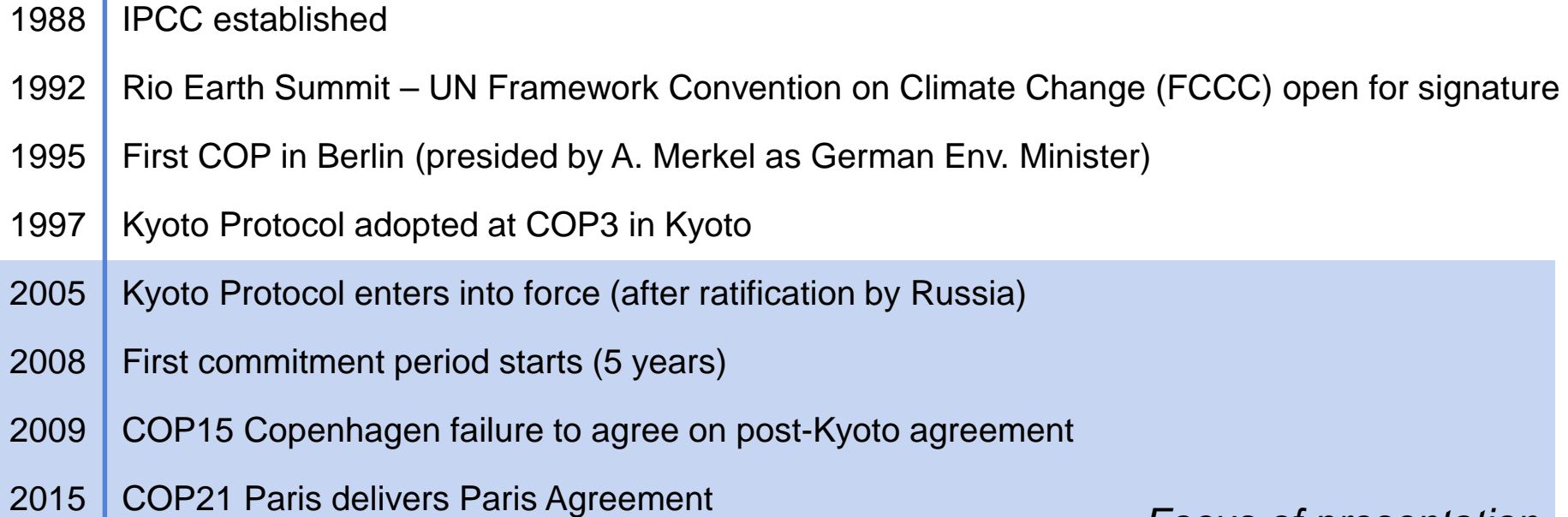
- Kyoto
- Copenhagen
- Paris

§ Paris Agreement institutions and mechanisms

§ Conclusion

# A super condensed history of climate policy/negotiations

strongly simplified

- 
- 1988 IPCC established
  - 1992 Rio Earth Summit – UN Framework Convention on Climate Change (FCCC) open for signature
  - 1995 First COP in Berlin (presided by A. Merkel as German Env. Minister)
  - 1997 Kyoto Protocol adopted at COP3 in Kyoto
  - 2005 Kyoto Protocol enters into force (after ratification by Russia)
  - 2008 First commitment period starts (5 years)
  - 2009 COP15 Copenhagen failure to agree on post-Kyoto agreement
  - 2015 COP21 Paris delivers Paris Agreement

*Focus of presentation*

# Agenda

## § From Rio to Paris

- **Kyoto**
- Copenhagen
- Paris

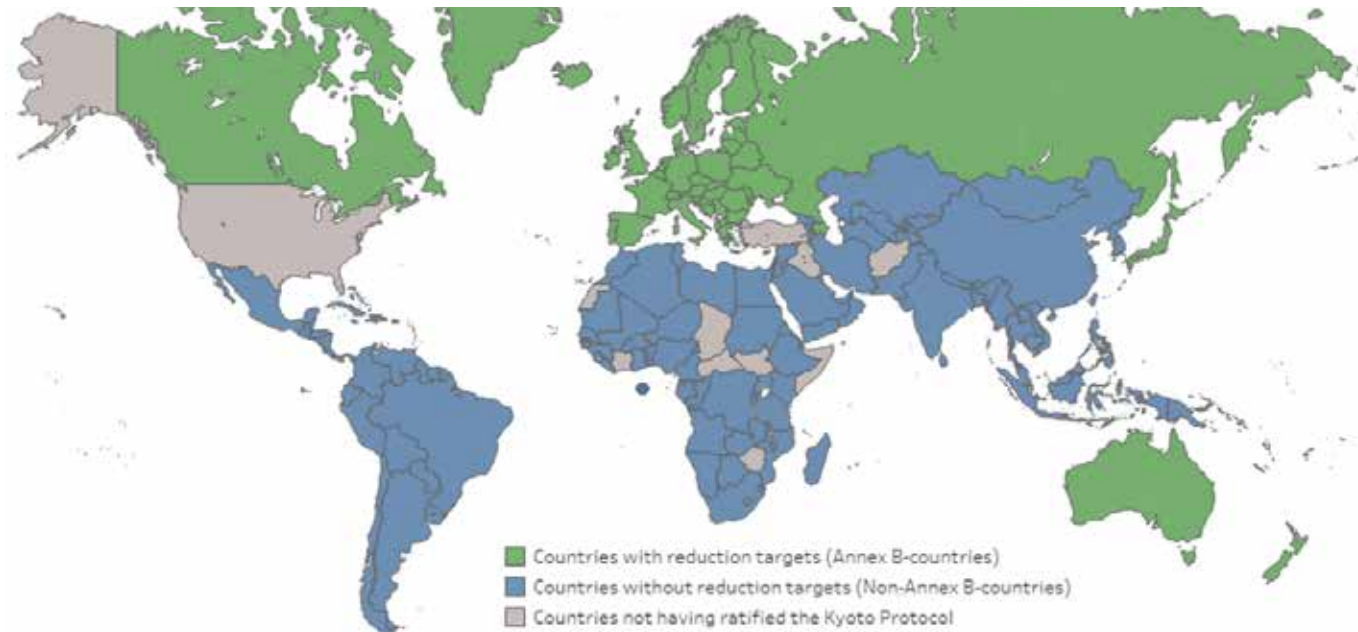
## § Paris Agreement institutions and mechanisms

## § Conclusion

# “Kyoto Paradigm”: limit and fairly distribute economic burden of climate change mitigation

strongly simplified

- § Kyoto split world into Annex I (developed) and non-Annex I (developing countries)
- § Plus: non-MOPs (MOP=“Members of the protocol”)
- § Goal: overall reduction of **4.2%** of Greenhouse Gas (GHG) emissions in Annex I countries compared to 1990



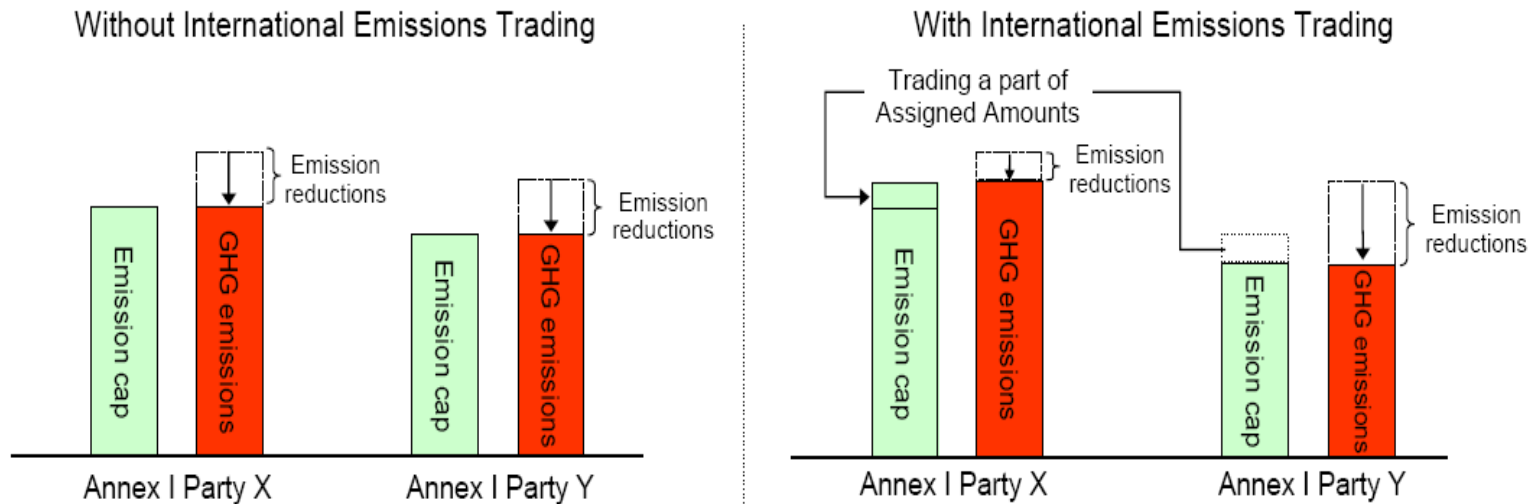
Reflects picture when Kyoto entered into force

# Kyoto: the idea behind international emissions trading

strongly simplified

§ Annex-B countries have individual reduction targets (caps)

§ Countries can trade emission rights:



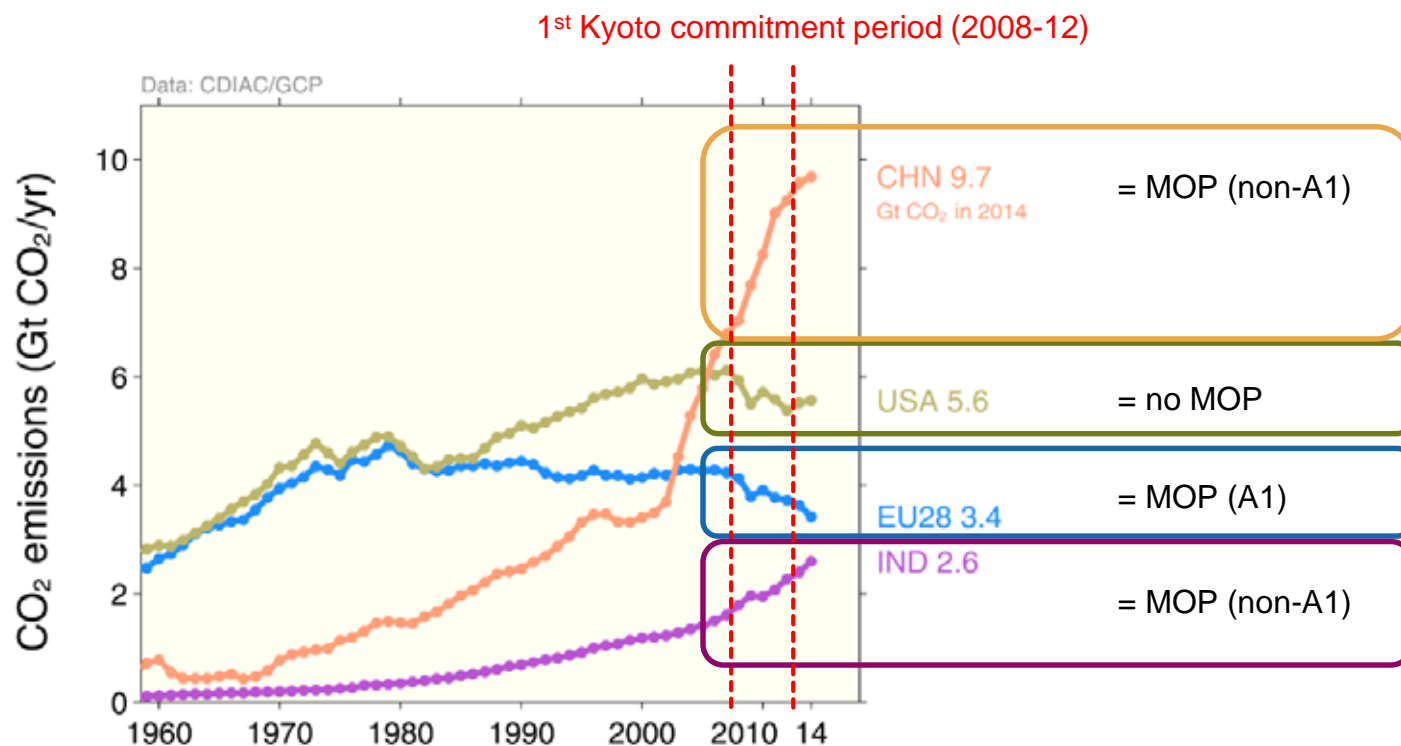
§ Non-Annex I countries can participate through Clean Development Mechanism (offsetting of emissions on project basis)

§ Goal: To allow parties to achieve their targets in a cost-efficient way (= minimize burden)



# Kyoto: what happened to emissions?

- Global CO<sub>2</sub> emissions increase by ca 10% during 1<sup>st</sup> Kyoto commitment period



Sources: EPG (ETH Zurich), Global Carbon Budget

# Agenda

## § From Rio to Paris

- Kyoto
- **Copenhagen**
- Paris

## § Paris Agreement institutions and mechanisms

## § Conclusion

# Copenhagen 2009 (COP15) failed to bring large emitters on board

strongly simplified

- § Kyoto was about to run out in 2012
- § COP 15 should deliver the Kyoto follow-on agreement (high expectations, 2007 Nobel Peace Prize to IPCC/ Gore)
- § COP15 failed to deliver



Reasons for failure:

- § Danish diplomacy/miss-organization
- § Mistrust between US, China and India
- § Very important: Strong ambitions perceived as economic burden: climate change mitigation = expensive

# Agenda

## § From Rio to Paris

- Kyoto
- Copenhagen

- **Paris**

## § Paris Agreement institutions and mechanisms

## § Conclusion

# The 2015 Paris Agreement (COP21)



- § All parties agree to limit “the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C...”
- § Based on national targets and policies that are communicated every 5 years and shall increase in their ambition levels
- § Climate finance reinforced: transfer of 100bn USD p.a. from developed to developing countries
- § Up for signature since 22.4.16 (for one year), 175 countries signed on first day
- § Ratification (act whereby a state indicates its consent to be bound to a treaty if the parties intended to show their consent by such an act) by 168/197 countries
- § Entered into force on Nov 4, 2016 (ratification of 55 countries representing >55% of emissions)
- § CH: parliament (large chamber) accepted agreement on Mar 2, 2017 (123 to 62 votes), ratification on Oct 6, 2017

# The 2015 Paris Agreement (COP21): why did it work? strongly simplified

- Even more scientific evidence (IPCC...)
- Bottom-up instead of negotiated targets
- French diplomacy and organization
- Paris agreement just an appendix to COP21 decision (to “bypass” US congress)
- New government in India (PM Modi as solar champion)
- Prior US-China and US-India deals
- Prior G7 meeting in Germany
- Environmental/societal co-benefits
- China wants to switch to service economy
- Technology cost reductions induced by national policies



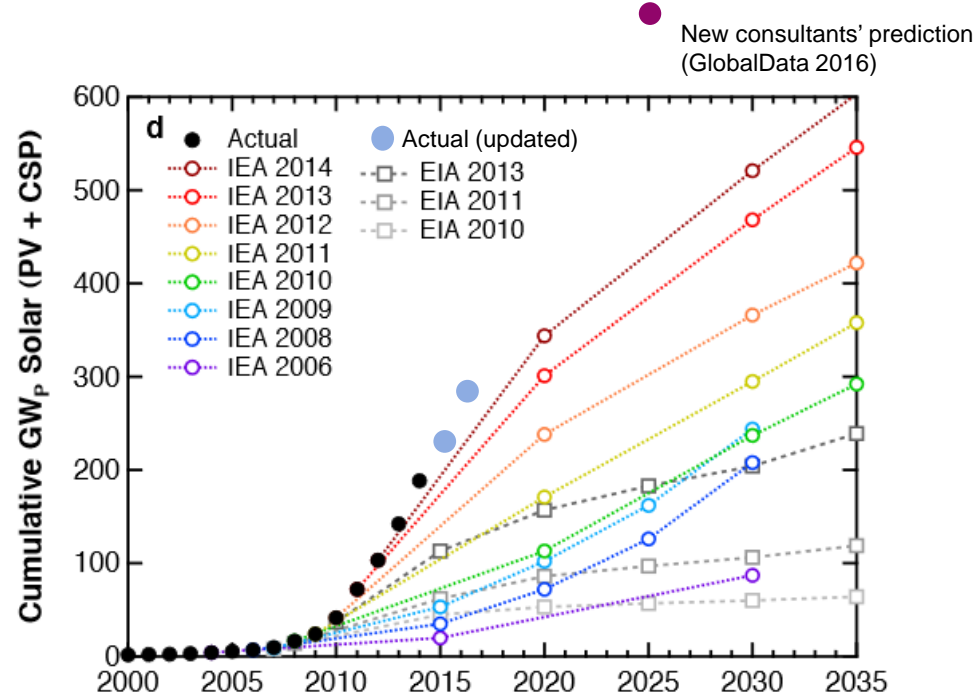
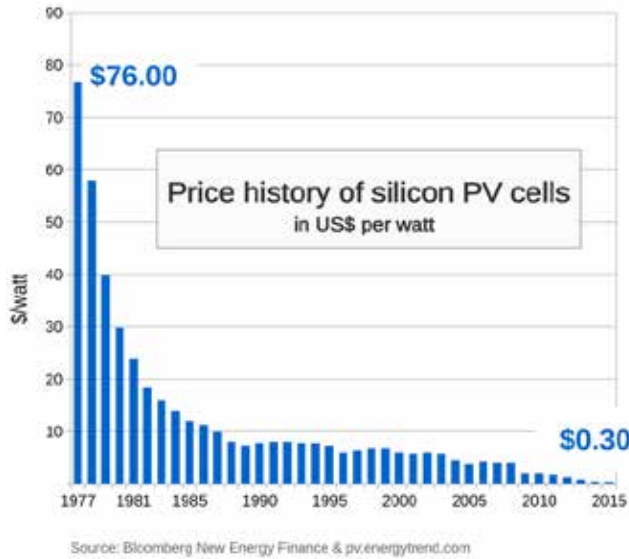
Raise the green lanterns The Economist

*China is using climate policy to push through domestic reforms*

- ↳ low-carbon technologies can already save cost today (negative abatement cost)
- ↳ Countries discover the economic opportunities involved in climate change mitigation instead of the burden

Sources: EPG (ETH Zurich), BNEF, The Economist

# Technology learning happened much faster than expected



McKinsey & Co MAC curves	Predictions (in 2007)	Update/actual case
Solar PV (incl BOS)	2.40 USD/Watt in 2030	1.60 USD/Watt in 2016
Wind (onshore)	300 GW installed in 2014	370 GW installed (in 2014)
Batteries/e-mobility	Li-Ion Battery cost: 900USD/kWh No electric cars considered for 2030	Stationary Li-ion battery cost down 40% 2017: >2 mio electric (PH)Evs produced

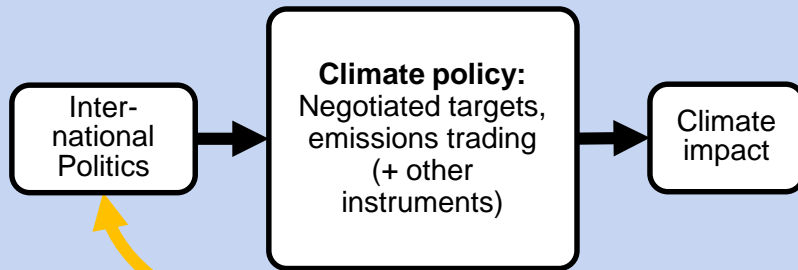
Sources: BNEF; IRENA; O Schmidt et al., Nature Energy (2017); McKinsey & Co., <http://www.mckinsey.com/industries/oil-and-gas/our-insights/peering-into-energys-crystal-ball> ; Roland Berger 2017

# From the Kyoto to the Paris paradigm

International politics and policy

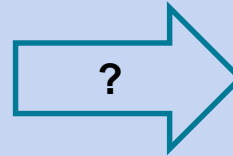
**Kyoto/Copenhagen: low ambition**

Emission focus



**Paris: high ambition**

Technology focus



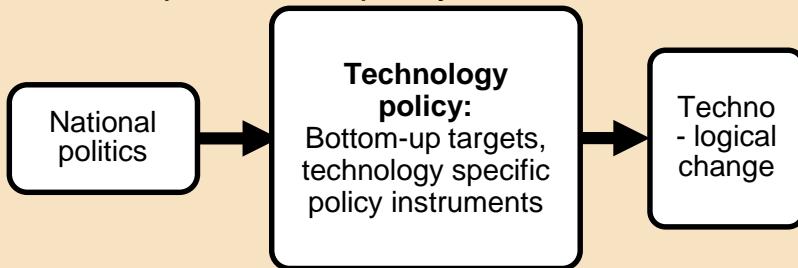
?



*Limiting economic burden*

*Seizing economic opportunity*

National politics and policy



Source: Schmidt & Sewerin, Nature Energy (2017), adapted



# Agenda

## § From Rio to Paris

- Kyoto
- Copenhagen
- Paris

## § **Paris Agreement institutions and mechanisms**

## § Conclusion

# Kyoto vs Paris: key (mitigation) contents

strongly simplified

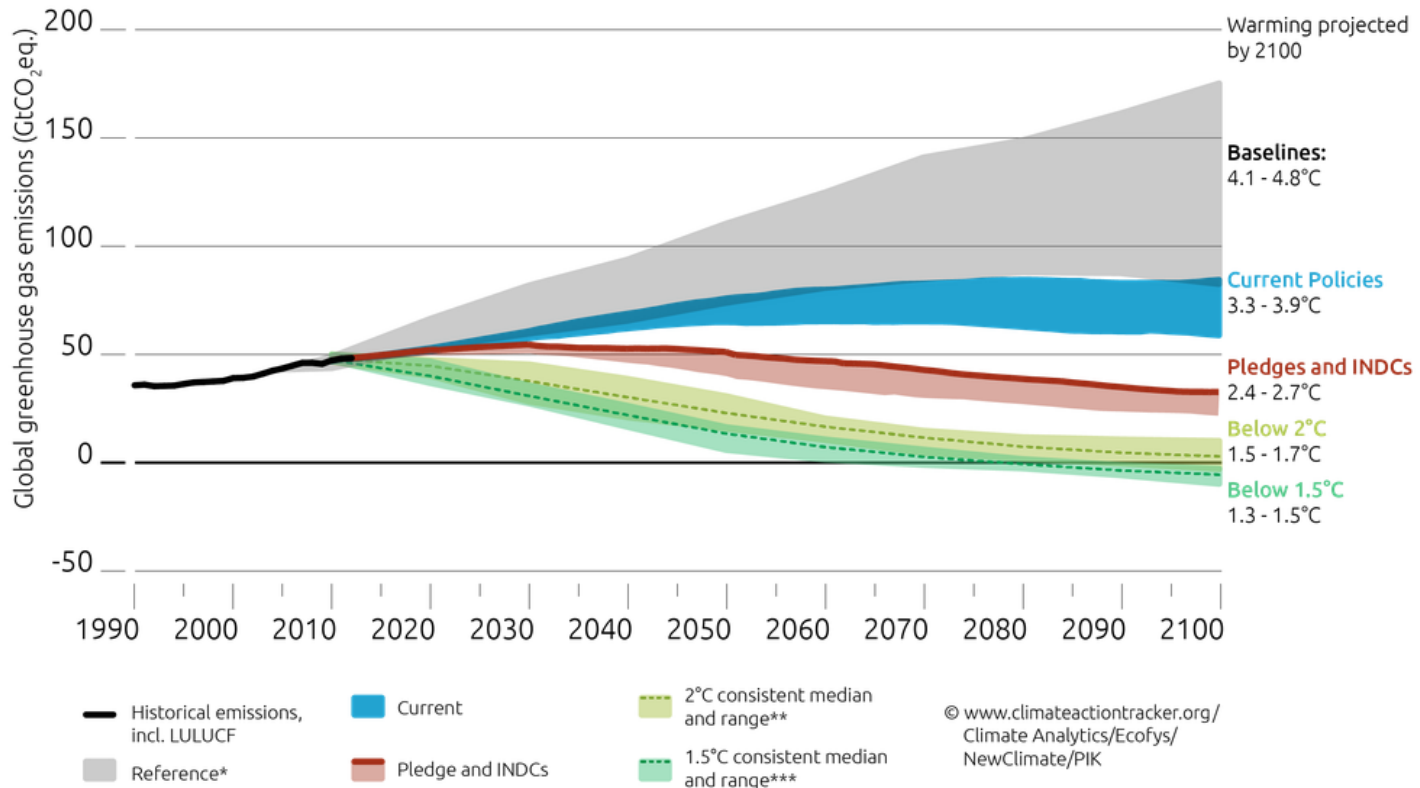
## Kyoto

- § Negotiated caps and international emissions trading (+CDM)

## Paris

- § Nationally determined contributions (NDCs): emission reduction targets put forward by each country
- § National/regional policies (mostly technology-/sector-specific) to achieve targets
- § Technology Mechanism (already established under Kyoto late phase) to provide technical support to developing countries
- § Green Climate Fund: transfer of finance from developed to developing countries
- § Article 6: similar to Emissions Trading/CDM -> tbd
- § Ratcheting up: countries to increase (but not lower) their ambitions over time

# The 2015 Paris Agreement (COP21): further increase in ambitions needed



# Agenda

## § From Rio to Paris

- Kyoto
- Copenhagen
- Paris

## § Paris Agreement institutions and mechanisms

## § **Conclusion**

# Conclusion

## Three take-home messages

1. Climate policy has multiple interaction points with other policy domains and aims; economic competitiveness more (immediately) relevant to most policy makers than climate change
  2. The dynamics that led to Paris might represent a paradigm shift driven by technology innovation and cost-reductions; future climate policy will be national/regional.
  3. The logic of Paris builds on “voluntary” targets and a positive dynamic towards higher future ambition
- ▮ R&D (and experience building) that decreases abatement cost of low-carbon technologies can strongly support this dynamic!

**Thanks for your attention!**

For more information on our research and teaching please see [www.epg.ethz.ch](http://www.epg.ethz.ch)