MCC

Mercator Research Institute on
Global Commons and Climate Change gGmbH

Coordinated CO_2 Prices and Strategic Transfers

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Workshop Realizing the Potential of the Paris Agreement

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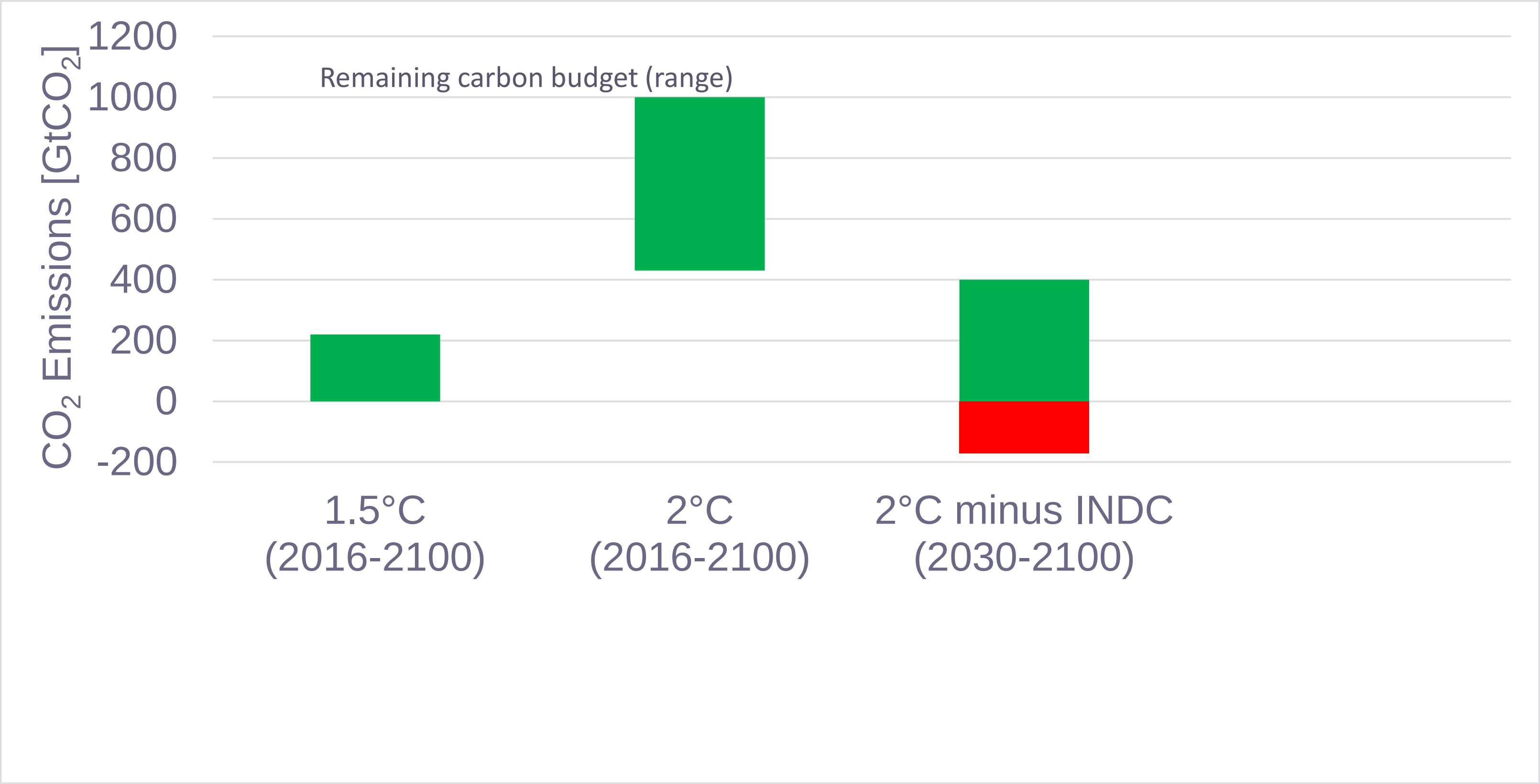
The global carbon budgets

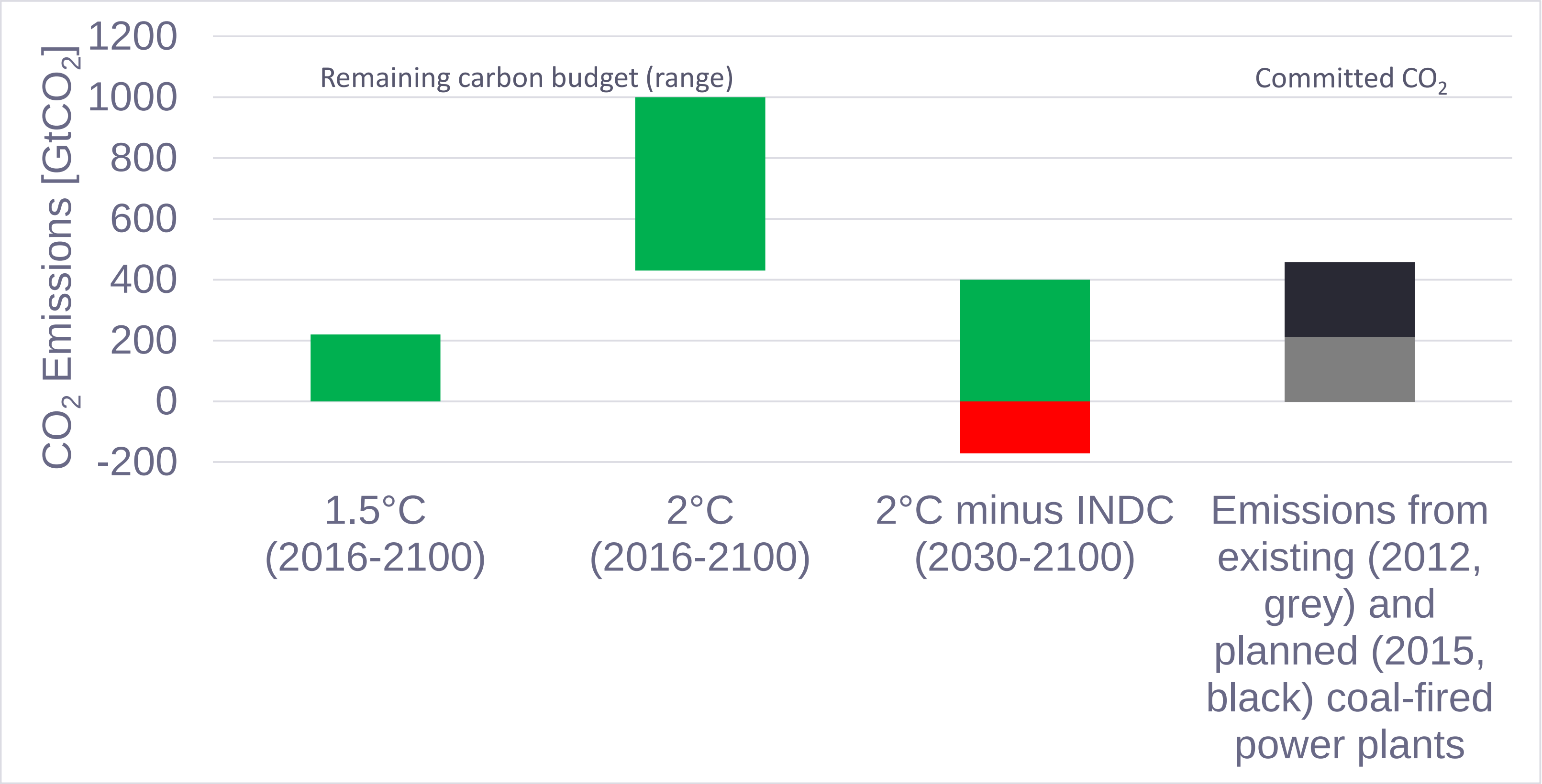
- Intended Nationally Determined Contributions are inconsistent with the temperature target.



Data sources: Rogelj et al. (2015), IPCC AR5 WGIII (2014), Minx et al. (2016), Davis and Sokolow (2014), Global Coal Plant Tracker (2015)

The global carbon budgets and coal

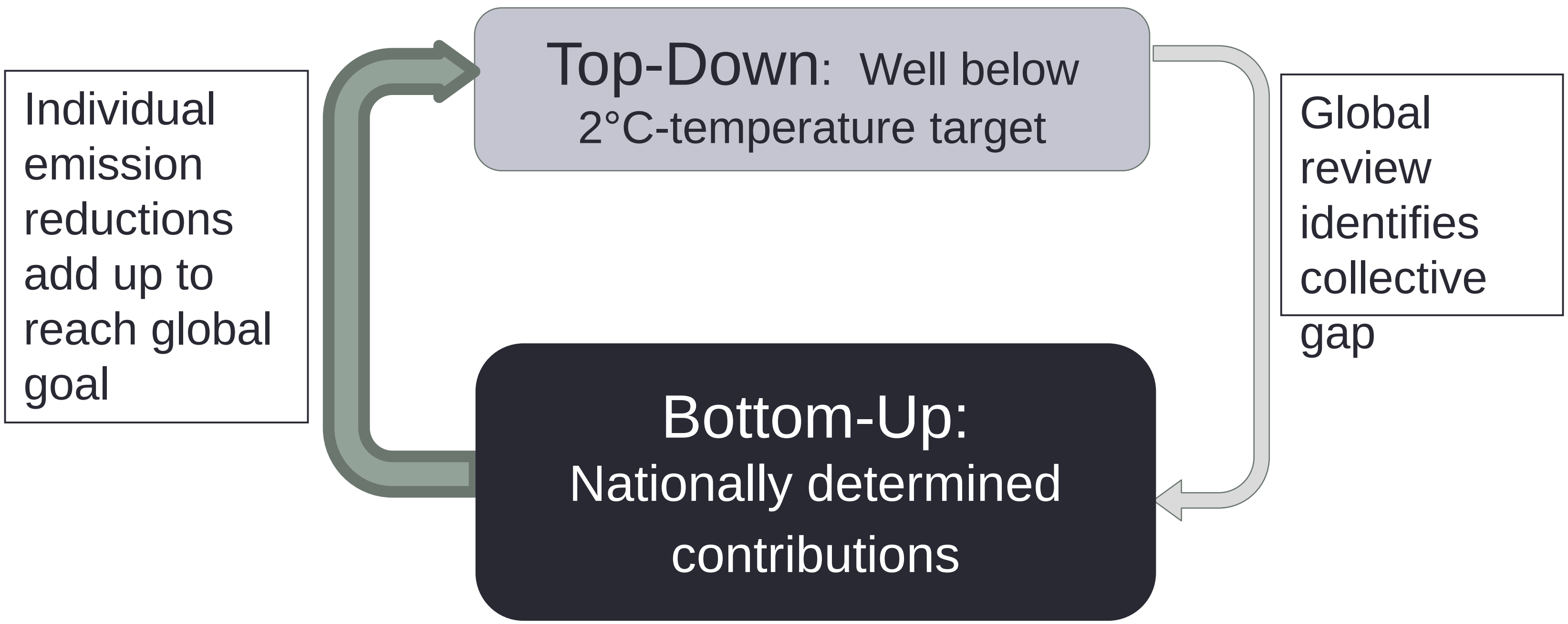
- Intended Nationally Determined Contributions are inconsistent with the temperature target.



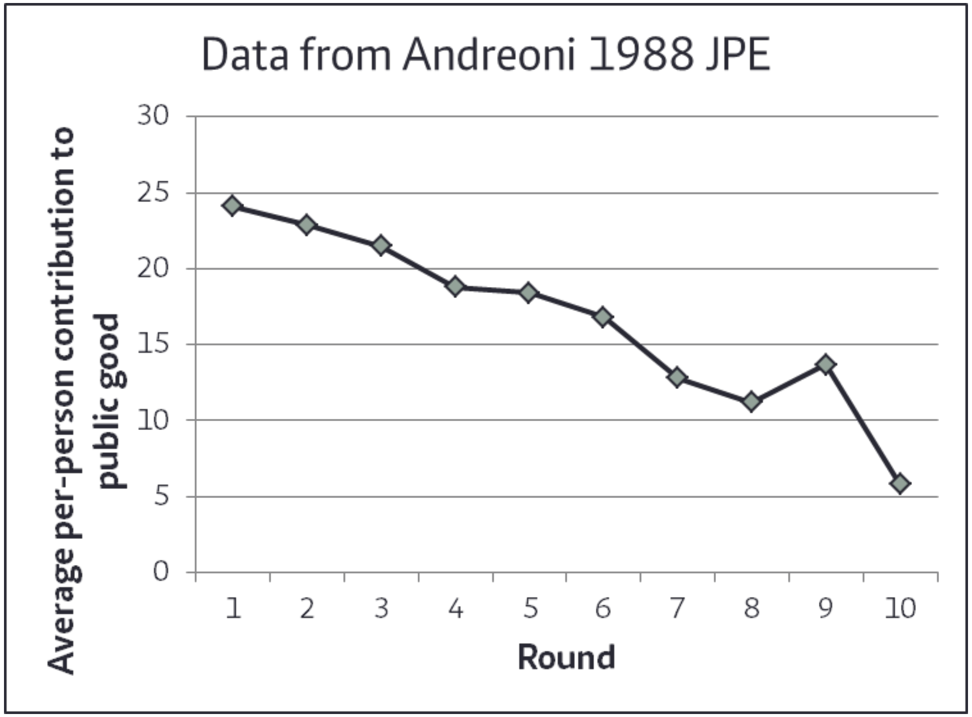
Data sources: Rogelj et al. (2015), IPCC AR5 WGIII (2014), Minx et al. (2016), Davis and Sokolow (2014), Global Coal Plant Tracker (2015)

The NDC-Process of the agreement

- Voluntary contributions to 2°C-temperature objective
- Only informal mechanisms as punishment/incentives
- Can voluntary contributions do the job?

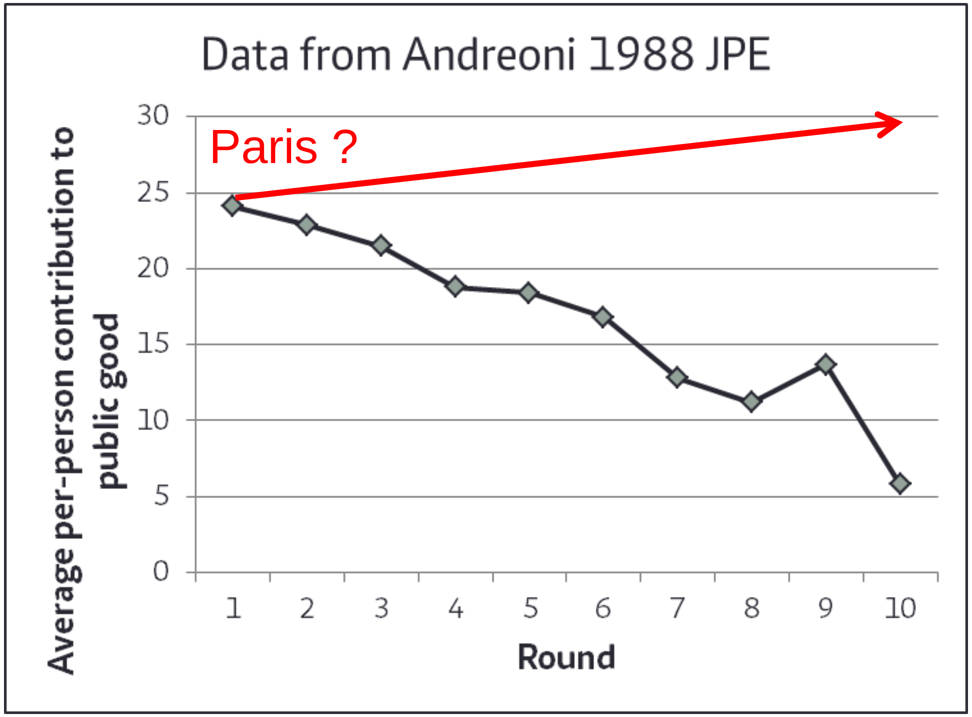


The public goods game and the Paris Agreement



- Large group of people are willing to cooperate when others also cooperate – „I cooperate when you cooperate“
- People start out by giving something
- Contribution drops, when free-riding is observed
- How to sustain conditional cooperation for climate change mitigation?

The public goods game and the Paris Agreement



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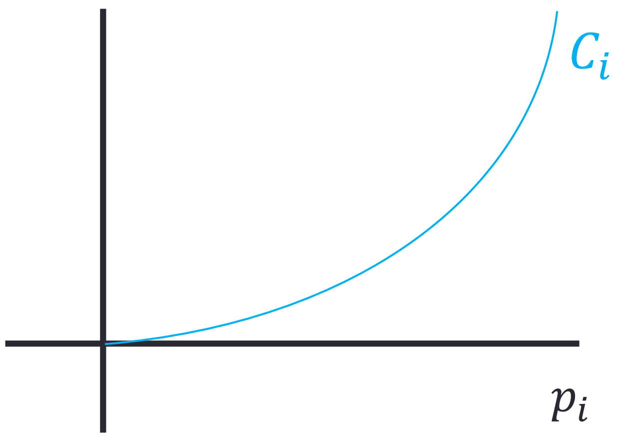
The public goods game with strategic transfers

- How to ensure that countries reduce emissions?
- Introduction of carbon pricing:

$$\boxed{p_i = MC_i\,(q_i)}$$

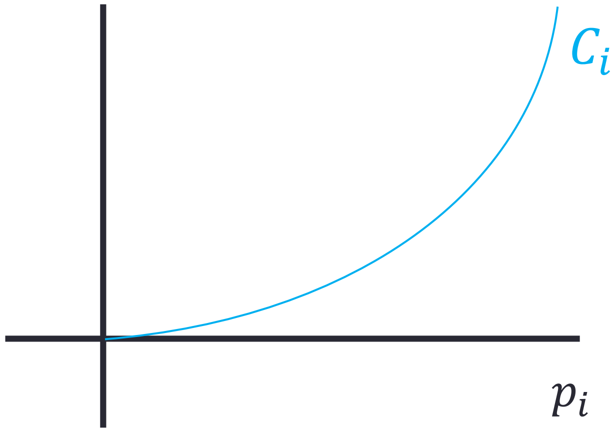
  - Leads to national, cost-efficient reductions q_i
  - Measure for ambition of country

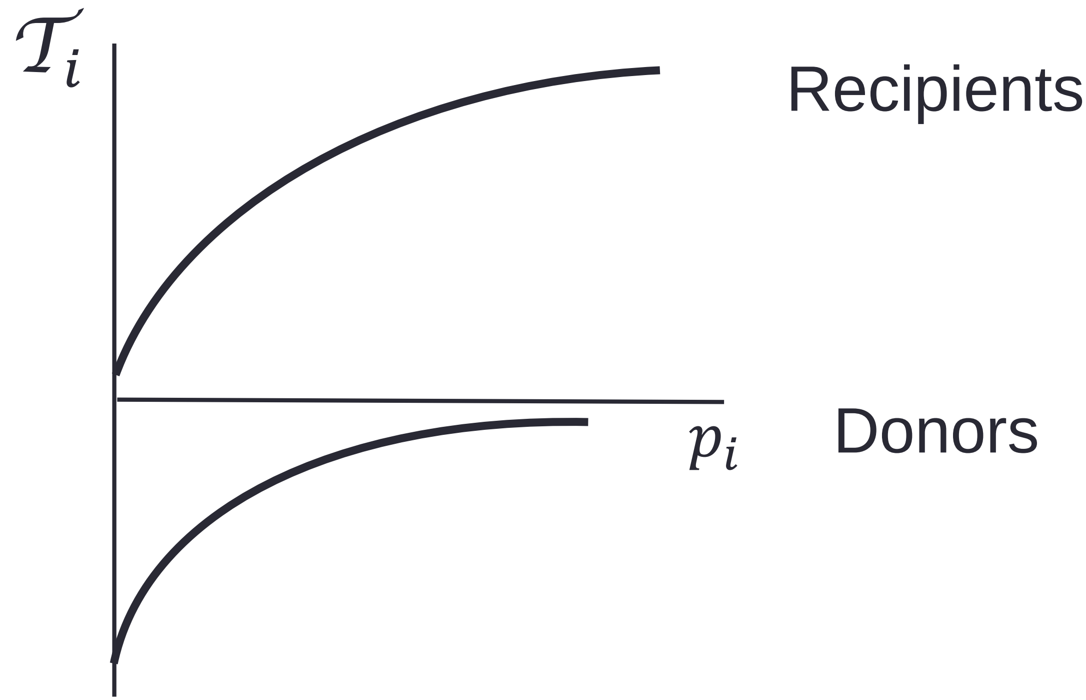
The public goods game with strategic transfers



- Costs rise with national price → Incentive not to reduce emissions

The public goods game with strategic transfers





- Strategic climate finance: transfers increase with national ambition

$$\boxed{\frac{\partial}{\partial p_i}\mathcal{T}_i \geq 0} \qquad \sum_{k \epsilon S} \mathcal{T}_k = 0$$

- Countries have an additional incentive to put a positive price on emissions

The public goods game with strategic transfers

- Implementation of strategic transfer through a compensation fund:

$$\mathcal{T}_i = \underbrace{T \quad \cdot \; size_i}_{\text{Magnitude of compensation}} \cdot \left(\frac{C_i}{size_i} - \frac{1}{\sum size_j} \sum C_j \right)$$

The public goods game with strategic transfers

- Implementation of strategic transfer through a compensation fund:

$$\mathcal{T}_i = T \quad \cdot\, size_i \cdot \left(\frac{C_i}{size_i} - \frac{1}{\sum size_j} \sum C_j \right)$$

- Strategic transfers enhance cooperation:

  1. Increased incentive to reduce as countries anticipate that they only have to pay a fraction of their increase in mitigation costs

  2. Countries either contribute through reducing emissions or through compensatory payments

Climate Finance and the Paris agreement

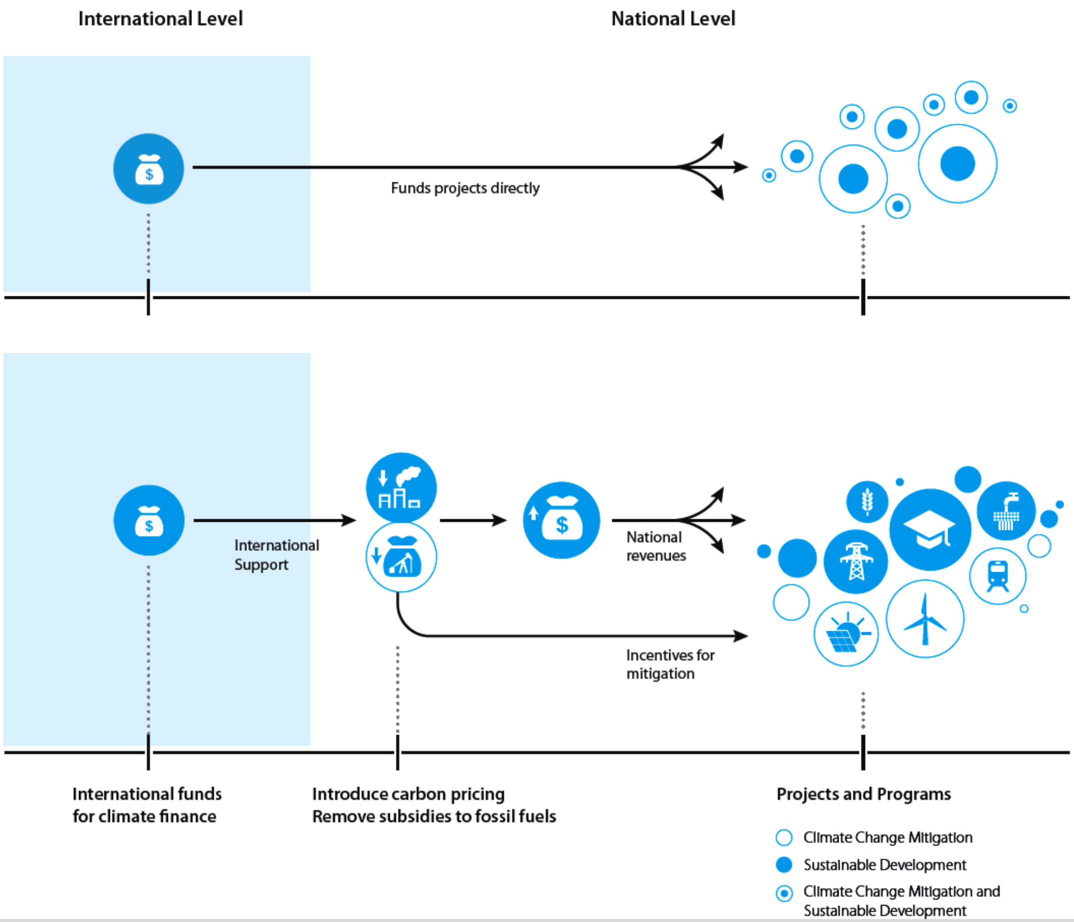
- Paris promised 100 bln USD from 2020 on
- Multilateral funds for the Paris agreement:
  - Green Climate fund: 9.9 bln of 10.3 bln pledged resources
  - Global Environmental Facility: 4.4 bln for climate and other environmental issue areas
- Other key players: World Bank, KfW, …
- Current approach: mostly project based disbursement of funds
  - Additionality?
  - Effectiveness for decarbonization?

Climate Finance and the Paris agreement

- Alternatively financing of policy packages
- Establish some form of carbon pricing
  - Use climate finance to: build capacity, provide compensation for incremental costs and adverse distributional consequences

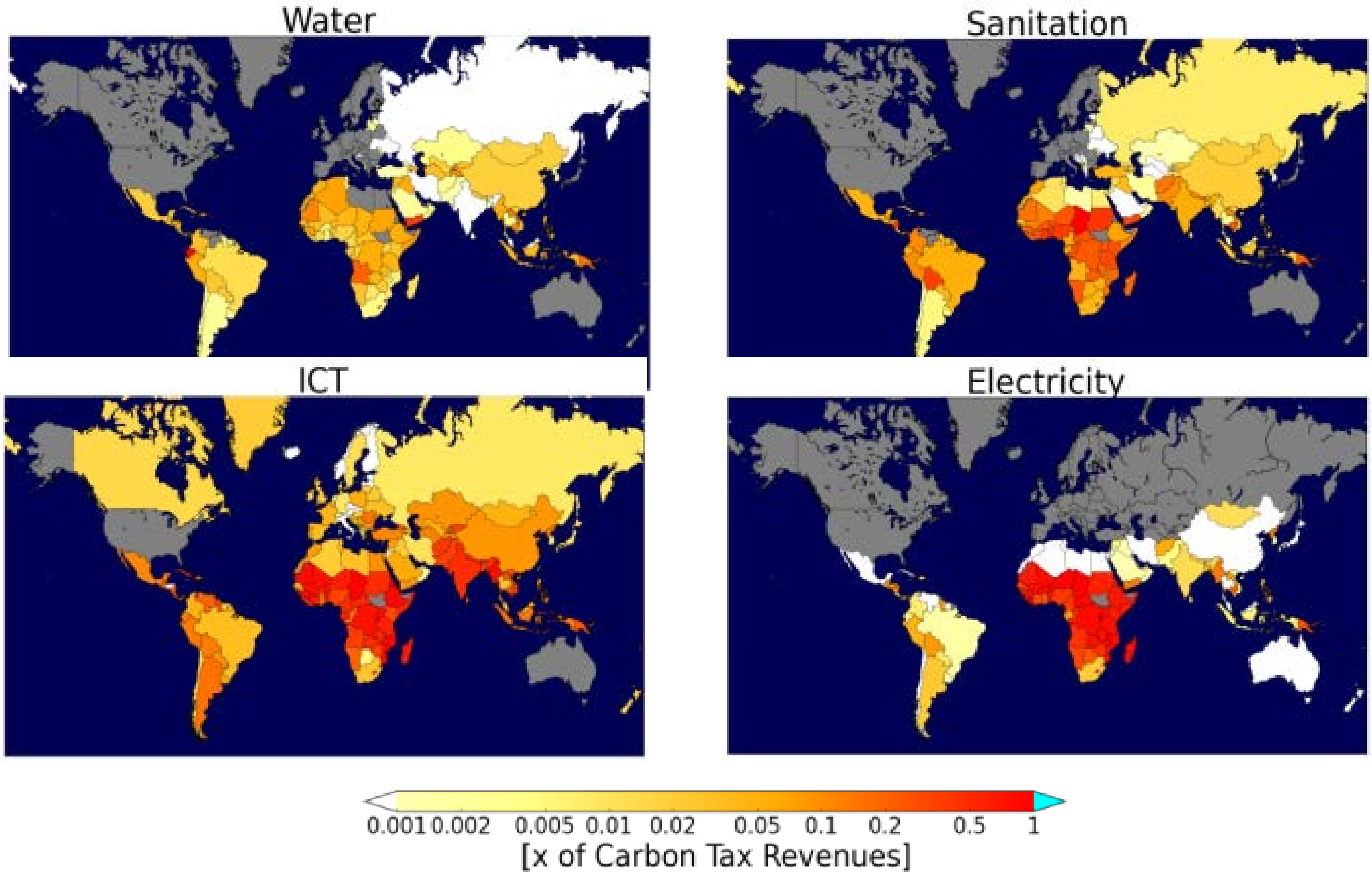
Current approach:

Financing carbon pricing:



Steckel et al 2016

Climate Finance and the Paris agreement



Jakob et al., 2016

Conclusions

- Nationally determined contributions establish price on carbon
- Coordination of price levels can help to establish conditional cooperation
- Strategic transfers payments can ratchet up ambition of price levels
- Basing transfers on compensating differences in incremental mitigation costs is ideal
  - Depending on heterogeneity, full cooperation can be established

Thank you for your attention!