arrhenius INSTITUT FÜR ENERGIE- UND KLIMAPOLITIK
INSTITUTE FOR ENERGY AND CLIMATE POLICY

How green is green power?

Dr. Sven Bode

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Warming up…

- If I switch of the light in this room, do I
  - reduce the formation of CO2 emissions from fossil fuel combustion?
  - contribute to the reduction of global greenhouse gas emissions?

Overview

- Background
- What is green power?
  - Power generation vs. green power products
- Green power products and national targets
  - Renewable energy targets
  - Emission targets
- Light green vs. dark green power products

Background

arrhenius INSTITUT FÜR ENERGIE- UND KLIMAPOLITIK
INSTITUTE FOR ENERGY AND CLIMATE POLICY

Hamburg based, private think tank that offers independent expertise for decision makers in politics, administrations and the private sector

Focus

- Liberalised power markets
- Emissions trading and trade in green certificates
- Renewable energies
- Carbon capture and storage (CCS)
- Decentralised energy systems

*) *Svante Arrhenius: Swedish physicist and chemist (1859 -1927); first to realise the role of carbon dioxide for the climate and to propose anthropogenic climate change already in 1895*

greenmiles

Greenmiles GmbH, Hamburg based carbon offset provider:

Focus

- Contribution to emission reductions through high-quality emission reduction projects [Active climate protection]
- Awareness raising and information on climate change and emission reductions respectively [Climate-Training]
- Support of implementation of climate strategies in companies and other organisations [Climate-Consulting]
- Development of innovative products and concepts for climate protection [Climate-Marketing]

What is green power?

What is green power?

- No commonly accepted definition, may depend on context, e.g. supply vs. demand
  Example: “Pro-climate 2011” tariff – based on nuclear and RE, offered by RWE → criticised

Supply side:

- E.g. EEG (feed-in tariff in Germany)
  - Wind, PV, hydro etc. but
  - Constraints regarding seize, capacity, plant age…
    - Old hydro power plants not eligible
    - Provisions for temporary opt-out e.g. new wind turbine if whole sale power price is high
    - Landfill gas? Pit gas?...

What is green power?

Demand side:

- Motivation - why to buy green power?
- Products' promise (examples from products recommend under EcoTopTen ranking):
  - „(Do) you want to actively contribute to safeguard the environment?“
  - „This means 100 percent less CO2 emissions in comparison to conventionally produced electricity.“
  - „A maximum of climate protection“
  - „For us, it is important that CO2 is really cut by the consumption of XY power…“
  - „…and only in that way we could already save more than 100.000 tons of CO2 with your help – and the amount goes up daily.“

What' s really in for the consumer?
Can he or she really make the difference?

What is green power?

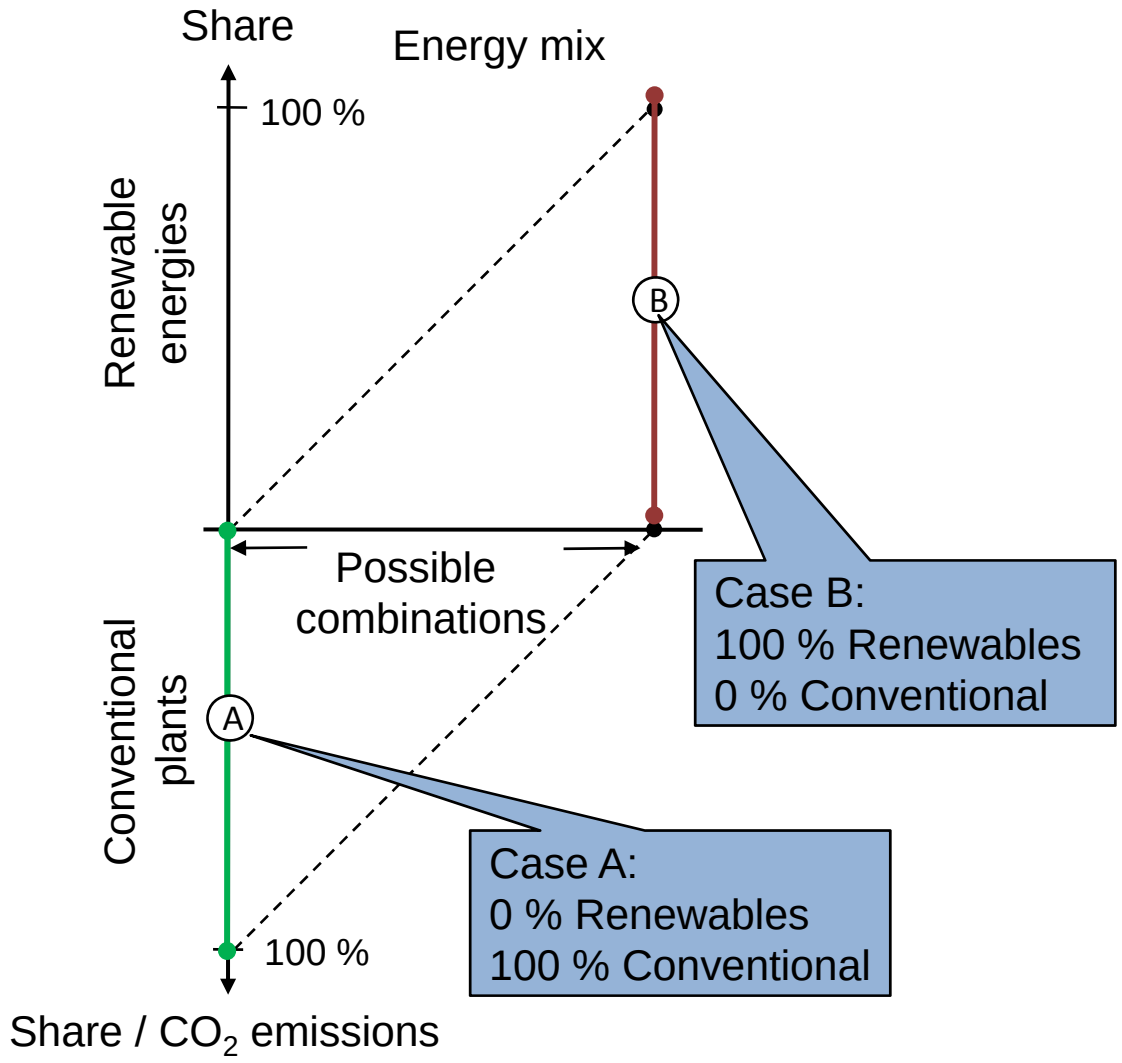
Let's assume…

- *A customer is buying green electricity, because he wants to make an impact that would not come about without his decision to purchase green power (for example, to change the energy mix in comparison with the baseline scenario or to his carbon footprint).*

And let's remember…

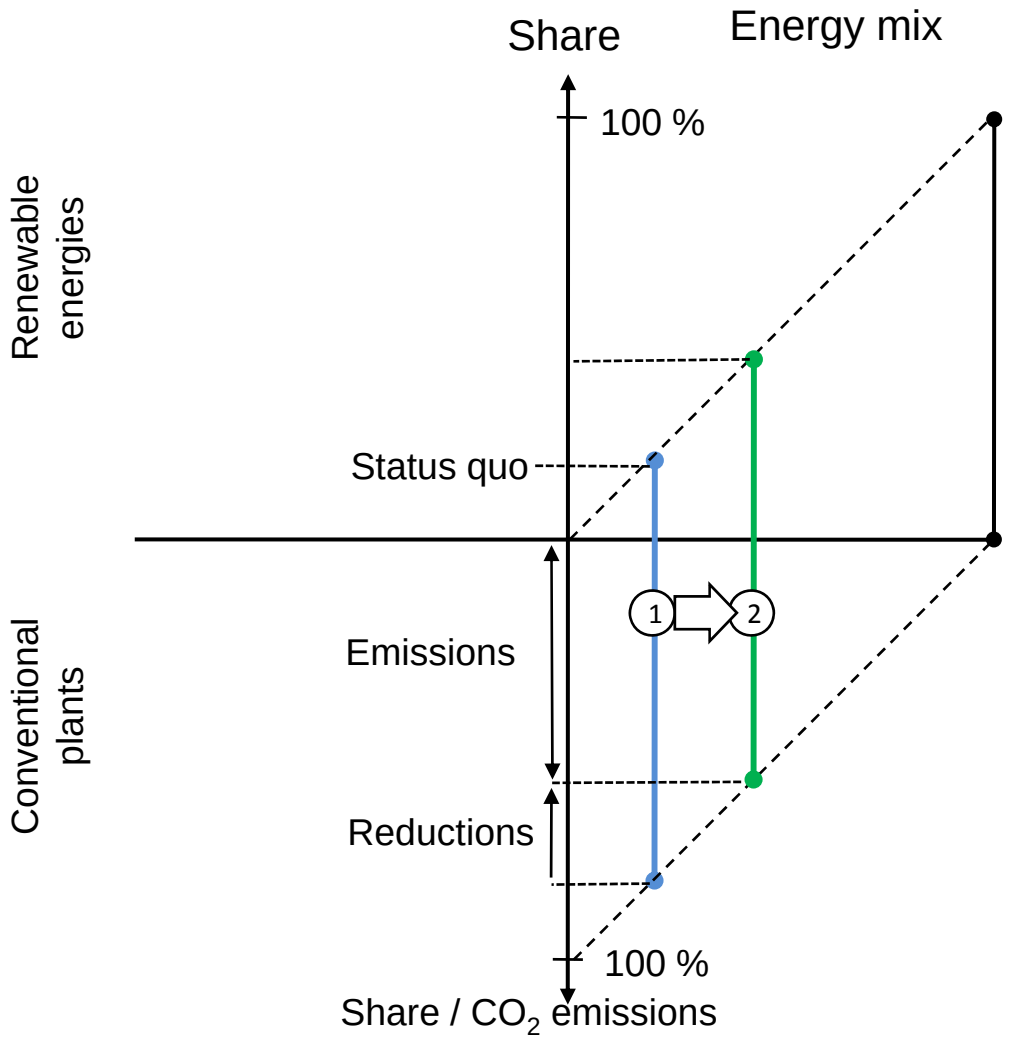
- The EU energy and climate package: specific targets (member state level) for the share of RE (primary energy consumption; heat, power, transportation)
- The emission targets under the Kyoto Protocol (member state specific) and related instruments
  - International emissions trading (Art. 17 KP)
  - EU ETS

Power plants mix

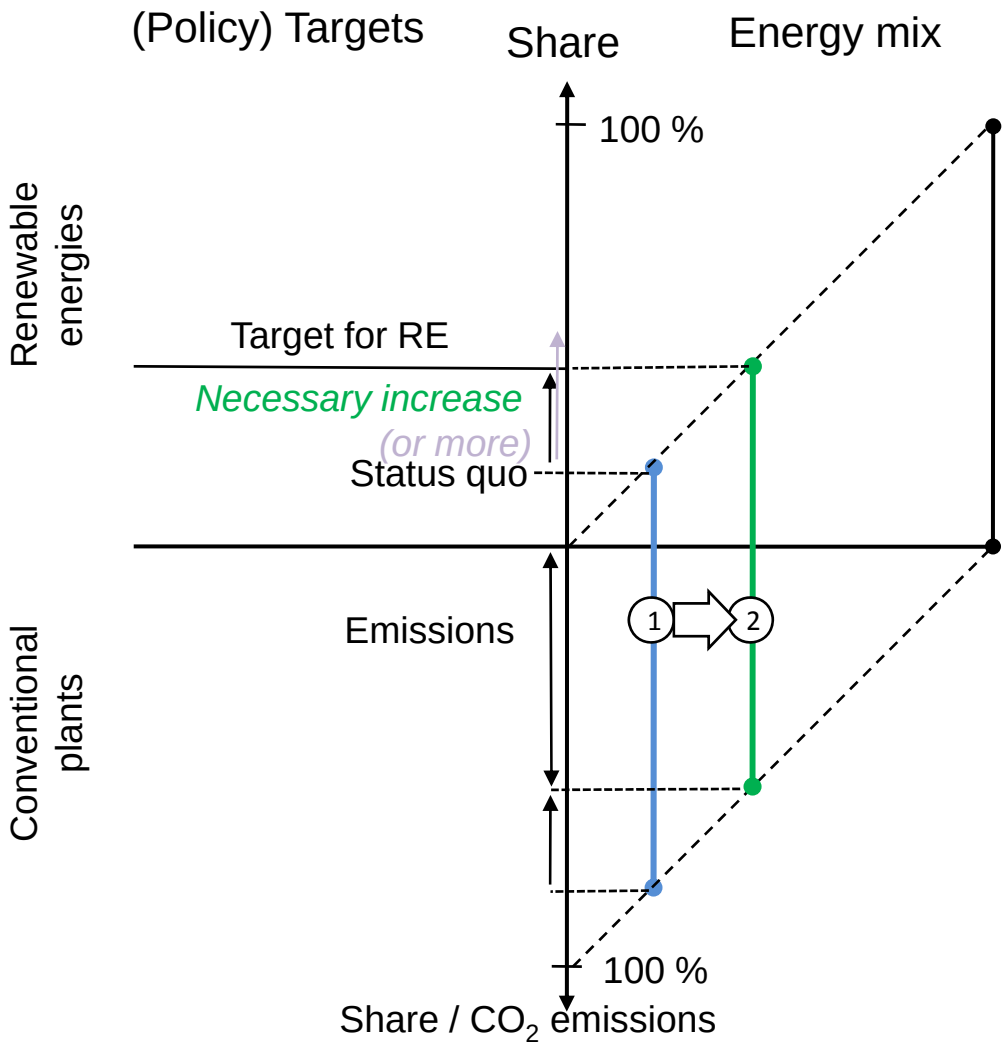


Power plants mix and increased demand

Assumption:
All demand is additional → new capacity is installed → shift from 1 to 2



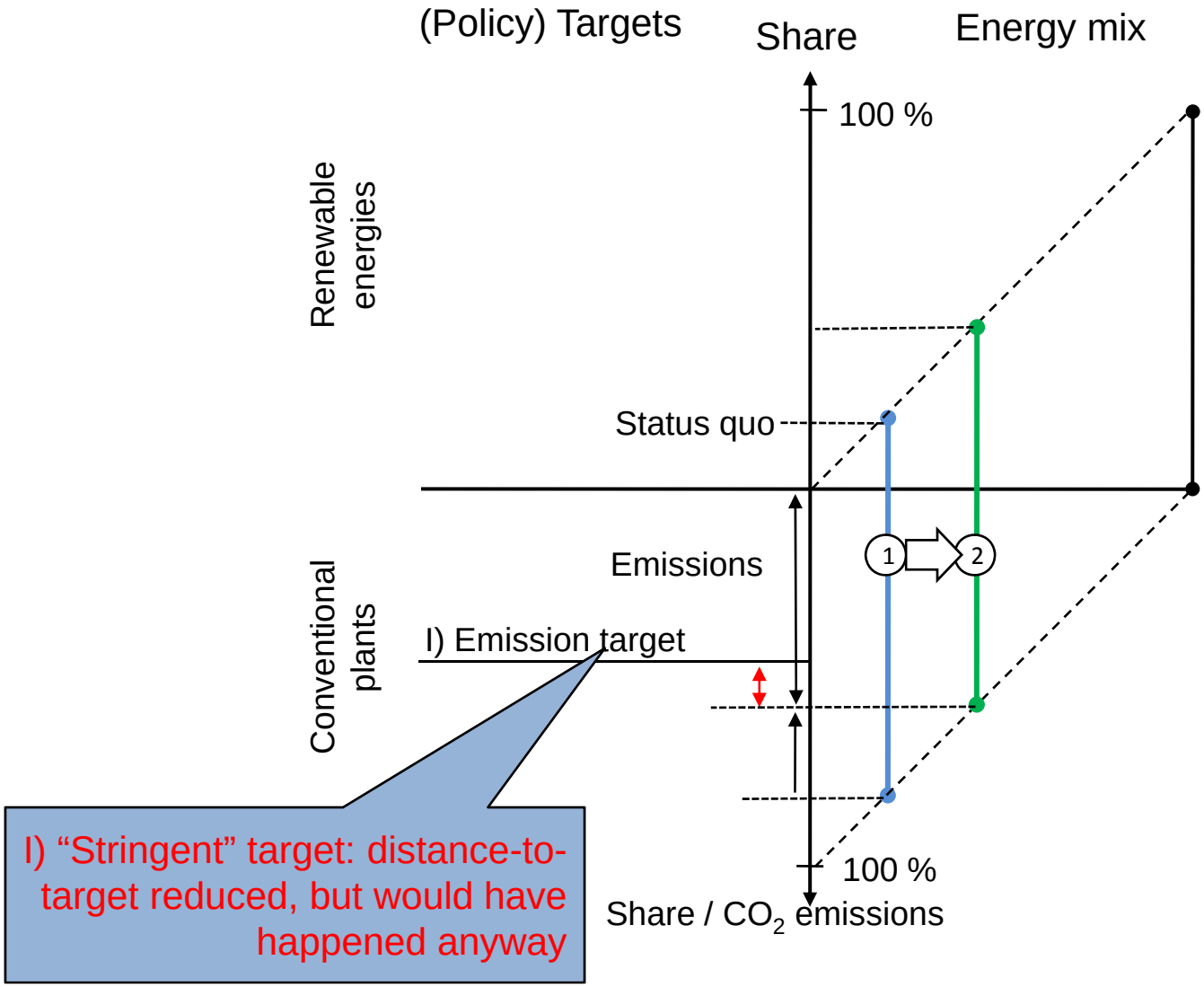
Voluntary demand and national RE targets



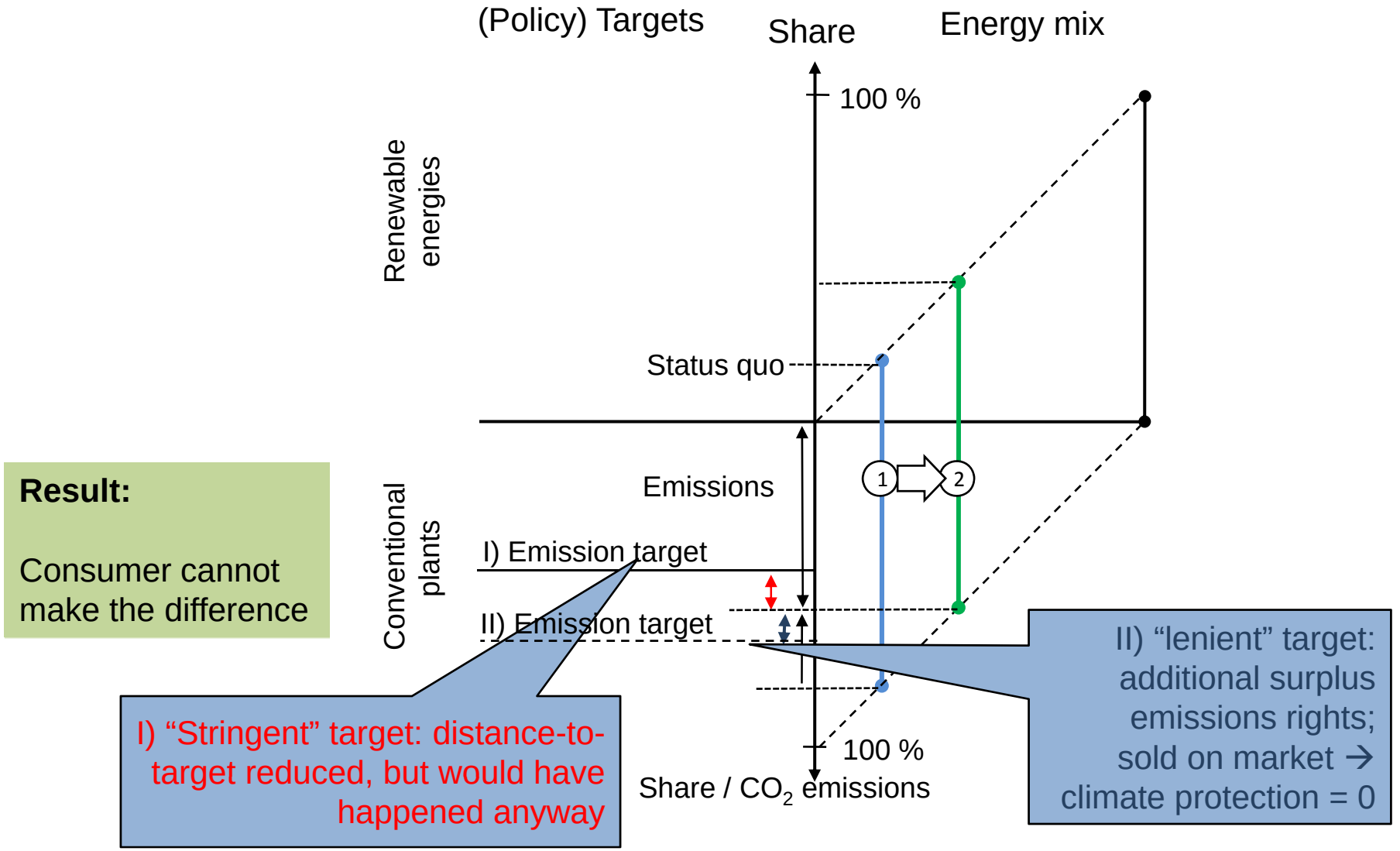
Result:
Additional demand results in additional capacity compared to status quo but not necessarily compared to business as usual growth path

Consumer cannot necessarily make the difference

Voluntary demand and national emission targets



Voluntary demand and national emission targets



How to asses green power consumption?

Partly contradicting guidelines

- **“*Choosing electricity emission factors***
  To quantify scope 2 emissions, the GHG Protocol Corporate Standard recommends that companies obtain source/supplier specific emission factors for the electricity purchased. If these are not available, regional or grid emission factors should be used.”
  (GHG Protocol, revised version, 2004; remember RE Directive (GO)

- *“There is no different factor for electricity purchased on a renewable energy tariff. This is because electricity suppliers already have a legal obligation to supply a certain amount of electricity from renewable sources – contributing to the UK grid average factor – and existing evidence suggests that we cannot quantify any additional carbon savings from renewable energy tariffs.”*
  (The Government‟s Quality Assurance Scheme for Carbon Offsetting, DEFRA 2009)

Our proposal / Conclusion

Green power

Directly from the installation or based on a) renewable energy certificates or b) on emission reduction projects that do not result in emission rights under the Kyoto Protocol (VERSs*)) if hosted in Annex B countries

results in

Reduction of the ”individual“ carbon footprint **WITHOUT** direct contribution the reduction of global GHG emissions.

(light green power)

Based on emission reduction projects that allow for a delivery and cancellation of emissions rights under the Protocol if hosted in Annex B countries or CERs and VERs*) in countries without emission targets

results in

Reduction of the ”individual“ carbon footprint **INCLUDING** a direct contribution to the reduction of global GHG emissions.

(dark green power)

*) special requirements to be met (e.g. passing of additionality test, consistent inventory)

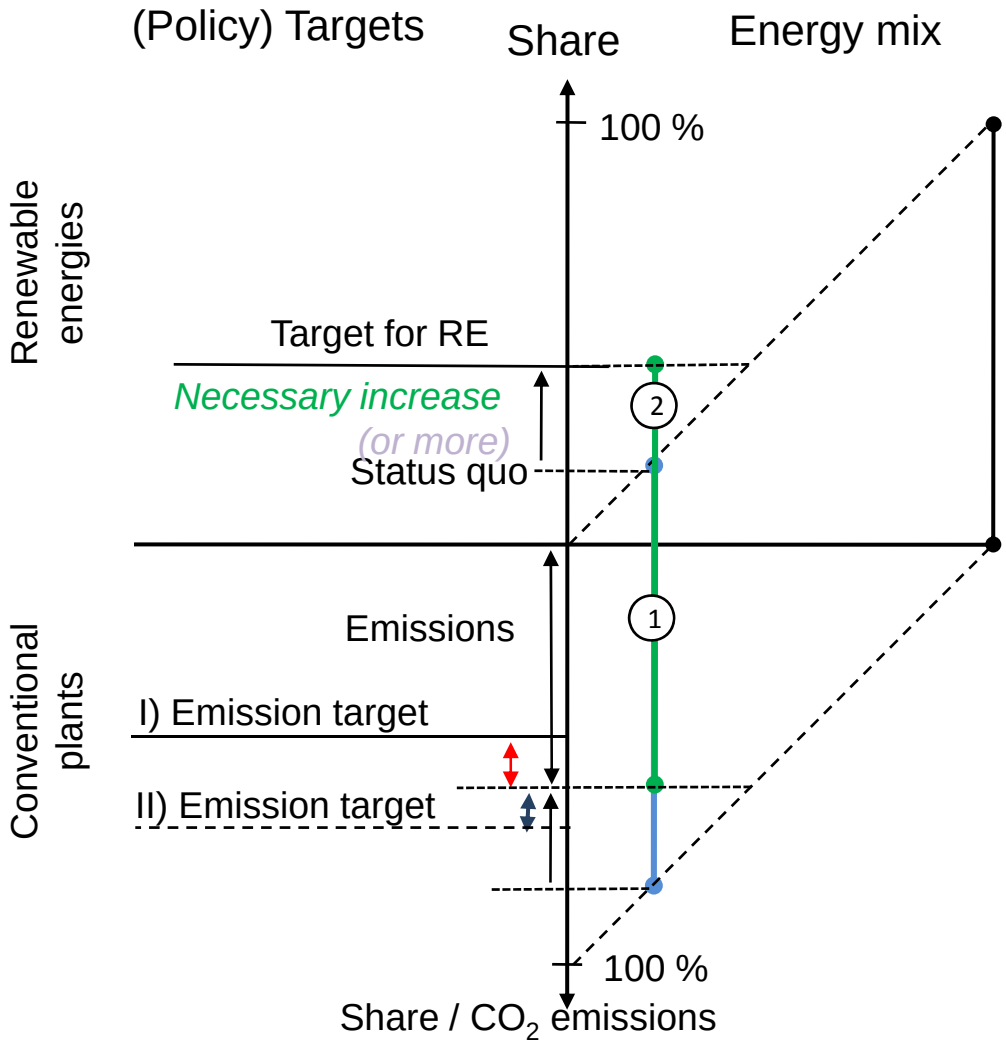
EXCURSUS: Flexible Mechanisms

Result:

Host country:
Wins as support of RE project reduces burden from meeting emissions target

Partner country:
May looses as it forgoes the “in-house” emission reduction by supporting projects abroad; additional efforts for compliance necessary

(Additional paper on this aspect available)



Warming down…

- If I switch of the light in this room, do I
  - reduce the formation of CO2 emissions from fossil fuel combustion?
    - yes
  - contribute to the reduction of global greenhouse gas emissions?
    - no

Contact

sven.bode@arrhenius.de
www.arrhenius.de
+49 40 4126 8215