Introduction

7th Solar Integration Workshop
International Workshop on Integration of Solar Power into Power Systems
24 - 25 October 2017
Berlin, Germany

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Short Workshop History

Number of Participants of the previous Solar Integration Workshops

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<th>COUNTRY</th>
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* Algeria, Austria, Brazil, China, Cyprus, Finland, France, India, Israel, Korea, Poland, Serbia, Singapore, Sri Lanka, United Kingdom

UPDATED 18 OCTOBER 2017
Impact of Parisian Climate Treaty

2015 PARISIAN CLIMATE TREATY TARGET
GLOBAL WARMING CLEARLY UNDER 2°C
CO₂ BUDGET WORLDWIDE MAX. 890 GIGATONS CO₂

CO₂ BUDGET GERMANY = 10 GIGATONS CO₂ > POWER SECTOR = 4 GIGATONS CO₂
To hit the Paris climate goals without geoengineering, the world has to do three broad (and incredibly ambitious) things:

1. **Global CO2 emissions** from energy and industry have to fall in half each decade. That is, in the 2020s, the world cuts emissions in half. Then we do it again in the 2030s. Then we do it again in the 2040s. Some call this a “carbon law” analogy to Moore’s law.

2. **Net emissions from land use** — i.e., from agriculture and deforestation — have to fall steadily to zero by 2050. This would need to happen even as the world population grows and we’re feeding ever more people.

3. **Technologies to suck carbon dioxide** out of the atmosphere have to start scaling up massively, until we’re artificially pulling 5 gigatons of CO2 per year out of the atmosphere by 2050 — nearly double what all the world’s trees and soils already do.
**2017-2020**

All countries would prepare for the herculean task ahead by laying vital policy groundwork.

By 2020, all cities and major corporations in the industrialized world should have decarbonization strategies in place.

**2020-2030**

Now the hard stuff begins

Coal power is phased out in rich countries by the end of the decade and is declining sharply elsewhere.

In addition, spending on clean energy research increases by “an order of magnitude”.

→ IN 3 TO 13 YEARS
2030-2040 Many countries should now have completely carbon-free grids and have electrified virtually all of their transport, heating, and industry. Cars with internal combustion engines “will have become rare on roads worldwide.” Aircraft will be almost entirely powered by carbon-neutral fuels, say, biofuels or hydrogen. New building construction will be largely carbon-neutral, by using emissions-free methods for steel and concrete or through other techniques. Meanwhile, we’d need to be sucking about 1 to 2 gigatons of CO2 from the air each year, with a heavy R&D effort on expanding that further.

IN 13 TO 23 YEARS

2040-2050 By the early 2040s, major European countries are close to carbon-neutral, and the rest of the world is moving toward that goal by the end of the decade. Electricity grids are nearly entirely carbon-free!

IN 23 TO 33 YEARS

The German Climate Protection Plan 2050

The goal for 2030:

- Power sector
- 1990: 466
- 2014: 358
- 2030: <183
- 2050:

Graph showing a decrease from 1990 to 2014, with a target of less than 183 for 2030, indicating a 51% reduction.
Goals for Germany (for 2030) – Expert Predictions

**PV Germany**
- End 2016: 42.4 GW
- > 2030: 34 to 40 GW Additional PV

**Wind Germany**
- End 2016: 53.81 GW
- > 2030: 42 to 46 GW Additional PV
ENJOY THE WORKSHOP!

Take part in the discussions & read the proceedings.