COMPARISON OF RESULTS WITH PREVIOUS STUDY (OTHER CCS TECHNOLOGY)

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CO-OPERATION IN RESEARCH AND DEVELOPMENT OF CARBON CAPTURE AND STORAGE TECHNOLOGIES
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Previous projects

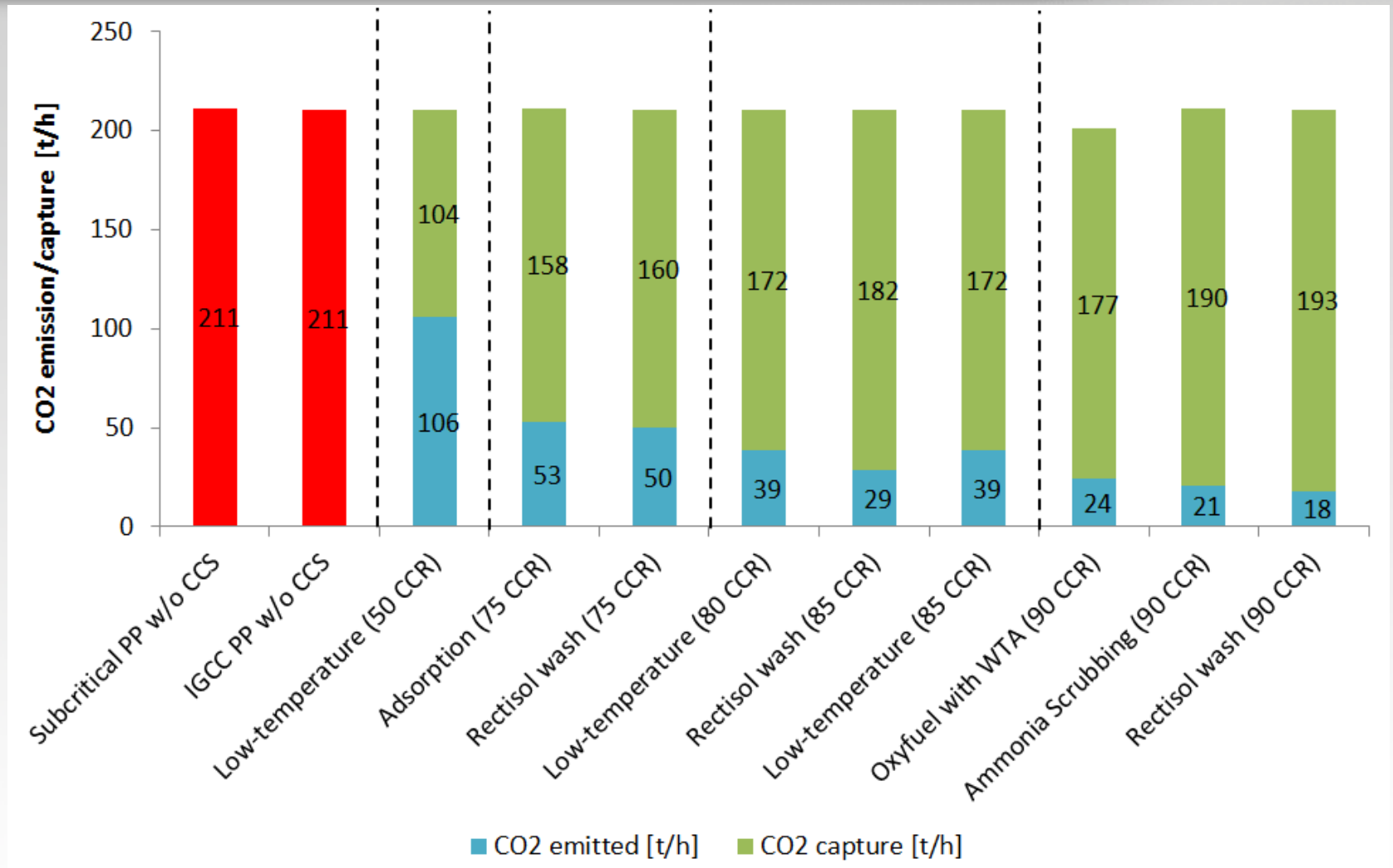
1) FR-TI1/379 „Research and development of methods and techniques for CO_2 capture in fossil fuel power plants and its storage to geological formations in the Czech Republic“
   - Subcritical lignite power plant
     - Oxyfuel with WTA dryer
     - Post-combustion – ammonia scrubbing

2) TA02020205 „Research and development of methods and techniques for CO2 capture from flue gas and design of technical solution for the Czech Republic“
   - Subcritical lignite power plant
     - Post-combustion – adsorption

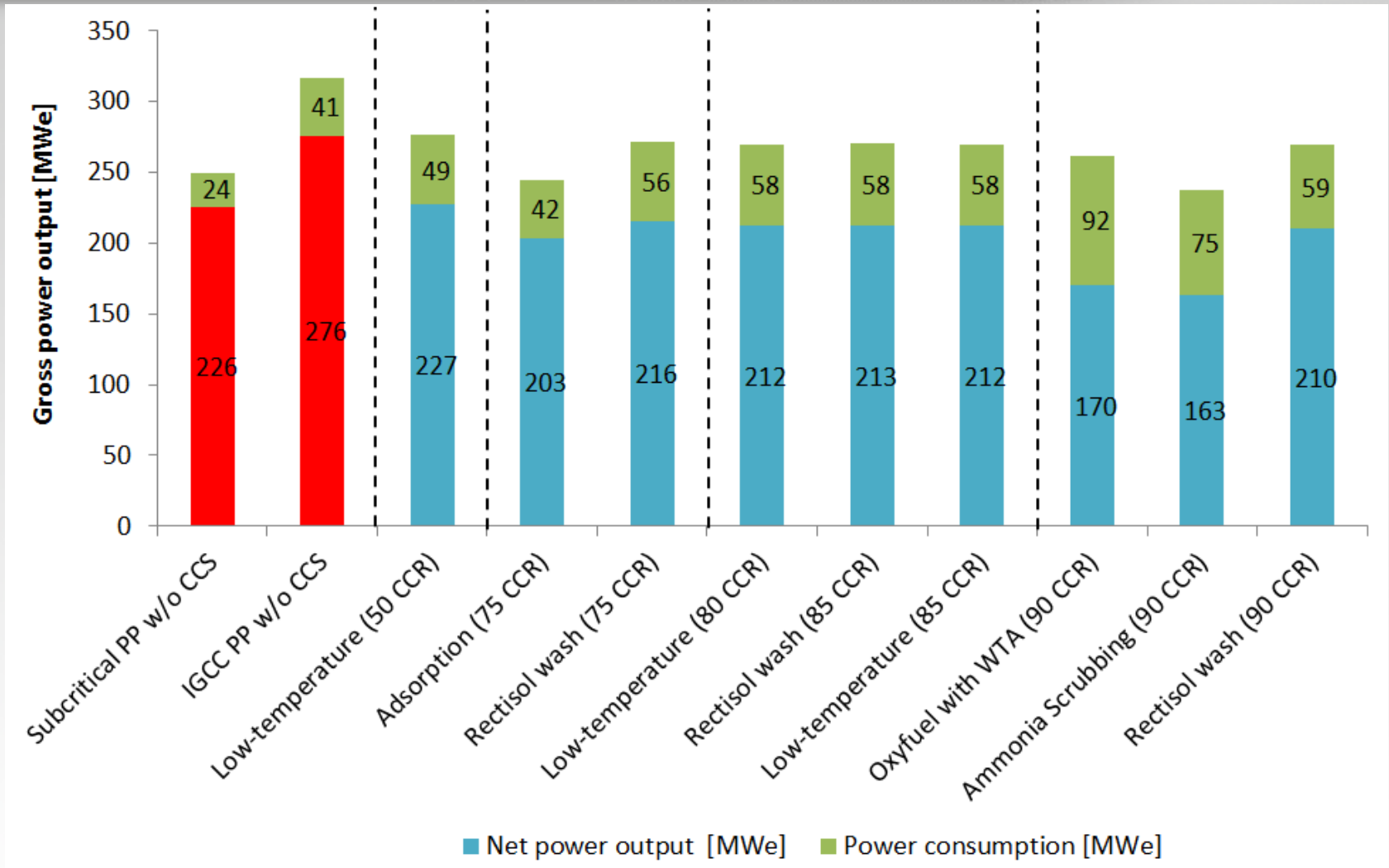
Studies

Parameters	FR-TI/379	TA02020205	NF-CZ08-OV-1-003
Power plant	Subcritical power plant		IGCC plant
Fuel	LHV = 9.75 MJ/kg, W=31%, A=30%, S=3%		LHV = 16.50 MJ/kg, W=31%, A=13%, S=1.3%
CCS technology	Oxyfuel, post combustion – ammonia scrubbing	Post-combustion adsorption	Pre-combustion – solvent, low-temperature, membrane
CCR	90%	75%	85% (50 – 90%)
Study term	2013	2015	2016

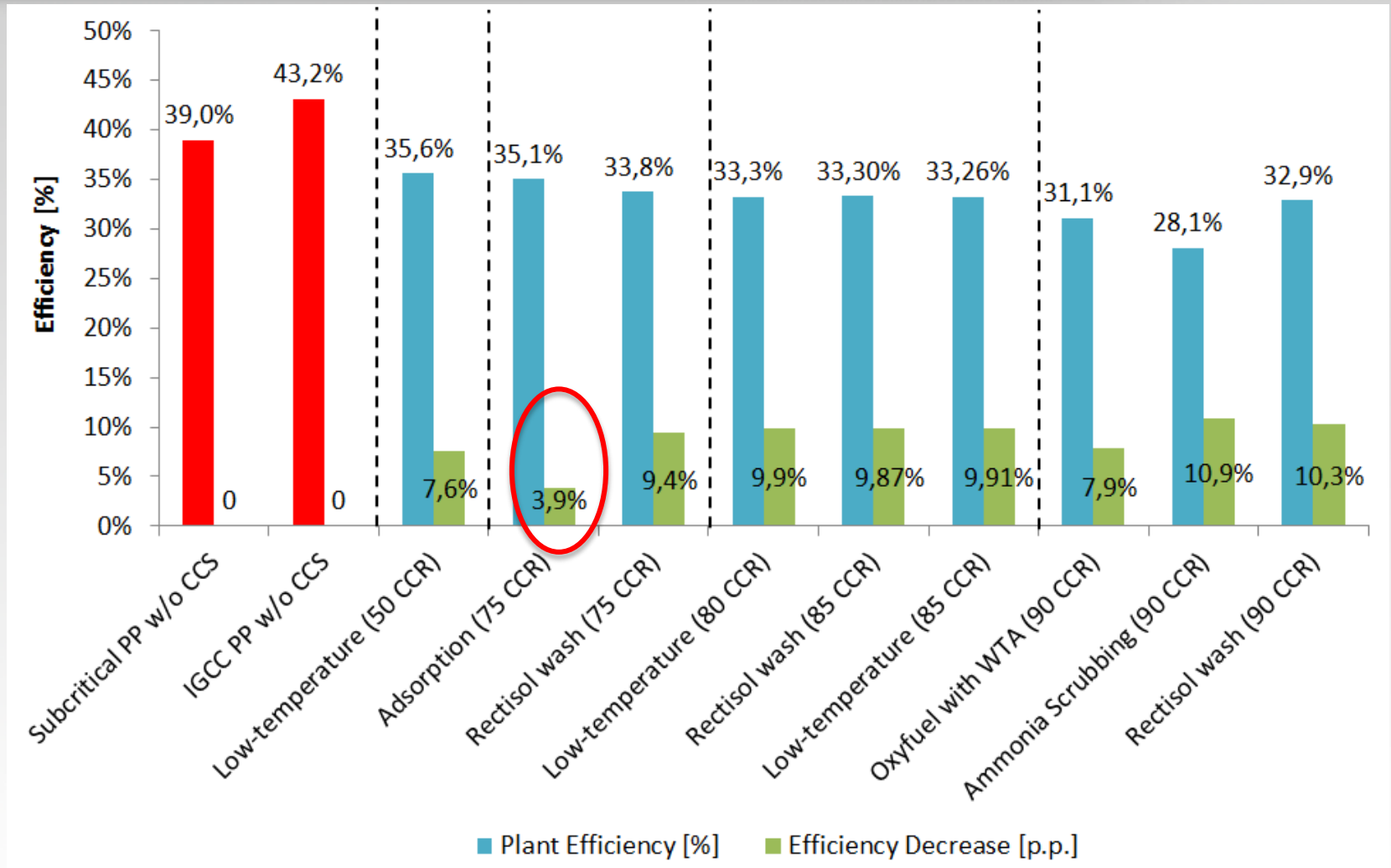
CO2 emissions



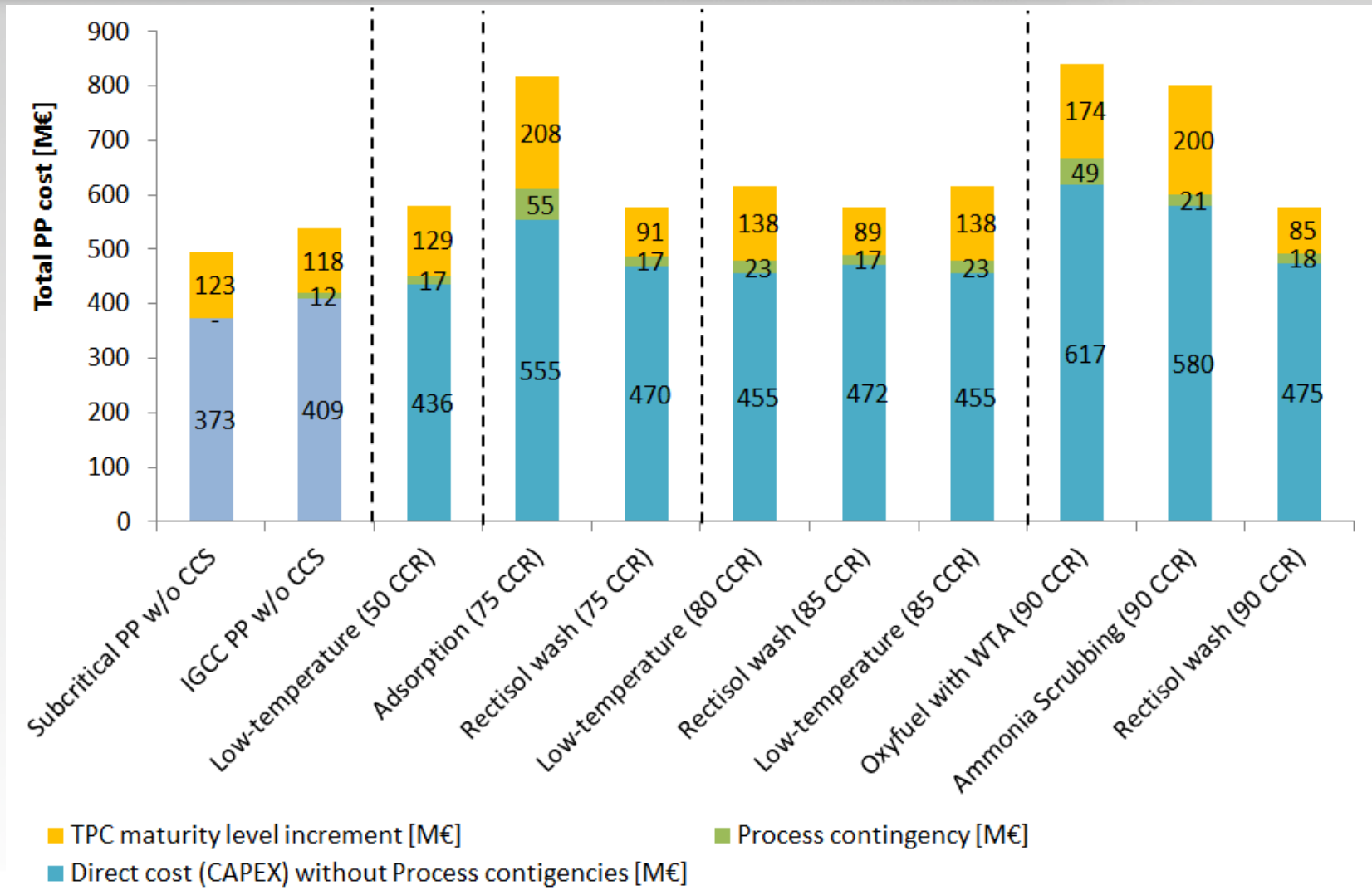
Technical Impacts
- Power output and consumption



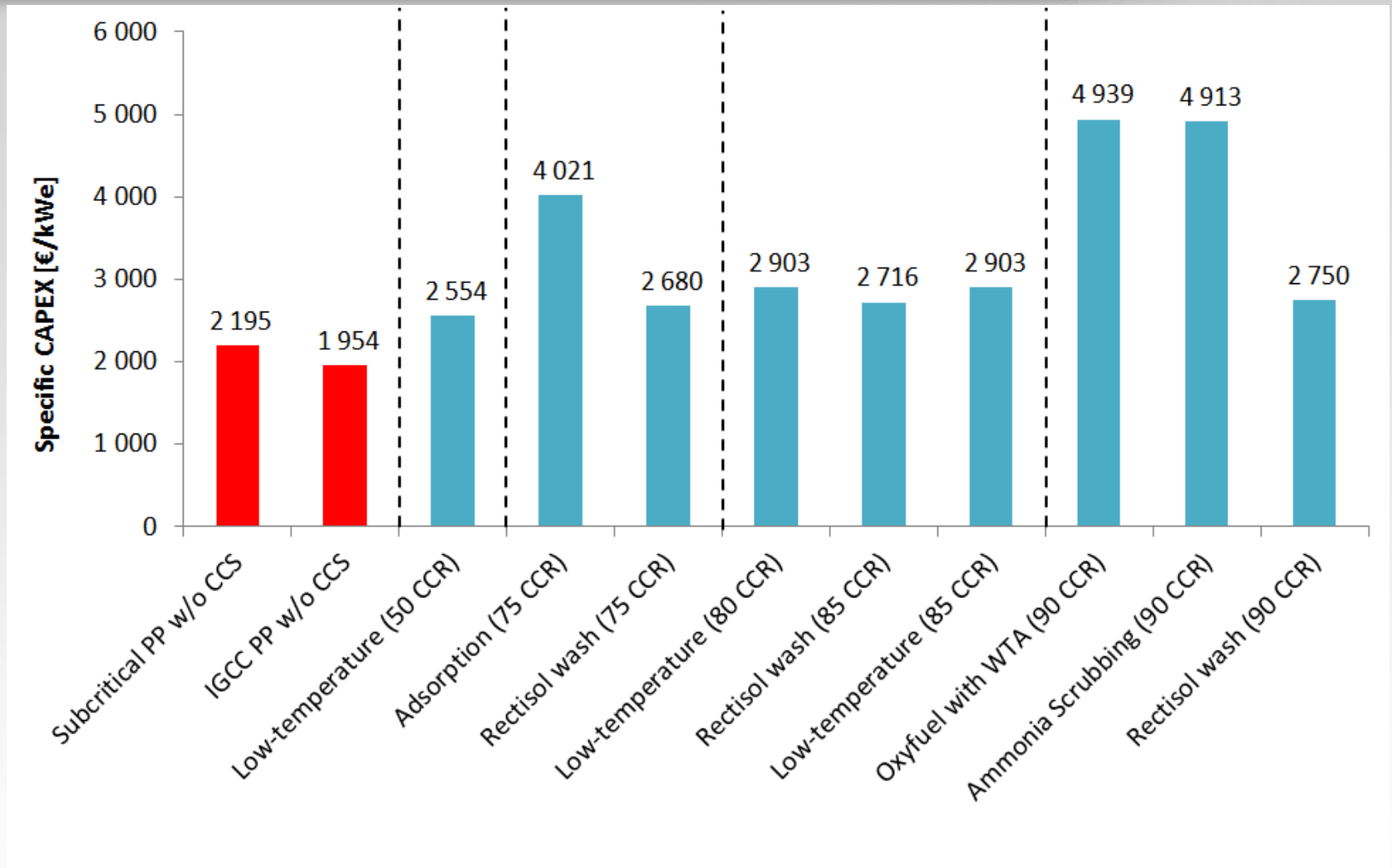
Technical Impacts
- Efficiency, Efficiency decrease



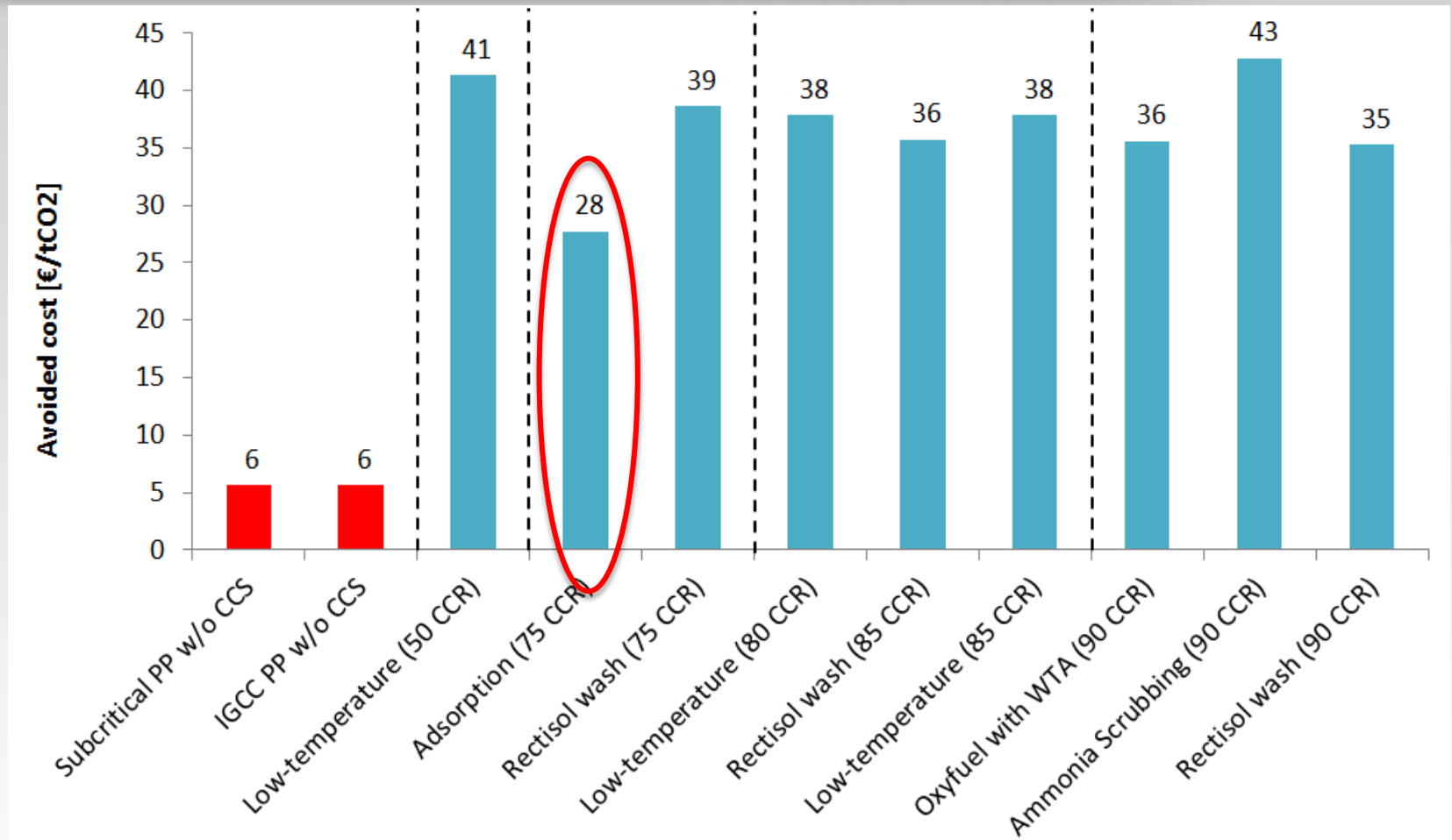
Economic Impacts - CAPEX



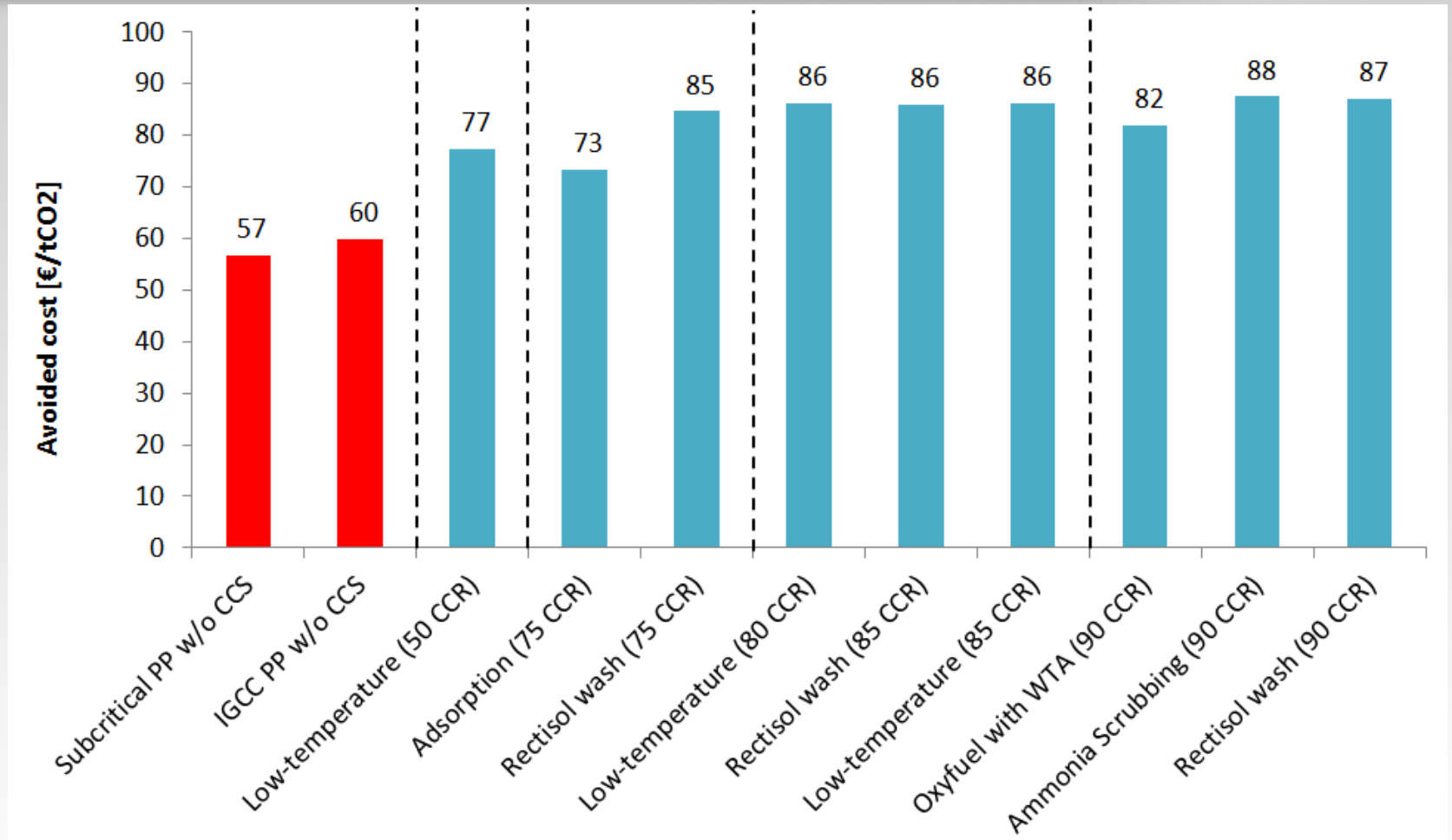
Economic Impacts - Specific CAPEX



Economic Impacts - Avoided cost

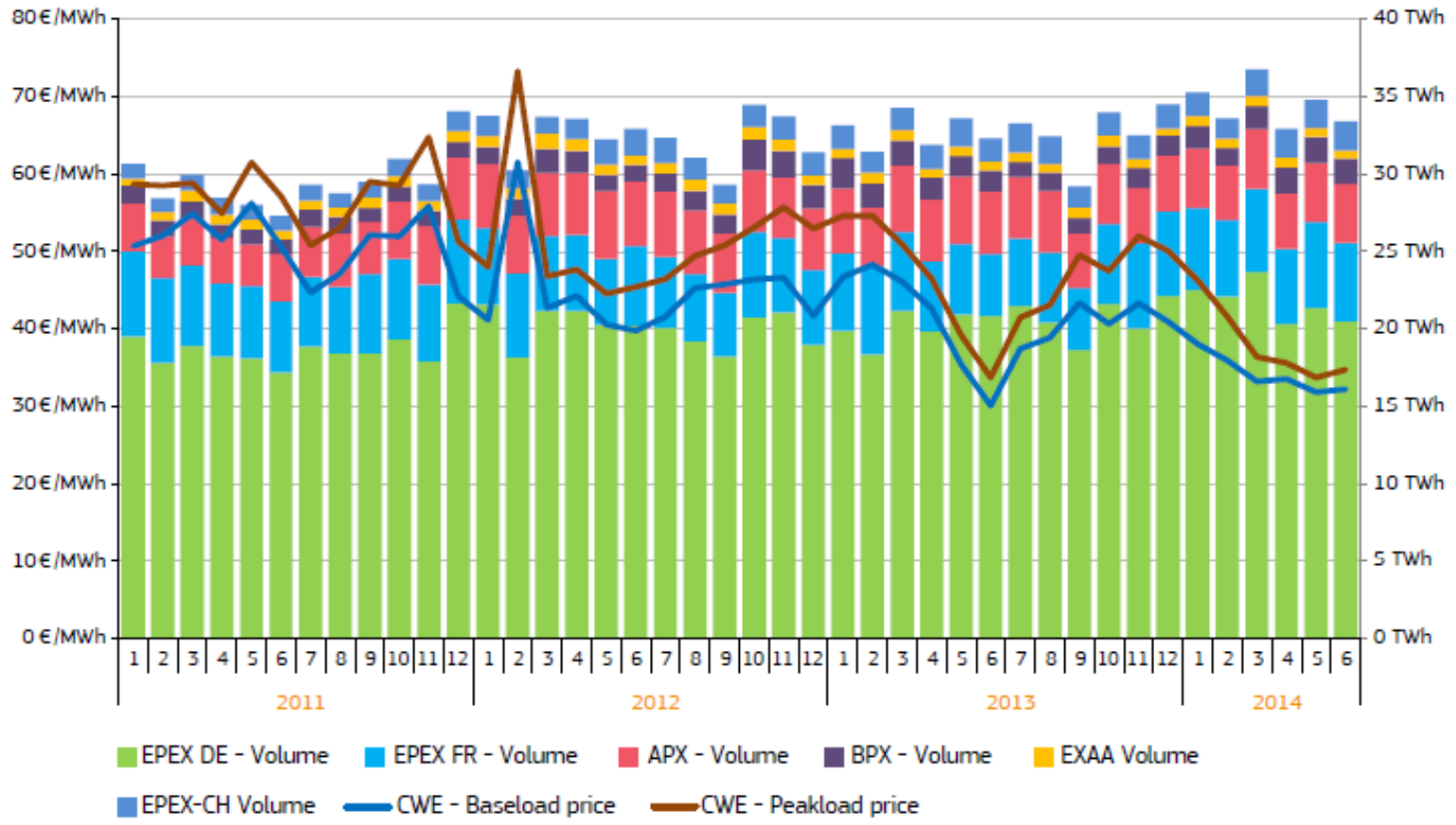


Economic Impacts - LCOE



Economic Impacts
- Electricity market (2011-2014)

FIGURE 14 – MONTHLY TRADED VOLUMES AND PRICES IN CENTRAL WESTERN EUROPE



https://ec.europa.eu/energy/sites/ener/files/documents/201410_q3-4_quaterly_report_electricity_market.pdf

Conclusions/Future recommendation

Path to future CCS

- flexible CCS technology (maximize Power Industry to participate in the research and development)
- CCS + CO2 utilization
- alteration the position of fossil fuels generally and in electricity market
- public support/state support

Path to reducing LCOE

- reducing CAPEX
  - => greater efforts to commercialize technology
- multiple products (not only electricity, heat, steam, ash, sulphur acid etc.) => one of the benefit – pre-combustion (IGCC generally)
- CO2 market => (maximize utilization of separated CO2)

THANK YOU FOR YOUR ATTENTION

More information about project:

- **project website:**
  - www.czech-norway-pilotccs.cz
- **project facebook:**
  - https://www.facebook.com/Czech-Norway-Pilot-CCS-1664816420432846**/**
- **project email:**
  - nfccs05@gmail.com