

# Different Measures for the same target – Comparing emission trading versus emission performance standards

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Sina Wartmann, Ecofys Germany GmbH  
s.wartmann@ecofys.de

## Basis of the Comparison

- Study from January 2009 on behalf of the European Climate Foundation
- Aim: quantify impacts of various emission performance standard scenarios for the EU power sector
- 18 Scenarios, timeframe 2005-2030
- Compared to Reference Scenario based on EU 20/20/20 target

To keep in mind:

- Comparison with EU-ETS targets not included in study
- Study is aimed at impacts on the emission side and does not address technical or economical feasibility

# Reference Scenario

Basis: EU 20/20/20 Target:

- 20 % decrease in GHG emissions relative to 1990
- 20 % decrease in energy consumption relative to business-as-usual
- 20 % share of renewable energy

to be met in 2020.

To keep in mind:

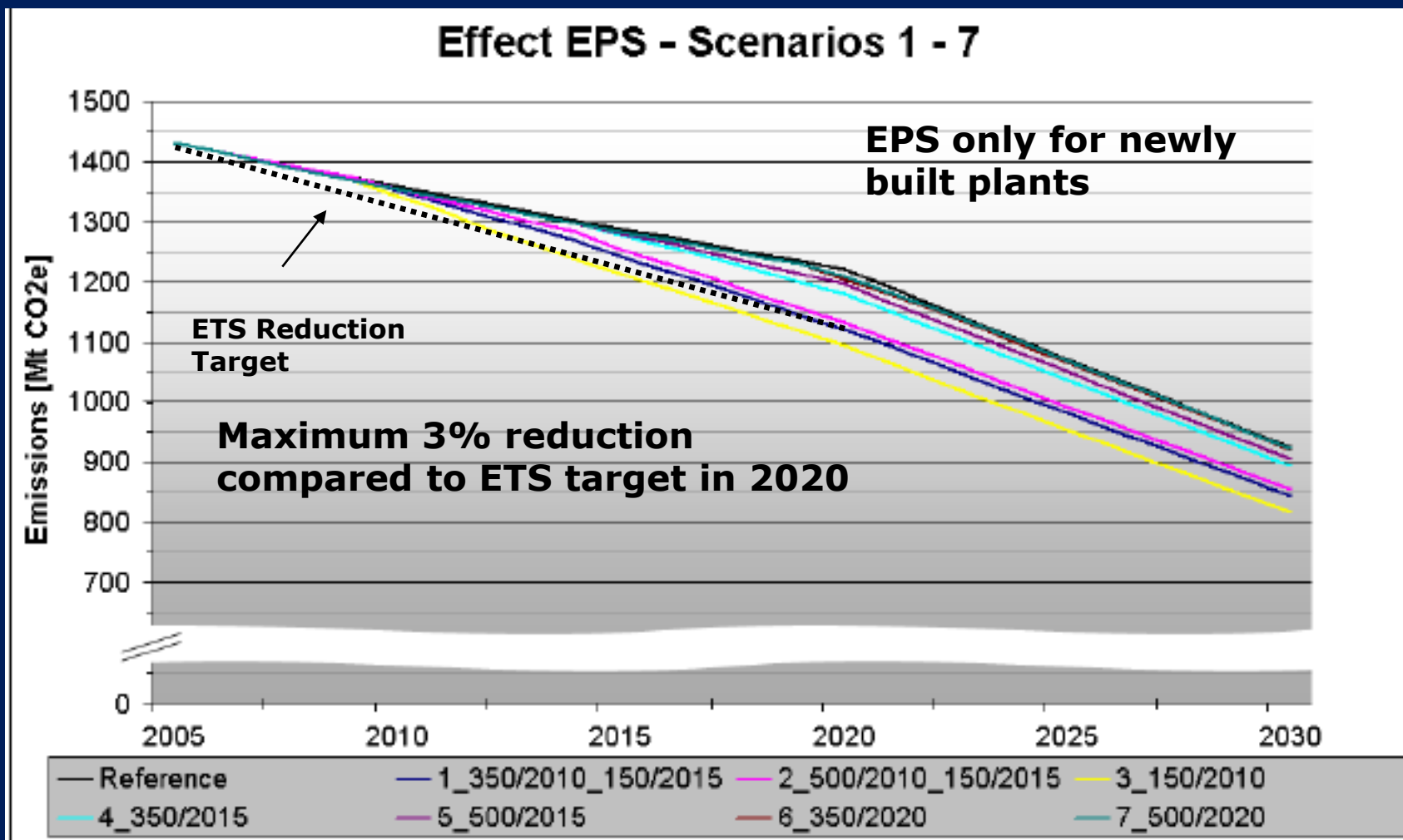
- Revised ETS Directive only available in draft format when study was finalized -> 20/20/20-target is less stringent than EU-ETS reduction requirement
- Study assumes German nuclear phase-out to take place – plans might be revised due to recent political developments

# EPS Scenarios

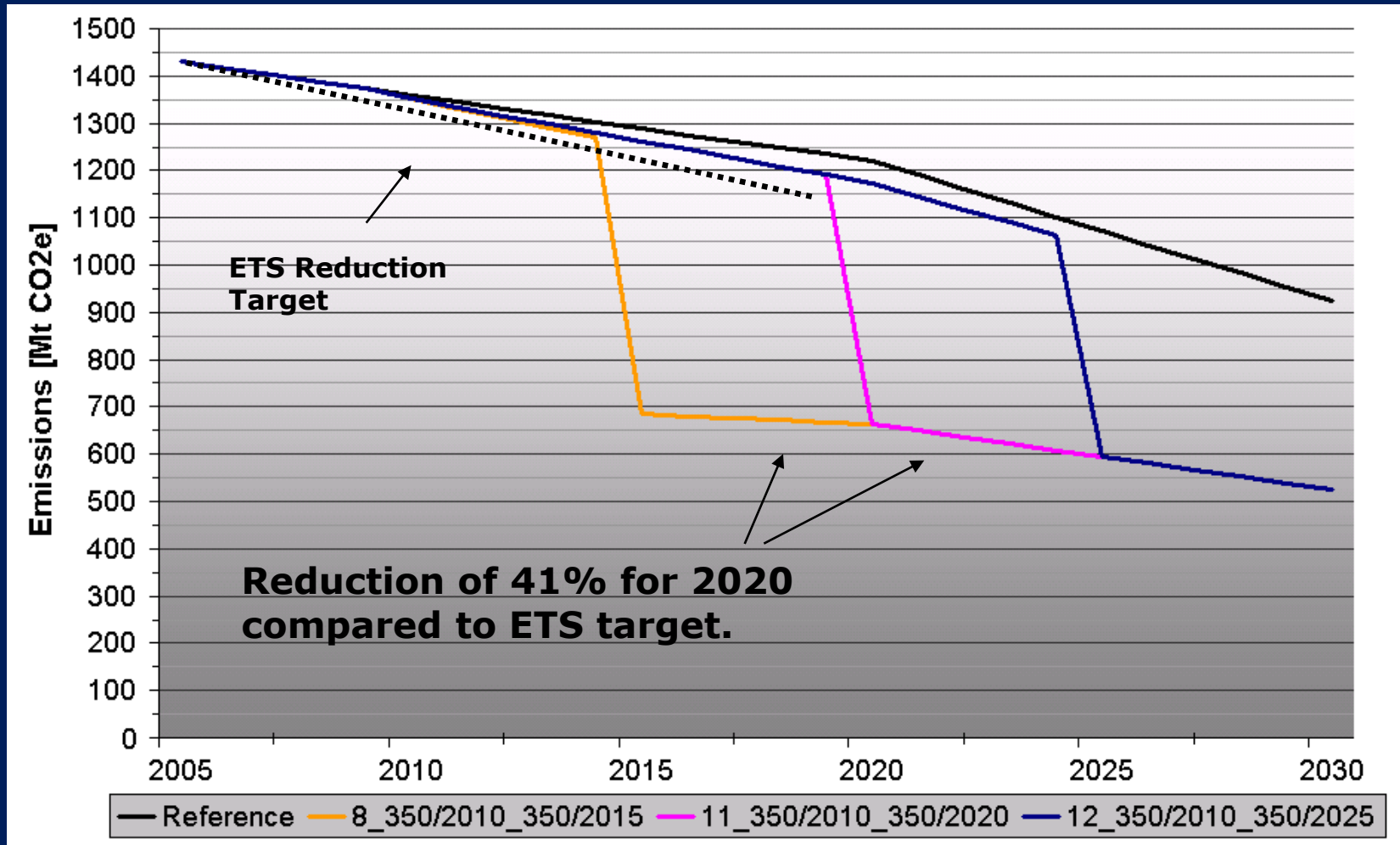
Development of 18 scenarios, varying the following parameters:

- EPS level: 500 gCO<sub>2</sub>/kWh, 350 gCO<sub>2</sub>/kWh, 150 gCO<sub>2</sub>/kWh
- Year of introduction: 2010, 2015, 2020, 2025, including staged and non-staged approaches as well as with or without retrofitting
- Scope: only newly built plants, existing and new plants
- Plant capacity: all capacities, plants > 100 MW, > 200 MW, > 300 MW

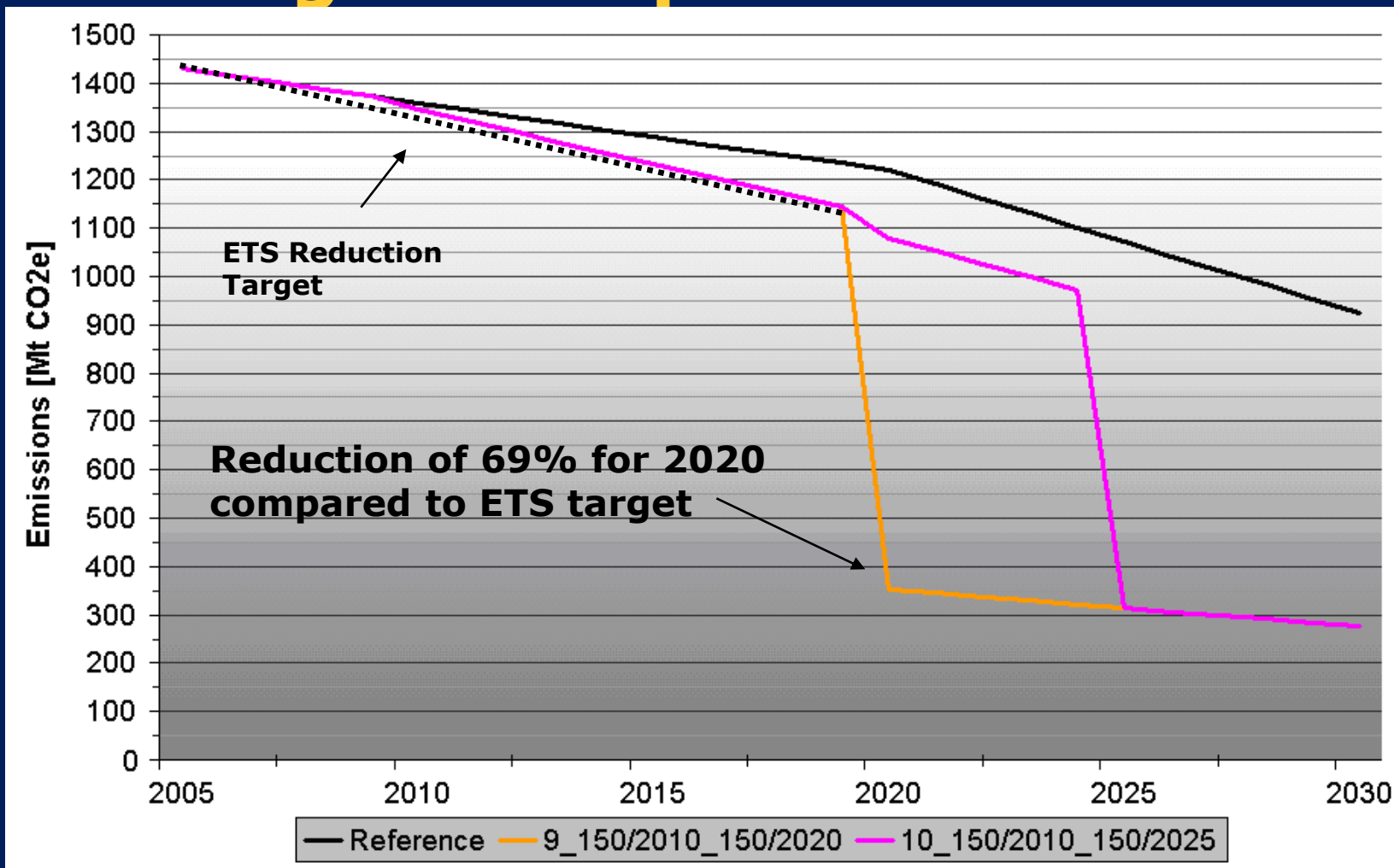
# Scenarios considering only new plants



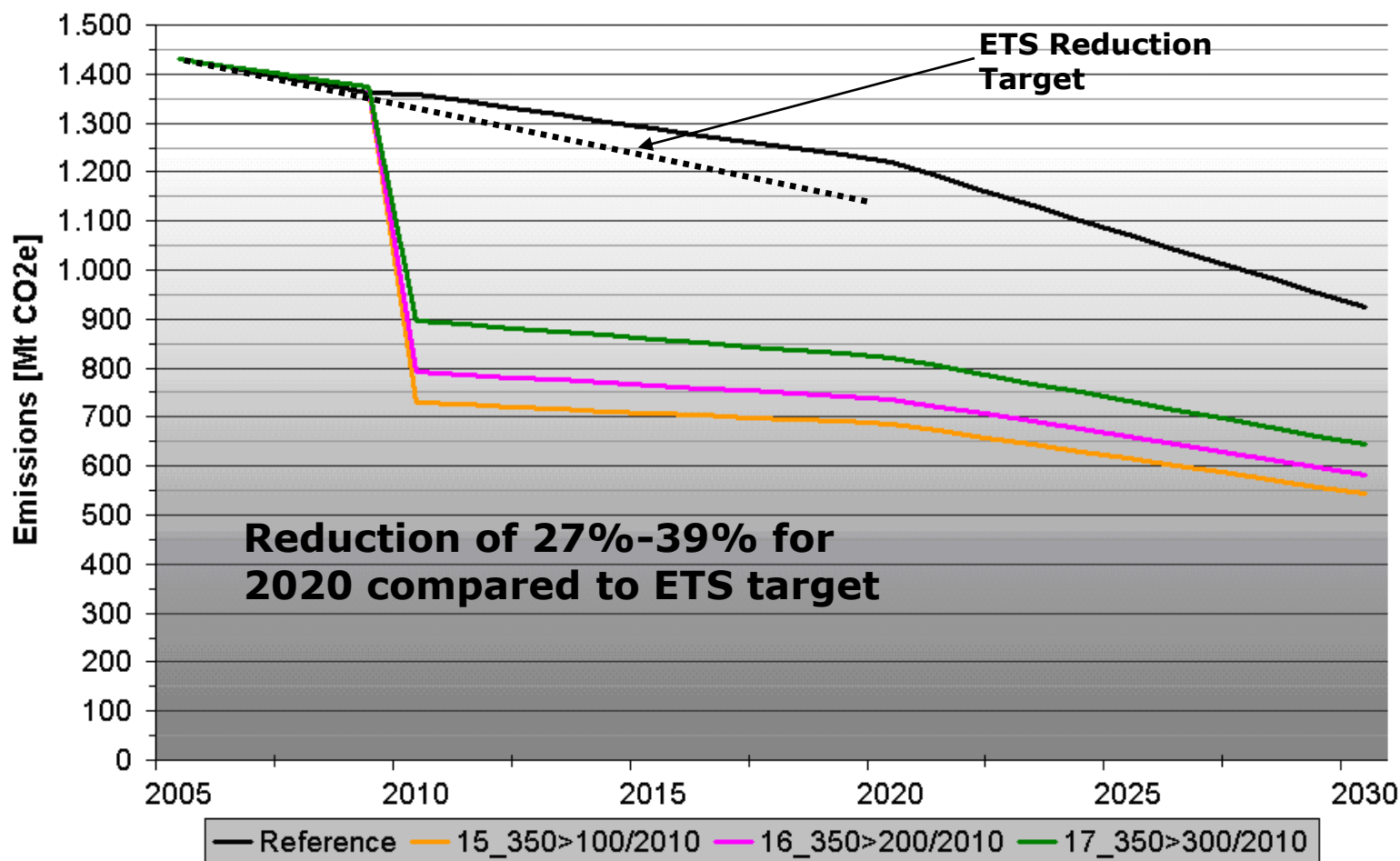
# Staged approaches for existing + new plants I



# Scenarios on staged approaches for existing + new plants II



# Variation Capacity Limits



## Key Findings (General)

- Of course: Earlier introduction, more stringent EPS and higher scope result in higher reductions
- Reductions of up to 69% compared to 2020 ETS target possible
  - > EPS approach could support and complement ETS
- Substantial reductions beyond ETS target only achieved if existing installations are included
  - > Technical retrofitting options to be explored
- Earlier introduction of lower EPS level results in higher reductions than later introduction of more stringent level
  - > Introduce EPS as early as possible

## Key Findings II (General)

- Over 70 % of the reduction potential lies with installations >300 MW
  - > Cost-efficiency option: Focus on installations with larger capacities
- Staged approaches seem best suited to cover needs of achieving substantial emission reductions (wide scope, early introduction, stringent EPS) as well as
  - Availability of technologies (e.g. CCS)
  - Cost-efficiency
  - Security of supply

## Key Findings (CCS related)

- An EPS level of 350 or 150g CO<sub>2</sub>/KWh could support widespread introduction of CCS technology
- Focus on large capacities supportive to CCS
- Staged approaches supportive CCS

### Open questions:

- When is a general availability of CCS for all newly built plants to be expected (e.g. reg. transport infrastructure)?
- Cost-related feasibility
- Can a sufficient share of existing plants be retrofitted with capture technology?

**Thank you for your attention!**

**For Questions:  
Sina Wartmann  
Ecofys Germany GmbH  
[s.wartmann@ecofys.com](mailto:s.wartmann@ecofys.com)**



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