Russian emission scenarios

CENTER FOR CLIMATE CHANGE AND SUSTAINABLE ENERGY POLICY

CENTRAL EUROPEAN UNIVERSITY

Aleksandra Novikova (CEU)
Anna Korppoo (FIIA)

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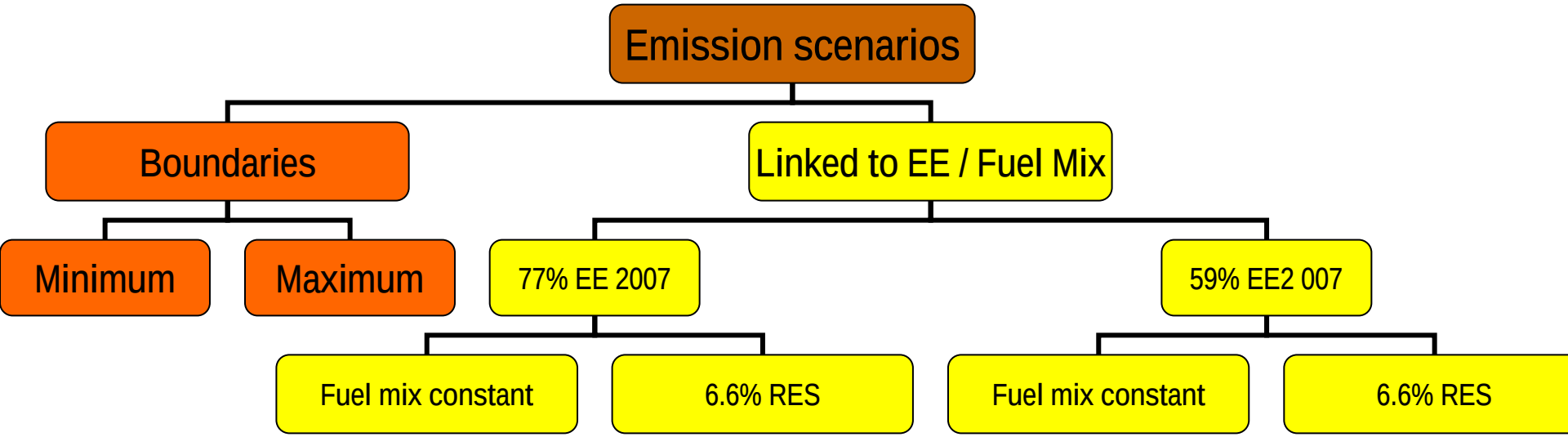


- Boundary scenarios
  - Maximum scenario: frozen-efficiency
  - Minimum scenario: the technical potential for CO2 mitigation is realized
- Policy-linked scenarios
  - Energy efficiency – Concept of the Long-Term Social and Economic Development
    - Pessimistic scenario – efficiency in 2020 equals 77% of the 2007 level -> corresponds to 1%/yr. (autonomous energy efficiency improvement)
    - Innovation scenario - efficiency in 2020 equals 59% of the 2007 level
  - Fuel mix - Energy Strategy of Russia….next slide

Fuel mix structures considered, 2006 and 2020

Fuels	2006 balance	Positive scenario, 2020
Coal	17,2%	18,5%
Liquid	18,0%	17,2%
Natural gas	54,5%	47,1%
Nuclear and hydro energy	9,1%	10,5%
Other innovation sources	1,3%	6,6%

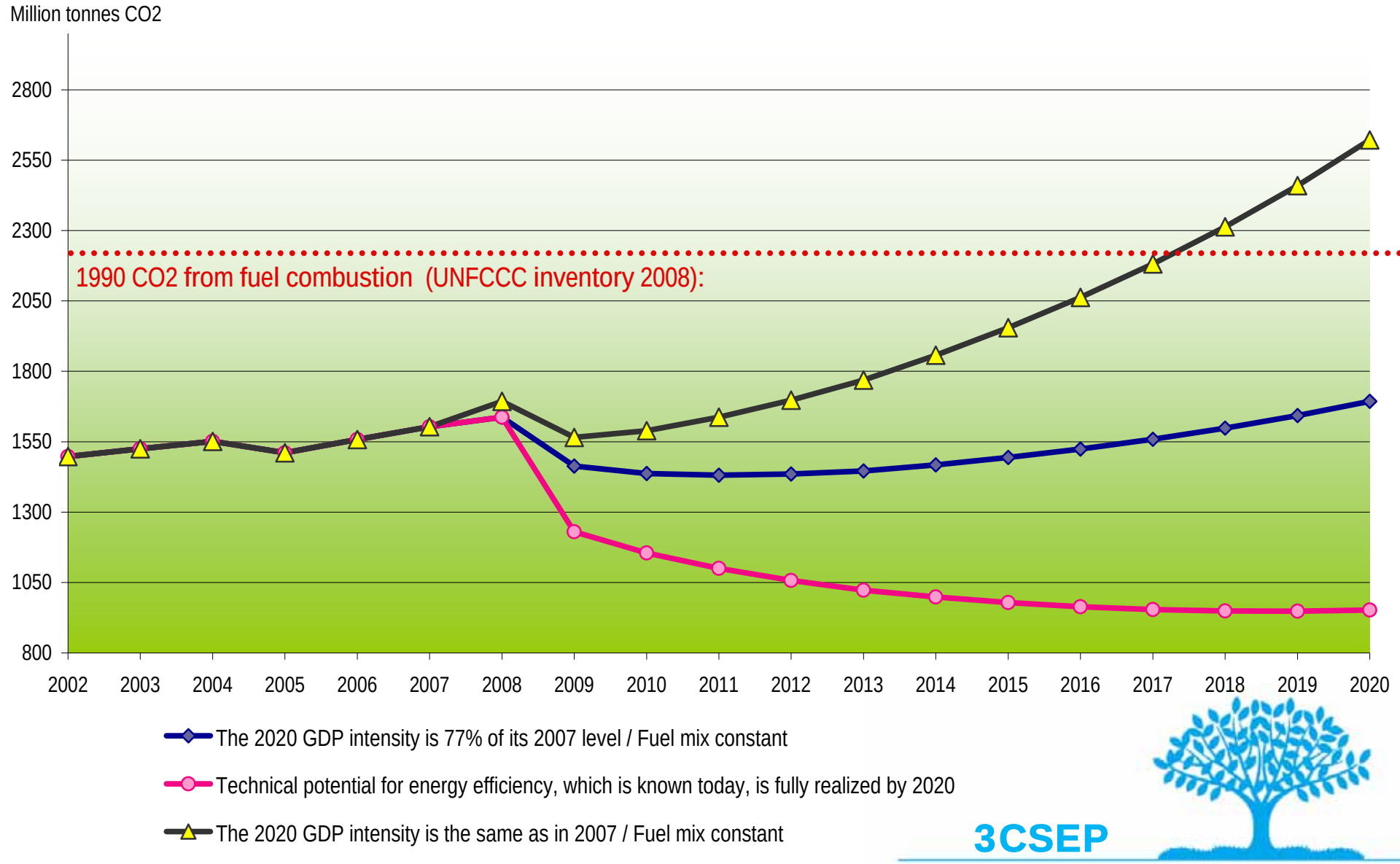
Sources: IEA (2009) and MINPROMTORG (2007).

Modelling assumptions and limitations

- Modelling approaches
  - Boundary storylines->bottom-up sectoral approach
    - Sectoral efficiencies
  - Policy scenarios->top-down approach modelling the whole economy
    - Overall economic efficiency
- Data source
  - Highly uncertain
  - IEA balances, GOSKOMSTAT, EIA DOE US, FIIA
- GDP forecast
  - World economic Outlook Oct 2009
  - Linked to the oil price forecast

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GDP growth rates	-6.0%	0.5%	3.4%	4.5%	4.8%	5.0%	5.3%	5.5%	5.8%	6.0%	6.3%	6.6%
Assumptions	WEO						+2% GDP /each incremental 10$ oil P					
Oil prices	57.0	58.1	59.3	60.5	61.7	62.9	64.2	65.5	66.8	68.1	69.5	70.9

CO_2 emissions associated with fuel combustion Russia 2002 - 2020



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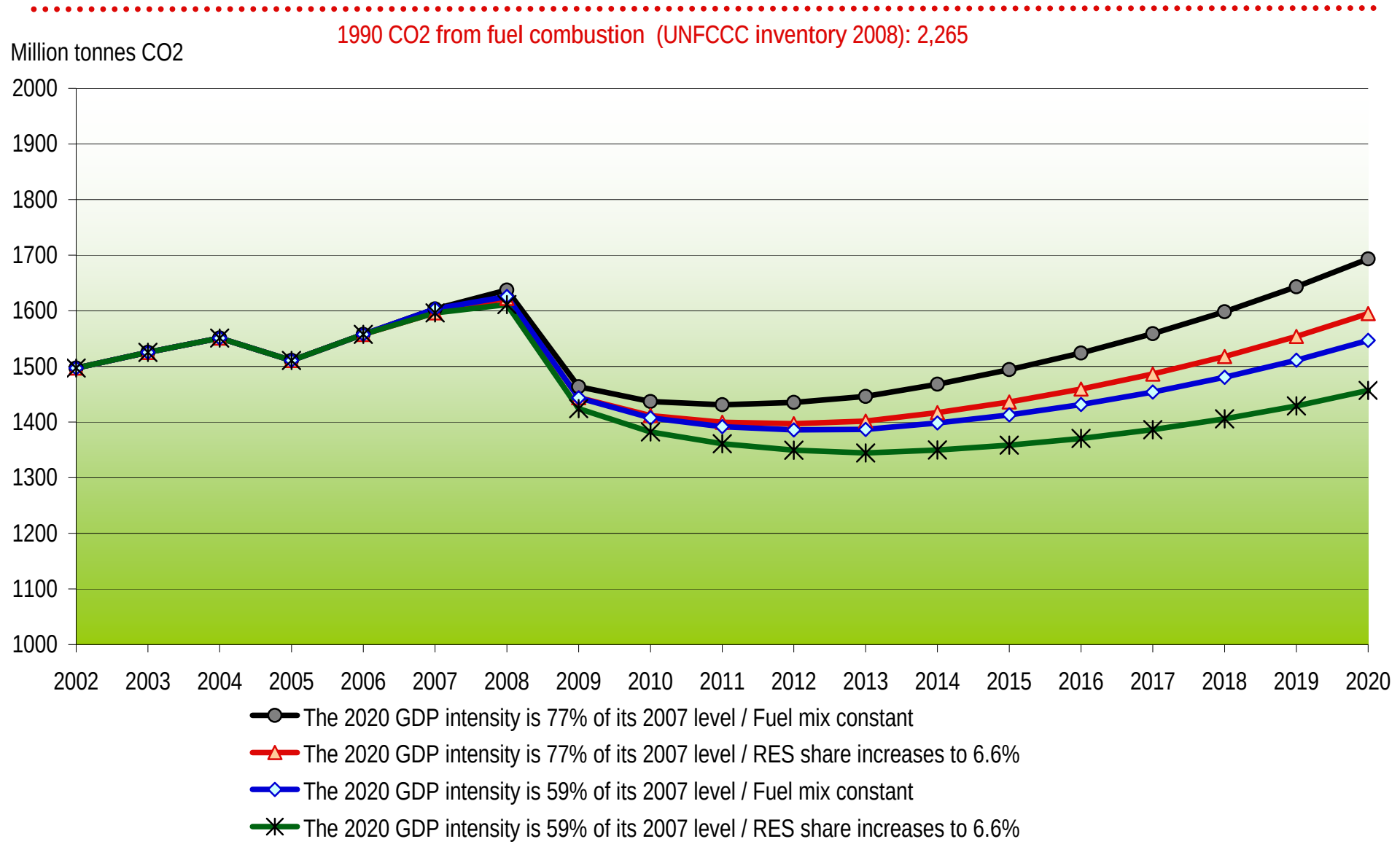
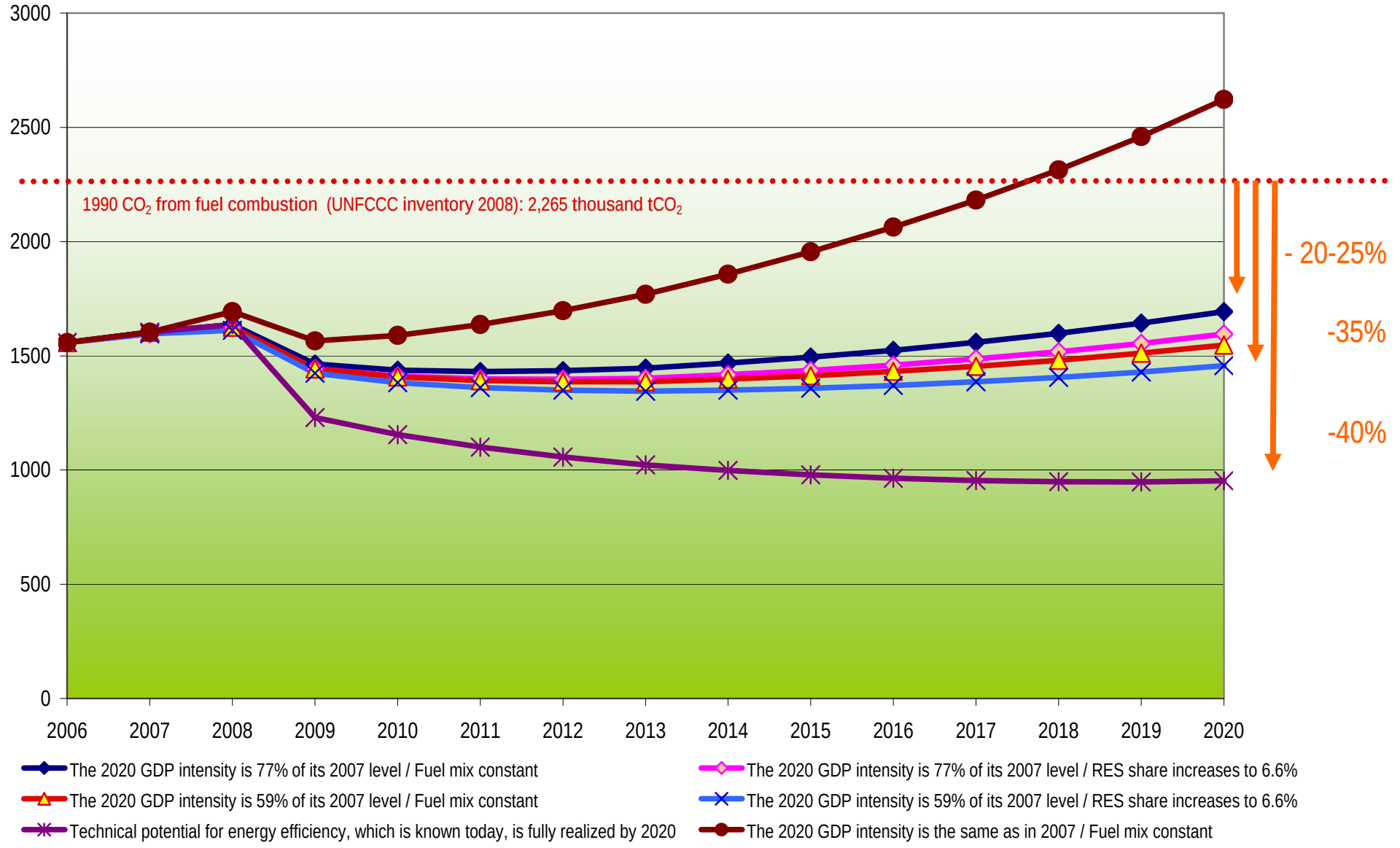
Scenarios of CO2 emissions to 2020 for different efficiency and fuel mix cases



Implications for emission reduction targets



Research limitations

- Uncertain data
- Modelling attempts are widely criticized nevertheless modelling is the only known tool to predict the future
- A very simplified approach is used
  - On one hand, the model is transparent
  - On another hand, the disadvantage is that some important factors may be overlooked
- The results should be used and interpreted with caution
- Uncertain assumptions
  - The world 2009 crisis
  - Oil price
  - GDP growth
- No account for implementation costs

Thank you!

- Comments are welcome!
- Emails:
  - Aleksandra Novikova: novikovaa@ceu.hu
  - Anna Korrpoo: anna.korppoo@upi-fiia.fi

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