Comparable efforts between Annex I countries based on principles proposed by the EU and Japan

AWG-KP workshop on issues relating to the scale of emission reductions to be achieved by Annex I Parties
Bonn, Germany, 27 March 2009

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Studies on effort sharing

- **Factors underpinning future action – 2007 Update**
  Höhne, Phylipsen, Moltmann, 2007
  Ecofys for UK Department for Environment Food and Rural Affairs
  www.fiacc.net/data/fufa2.pdf
- **Distribution of emission allowances under the Greenhouse Development Rights and other effort sharing approaches**
  Höhne, Moltmann, 2008
  Ecofys report for Heinrich Böll Foundation
  http://www.boell.de/downloads/ecology/GDR_report_for_HBS_2008-10-13_endv_2.pdf
- **Exploring comparable post-2012 reduction efforts for Annex I countries**
  Den Elzen, Höhne, van Vliet, Ellermann, 2008
  MNP and Ecofys for VROM NL http://www.rivm.nl/bibliotheek/rapporten/500102019.pdf
- **Ongoing work**

- **Side event: Monday 30 March, 18.00, Room König**

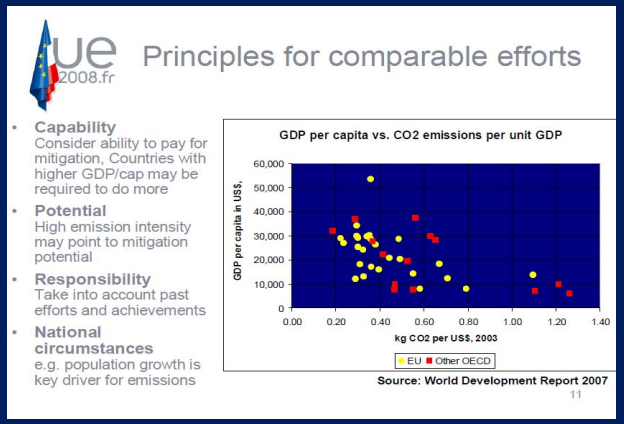
Content

- Effort sharing principles proposed by EU and Japan in Poznan
- Our interpretation of the principles into an effort sharing approach
- Results
- Conclusions

Our approach

- Based on internationally acknowledged data
  (UNFCCC technical paper on mitigation potential, FCCC/TP/2008/10)
- Simple and transparent
- Starting point: emission level in 2006 (not 1990, not Kyoto targets)

Our approach based on EU principles



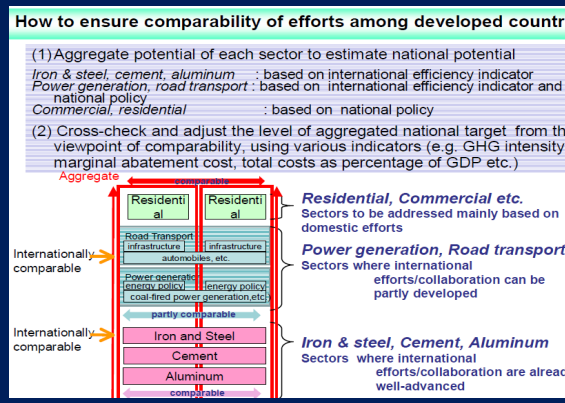
- Four indicators:
  - Capability: GDP / cap
  - Potential: GHG / GDP
  - Responsibility: % change in emissions (1990 -2006)
  - National circumstances: projected population growth (2006 - 2020)

- E.g. countries with GDP/cap 10% higher than average reduce 1% more than average

Our approach based on Japanese principles

Energy industries / power generation

- Convergence of CO_2/kWh



Industry

- Convergence of energy efficiency index

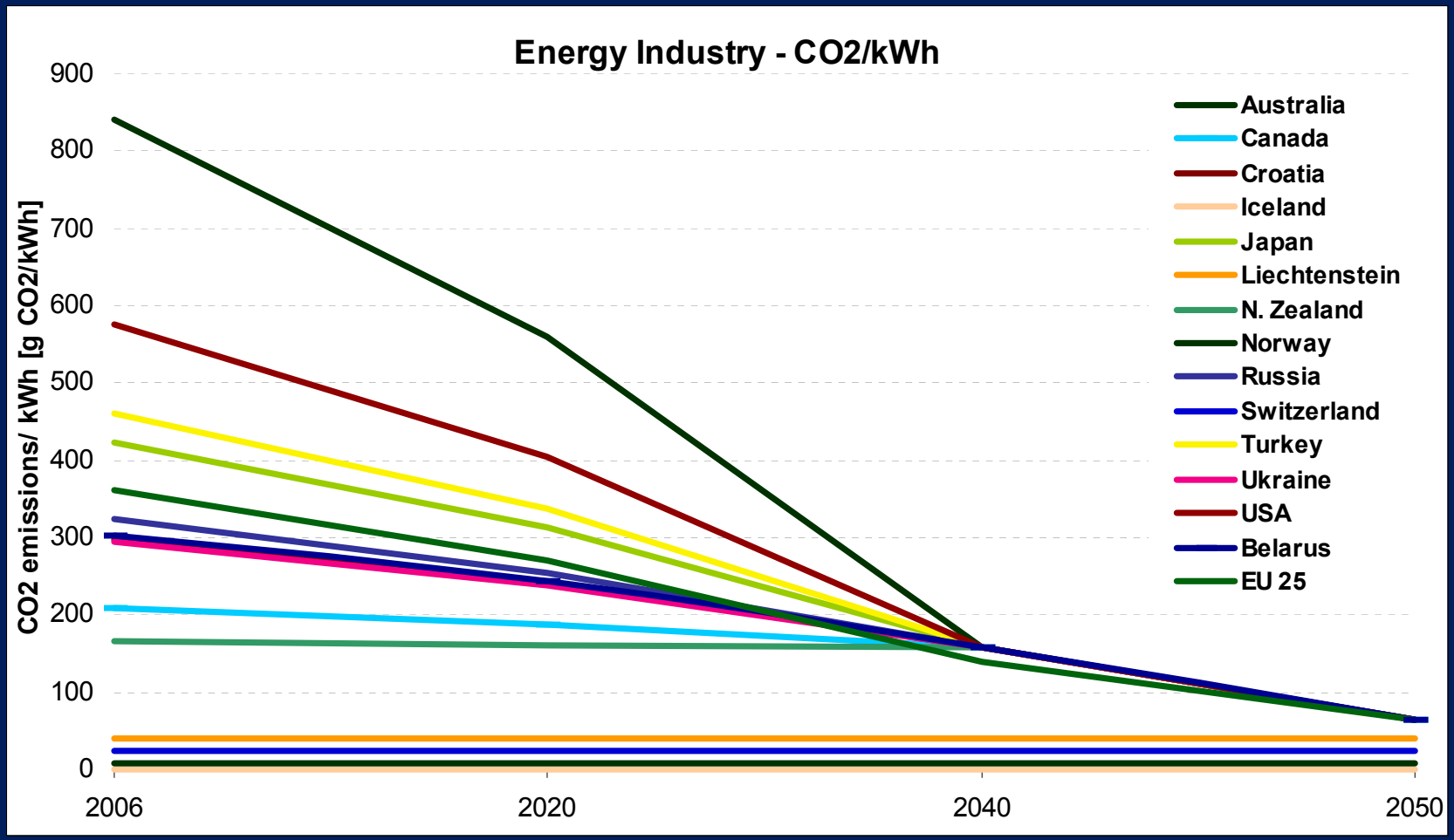
Transport

- Convergence of GHG emissions per capita
- Adjusted for population density
  (target level is 1% higher if population density is 10% lower than average)

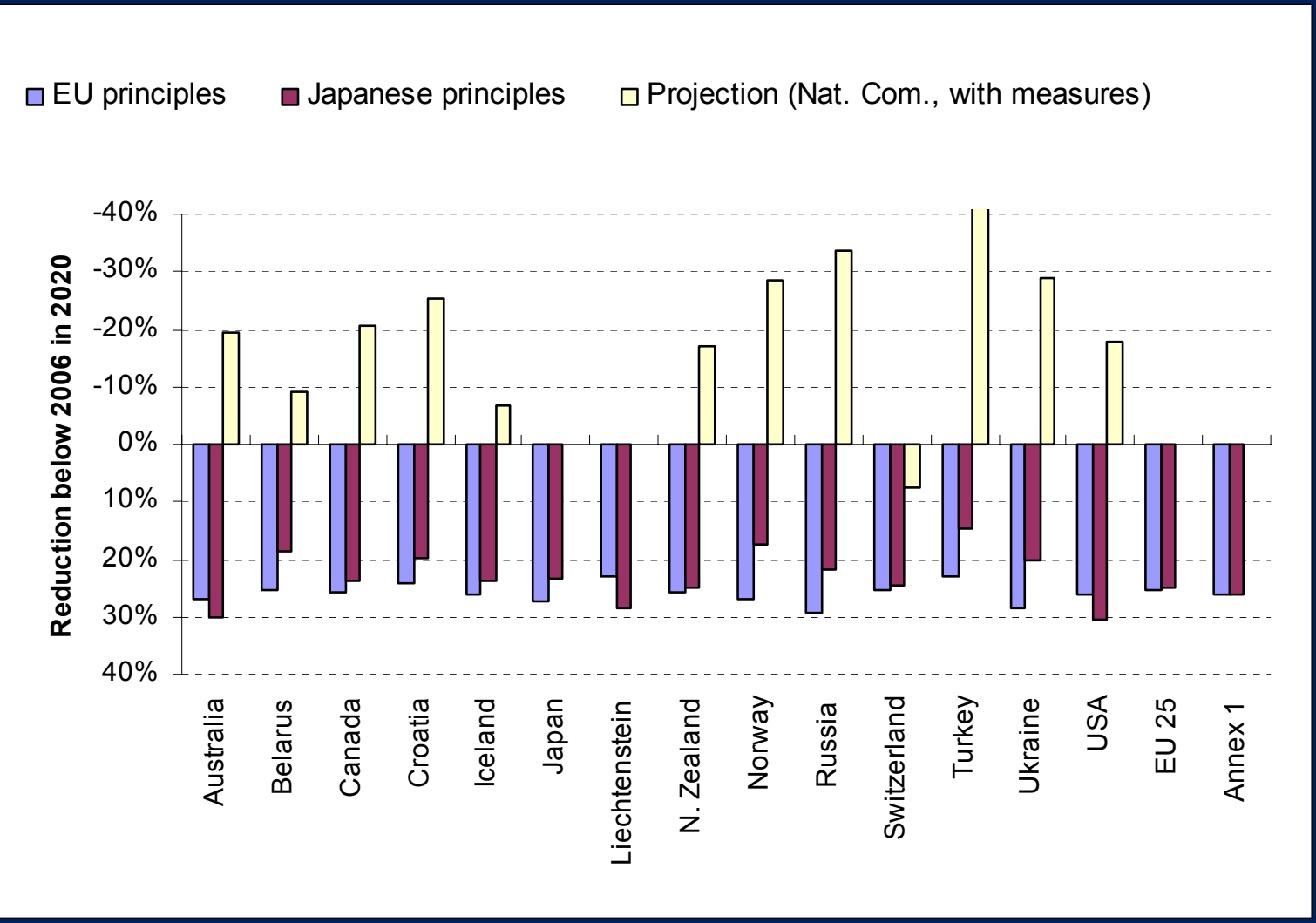
Commercial / Residential

- Convergence GHG emissions per capita
- Adjusted for heating degree days
  (target level is 1% higher if heating degree days is 10% higher than average)

Convergence of energy intensity in energy industries

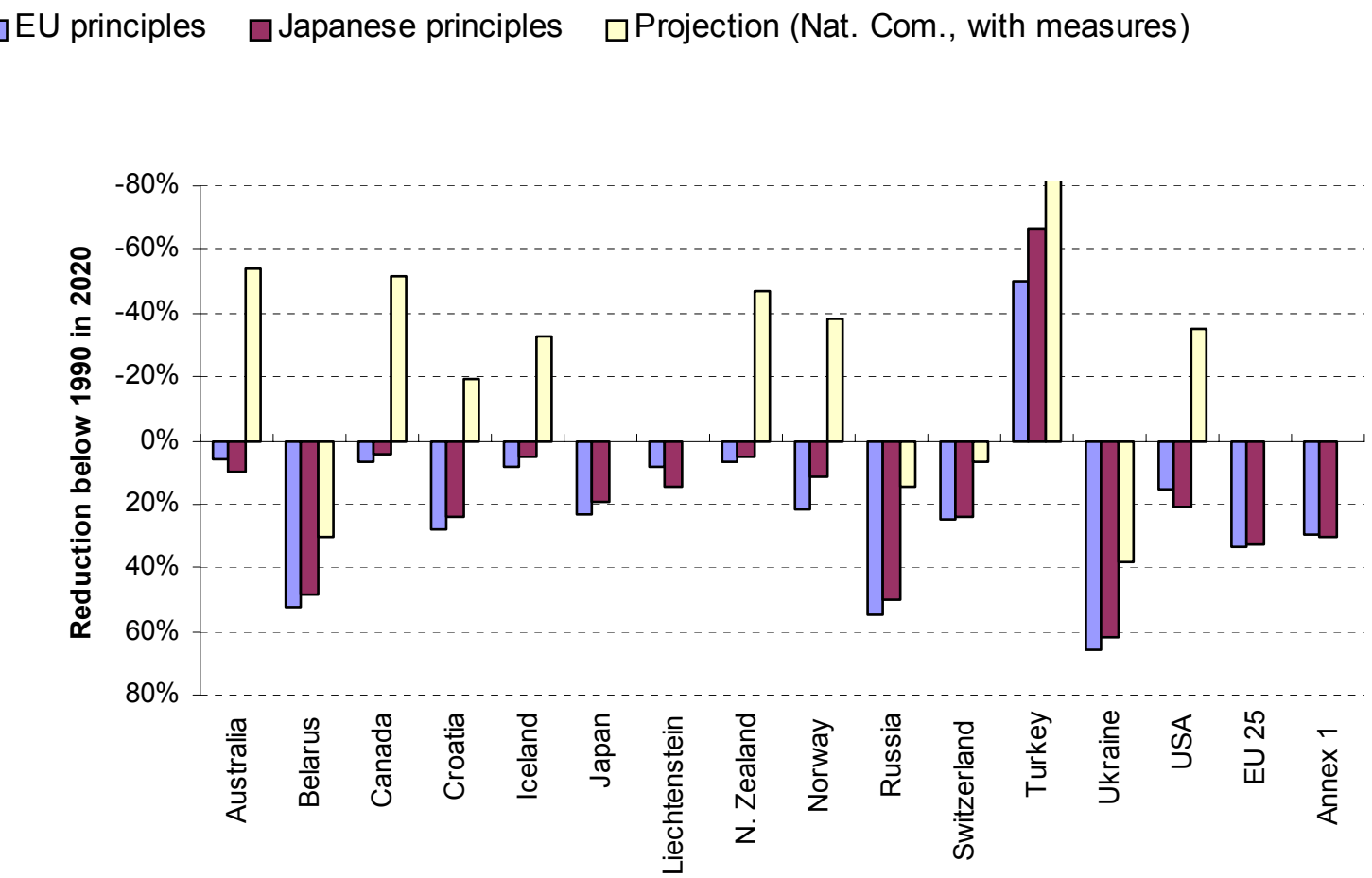


Emission reductions in 2020 below 2006



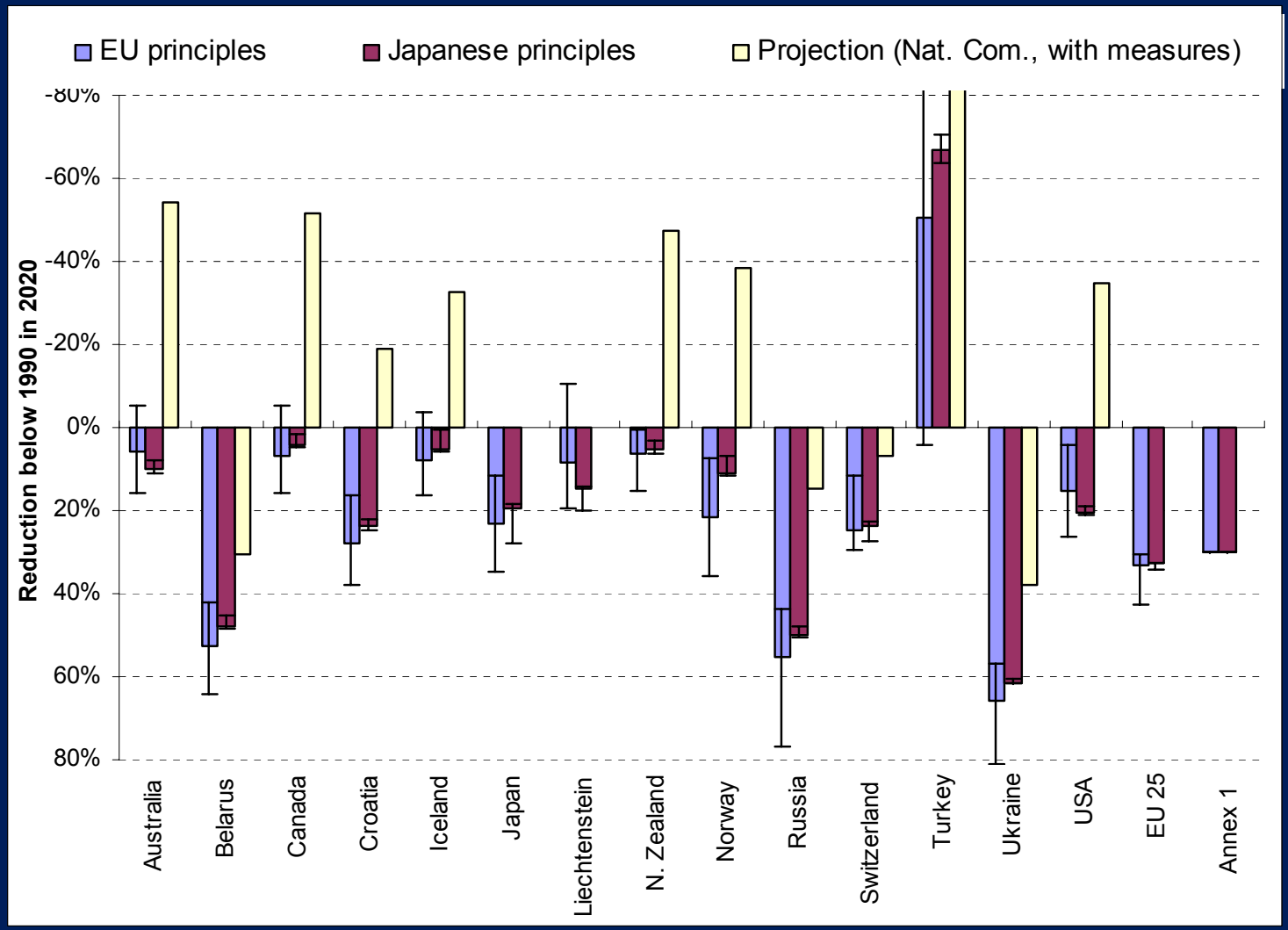
Annex I is 30% below 1990 in 2020

Emission reductions below 1990 in 2020



Annex I is 30% below 1990 in 2020

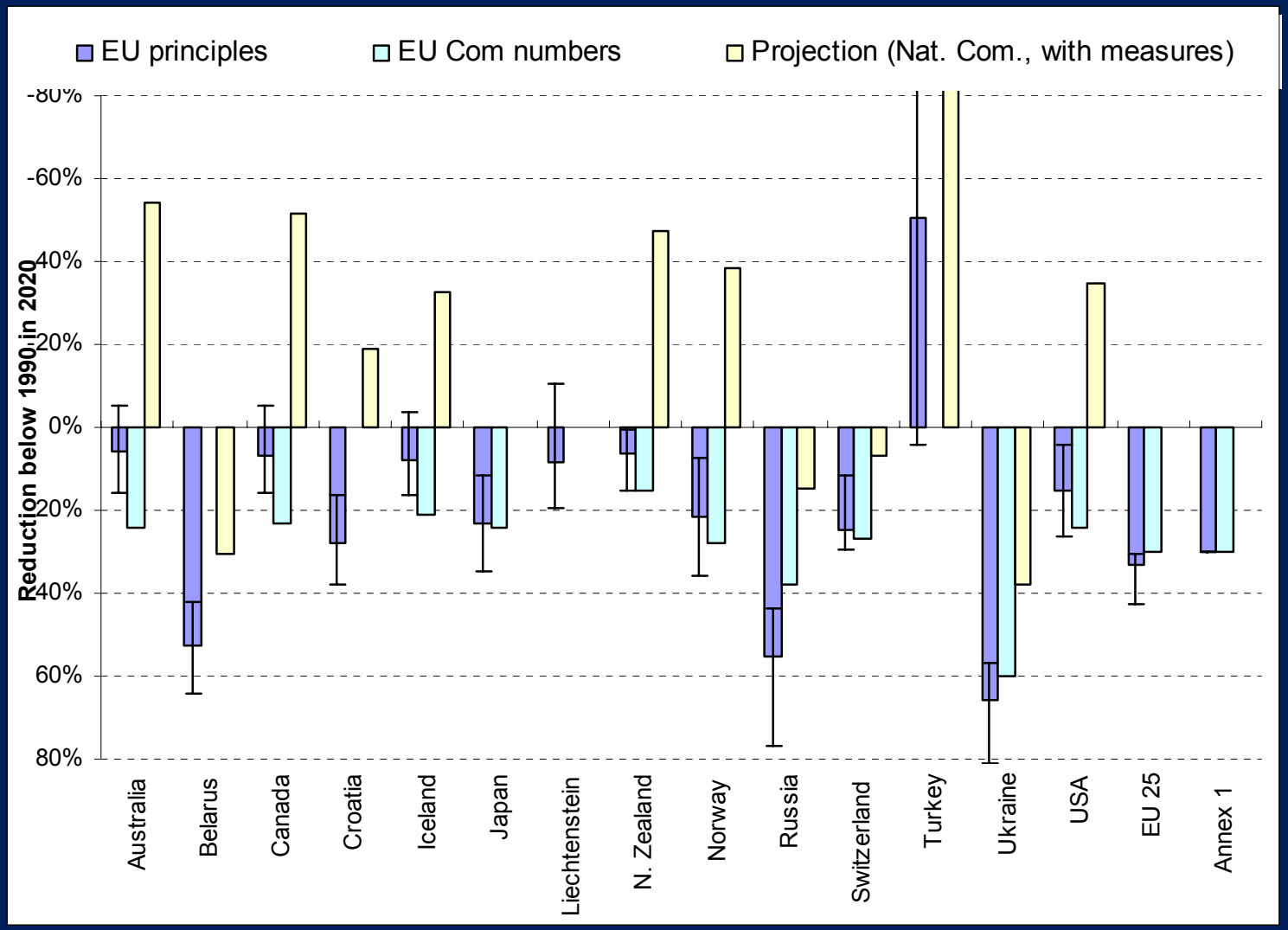
Emission reductions below 1990 in 2020



Annex I is 30% below 1990 in 2020

Error bars indicate possible range giving factors different weigh

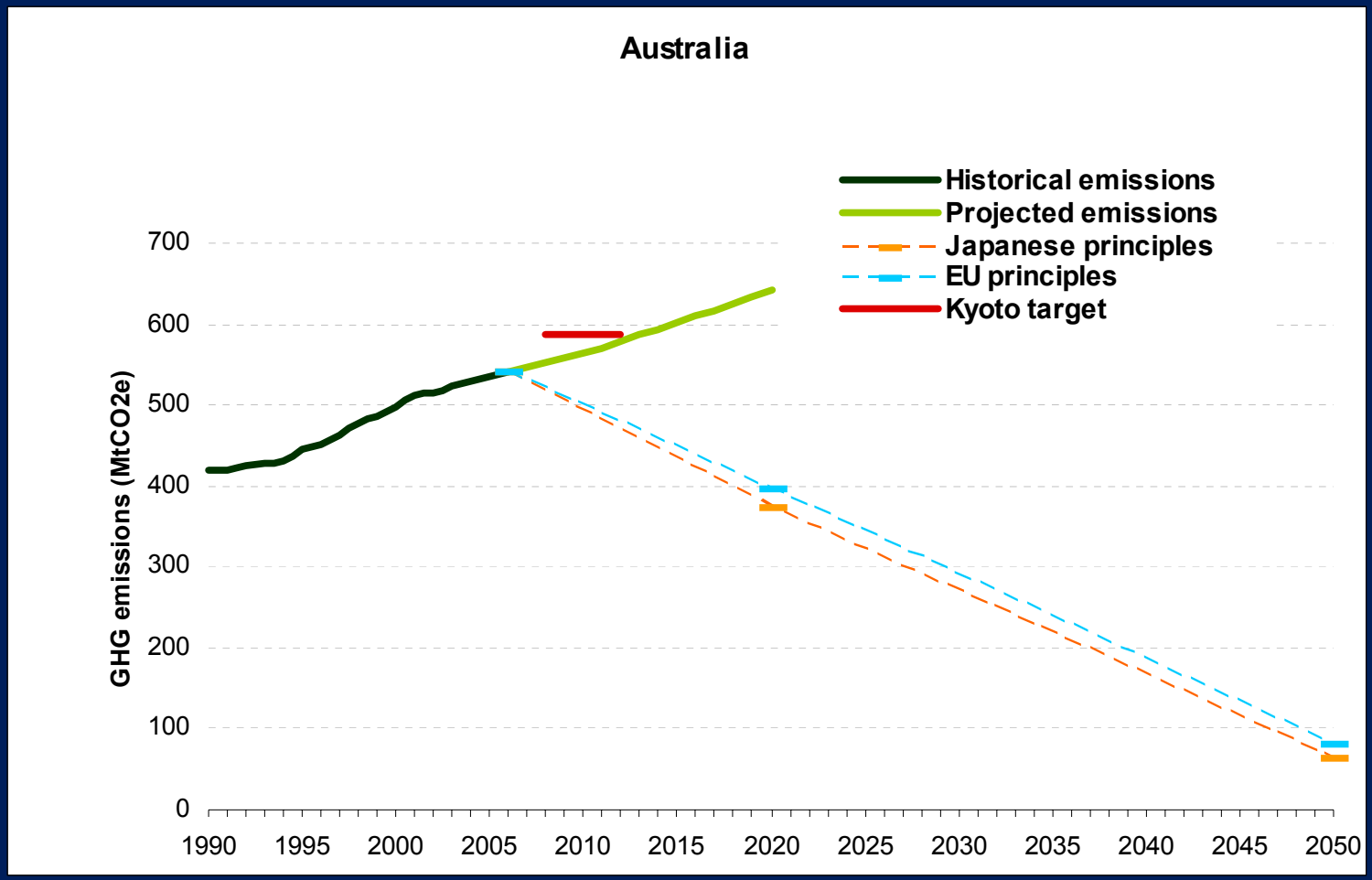
Emission reductions below 1990 in 2020



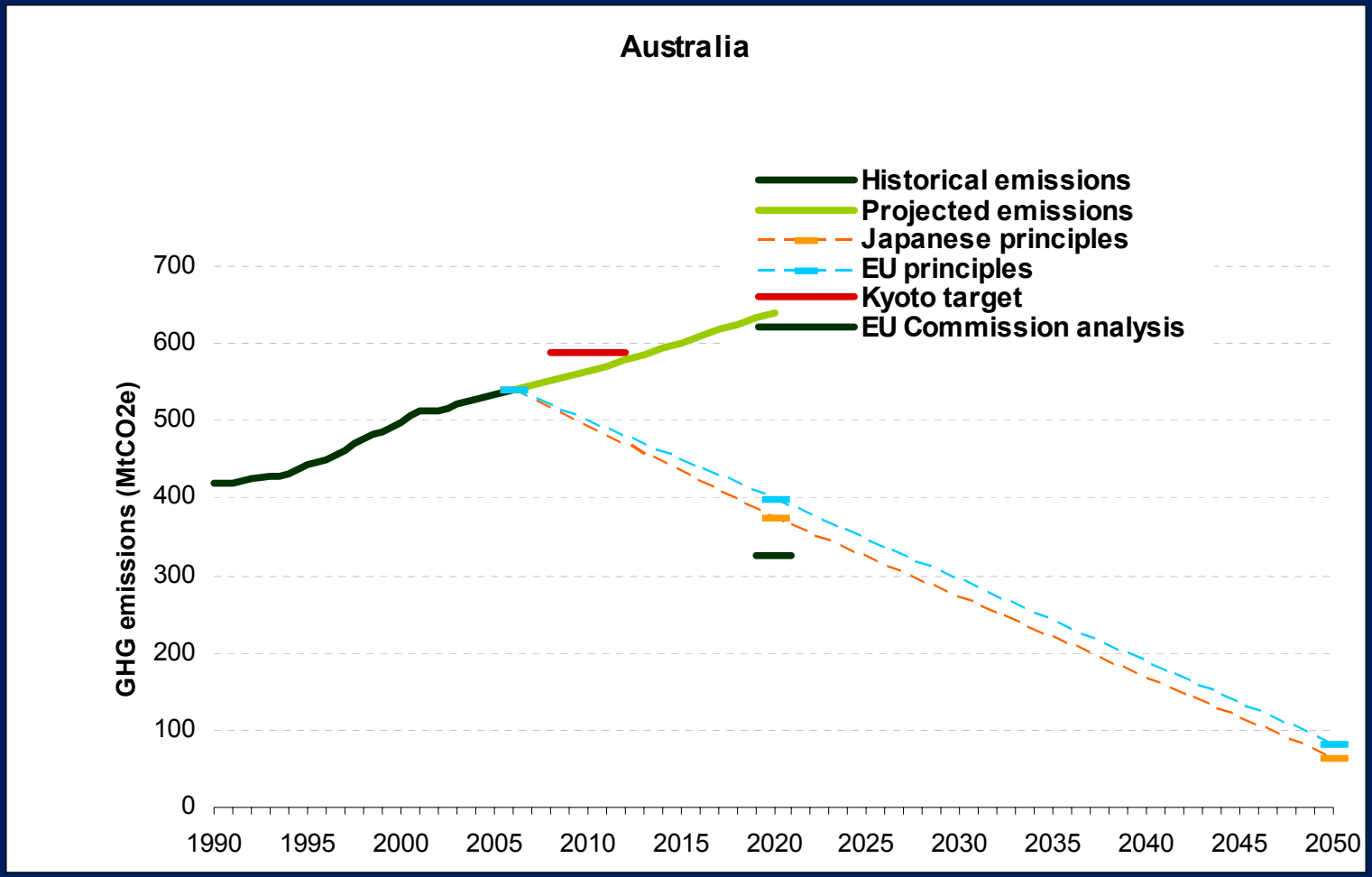
Annex I is 30% below 1990 in 2020

Error bars indicate possible range giving factors different weigh

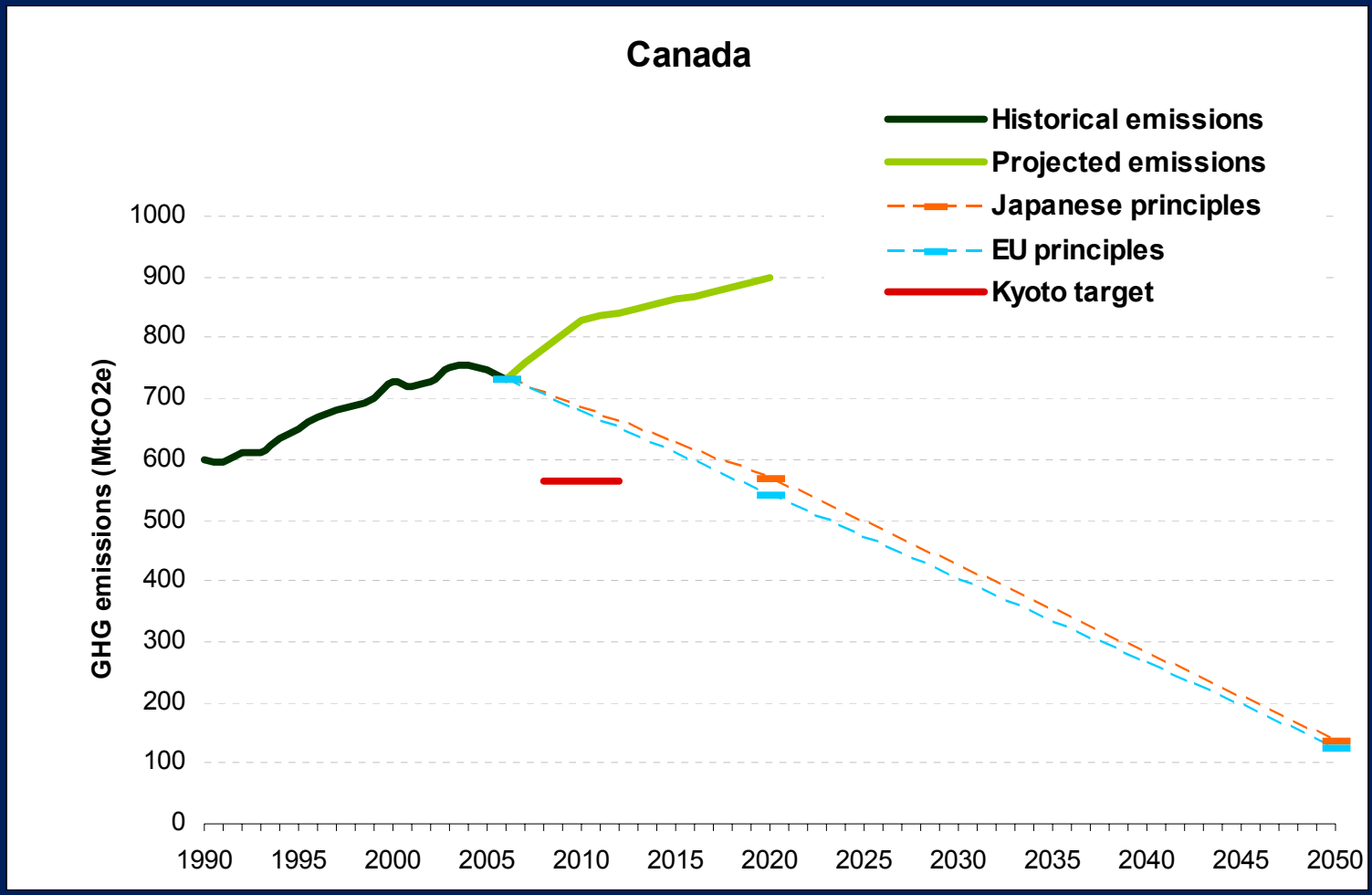
Australia


Australia
Historical emissions
Projected emissions
Japanese principles
EU principles
Kyoto target
GHG emissions (MtCO2e)
0
100
200
300
400
500
600
700
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050

Regional targets – Australia



Canada


Canada
Historical emissions
Projected emissions
Japanese principles
EU principles
Kyoto target
GHG emissions (MtCO2e)
1000
900
800
700
600
500
400
300
200
100
0
1990
1995
2000
2005
2010
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Canada

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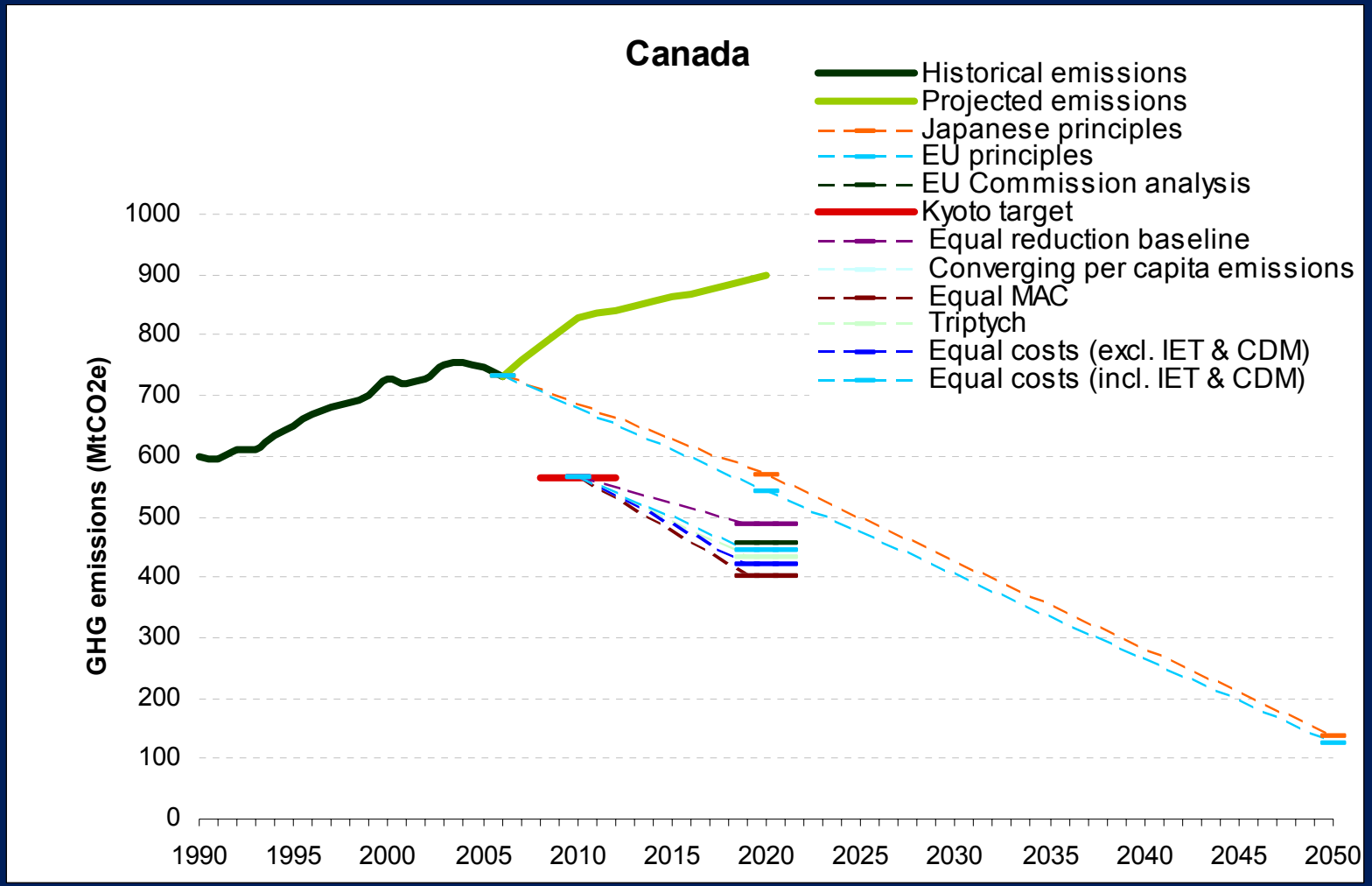
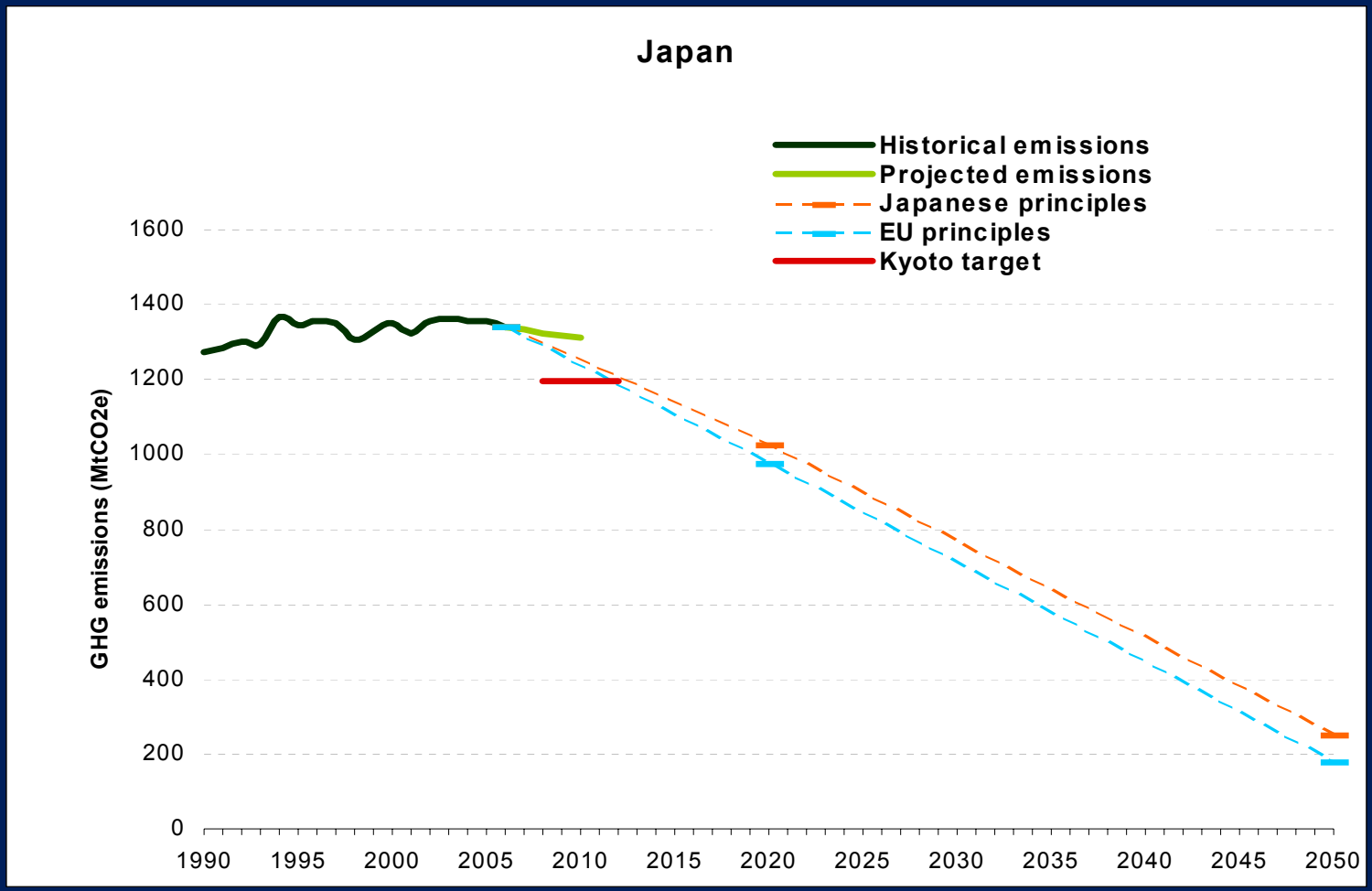


Japan


Japan
Historical emissions
Projected emissions
Japanese principles
EU principles
Kyoto target
GHG emissions (MtCO2e)
0
200
400
600
800
1000
1200
1400
1600
1990
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2000
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2020
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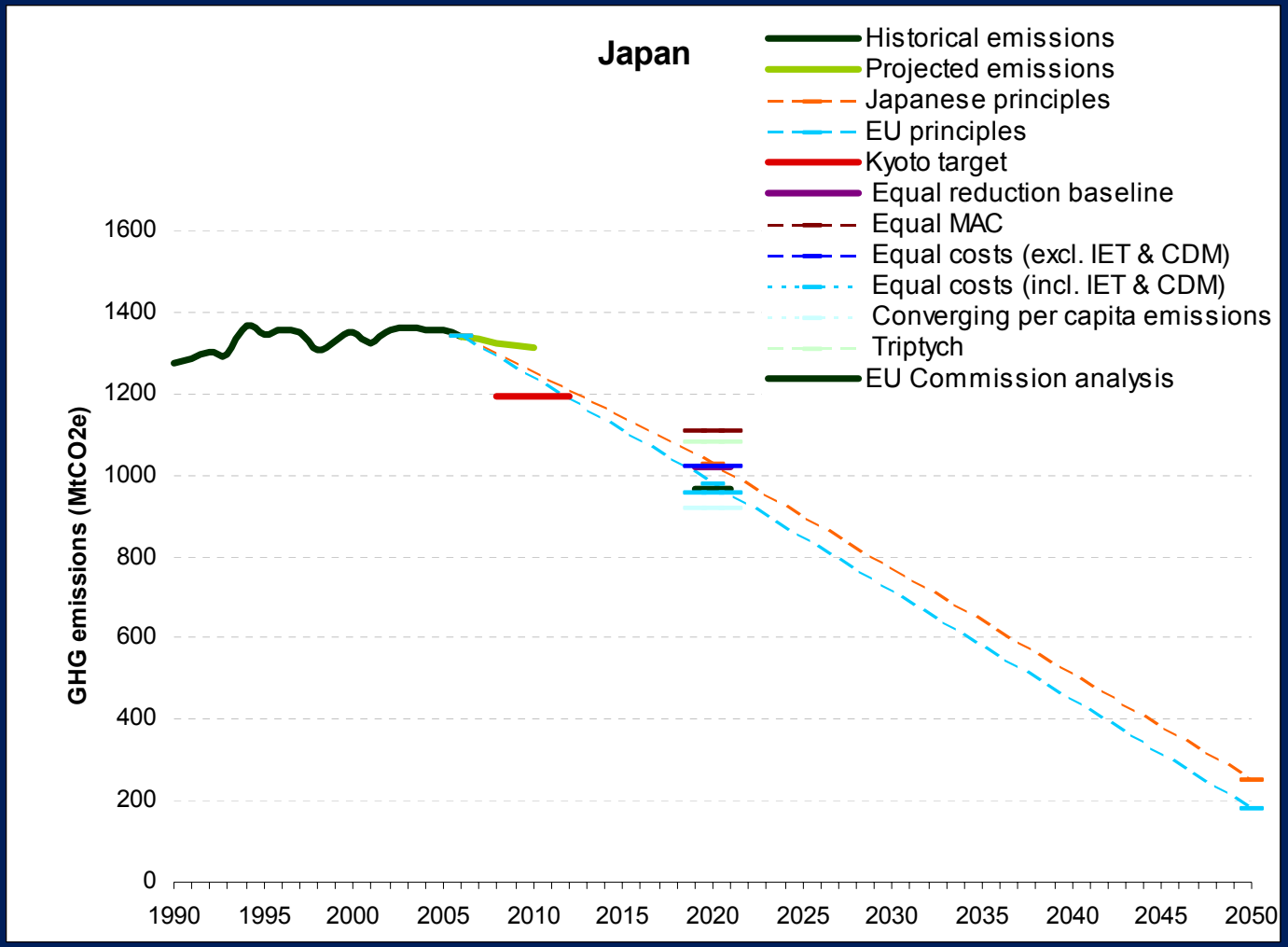
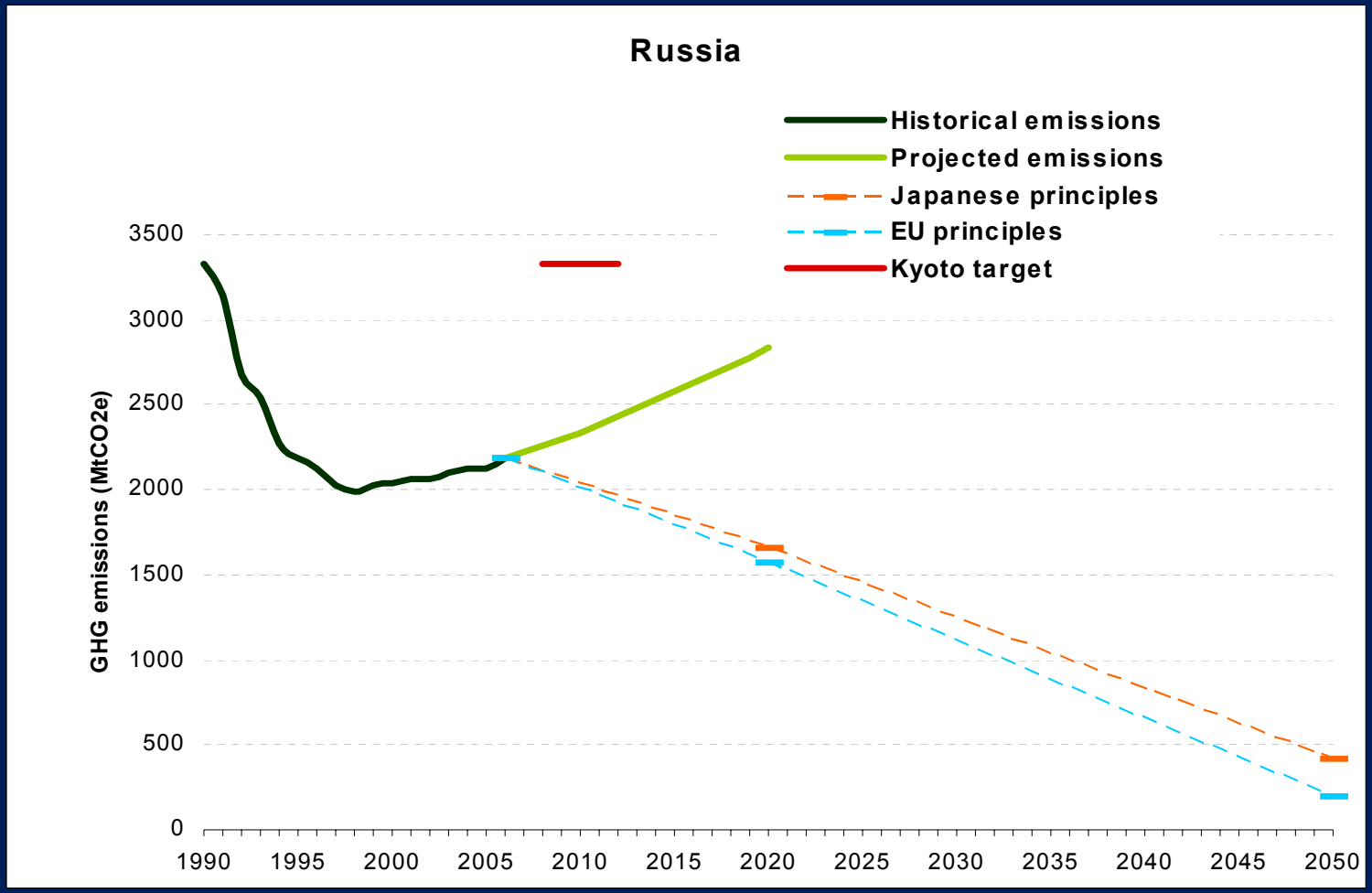
2050

Japan

Including calculations made in Den Elzen et al. 2008



Russia


Russia
Historical emissions
Projected emissions
Japanese principles
EU principles
Kyoto target
GHG emissions (MtCO2e)
3500
3000
2500
2000
1500
1000
500
0
1990
1995
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Russia

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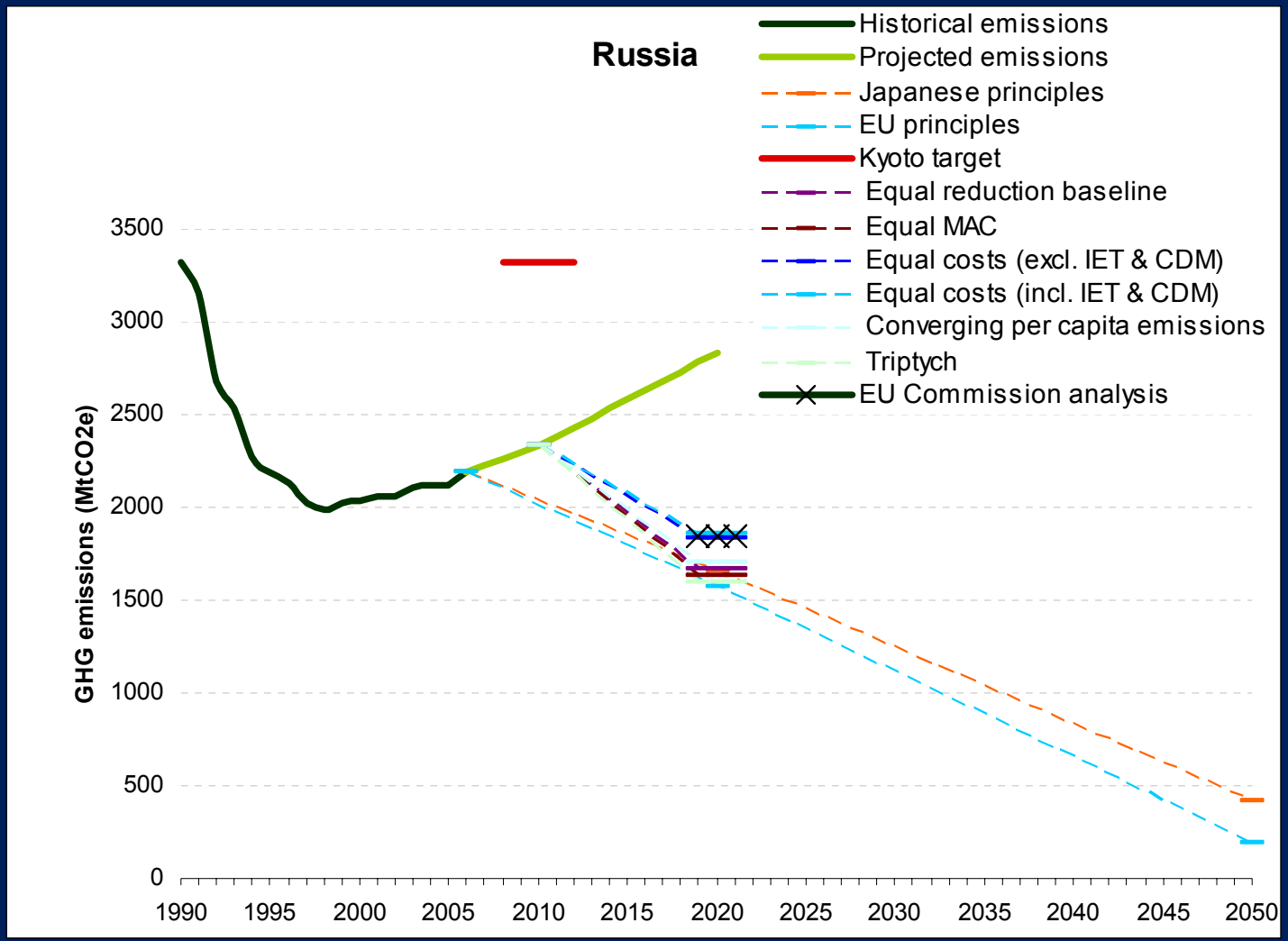
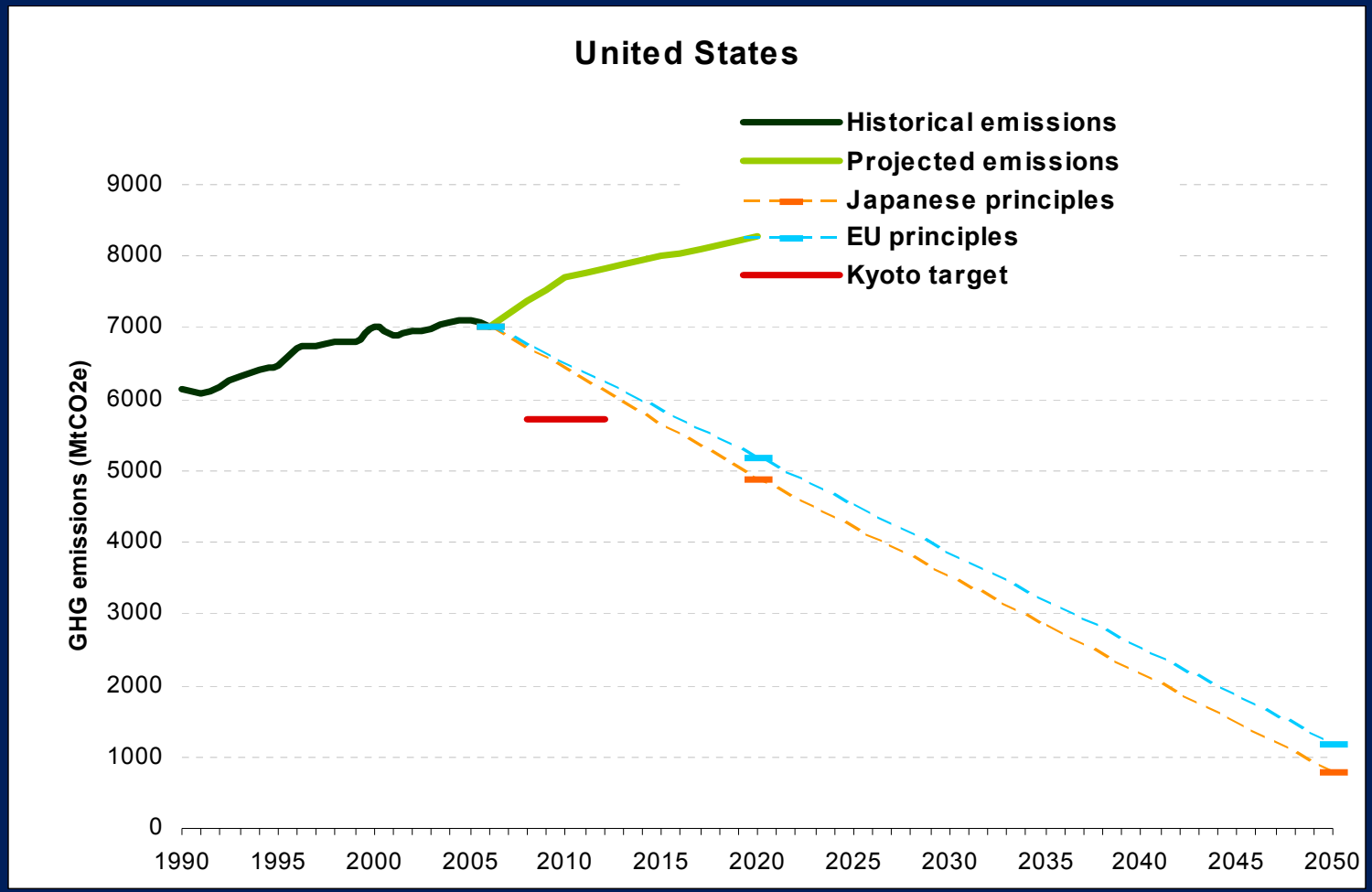


United States



United States

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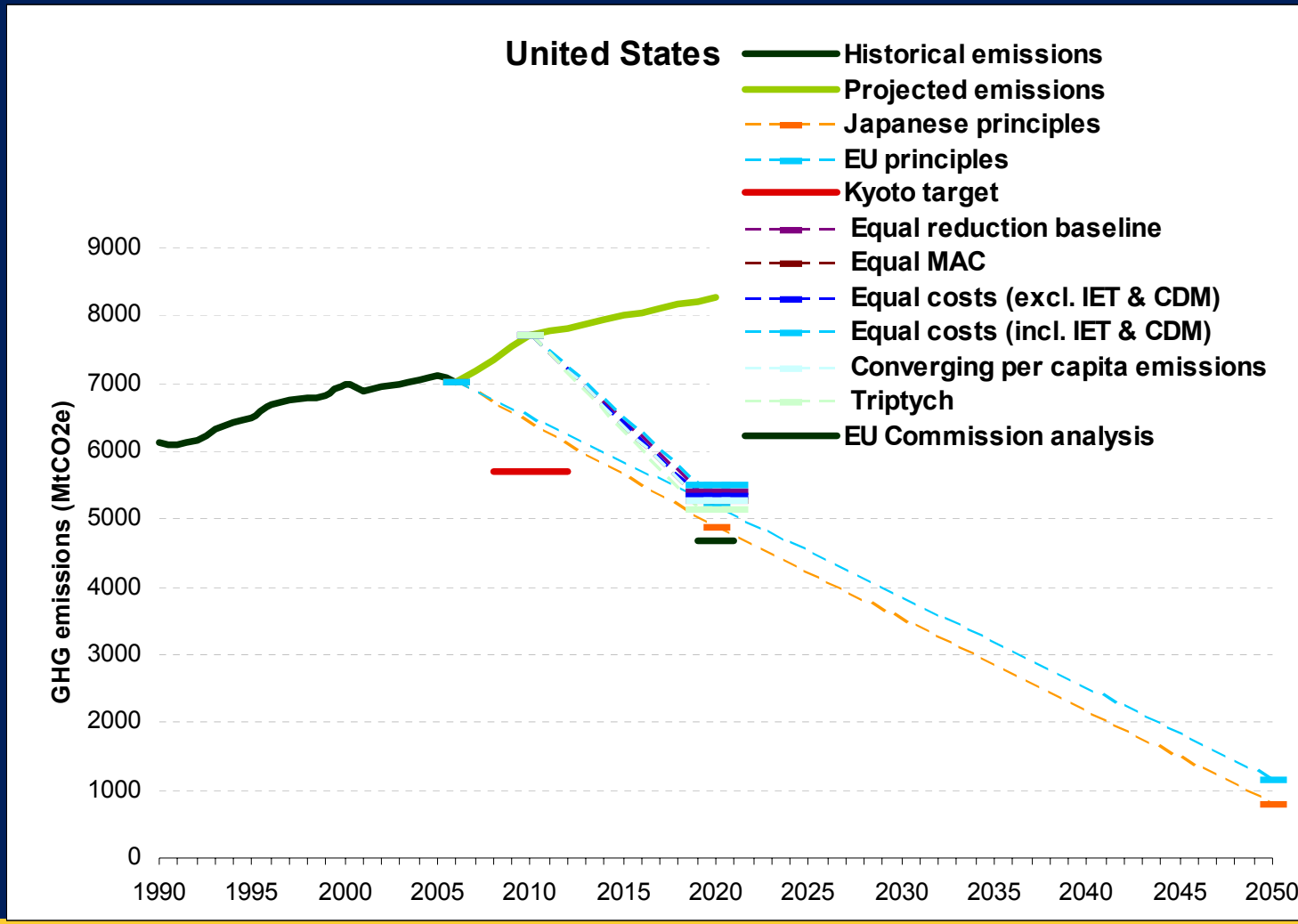
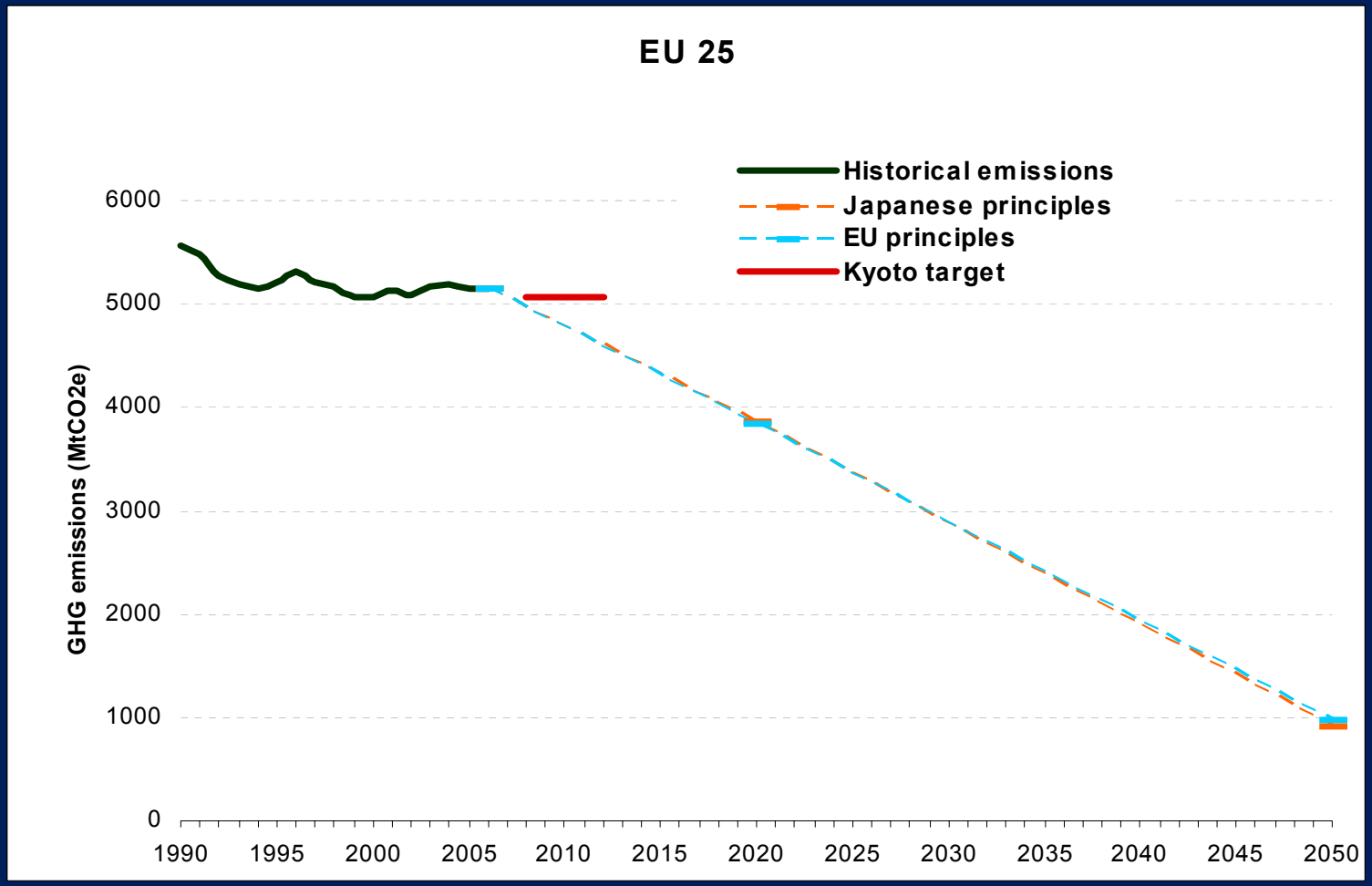


EU 25


EU 25
Historical emissions
Japanese principles
EU principles
Kyoto target
GHG emissions (MtCO2e)
6000
5000
4000
3000
2000
1000
0
1990
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Regional targets – EU 25

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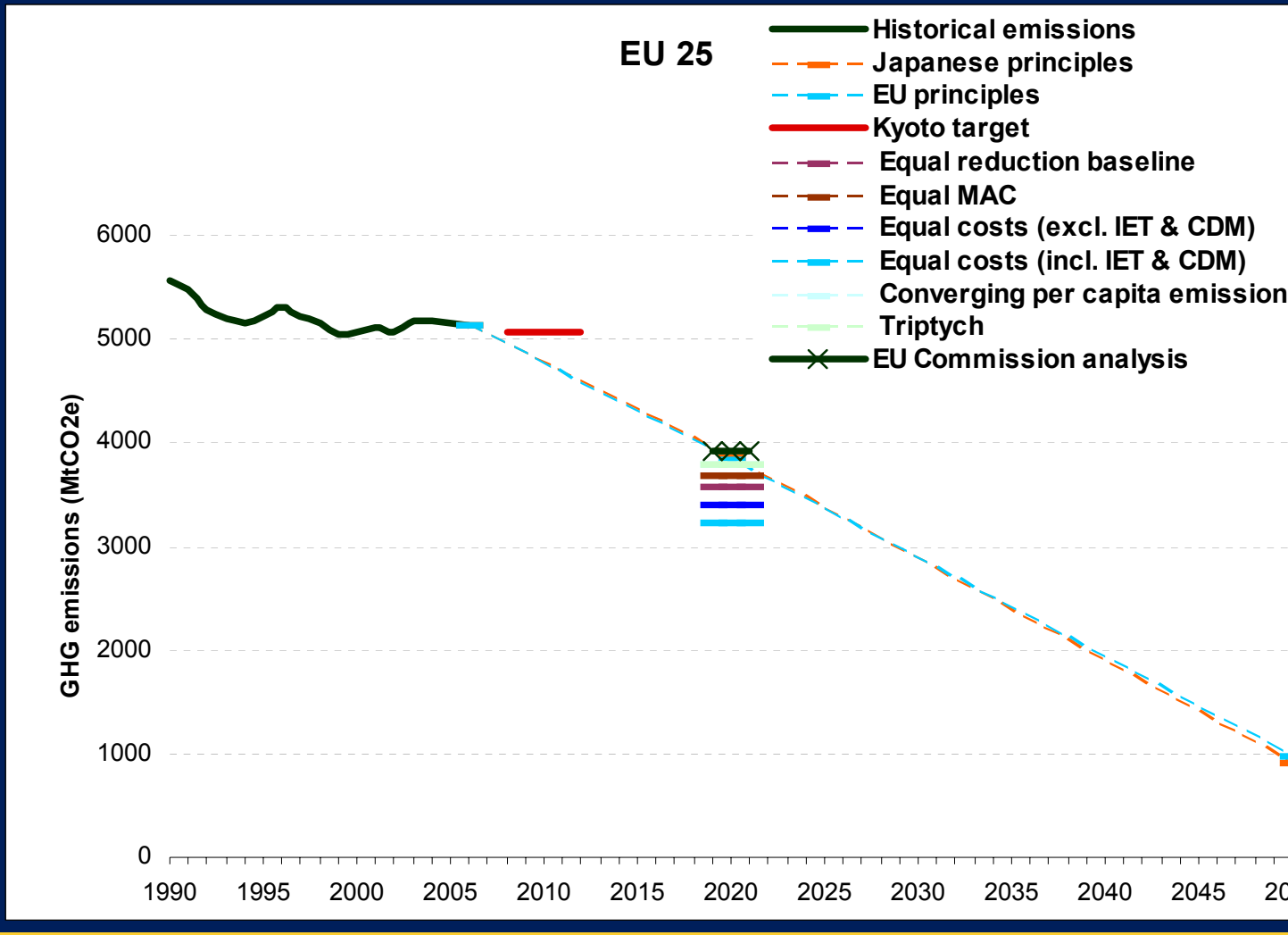

Conclusions

- What are the effort sharing principles?
  - It matters how possible principles are implemented
  - Very important for countries that are different to the average (e.g. Japan, Canada)

- What is the basis for future reduction targets? 1990, 2006, Kyoto target, emissions in 2008 to 2012?
  - Very important for countries that increased emissions (USA, Canada, Australia) or that are well below their Kyoto target (Russia, Ukraine)

- Process:
  - Use simple and transparent principles (not cost information) to calculate possible future targets
  - Use cost information to assess the possible future targets
  - Negotiate the targets

- More detail: Side event, Monday 30 March, 18.00, Room König