

Updated development of global greenhouse gas emissions 2016

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**“Prospects of Climate Change Policy
and Green Finance”**

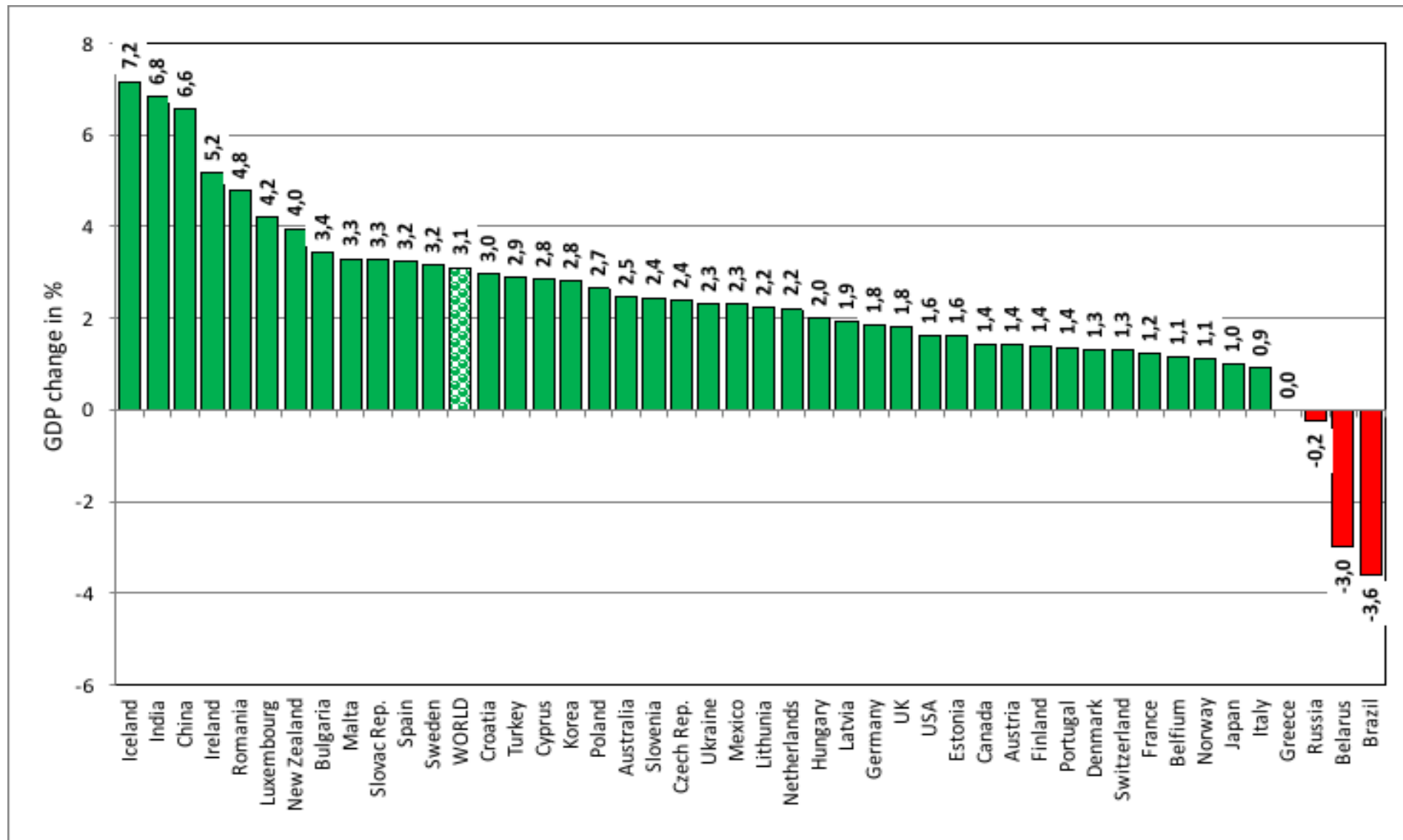
**21st REFORM Group Meeting, Schloss Leopoldskron,
Salzburg, August 30, 2017**

Main data for estimating GHG emissions for 2014

- **UNFCCC: National Communications from Parties included in Annex I to the Convention; National Greenhouse Gas Inventory Data from Annex I Parties for 1990 to 2015**
- **International Energy Agency (IEA): CO₂ Emissions from Fuel Combustion, 2016 Edition, Paris 2016 and CO₂ Highlights 2016 (both data up to 2014)**
- **BP Statistical Review of World Energy 2017, June 2017**
- **The World Bank, World Development Indicators, Database July 2017**
- **Eurostat Database**

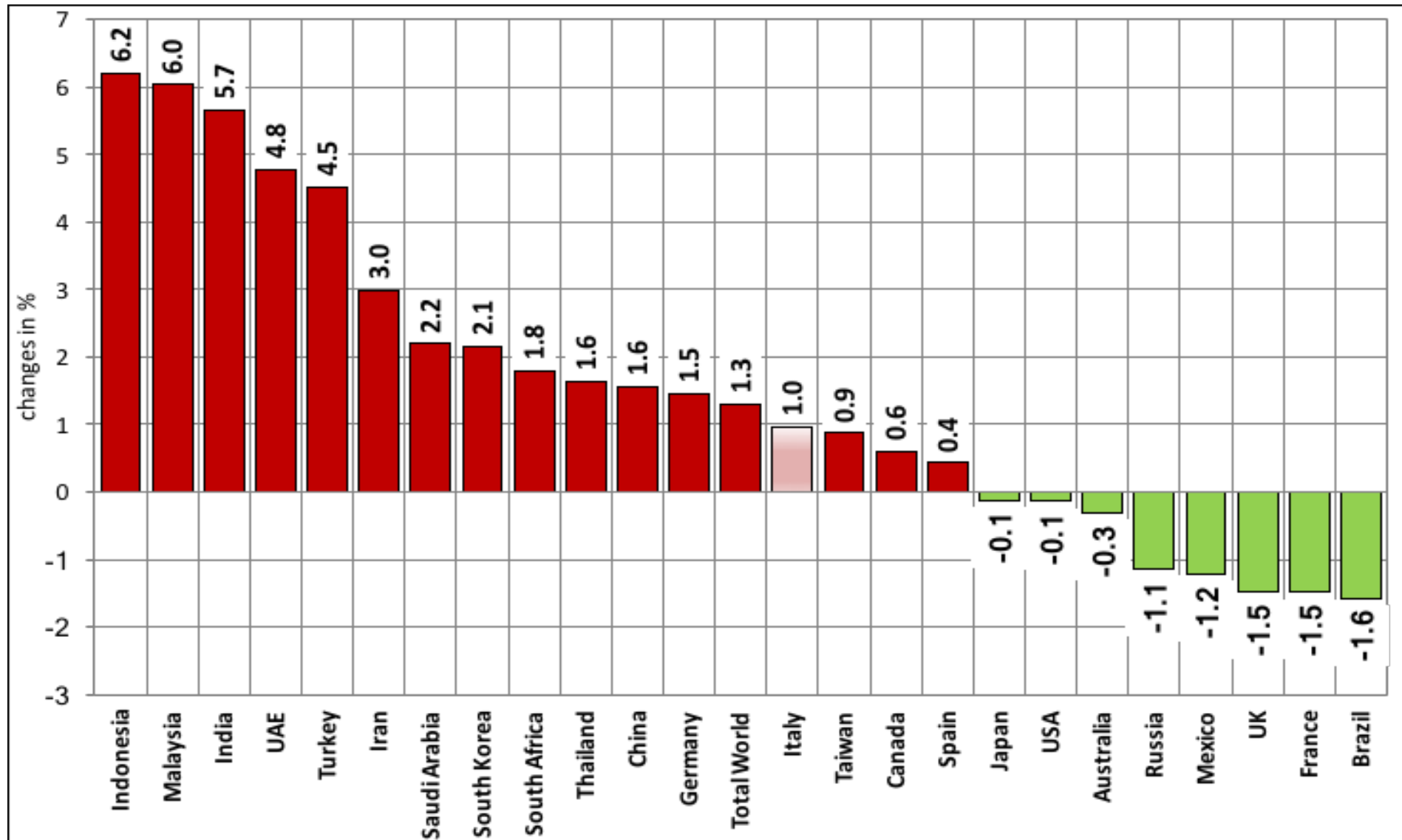
CO₂ emissions up to 2016 are extrapolated from the 2016 data on energy consumption published in the BP Statistics, June 2017, which are shown by country and energy source.

Changes of real GDP 2016 versus 2015 in Annex I parties and others



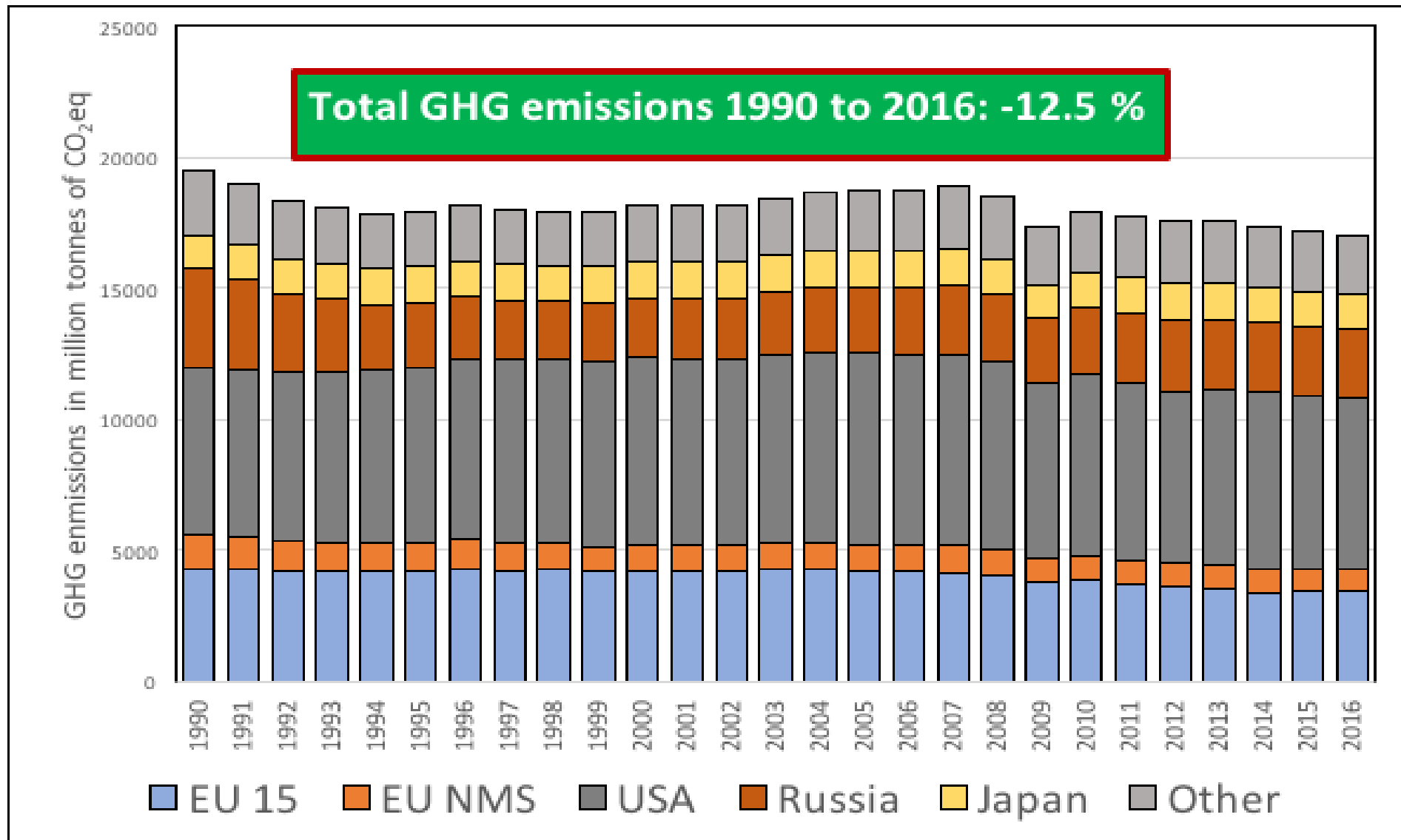
sources: World Bank; International Monetary Fund (IMF); OECD, Eurostat.

Changes of primary energy 2016 vs 2015 in countries with ≥ 100 Gtoe



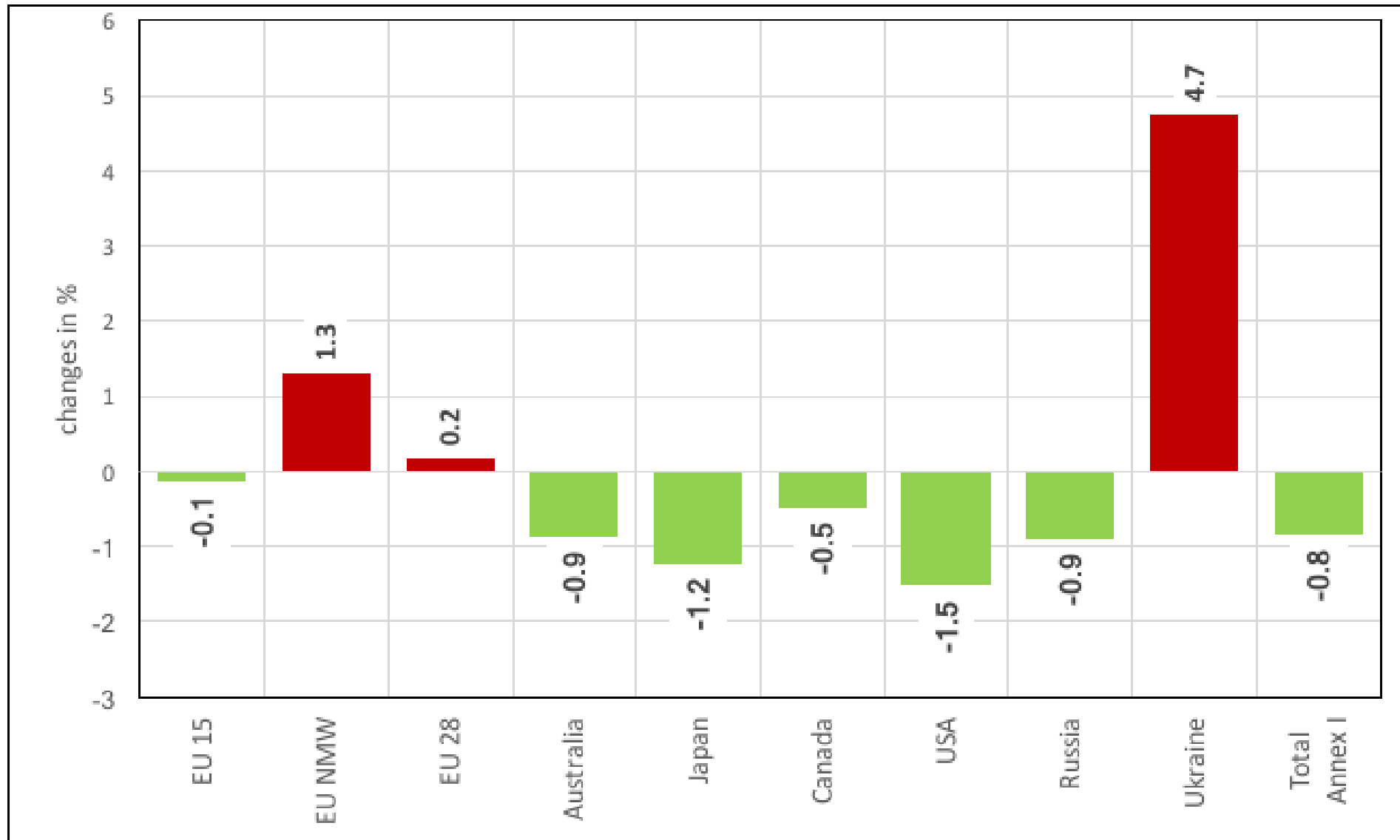
source: BP Statistical Review of World Energy June 2017

GHG emissions in Annex I parties 1990 – 2016



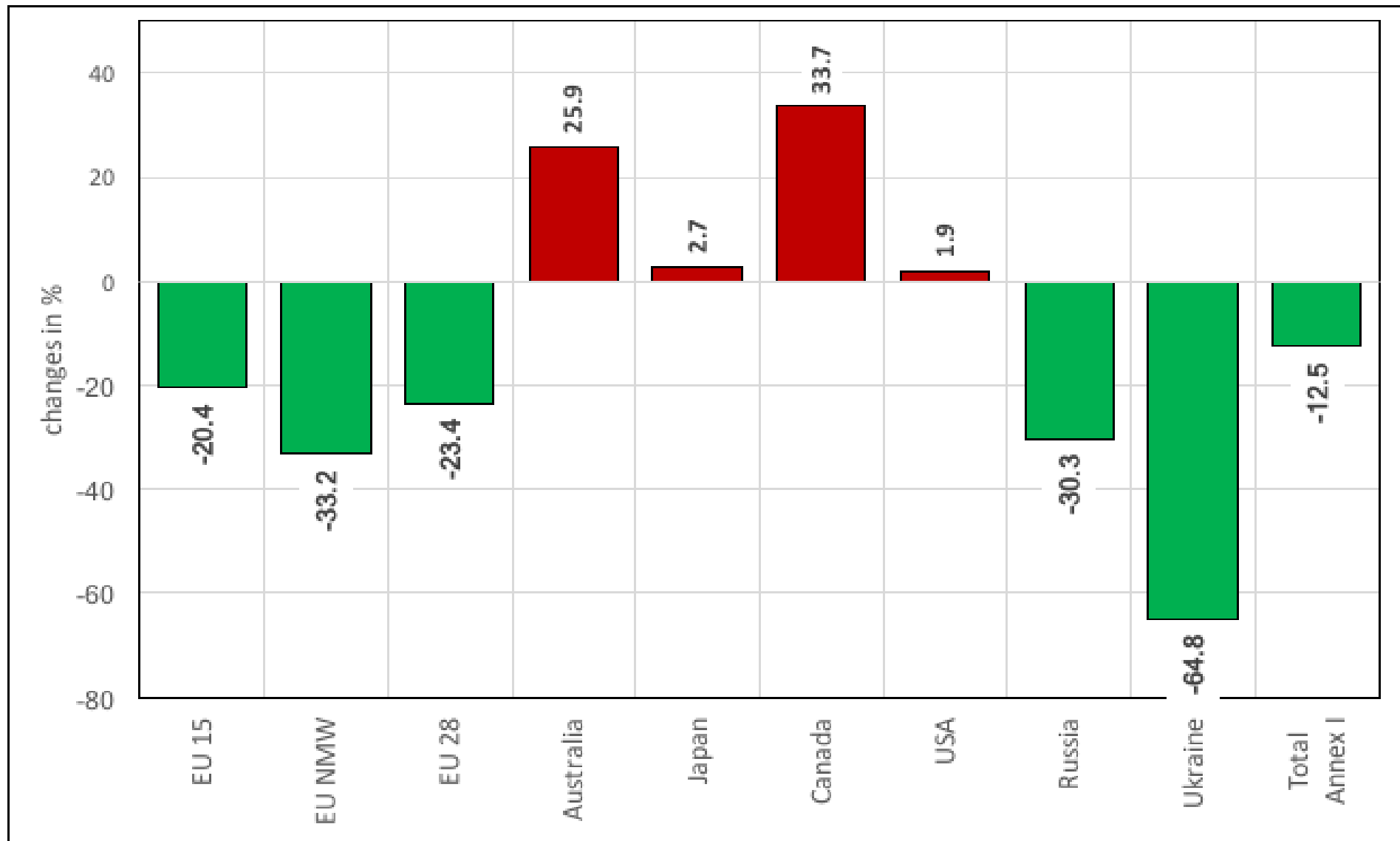
sources: UNFCCC; World Bank; OECD; IEA; author's calculation.

GHG emissions in Annex I parties: 2015 - 2016



sources: UNFCCC; IEA; BP; author's calculation.

GHG emissions in Annex I parties: 1990 - 2016



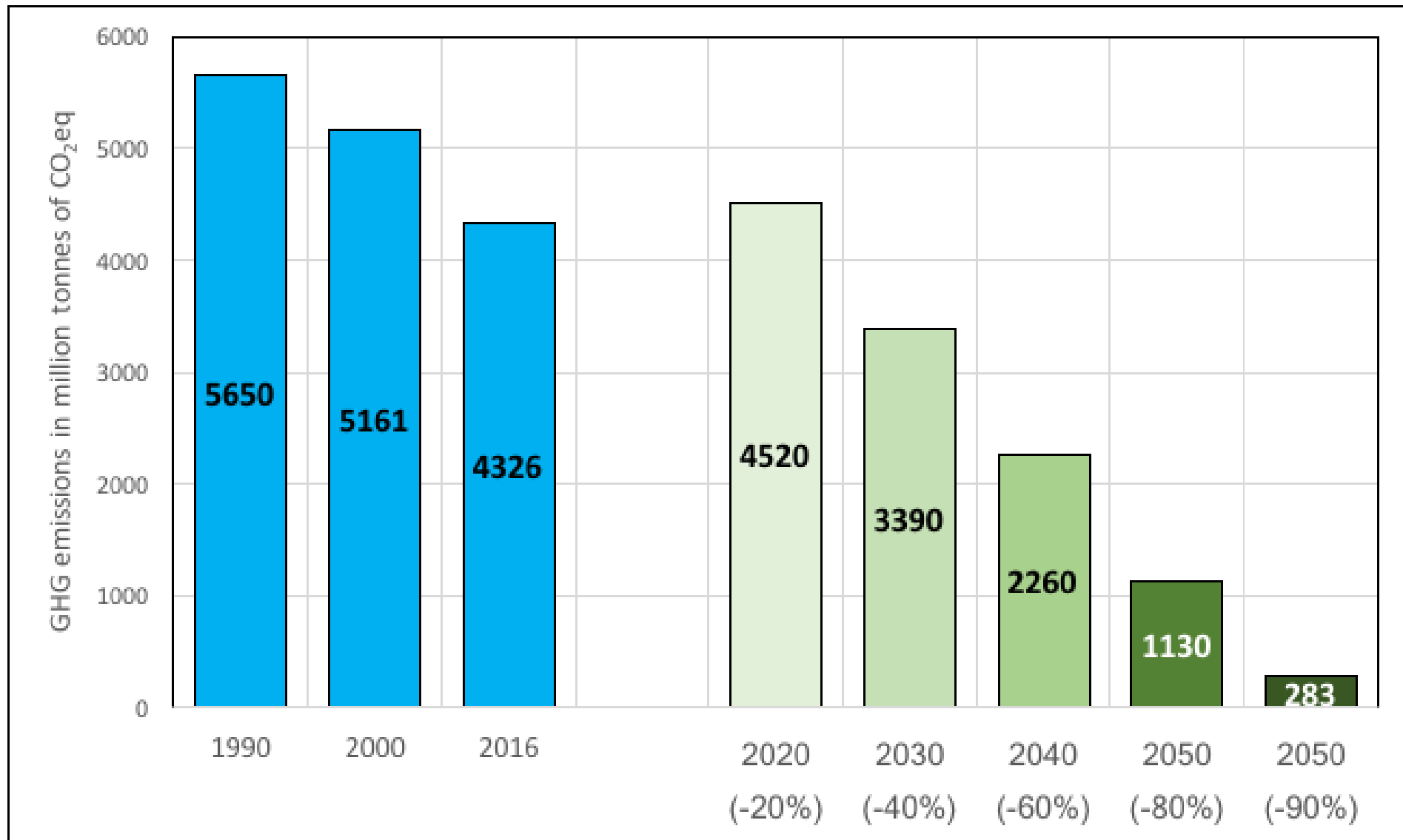
sources: UNFCCC; IEA; BP; author's calculation.

GHG emissions in Annex I parties 1990 – 2016

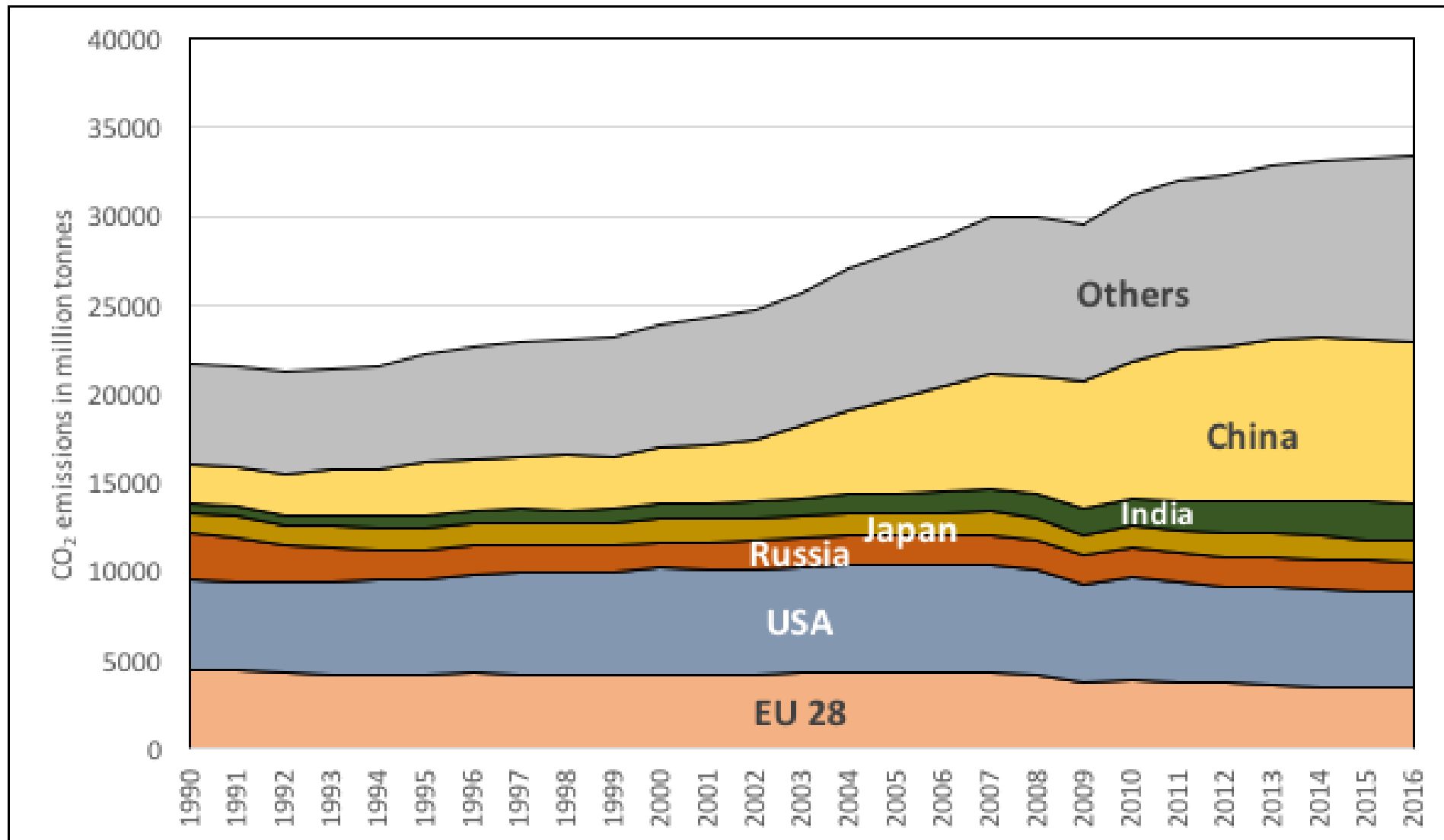
	1990	1995	2000	2005	2010	2015	2016	2015/2016	1990/2016
	GHG emissions in Gt CO ₂ eq							changes in %	
EU 15	4296	4214	4197	4222	3833	3425	3421	-0.1	-20.4
EU NMS	1354	1086	964	998	952	894	905	1.3	-33.2
EU 28	5650	5300	5161	5221	4786	4319	4326	0.2	-23.4
Japan	1274	1382	1389	1399	1306	1325	1309	-1.2	2.7
Australia	420	435	485	521	537	533	529	-0.9	25.9
USA	6363	6709	7214	7313	6925	6587	6487	-1.5	1.9
Canada	512	586	676	702	673	689	685	-0.5	33.7
Total Annex II	13038	13502	14147	14355	13468	12746	12617	-1.0	-3.2
Russia	3768	2429	2273	2500	2601	2651	2627	-0.9	-30.3
Ukraine	962	572	427	450	413	323	338	4.7	-64.8
Total Annex B	19251	17662	17882	18379	17516	16700	16535	-1.0	-14.1
Total EIT	6213	4160	3735	4024	4048	3947	3953	0.2	-36.4
Total Annex I	19465	17908	18179	18716	17922	17175	17032	-0.8	-12.5

sources: UNFCCC; World Bank; IEA; BP; author's calculation.

EU 28: GHG emissions targets by 2020, 2030, 2040 and 2050

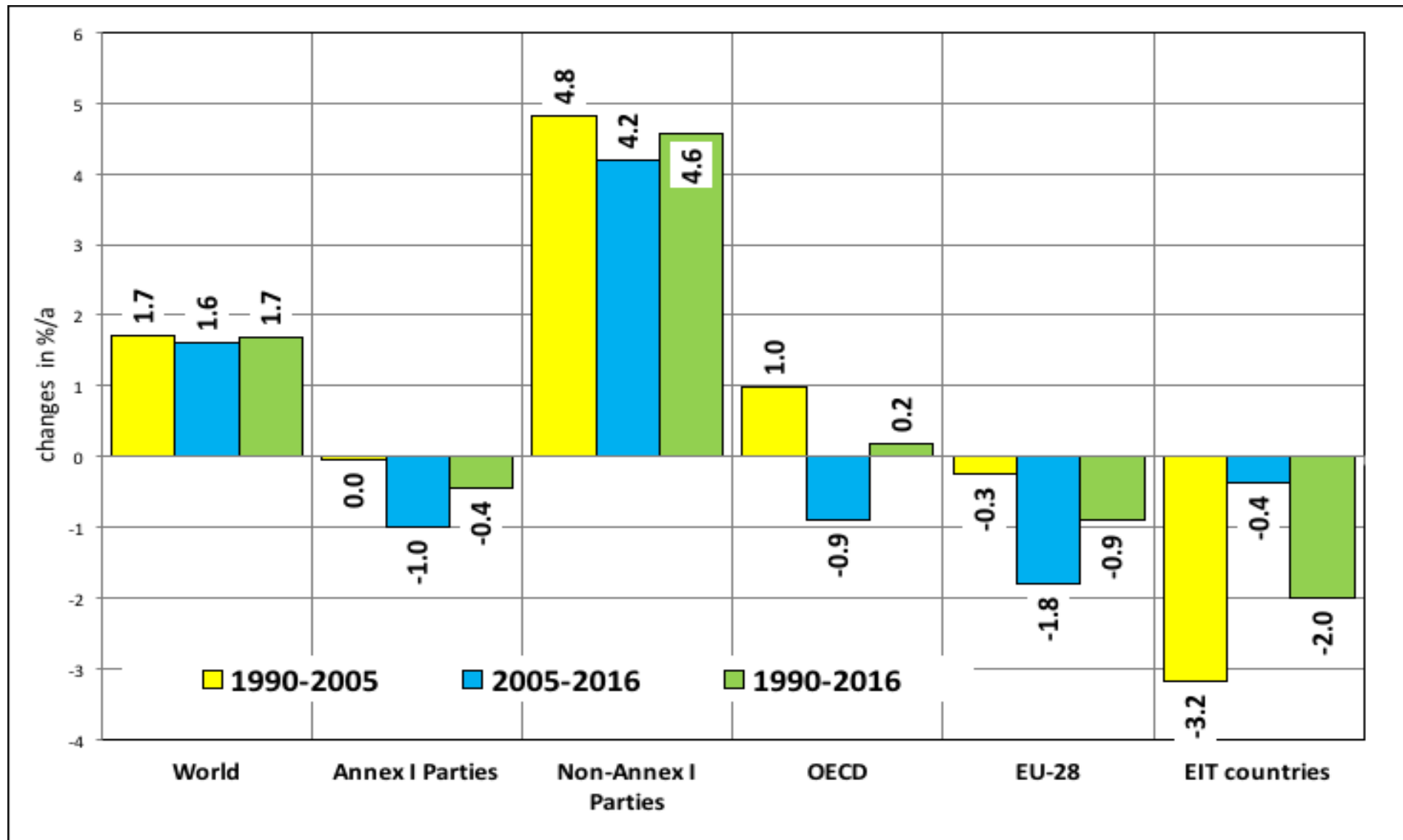


World-wide CO₂ emissions by countries 1990 - 2016

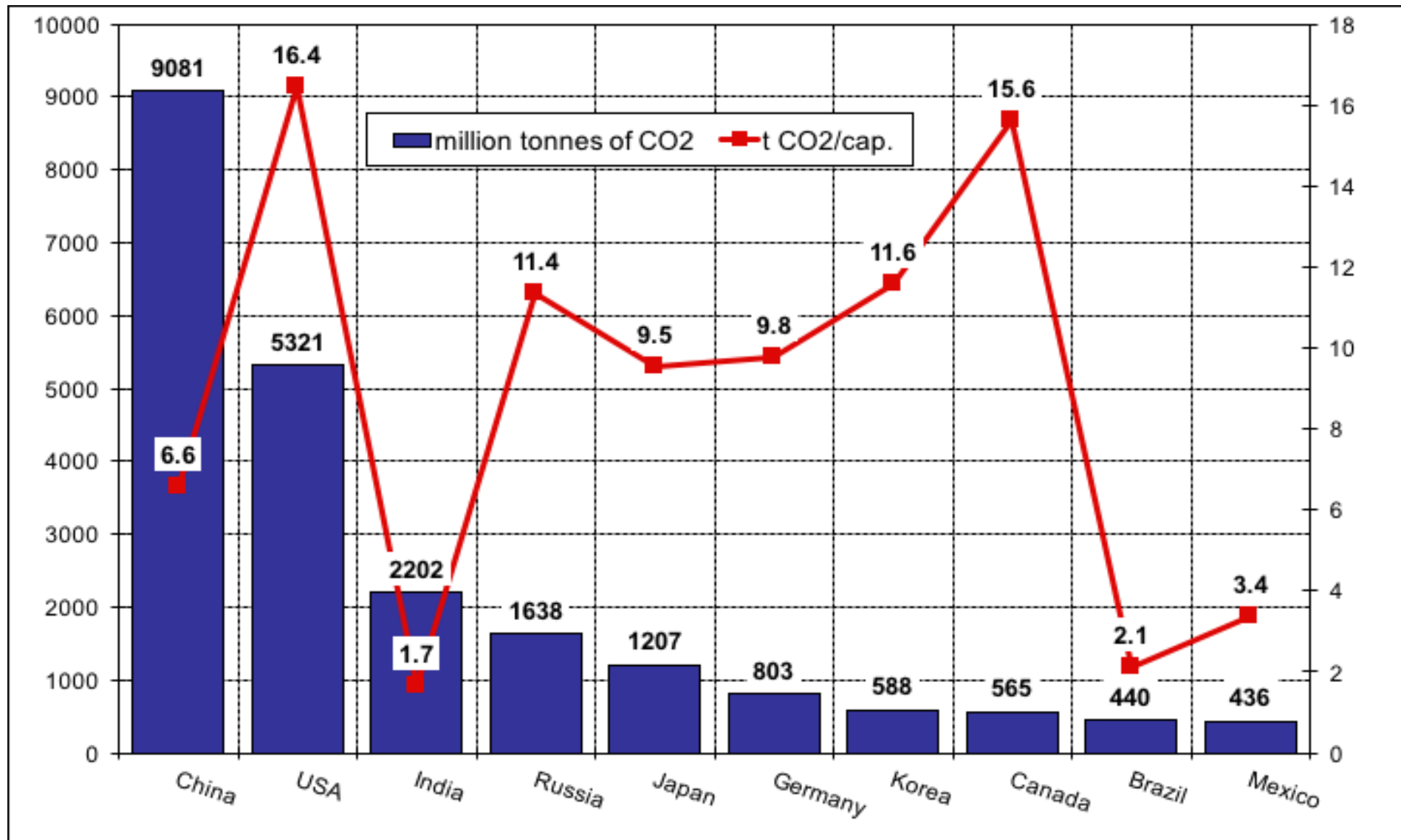


sources: UNFCCC; IEA; BP; author's calculation.

World-wide CO₂ emissions by regions 1990 - 2016

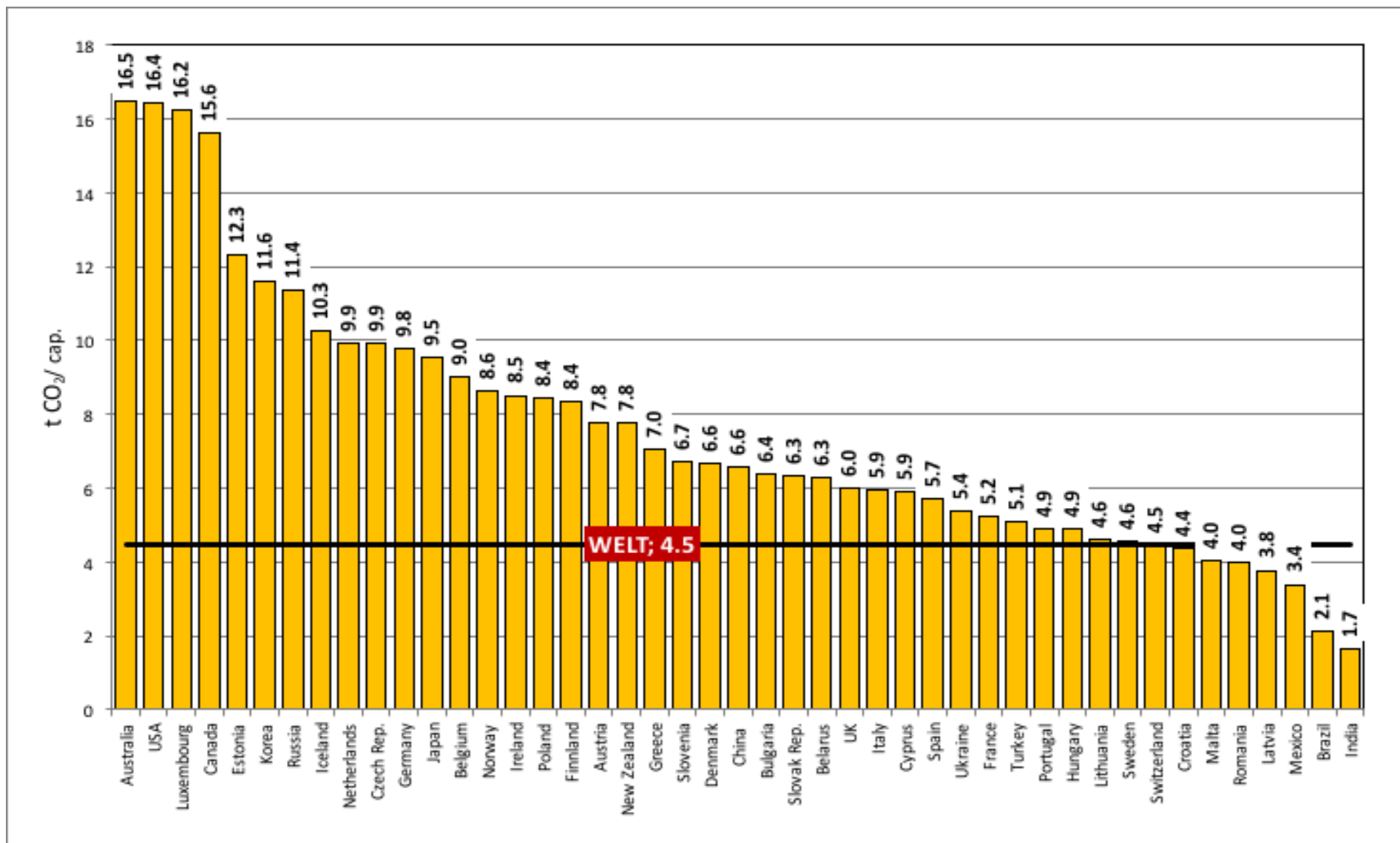


The ten major CO₂ emitters world-wide 2016



sources: UNFCCC; World Bank; OECD; IEA; Eurostat; author's calculation.

Per capita CO₂ emissions: EU-28 and selected countries 2016

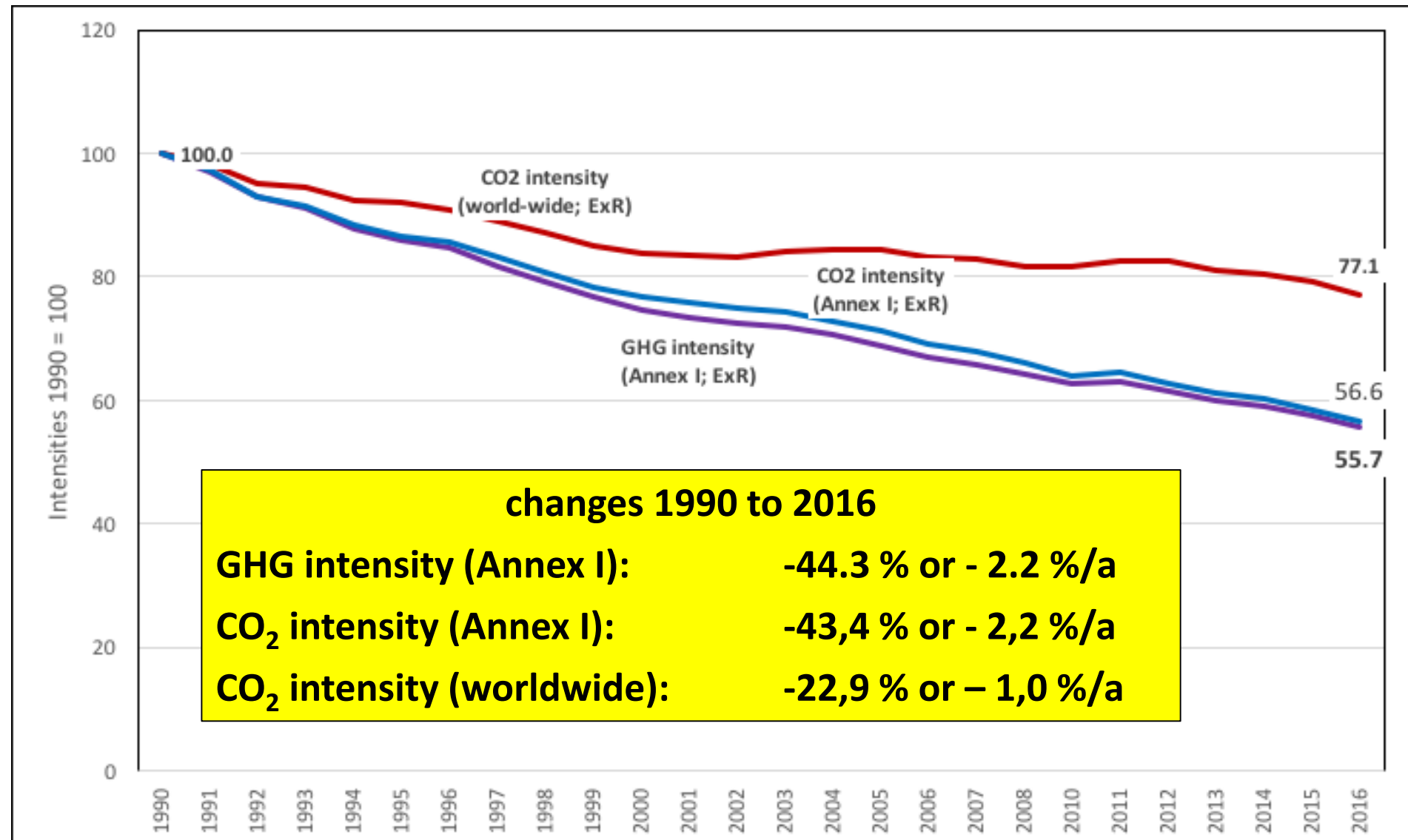


sources: UNFCCC; World Bank; IEA; Eurostat; BP; author's calculation.

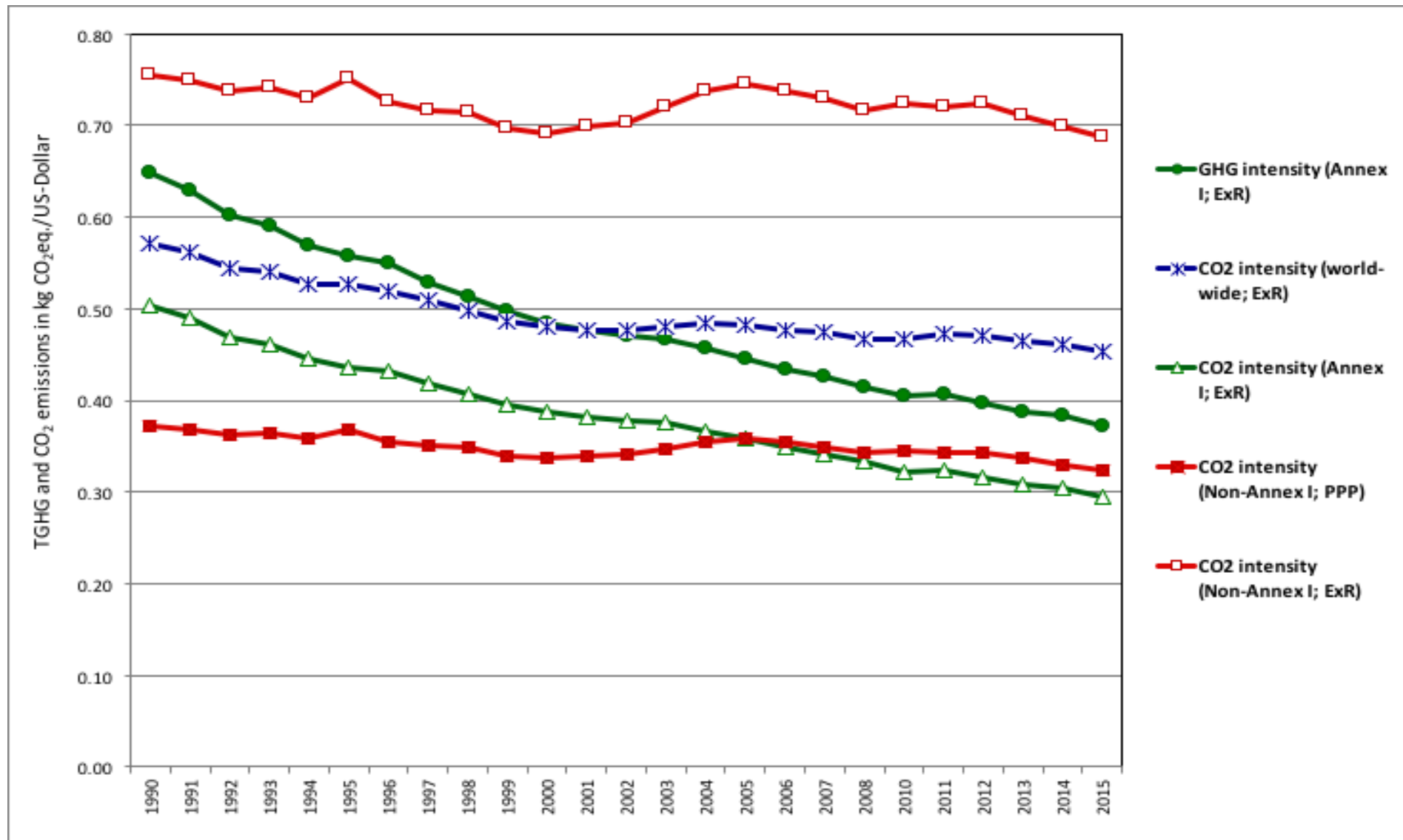
World-wide CO₂ emissions 1990 – 2016 by regions

	1990	1995	2000	2005	2010	2015	2016	2015/2016	1990/2016
	CO ₂ emissions in million tonnes							changes in %	
WORLD	21,630	22,173	23,910	27,943	31,144	33,203	33,348	0.4	54.2
Annex I	15,132	14,016	14,544	15,049	14,275	13,563	13,469	-0.7	-11.0
Non-Annex I	5,868	7,439	8,513	11,897	15,742	18,484	18,711	1.2	218.9
EIT	4,450	2,931	2,588	2,747	2,767	2,640	2,640	0.0	-40.7
OECD	11,962	12,511	13,401	13,850	13,194	12,614	12,537	-0.6	4.8
EU 28	4,464	4,206	4,170	4,299	3,940	3,508	3,521	0.4	-21.1
EU 15	3,403	3,343	3,410	3,509	3,181	2,810	2,813	0.1	-17.4
EU NMS	1,060	863	760	790	759	698	709	1.6	-33.1

GHG/CO₂ intensity in Annex I countries/world-wide CO₂ intensity 1990 - 2016

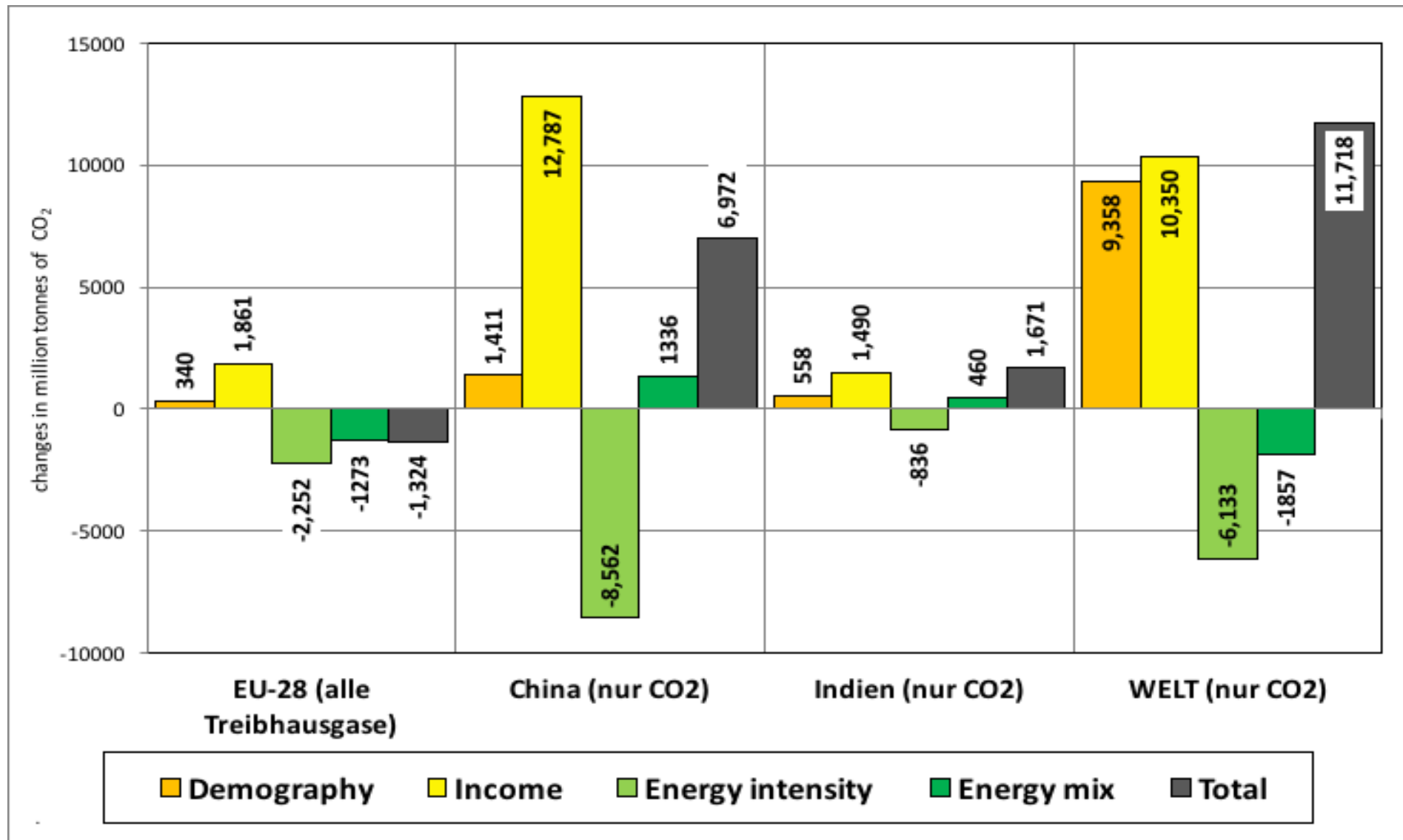


GHG/CO₂ intensity in Annex I and Non-Annex I countries 1990 - 2016

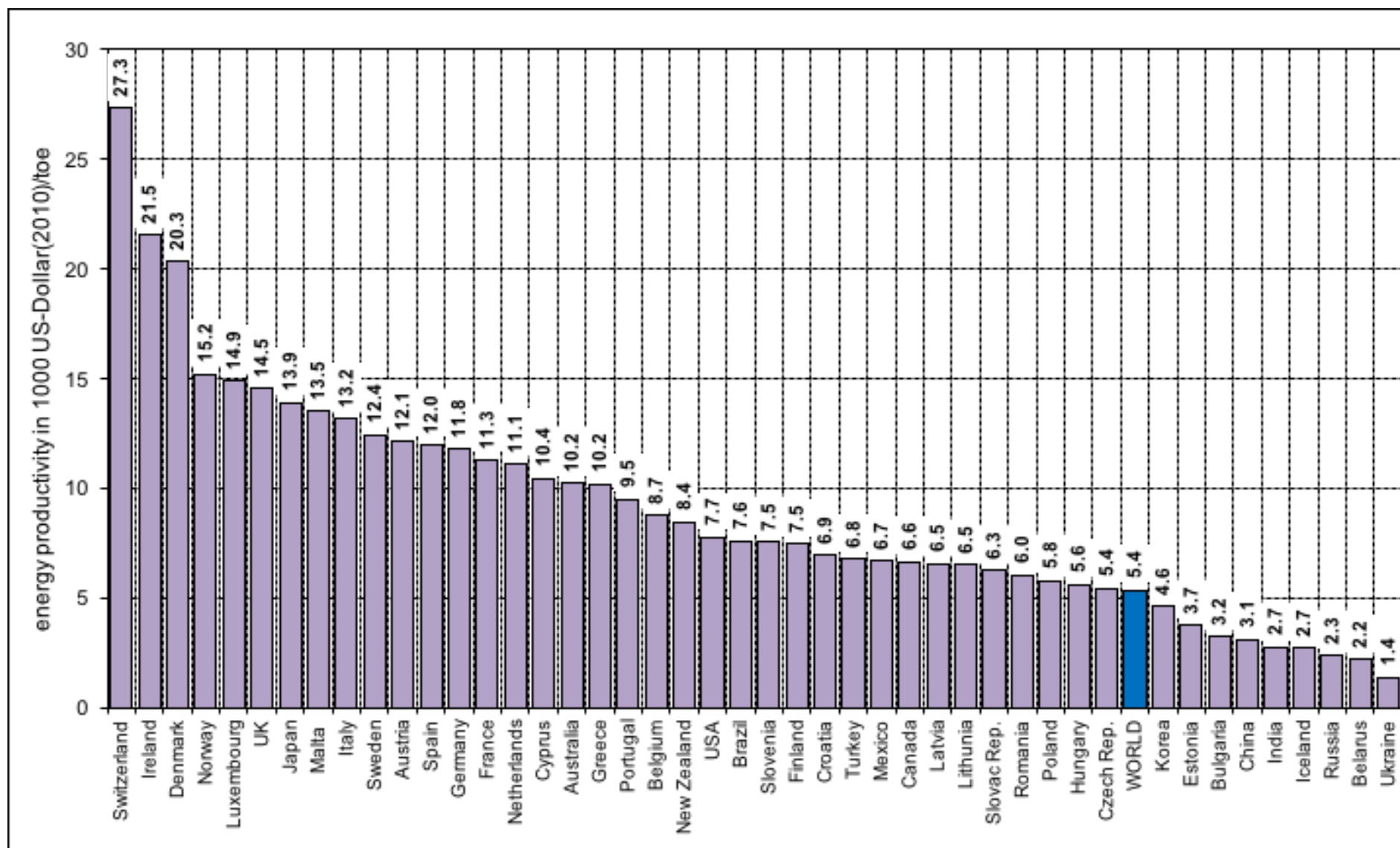


sources: UNFCCC; IEA; Worldbank; author's calculation.

Components influencing GHG emissions 2016 vs. 1990

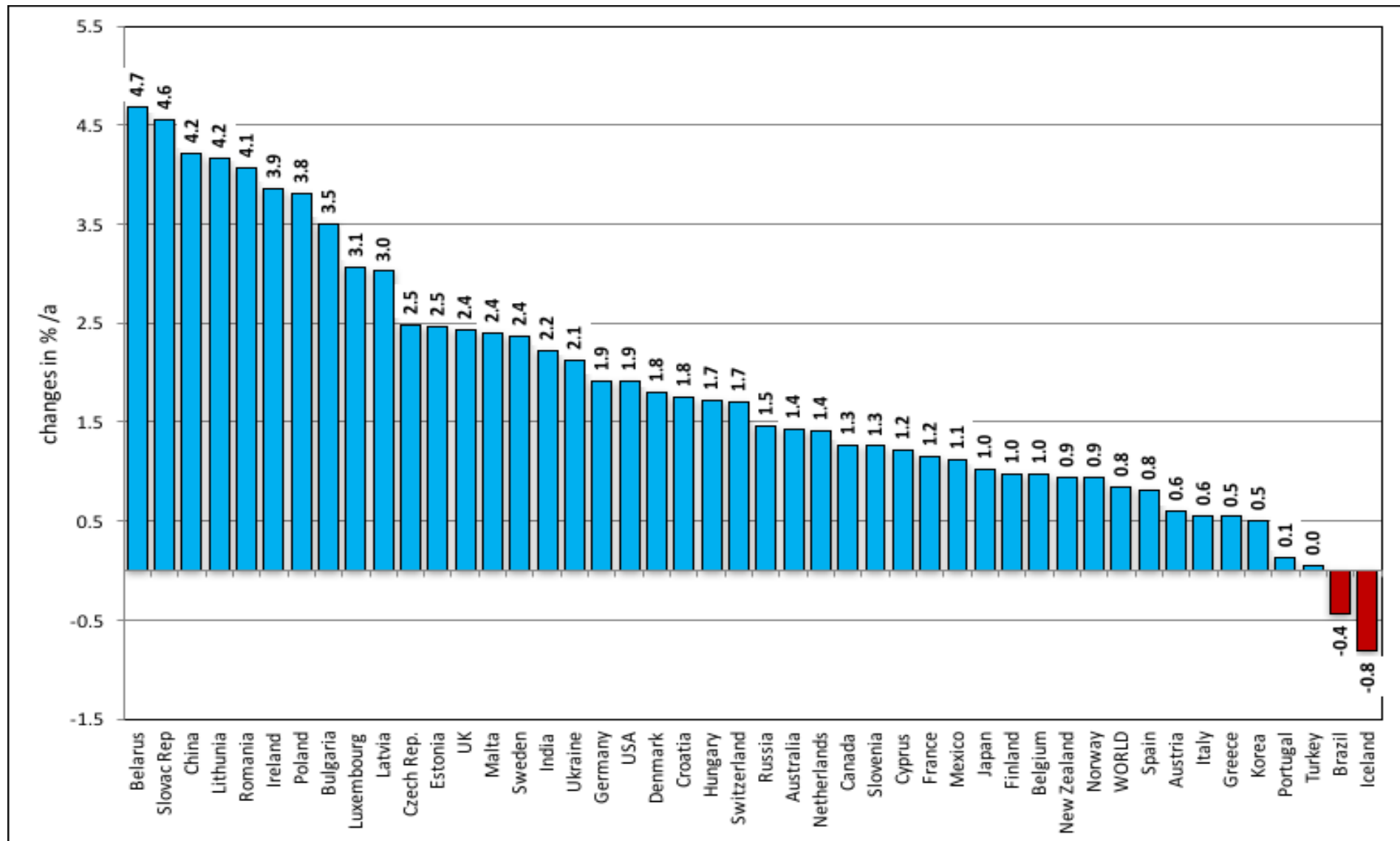


Energy productivity in selected countries 2016



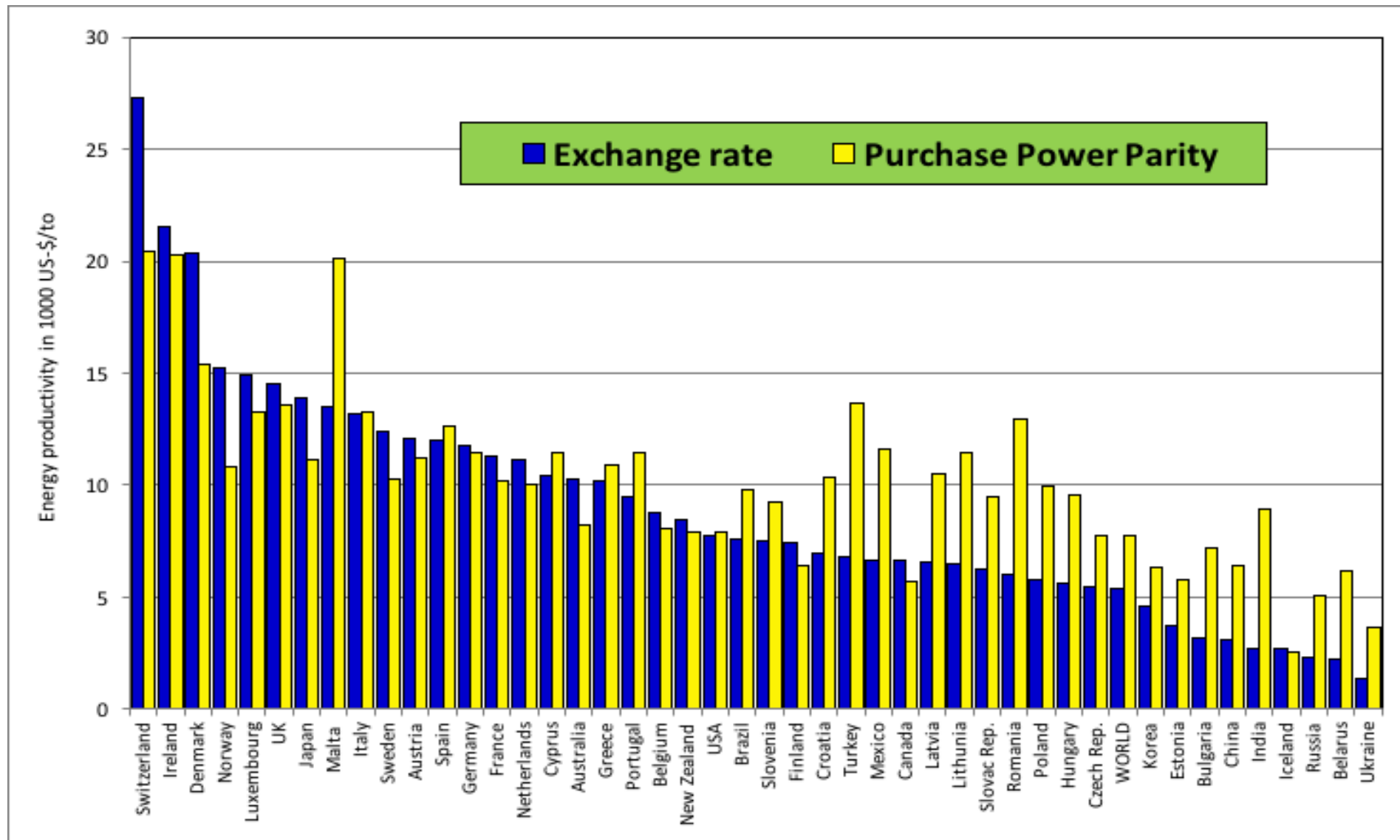
sources: World Bank; IEA; BP; author's calculations.

Changes of energy productivity in selected countries 1990 - 2014/6



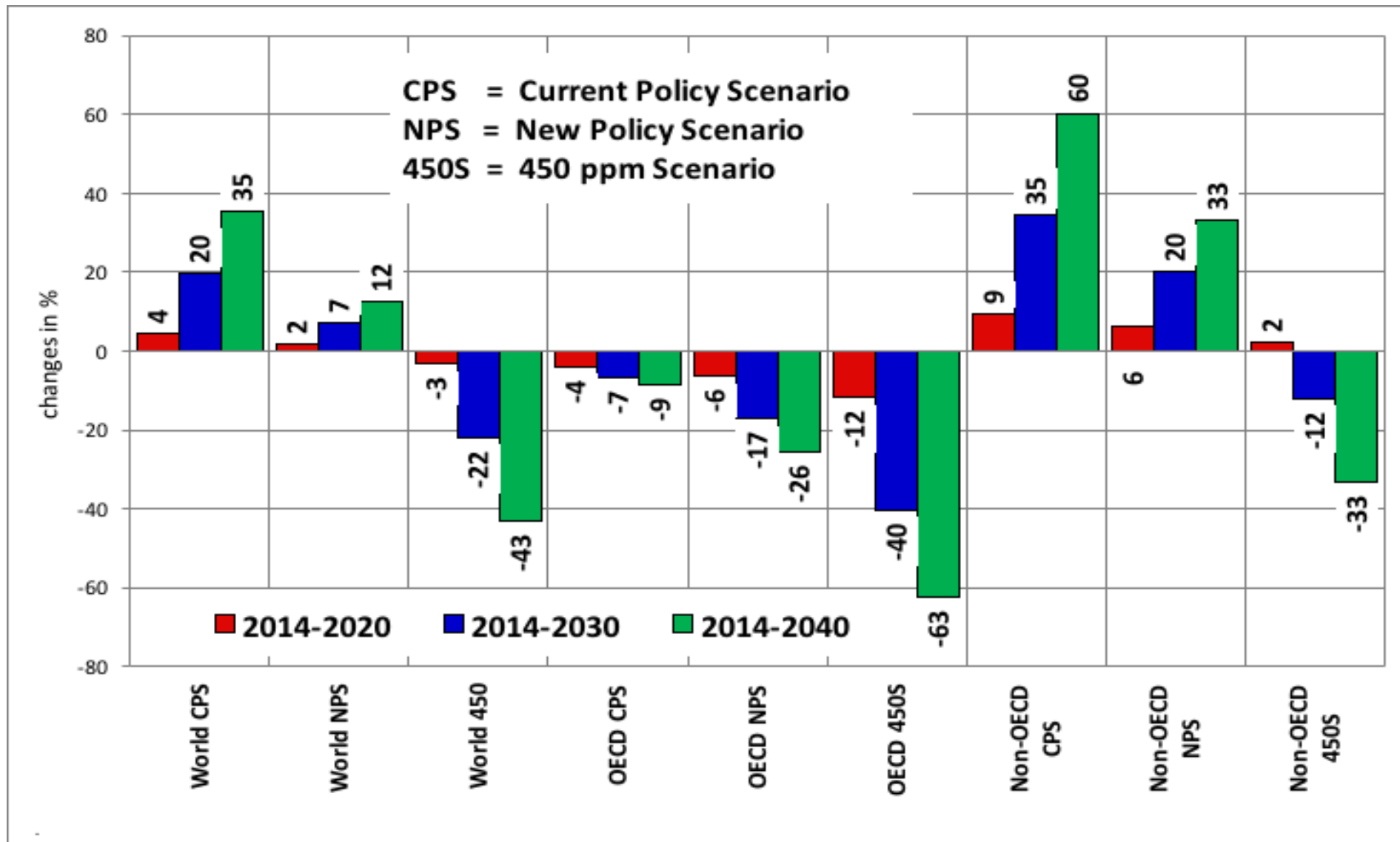
sources: World Bank; IEA; BP; author's calculation.

Energy productivity 1990 – 2016 with different base of calculation :



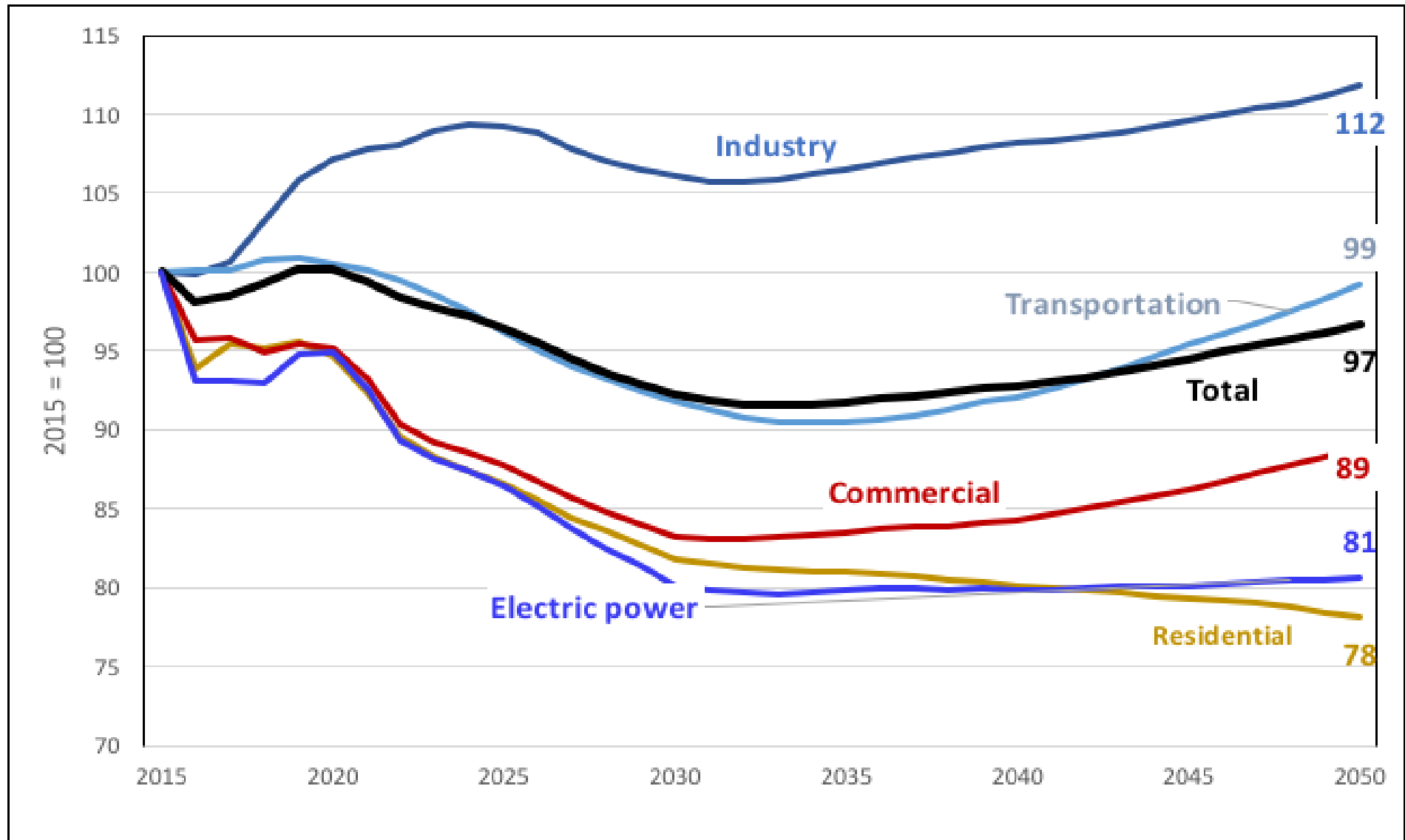
sources: World Bank; IEA; BP; author's calculation

World-wide CO₂ emissions by regions 2014-2030 (IEA scenarios 2016)



Carbon dioxide emissions by sector 2015 – 2050

- Long-term projections for the United States



source: U.S. Energy Information Administration (EIA); Annual Energy Outlook, January 5, 2017

Conclusions – almost the same as all the previous years

- The discussion often concentrates on emissions targets. This is necessary and has to be pursued in the future - **but**
- The real emission's development and their business-as-usual-perspectives should not be neglected.
- The gap between the desired targets and the expected real development can only be filled with an appropriate policy and effective measures for more energy efficiency and renewable energies.
- Targets are necessary but not sufficient: It needs policies and measures. That's the proof for an effective climate protection policy and not only the target setting!
- The present figures shows some promising results but the overall turning point is still far away.



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Thanks for listening
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