PBL Netherlands Environmental Assessment Agency

Comparing the ambition level of INDCs of G20 economies by analysing various indicators

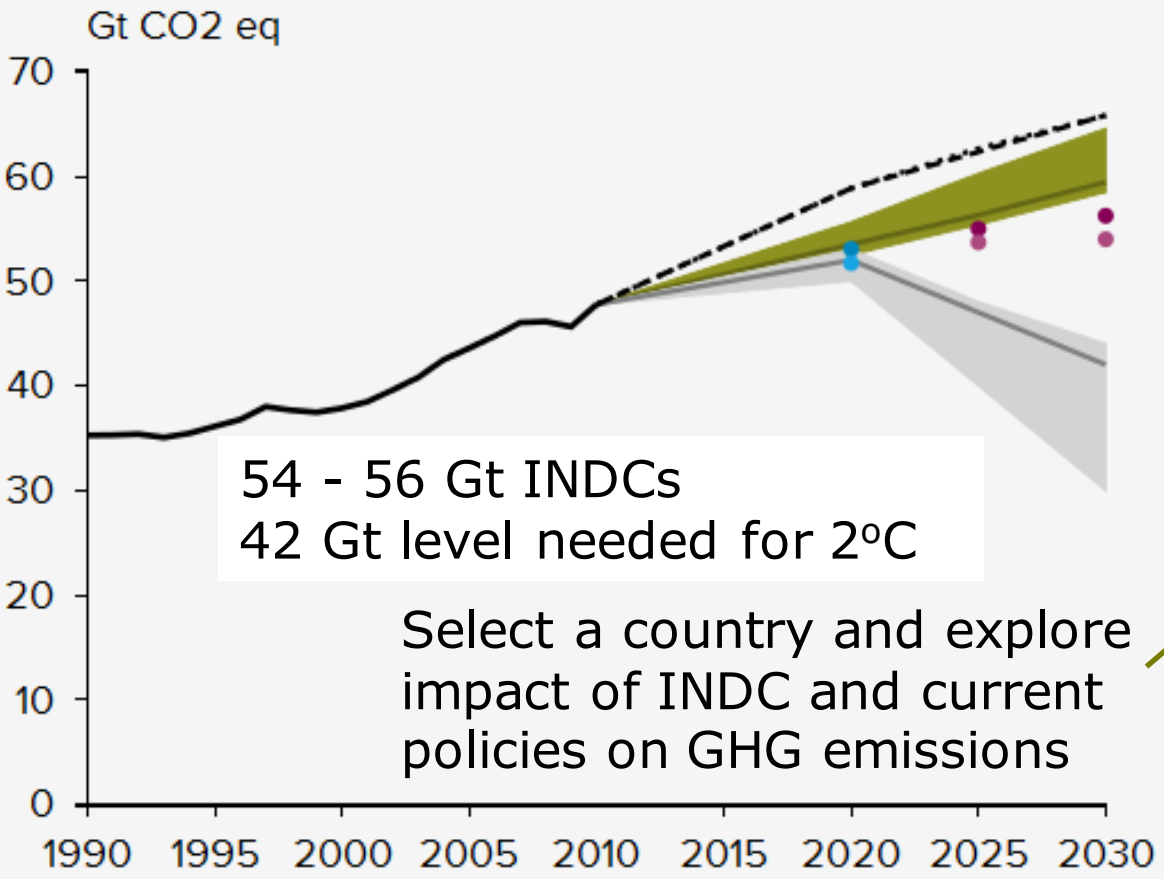
Bonn, 23 May 2016

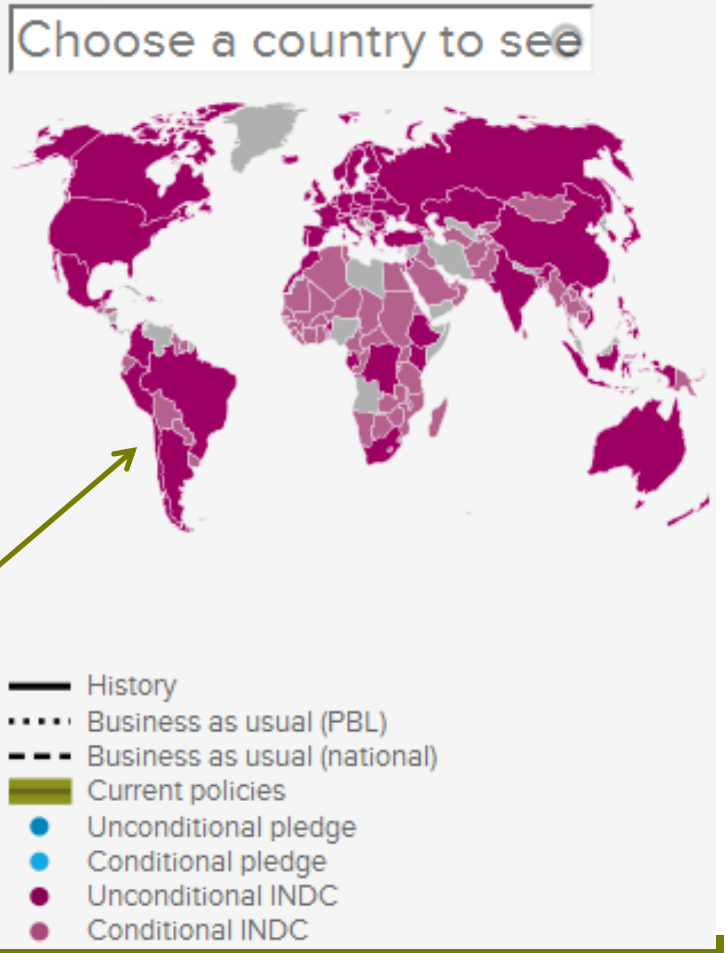
Michel den Elzen

PBL INDC tool: shows impact of INDCs and policies

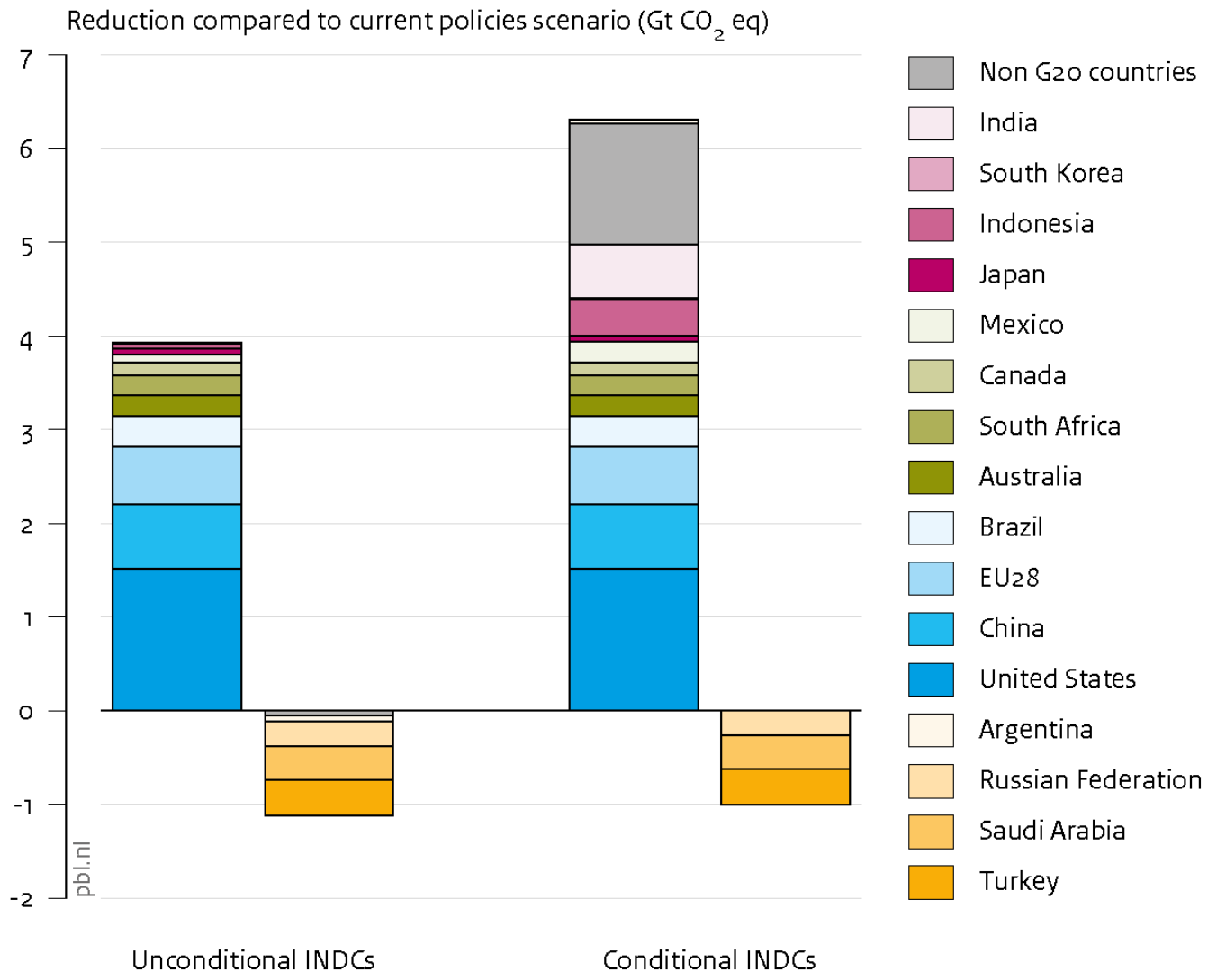
Total emissions | Emissions per capita | Emissions per income

www.pbl.nl/indc/





National emission reductions in countries based on their INDCs, 2030



Source: PBL FAIR/TIMER model

1/ Comparing INDCs with current policies trends

G20 economies are responsible for the largest share of global reduction from current policies

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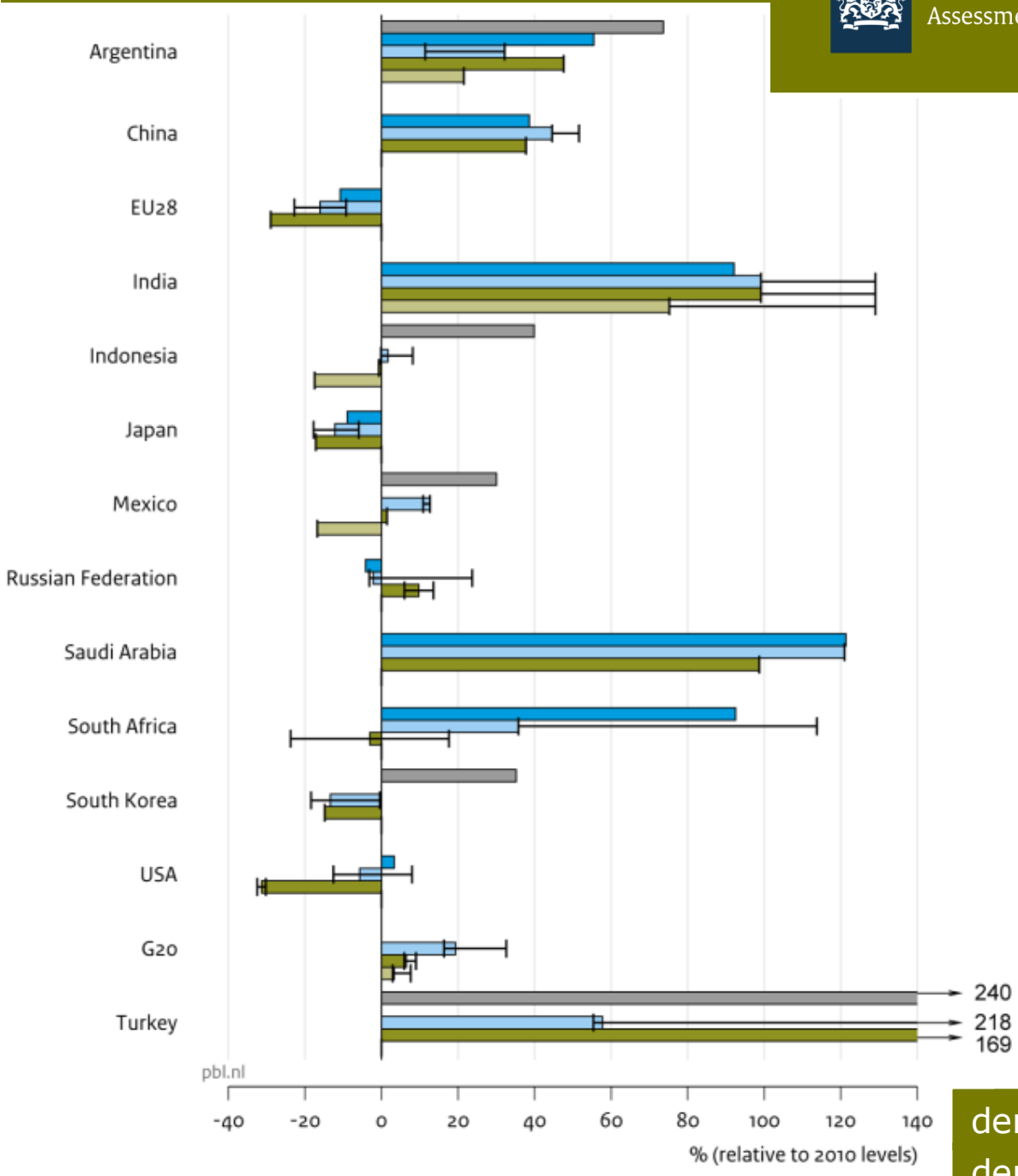


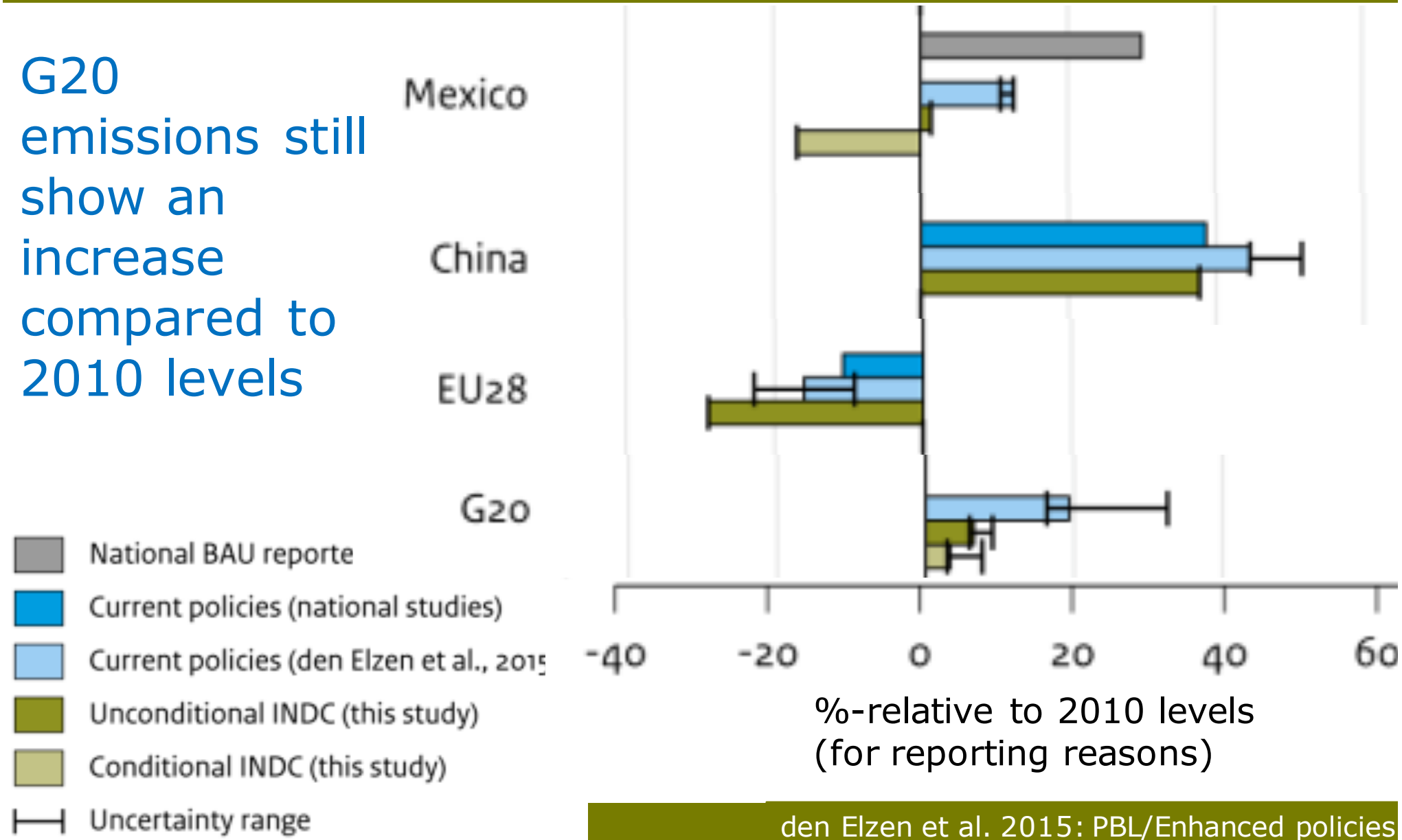
National BAU reported in INDC
Current policies (national studies)
Current policies (den Elzen et al., 2015)
Unconditional INDC (this study)
Conditional INDC (this study)
Uncertainty range

Comparing GHG emissions in the BAU scenario and current policies and INDC scenarios

Not shown G20 countries : Australia, Brazil, Canada

den Elzen et al. 2015: PBL/Enhanced policies
den Elzen et al. 2016 – Climatic Change

G20 emissions still show an increase compared to 2010 levels



den Elzen et al. 2015: PBL/Enhanced policies

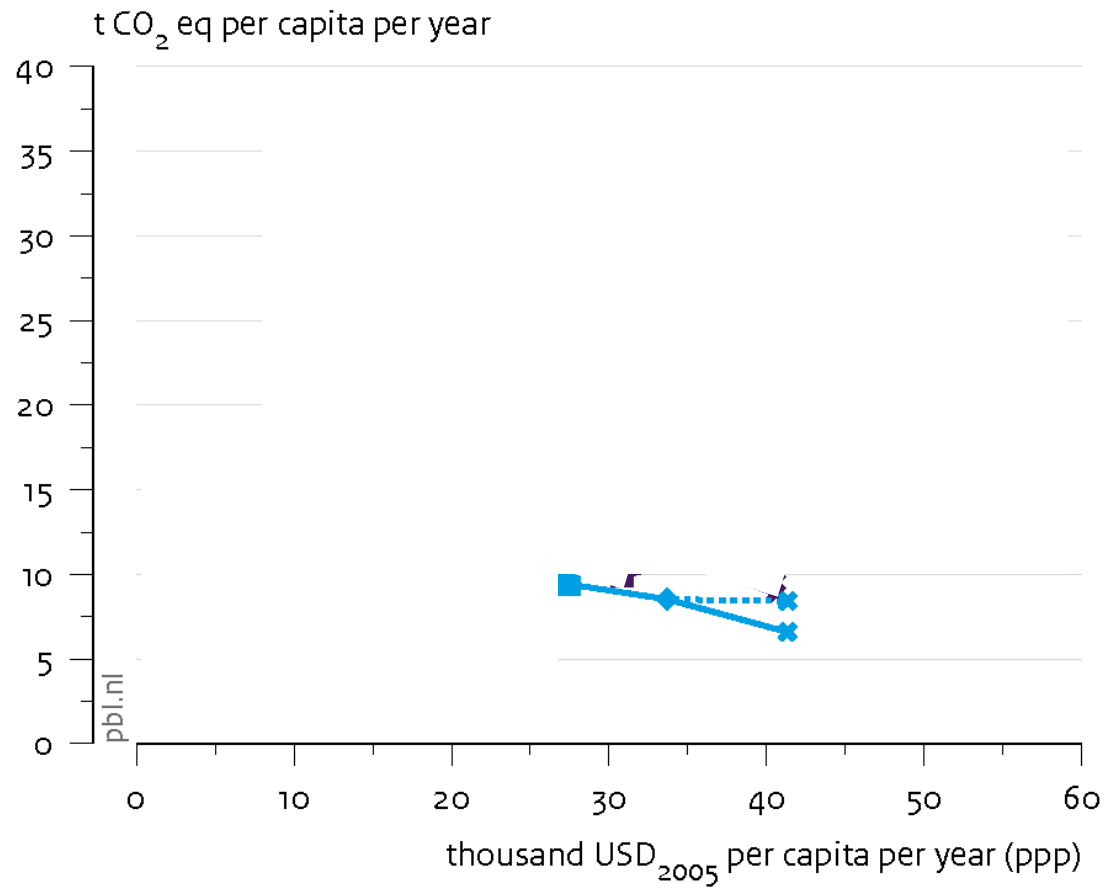
den Elzen et al. 2016 – Climatic Change

2/ Comparing emission peak years of the G20 economies

Country	Peak year	Per capita emissions (tCO_2eq/cap)	GDP (PPP) per capita (thousand USD/cap)	Emission intensity (tCO_2eq/ $MUSD_{2005}$)
EU	1980	13.3	17.4	759
Russian Federation	1990	22.7	12.6	1,797
Australia	2005	29.4	33.8	869
Canada	2005	23.7	35.1	662
Japan	2005	10.7	30.4	351
United States	2005	21.7	42.6	510
South Korea	2010	13.1	27.4	446
Brazil	2020	7.2	13.5	530
Mexico	2025	6.6 (6.4)	18.3	360 (350)
Indonesia	2025 (2020)	8.0 (7.4)	8.8 (6.7)	680 (1170)
Argentina	2030	12.4 (10.9)	26	475 (391)
China	2030	9.6	23.1	416
India	2030	2.8	8.2	341
South Africa	2030	7.3 – 11.3	18.8	389 – 599
Turkey	2030	10.5	22.4	470
Saudi Arabia	>2030	32.8	37.3	878

3/ Comparing indicators of the G20 economies

Greenhouse gas emissions per capita versus GDP per capita



2010
2020
2030
INDC scenario
Current policies scenario

EU28
United States
Mexico
Russian Federation
South Africa
India

Except for China, India, Russia and Turkey

Turkey
Canada
Brazil
China
South Korea
Indonesia
Australia
Japan
Argentina
Saudi Arabia
World

Source: PBL FAIR/TIMER model; SSP database

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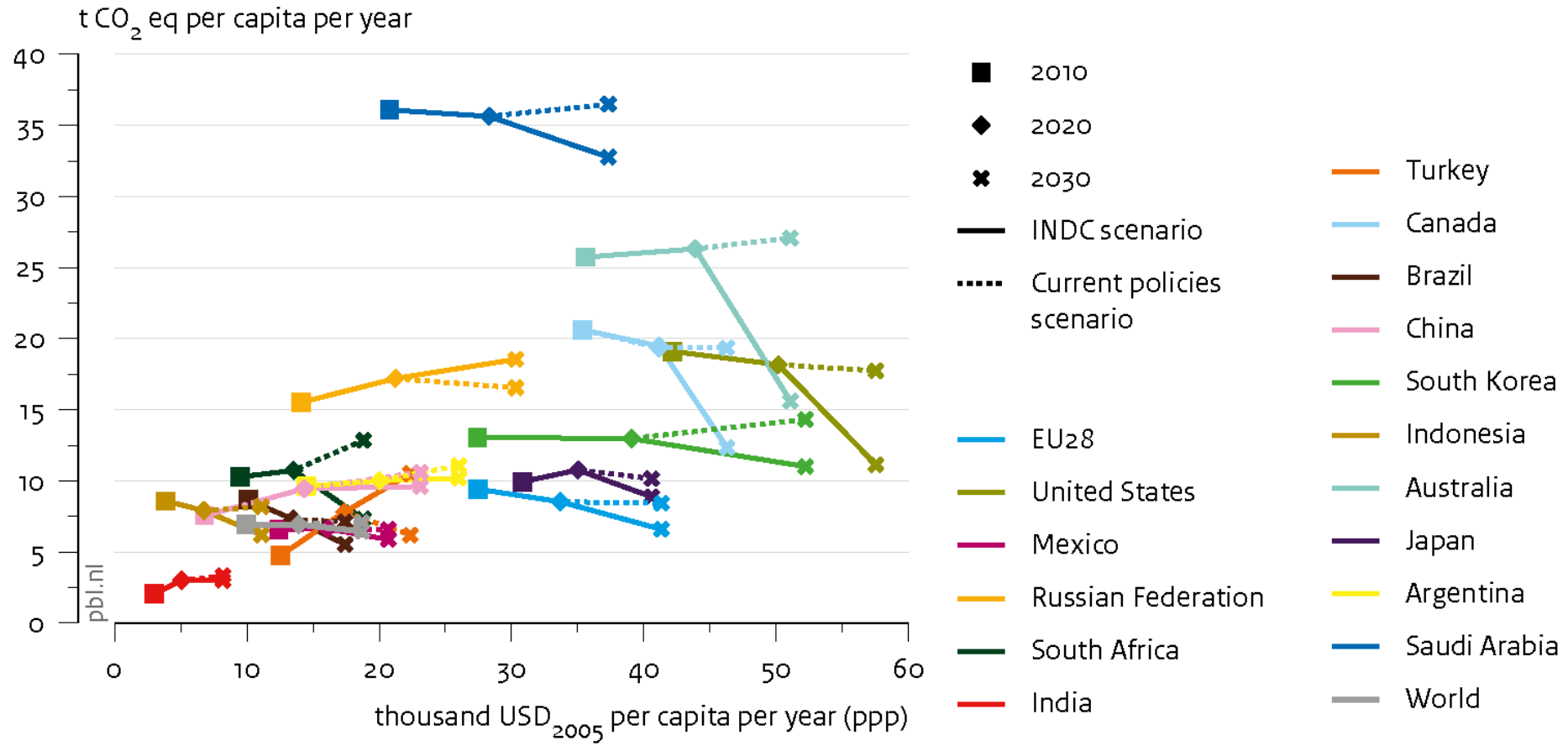
Full implementation of INDCs could enable a transition to lower per capita emissions and lower emission intensities

Greenhouse gas emissions per capita versus GDP per capita



Source: PBL FAIR/TIMER model; SSP database

den Elzen et al. 2016 – Climatic Change

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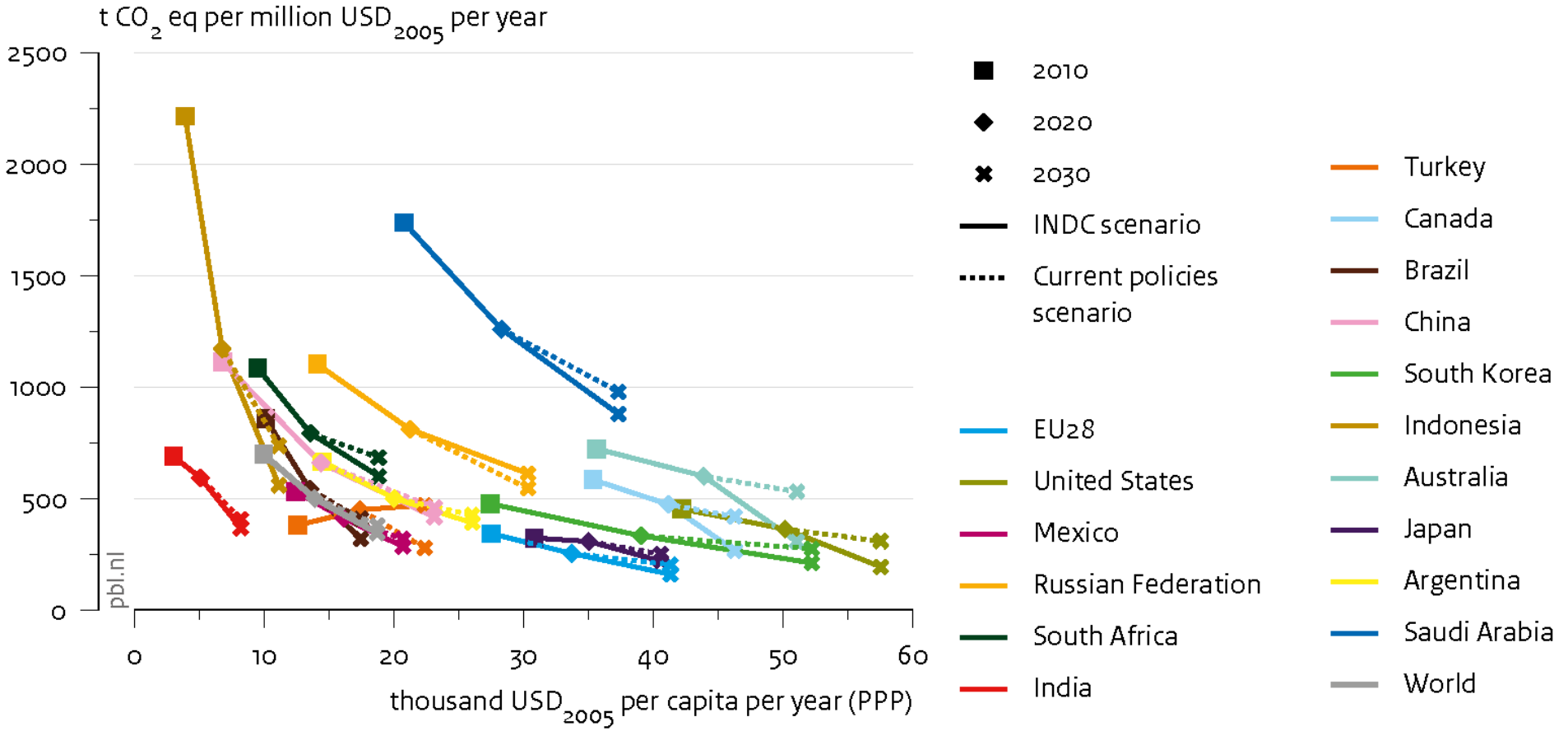
Full implementation of INDCs could enable a transition to lower per capita emissions and lower emission intensities

Greenhouse gas emissions per GDP versus GDP per capita

Except for Turkey

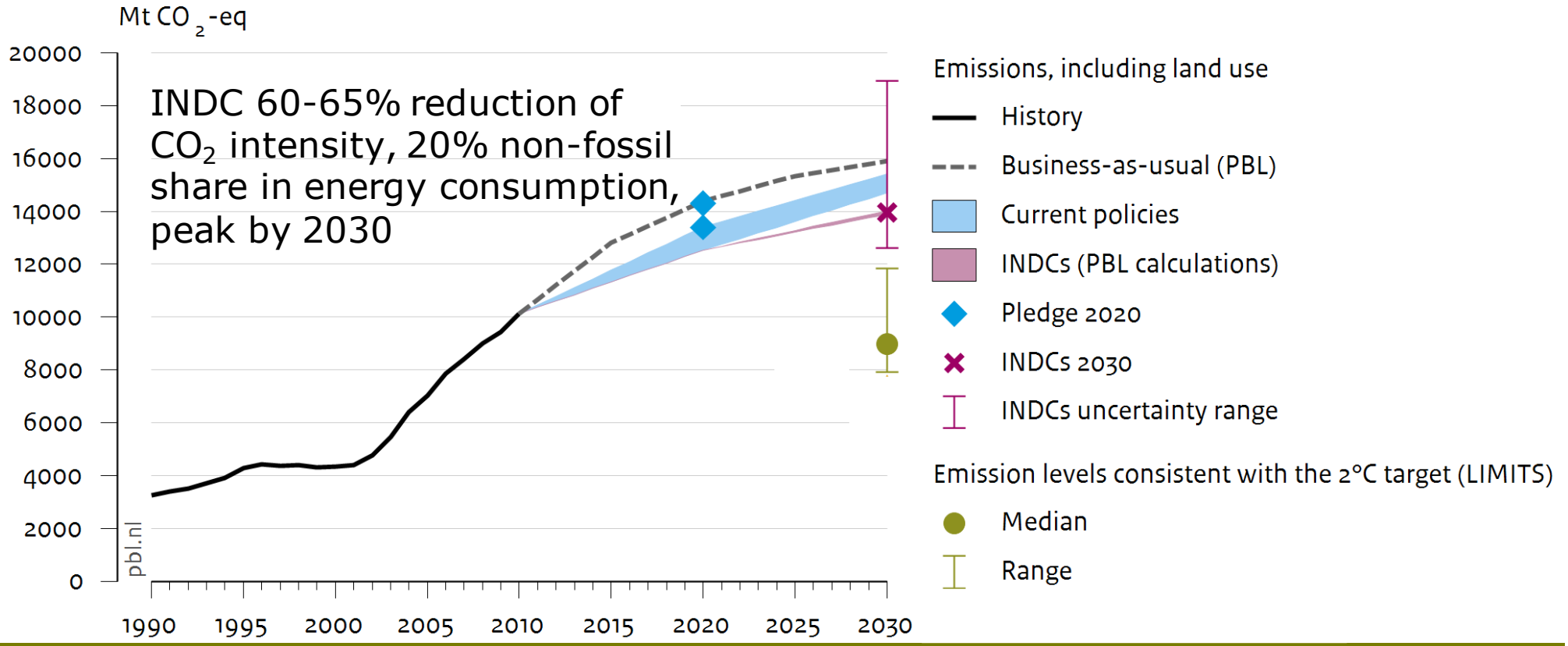


Source: PBL FAIR/TIMER model; SSP database

4/ Comparing the INDCs with two degree pathways

China's INDC is above domestic levels under a global costs-effective 2°C pathway

Impact of INDCs and climate policies on greenhouse gas emissions, China



Admiraal et al. 2016 – PBL/INDCs

Key messages:

1. INDCs do lead to reductions compared to current policies trends. Brazil, China, EU28 and US, are responsible for ~80% of the reductions for the unconditional INDCs, and half for the conditional INDCs
2. Despite these reductions, the global emission level is still projected to be higher in 2030 than it was in 2010. This also holds for the G20
3. INDCs imply that greenhouse gas emissions of Brazil, Indonesia, Mexico, and South Korea peak before 2025, and of China, India and South Africa by 2030 or later.
4. INDC implementation could enable a transition from business-as-usual trends to lower emission levels, lower emissions per capita and lower emission intensities at both national and global levels.

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Thank you for your attention

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den Elzen, M.G.J., Admiraal, A., Roelfsema, M., van Soest, H., Hof, A., Forsell, N. 2015. **Contribution of the G20 economies to the global impact of the Paris Agreement climate proposals** – Climatic Change, http://dx.doi.org/10.1007/s10584-016-1700-7.

den Elzen, M.G.J., Fekete, H., Höhne, N., Admiraal, A., Forsell, N., Hof, A.F., Olivier, J.G.J., Roelfsema, M., van Soest, H., 2016**. Greenhouse gas emissions from current and enhanced policies of China until 2030: Can emissions peak before 2030?** Energy Policy 89, 224-236

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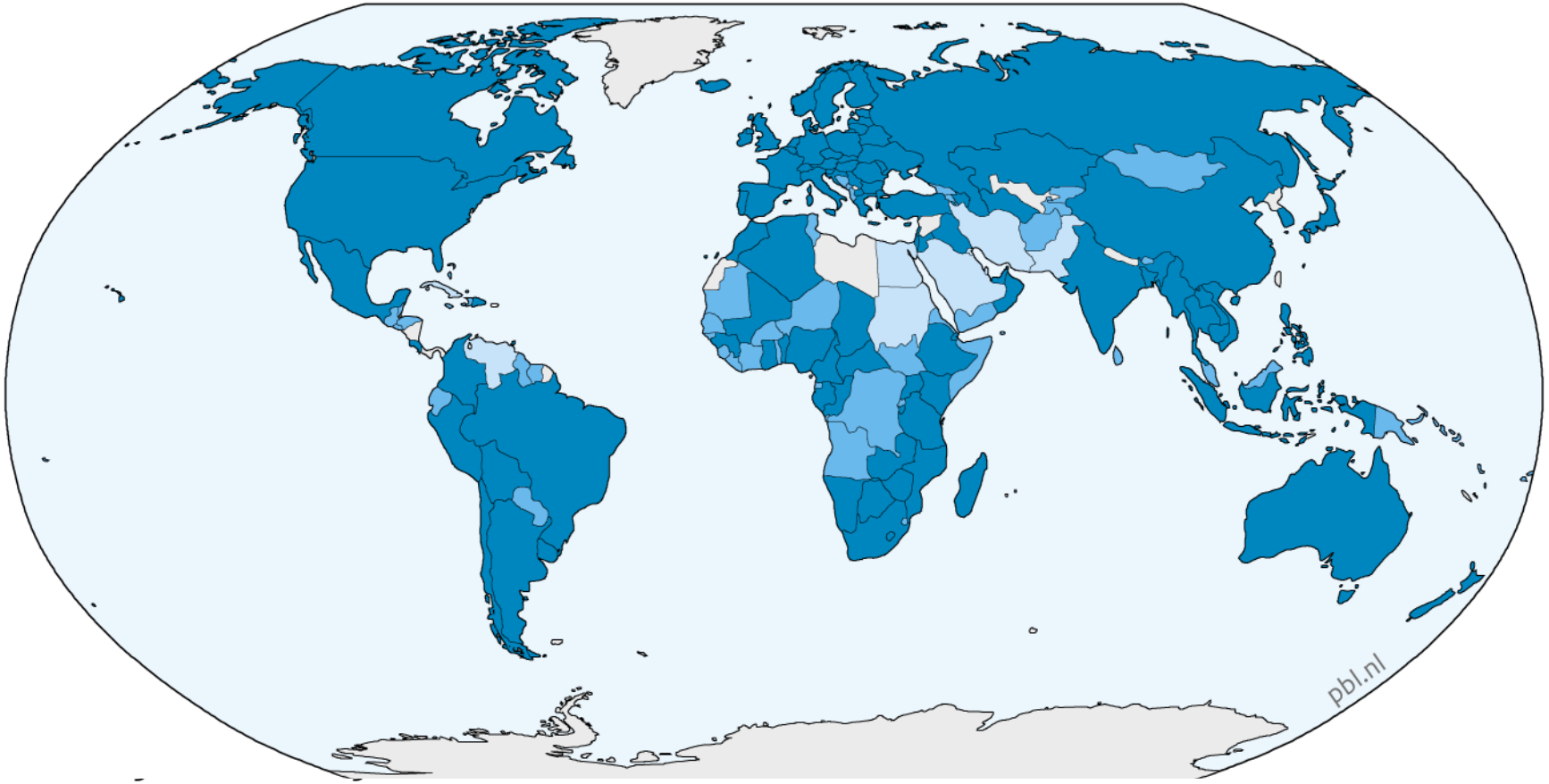
INDC submissions by 15 December 2015



	Share of global 2012 emissions (%)
INDC submitted, analysed	89.60
INDC submitted, not analysed (2012 emissions share <0.1%)	1.51
INDC submitted, not-analysed (non-GHG target and actions, and cannot be quantified)	5.84
No INDC submitted	3.05

Summary of INDCs by main G20 countries

Country	% of GHG 2012 (EDGAR, incl. LULUCF)	Unconditional INDC (conditional*)		base year
		2025	2030	
China	22%	Peak by 2030 NF 20% by 2030	-60% to -65% intensity level	2005
USA	12%	-26% to -28%		2005
EU 28	9%		(domestic) -40%	1990
Brazil	5.7%	-37%	-43%	2005
India	5.4%	NF target	-33% to -35% Intensity level	2005
Russia	5.3%		-25% to -30%	1990
Japan	2.8%		-26%	2013
Canada	1.9%		-30%	2005
Indonesia	1.5%		-29% (-41%)	BAU 2030
Australia	1.5%		-26% to -28%	2005
Mexico	1.3%		-22% (-36%*)	BAU 2030

Shown: regions with a large share in global 2012 emissions

www.pbl.nl/indc/

Reduction effort compared to different base-year levels

Country	Unconditional INDC (conditional*)		
base year:	1990	2005	2010
Australia	-21%	-27%	-22%
Brazil	-26%	-43%	-29%
Canada	-14%	-30%	-26%
China	+329%	+98%	+38%
EU28	-40%	-35%	-29%
India	(+253%)	(+130%)	(+75%)
Indonesia	+92% (+60%)	+10% (-8%)	-1% (-17%)
Japan	-16%	-23%	-17%
Mexico	+36% (+11%)	+16% (-5%)	+1% (-17%)
Russian Federation	-27.5%	+14.2%	+9.8%
South Africa	+4.7% to +61.6%	-20% to +23%	-23% to +19%
South Korea	+85.1%	-9%	-14.8%
United States	-25%[3)]	-37%[3)]	-31%[3)]