



Assessing climate action - Climate Action Tracker

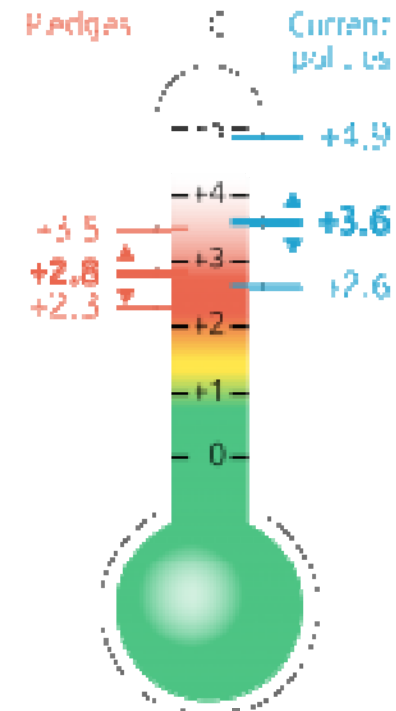
Side event on Climate change mitigation Policy Progression Indicator (C-PPI)

Frederic Hans, f.hans@newclimate.org

COP22, Marrakesh, Morocco, 18 November 2016

Content

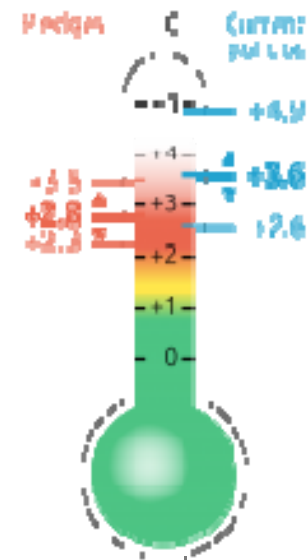
- » Introduction to the Climate Action Tracker
- » Assessing climate action proposals against ...
 - Macro-economic indicators
 - Effort sharing calculations
 - Sectoral decarbonisation indicators
 - A good practice policy package



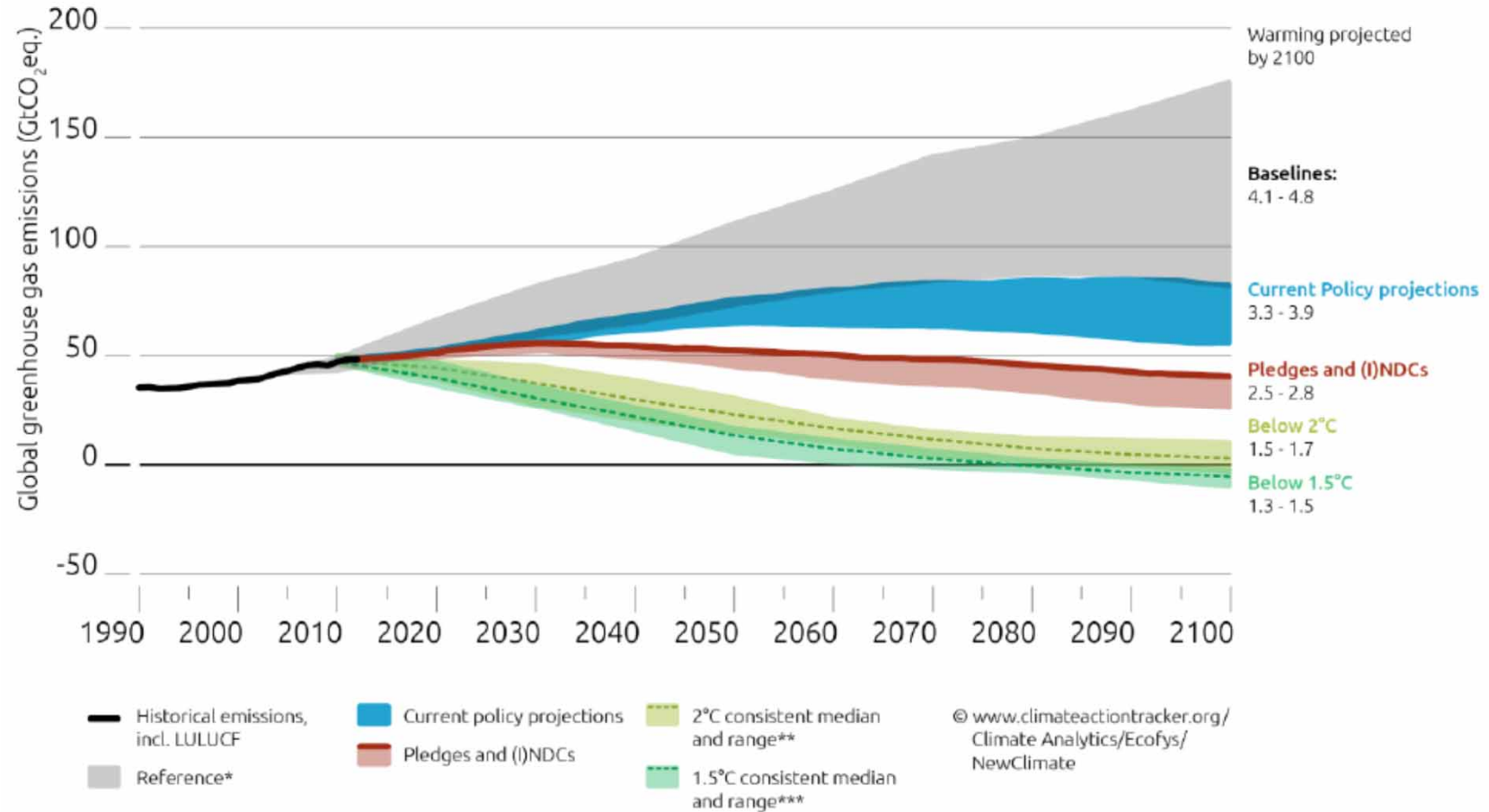
Climate Action Tracker

- » **Harmonised country assessments:** Provide national, fast-response, harmonised assessments from a high-level perspective for a large number of countries: around 30 countries covering around 80% of global emissions
 - Emissions implications of (I)NDCs
 - Emission implications of implemented climate-change policies
 - Comparison to effort-sharing calculations
 - Comparison to emission reduction potential
 - Tracking decarbonisation
- » **Temperature increase:** aggregation of national pathways to global level and estimating the resulting temperature increase

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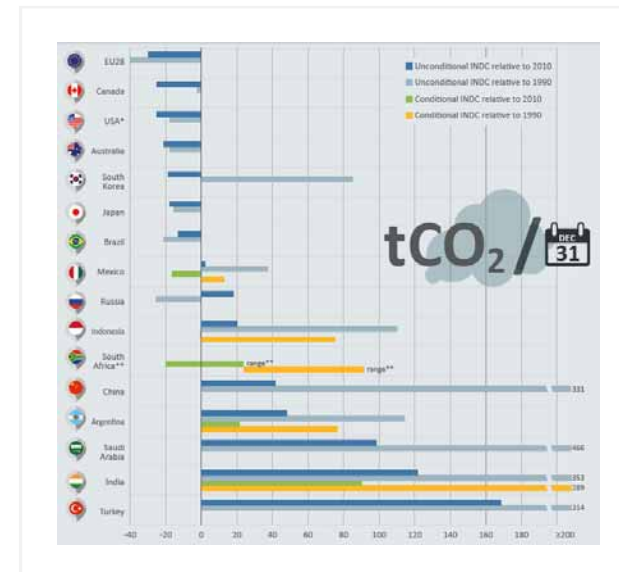
Global aggregation



Source: Climate Action Tracker Update, November 2016

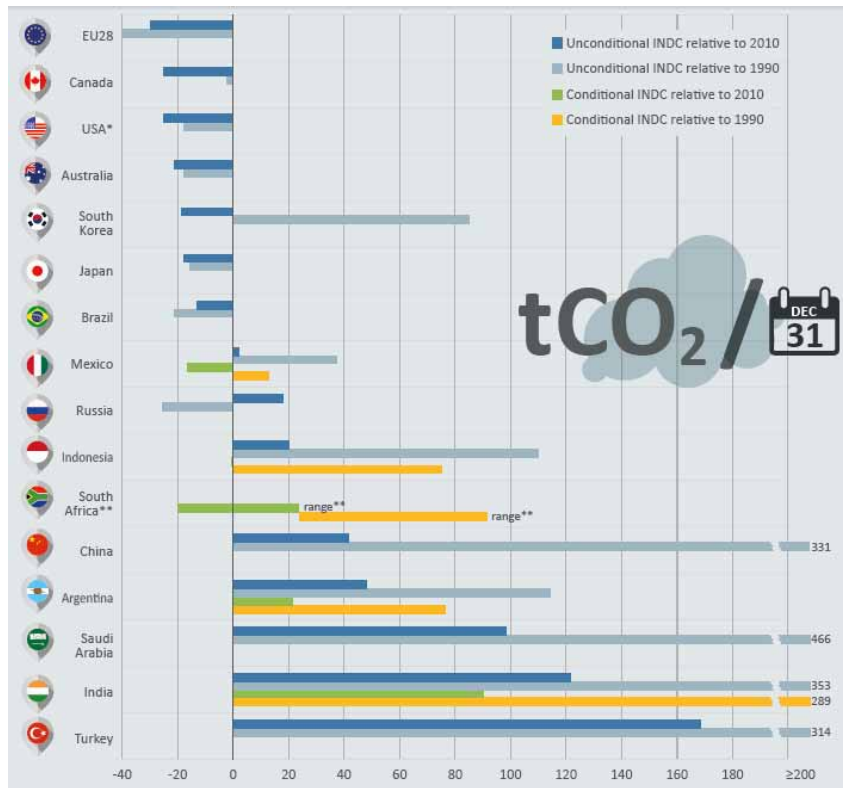
Content

- » Assessing climate action proposals against ...
- **Macro-economic indicators**
 - Effort sharing calculations
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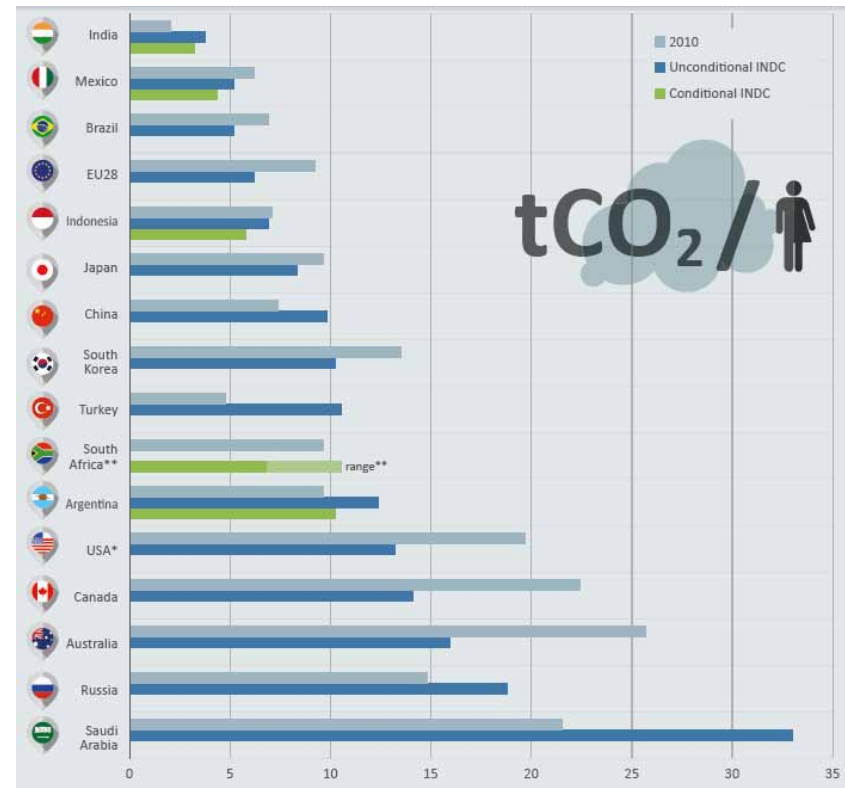


Marco-economic indicators

GHG emissions relative to base year (in percentage) for G20 members under the INDCs in 2030



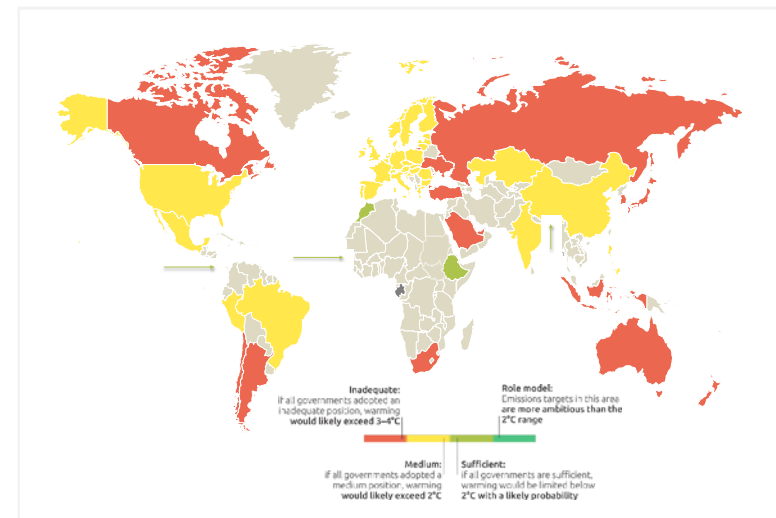
Greenhouse gas emissions per capita for G20 members under the INDCs in 2030 (tCO2e/capita)



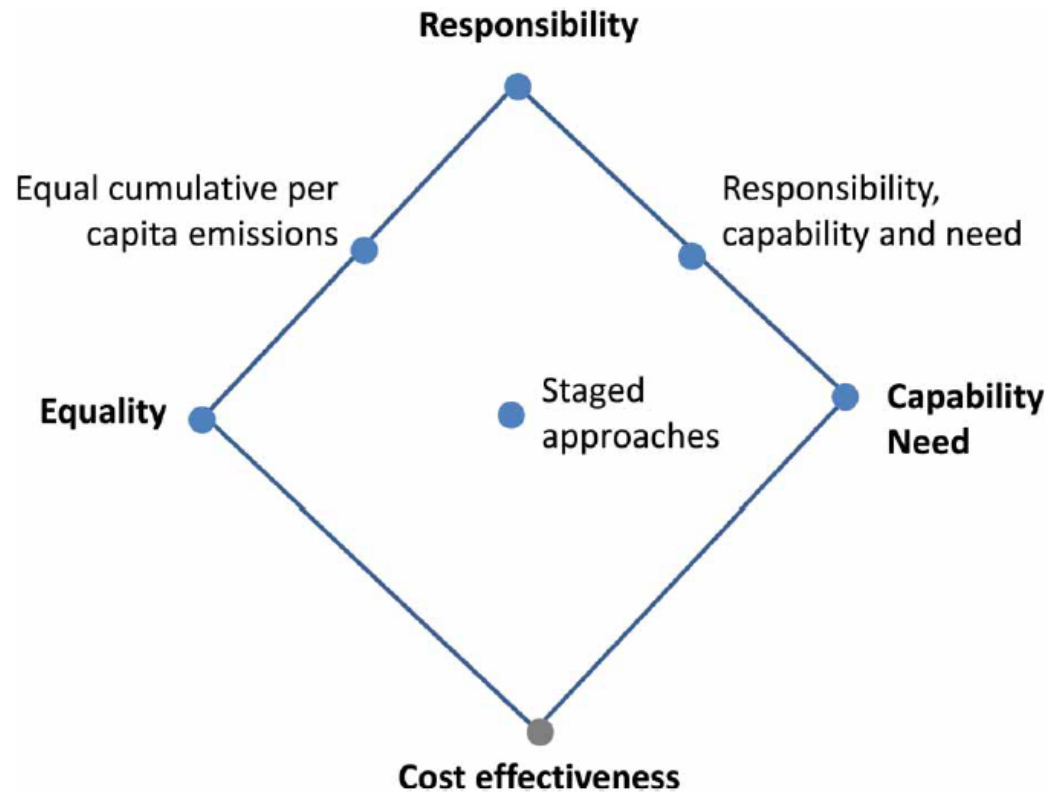
Source: UNEP Emissions Gap Report 2016

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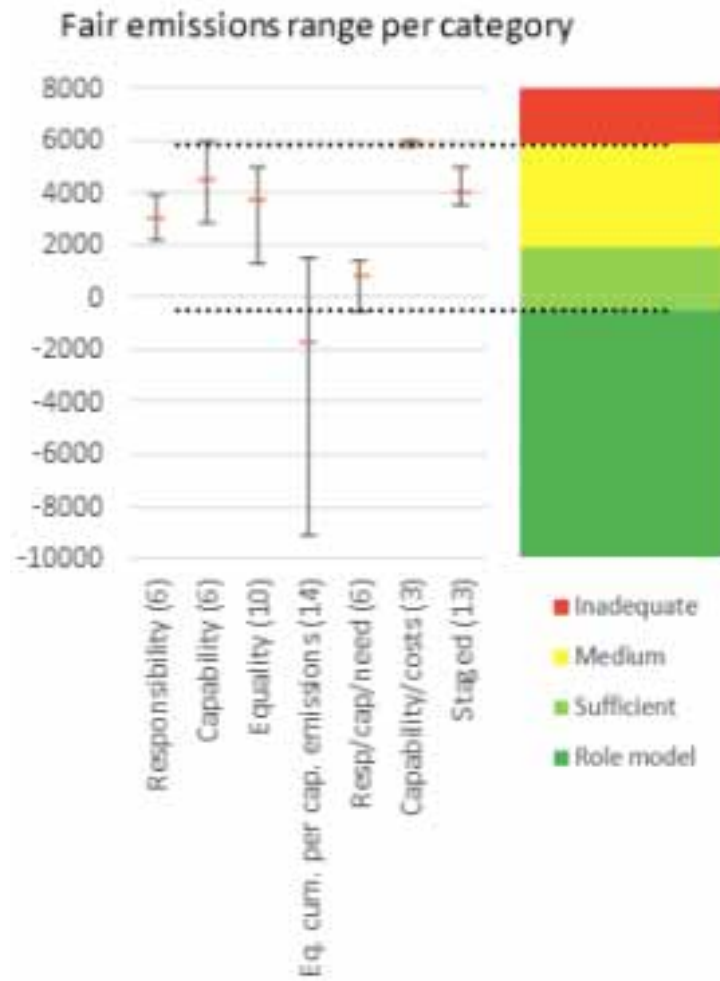


Different ways to share the effort



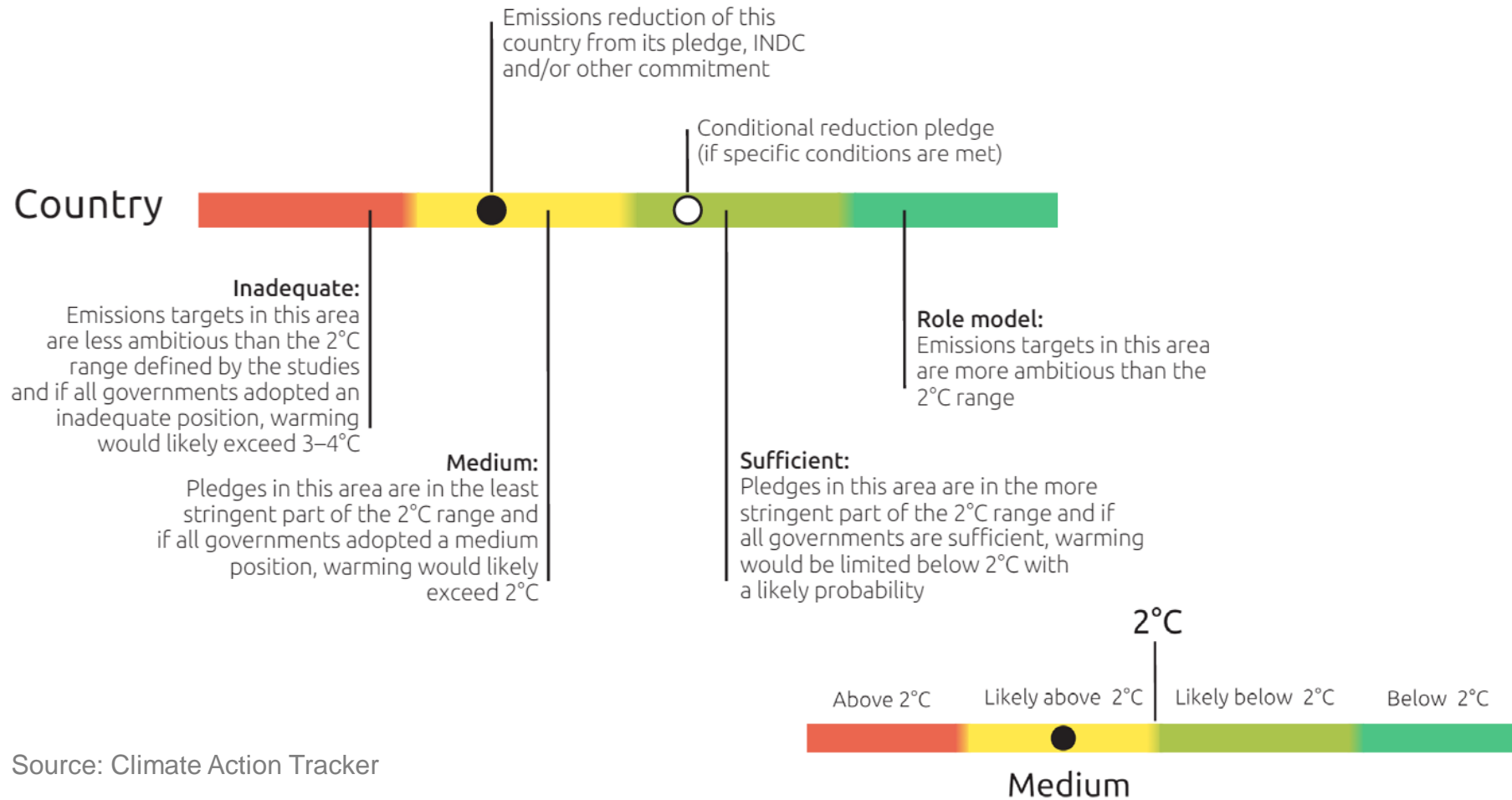
Source: Höhne, N., Den Elzen, M., & Escalante, D. (2014). Regional GHG reduction targets based on effort sharing: a comparison of studies. *Climate Policy*, 14(1), 122-147.

Defining a simple rating scale

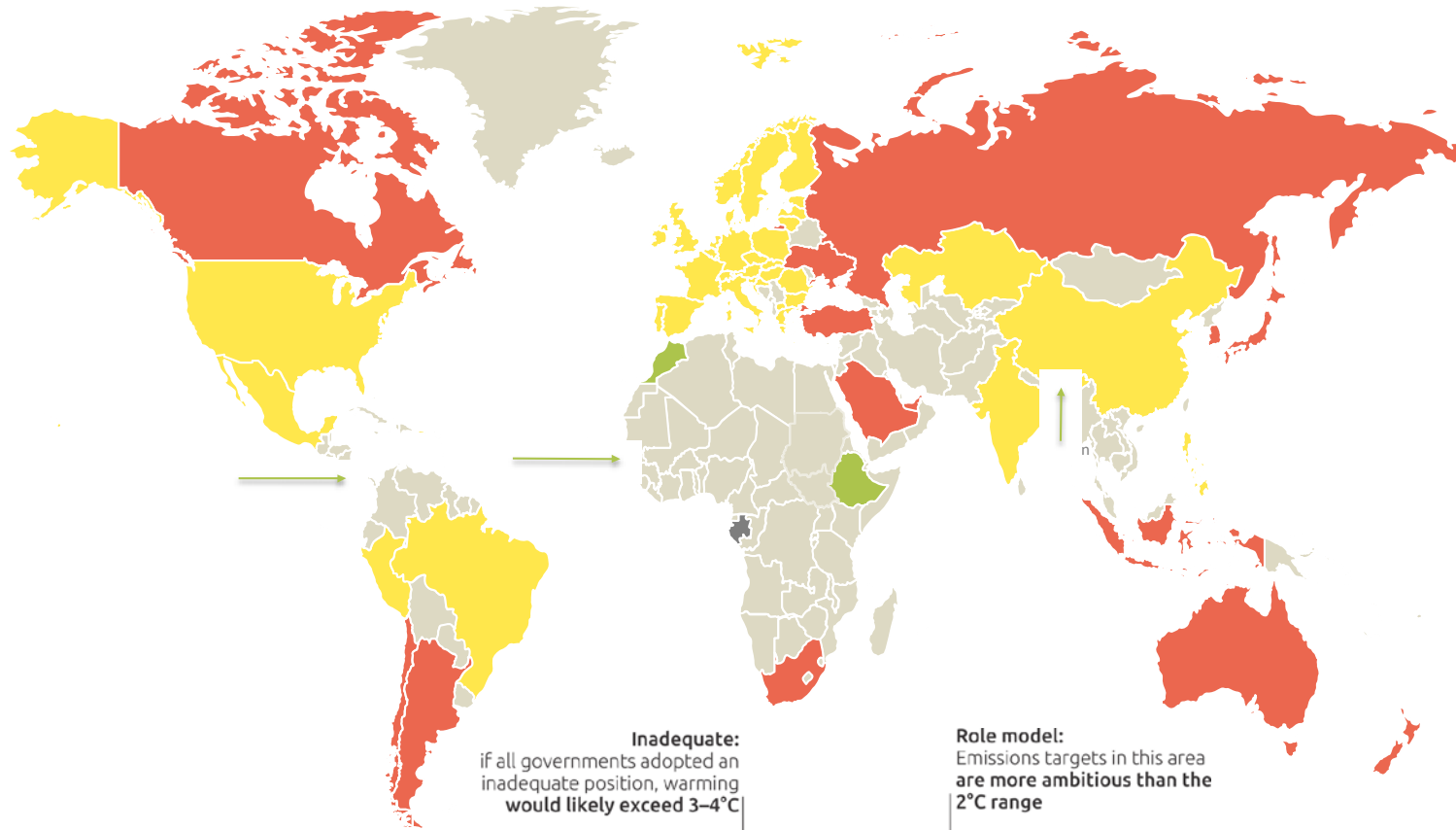


Source: Climate Action Tracker

Defining a simple rating scale

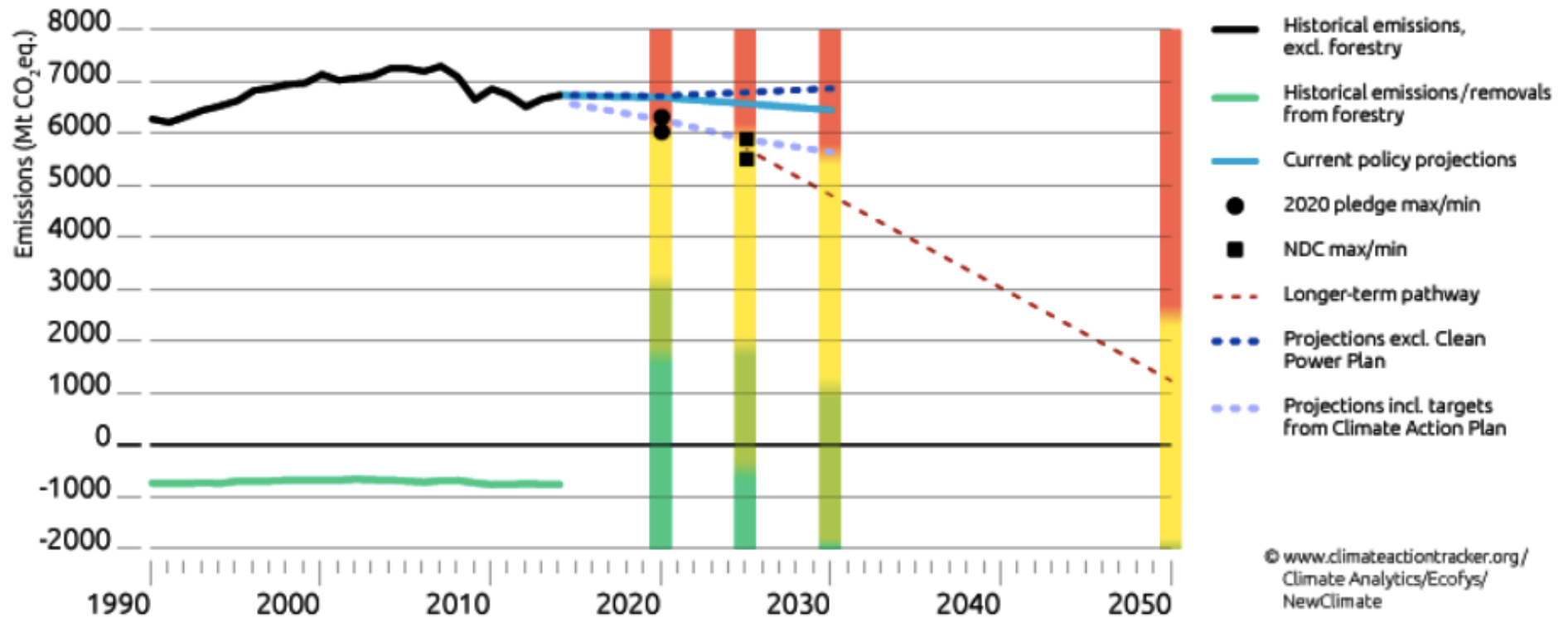


Country assessments



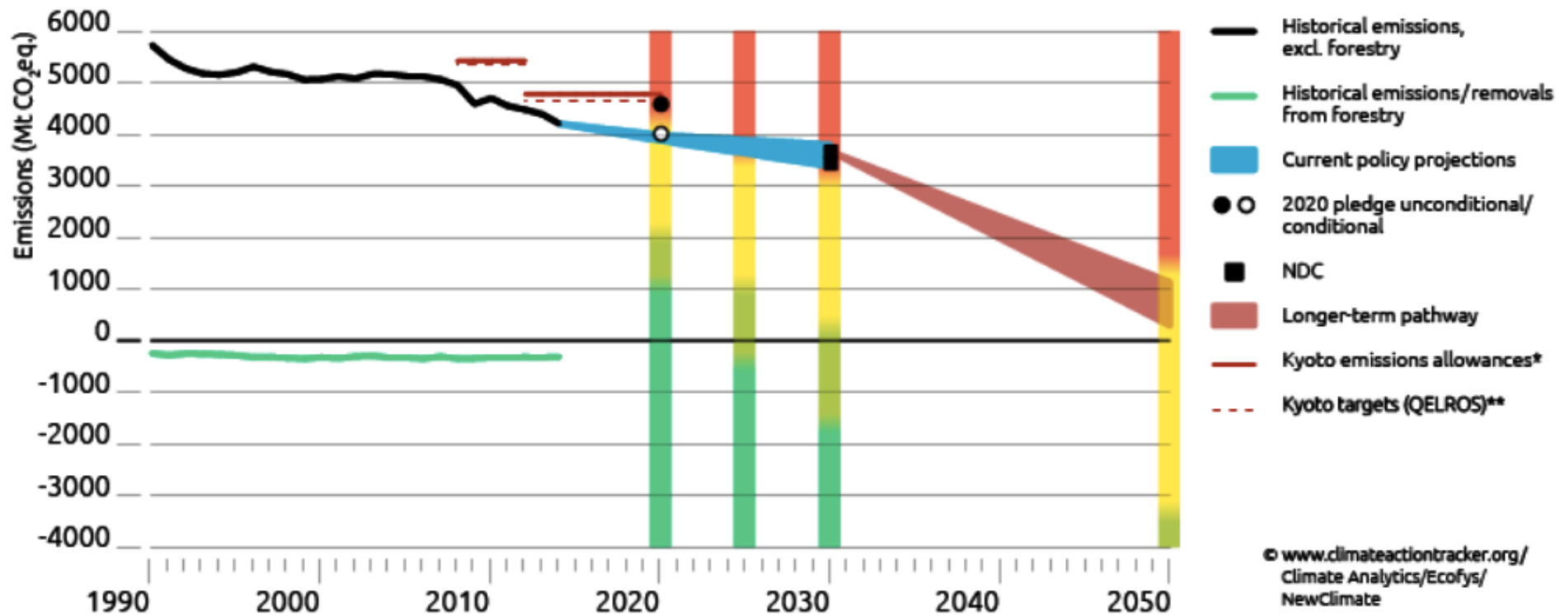
USA

- » Copenhagen 2020 pledge: **17% below 2005**
- » NDC target for 2025: **26% to 28% below 2005**



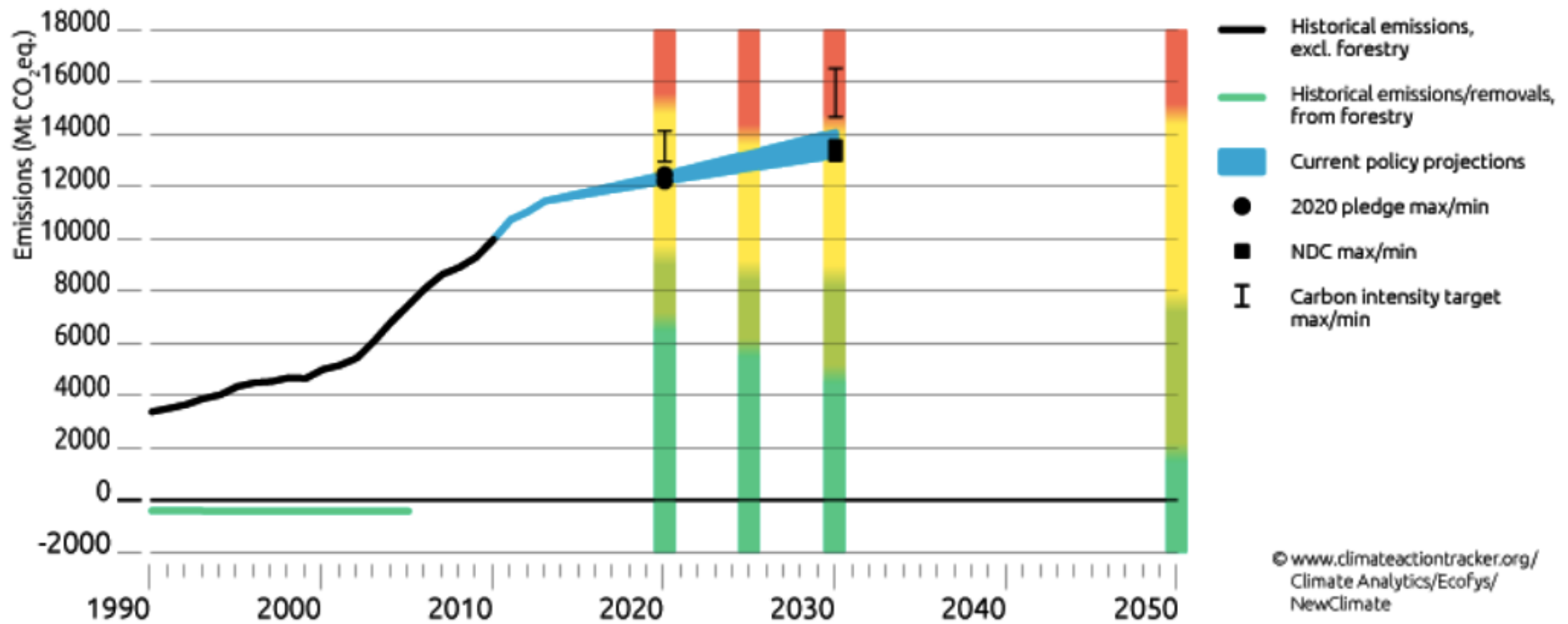
EU

- » Unconditional 2020 pledge: **20% below 1990**
- » Conditional 2020 pledge: **30% below 1990 in 2020 with ambitious international treaty**
- » NDC target for 2030: **at least 40% below 1990**

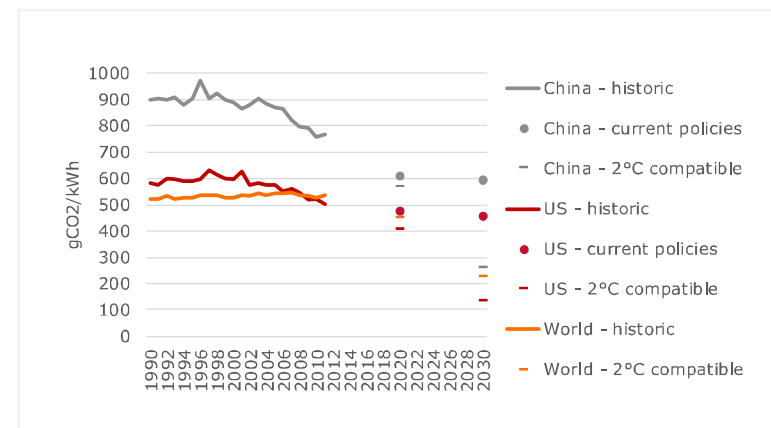


China

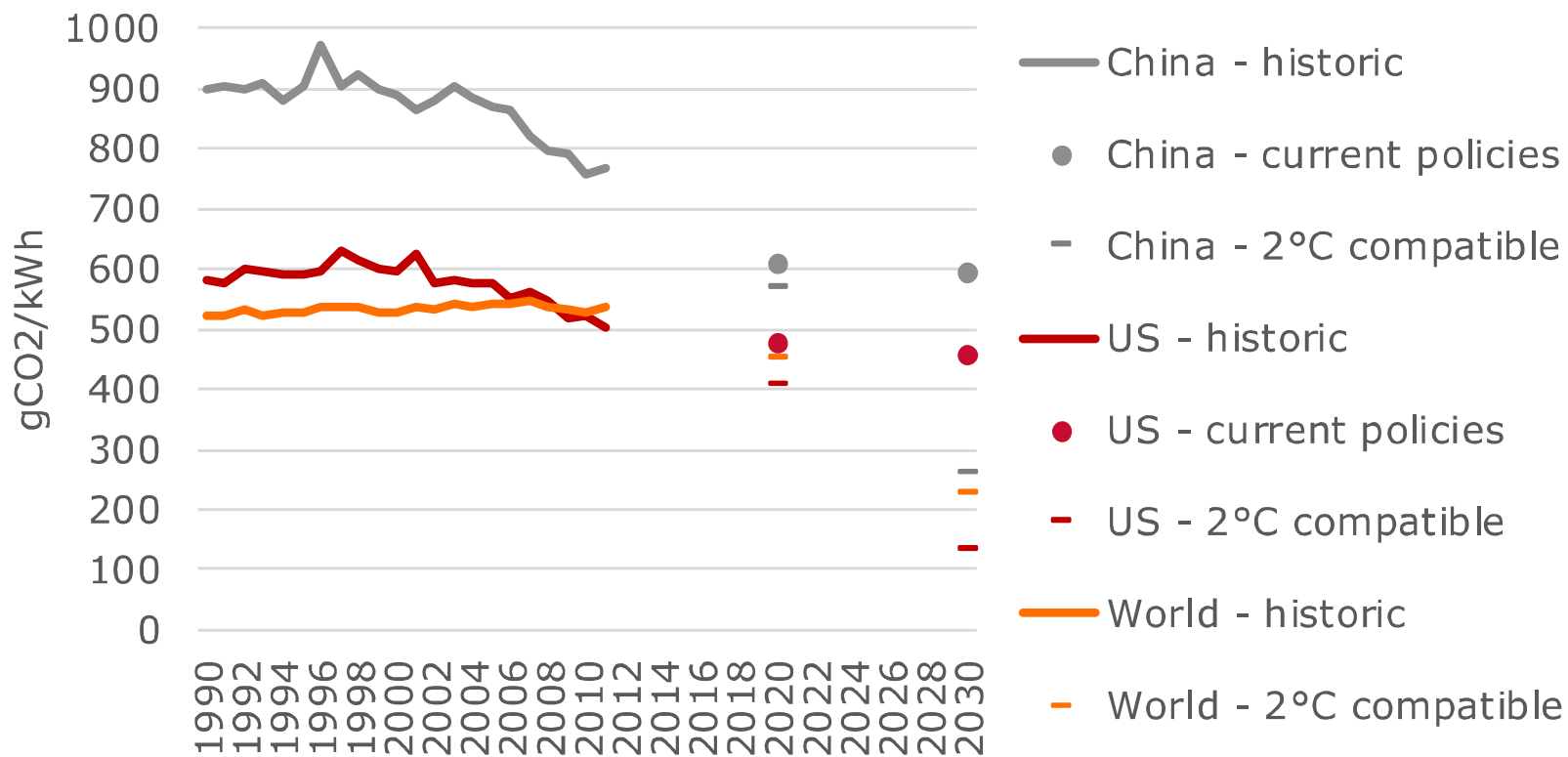
- » Copenhagen 2020 pledge: **Reduction of 40-45% CO₂/GDP below 2005, 15% non-fossil energy, afforestation**
- » NDC target for 2030: **Target to peak CO₂ emissions at the latest, CO₂/GDP by 60% to 65% below 2005, 20% non-fossil energy, afforestation**



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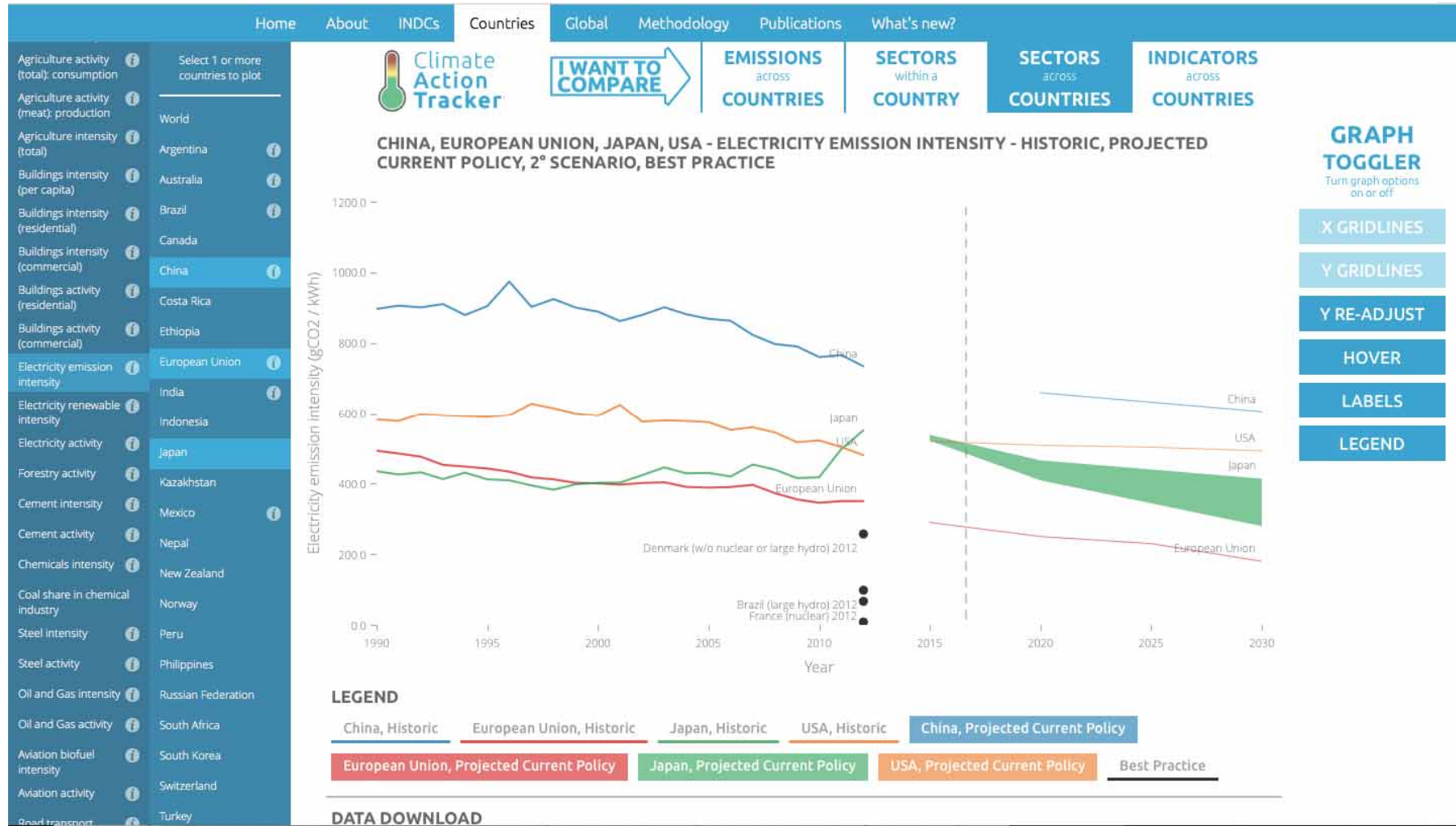


Comparing emission intensity of power production



Source: *China and the US: how does their climate action compare?*, CAT Policy Brief, October 2014 ([Link](#))

Explorer for 30 indicators



Country Factsheets



AUSTRALIA

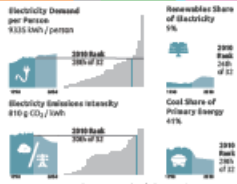
15 Aug 2016

Factsheet - Key Sector Decarbonisation, Agriculture & Land Use
Short form analysis by CAT - for more information visit www.climateactiontracker.org

For more complete analysis please visit climateactiontracker.org/countries/australia

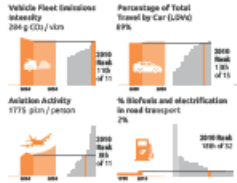
Electricity & Coal
in Total
Primary
Energy

Electricity generation is the largest source of emissions, accounting for 33% of total emissions in 2014 with a total of 180 MTCO₂e. Electricity sector emissions increased strongly until 2009 but have since then fallen slightly from 212 MTCO₂e in 2009 to 180 MTCO₂e in 2014, mostly from government policy including the carbon tax, energy efficiency, the closing of electricity-intensive industrial facilities such as aluminium smelters, higher electricity prices and increased renewable energy adoption. However, electricity emissions are projected to grow 24% above 2014 by 2030, reaching 224 MTCO₂e. This is partly due to the recent change in government policy (repeal of the carbon pricing mechanism and scaling back of the renewable energy target), with higher emissions intensity expected from increased coal-fired generation, increased energy demand from major coal seam gas & LNG projects, as well as increased residential demand after 2018. Australia also has significant renewable resource potential that it isn't adequately utilising, especially in terms of large scale wind & solar generation. However, rooftop solar PV has seen considerable growth and 16.5% of households now have PV systems, making Australia the world leader (but sixth in total capacity).



Transport

The transport sector is a significant and growing slice of Australia's overall emissions (30 MTCO₂e or 17%), and emissions per person are higher than most other countries. This is mainly due to a high dependence on road transport and a very inefficient vehicle fleet. Historically, emissions growth was driven by personal vehicle ownership and use, but future growth will be more determined by increased freight and aviation activity. Emissions standards for vehicles can be improved but it will be much trickier to reduce car dependency and increase public transportation due to the low urban density of Australia's cities (where the vast majority of people live).



Agriculture

Historically, Australia's agricultural sector has been a large export earner for the country and in 2012 contributed 16% of national emissions or 87 MTCO₂e, with livestock accounting for the majority. Emissions are mainly subject to seasonal conditions, export demand and productivity. As such, weather and market forces will play a much larger role than mitigation efforts. It is expected emissions will rise by 4%, reaching 91 MTCO₂e, largely driven by increased export demand from Asia, particularly in meat.



Land Use (LULUCF)

Land use, land use change & forestry (LULUCF) has been a highly irregular source of emissions for Australia. Emissions from forestry are heavily influenced by policies and fluctuate widely over the years, however bushfires/wildfires also contribute to the volatility. With recent revisions of land clearing restrictions in certain parts of

Australia, deforestation emissions are rising again. It is also important to note that because of this volatility it is more sensible to measure the progress of decarbonisation for Australia excluding LULUCF as emission reductions are often taken from the year 1990 when emissions from this sector were 32% and well above average.



EUROPEAN UNION

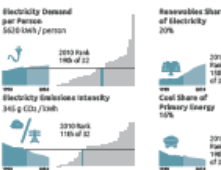
15 Aug 2016

Factsheet - Decarbonisation Indicators of Key Sectors
Short form analysis by CAT - for more information visit www.climateactiontracker.org

For more complete analysis please visit climateactiontracker.org/countries/eu

Electricity & Coal
in Total
Primary
Energy

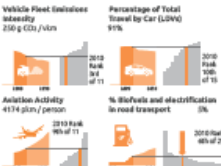
The electricity sector's share of total EU GHG emissions increased from 22.6% in 1990 to 25% in 2012 (1134 MTCO₂e). Despite an increase in electricity generation, total emissions from the EU power sector has remained stable over the last two decades, mainly due to a decrease in emissions intensity by almost 30% (from 500 gCO₂/kWh in 1990 to 350 gCO₂/kWh in 2012). This has been caused by an increase in the share of renewables in power generation, which reached 25% in 2013, representing a doubling since 2000, mostly from wind energy and more recently solar. This has been driven by individual countries but also by EU legislation.



The role of electricity within the overall energy mix is certain to increase in the future, driven by further electrification of transport and heating (e.g. electric vehicles & heat-pumps). Based on current projections, electricity consumption per capita in the EU will rise from 5500 kWh/person in 2012 to above 7000 kWh/person by 2050, with the share of electricity in the final energy demand almost doubling, reaching 36-39%. Therefore, future electricity emissions reductions will be largely determined by the deployment of low-carbon energy technologies like renewables, nuclear and carbon capture & storage (CCS), as well as the role of the EU ETS and subsequent carbon price on those investments.

Transport

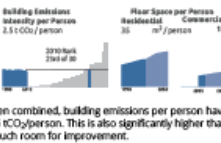
In 2012, the transport sector accounted for 21% of total emissions in the EU (893 MTCO₂e) with the major source being private car traffic. Some policies in place to tackle transport sector emissions are the EU regulations on emissions performance standards for new passenger cars (33/2014, 51/2011) and the clean vehicle directive 33/2009, which encourage the introduction and promotion of environmentally friendly vehicles at the national level. Cities and local governments also influence driving and purchasing behaviour through public transport, car free/congestion zones & parking policies.



These regulations will continue to push down road transport emissions intensity. However, in light of increasing individual automobile traffic, transport emissions are unlikely to fall unless additional measures are taken to increase the share of public transport and/or decarbonise private vehicles.

Buildings

In 2012, emissions from the residential and commercial buildings sector in the EU stood at roughly 700 MTCO₂e and 470 MTCO₂e, respectively. Recent decades have seen the buildings sector exhibit two contradictory trends: improving energy efficiency on a per area basis and growing floor space per person. These trends have resulted in increasing commercial emissions and decreasing residential emissions. However when combined, building emissions per person have remained stable over recent decades at around 2.5 tCO₂/person. This is also significantly higher than the global average of 1 tCO₂/person and there is much room for improvement.



Future emissions will depend on the effective implementation of the Energy Performance of Buildings and Energy Efficiency directives, combined with the spread and increased utilization of technologies to achieve greater energy reductions and a higher proportion of passive or net-zero-energy buildings.



INDIA

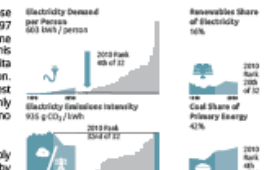
15 Aug 2016

Factsheet - Key Sector Decarbonisation & Agriculture
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Electricity & Coal
in Total
Primary
Energy

Emissions from the power sector in India rose from roughly 219 MTCO₂e in 2000 to 897 MTCO₂e in 2012, accounting for around one third of total GHG emissions (excl. LULUCF). This growth is explained by increases in per capita electricity demand and access to electrification. Electricity demand remains as one of the lowest of the world (700 kWh/capita in 2012) mainly because around 20% of the population has no access to electricity.

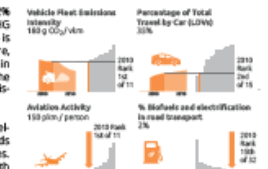


The high emissions intensity of electricity supply in India (926 gCO₂/kWh in 2012) is explained by the dominant role of coal in generation (71% in 2012) and the low efficiency in power generation. However, the government plans to significantly improve this indicator through a wide set of policies aimed at increasing renewable generation and improving efficiency of coal fired plants.

Population growth, better access to electricity and economic development are expected to result in a rapid growth of electricity demand in India. Although the renewable energy targets are ambitious, they are not enough to keep up with the expected growth of electricity demand, and coal will likely maintain its dominance on generation, which will result in emissions intensity remaining above the world average and total electricity emissions growing significantly.

Transport

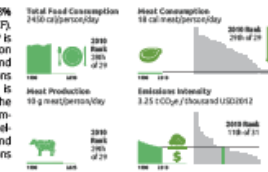
In India, road transport accounts for around 12% of final energy consumption and 7% of GHG emissions (excl. LULUCF, 2010). Car ownership is very low, in part due to poor road infrastructure, with public transport surpassing a 65% share in road transport (followed by motorcycles). The former explains India's low road transport emissions intensity (180 gCO₂/vkm in 2010).



However, the country lags behind other developing countries in its vehicle emission standards and in biofuels and electric transport shares. India has also experienced a significant growth in vehicle ownership in the recent years (around 2% per year in the 2005-2010 period), which has resulted in increasing road emissions. These tendencies highlight the importance of reducing vehicle emissions and improving air quality in the next decades, especially in the cities.

Agriculture

The agriculture sector accounts for around 18% of India's total emissions (2010, excl. LULUCF). Although the share of agriculture in total GDP is declining, the majority of the population depends almost completely on it and around 45% of land is agricultural land. The emissions intensity (per unit of value added) indicator is higher than the global average due to the relatively high importance of subsistence farming, which is not reflected in added value. Developments on dietary energy consumption and government policy will define the emissions pathway of the sector in the future.



Source: <http://climateactiontracker.org/decarbonisation/intro>

CAT Decarbonisation series

The road ahead: How do we move to cleaner car fleets (Sept 2016)



Constructing the future: Will the building sector use its decarbonisation tools (Nov 2016)



Source: newclimate.org/publications/

Content

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	Changing activity	Energy efficiency	Renewables	Prohibit or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG industrial target (2)				
	Coordinating funds for climate strategy (1)				
	Support for low-emission R&D (1)				
Electricity and heat	National energy efficiency target	Renewable energy target			
	Highly efficient power plants (7)	Renewable energy target (1)	CCU support scheme		
	Industrial obligation scheme	Support scheme for renewables (7)			
	Grid infrastructure development (1)	Sustainability standards for biomass use			
Industry	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
	Material/energy	Industrial production efficiency (7)	Support for renewables (2)	CCU support scheme (1)	Landfill reduction
Buildings	Energy reporting and audits (1)	Sustainability standards for biomass			DM - oil and gas (1); from industry
	MEPs for equipment (2)				Non-ferrous gases
	Overarching carbon pricing scheme or emissions limit (7)				
	Energy and other taxes (1)				
Transport	No fossil fuel subsidies				
	Urban planning (2)	MEPs or fiscal/incentive (7)	Support for heating and cooling (1)		
	MEPs for appliances (1)	Support for hot water and cooling	Sustainability standards for biomass		
	Energy and other taxes (1)				
Agriculture and forestry	No fossil fuel subsidies				
	Urban planning and investment (7)	MEPs or support for energy efficient light duty vehicles (1)	Subsidy target	Subsidy target	Subsidy target (1)
	MEPs or support for energy efficient heavy duty vehicles (1)		Support for biofuels (1)		
	Energy and other taxes (1)		Sustainability standards for biomass		
Tax on food and/or emissions (4)					
No fossil fuel subsidies					
Standards and support for sustainable agricultural practices and use of agricultural products					
Incentives to reduce CO ₂ emissions from agriculture					
Incentives to reduce CH ₄ emissions from agriculture					
Incentives to reduce N ₂ O emissions from agriculture					
Incentives to reduce deforestation (2)					

Option 1: Counting if policies exist in a matrix of good practice policy areas

» Policy database and initial analysis report

NowClimate! Policy Database Search policies - Analysis - Browse countries This page - Tools - User - Search

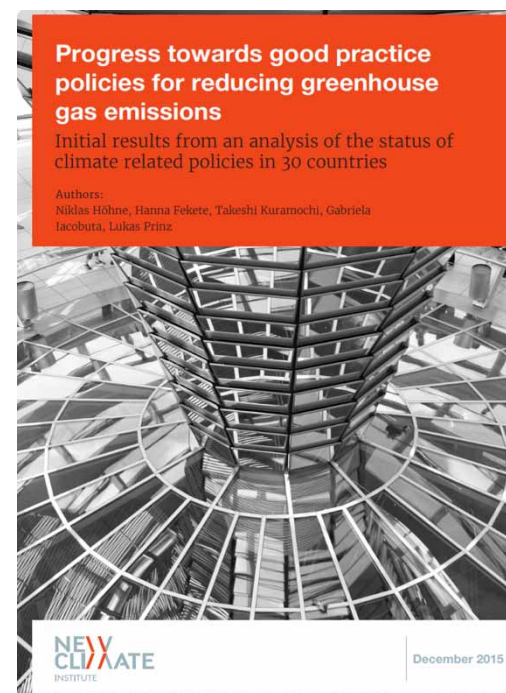
European Union

The matrix below describes the coverage of the good practice policy menu (details are provided [here](#)) by climate policies currently implemented inside the country. For a complete list of climate policies in this country, see the table at the bottom of the good practice policy matrix.

■ - Implemented policies exist in the database
■ - No implemented policies exist in the database
■ - Unknown
 Numbers in brackets indicate number of policies in this area

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non energy
General	Climate strategy (2)				
	GHG reduction target (4)				
	Coordinating body for climate strategy				
	Support for low-emission RDND (1)				
Electricity and heat	National energy efficiency target (1)		Renewable energy target (2)		
	Support for highly efficient power plants (including codes and standards and fiscal/financial incentives) (2)		Renewable energy target for electricity sector		CCS support scheme, including fiscal/financial incentives and infrastructure investment (1)
	Reduction obligation schemes		Support scheme for renewables (including green certificates, fiscal/financial incentives, obligation schemes, net metering or direct investment) (2)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
			Overarching carbon pricing scheme or emissions limit (1)		
Industry	Energy and other taxes (1)				
	No fossil fuel subsidies				
	Strategy for material efficiency (including product standards and other requirements)	Support for energy efficiency in industrial production (including voluntary approaches, fiscal/financial incentives, obligation schemes or white certificates) (1)	Support schemes for renewables (including fiscal/financial incentives, green certificates, obligation schemes) (1)	CCS support scheme (including fiscal/financial incentives and infrastructure investment) (1)	Landfill methane reduction (1)
		Energy reporting and audits (2)	Sustainability standards for biomass use (1)		Incentives to reduce CH ₄ from oil and gas production (1) Incentives to reduce H ₂ O from industrial processes (2)
	Minimum energy performance and equipment standards (2)				

www.climatepolicydatabase.org



<http://newclimate.org/2015/12/01/good-practice-policies/>

Supported by the Netherlands Ministry of Infrastructure and Environment and European Commission in CD-links project

Option 1: Counting if policies exist in a matrix of good practice policy areas

Policy coverage in Japan

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (2)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
Electricity and heat		National energy efficiency target	Renewable energy target		
		Highly efficiency power plants (7)	Renewable energy target (1)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (7)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
		Overarching carbon pricing scheme or emissions limit (2)			
Industry	Energy and other taxes (1)				
	No fossil fuel subsidies				
	Material/process	Industrial production efficiency (7)	Support for renewables (2)	CCS support scheme (1)	Landfill methane
		Energy reporting and audits (3)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (2)			N2O from industry
					Fluorinated gases
		Overarching carbon pricing scheme or emissions limit (7)			
Buildings	Energy and other taxes (1)				
	No fossil fuel subsidies				
	Urban planning (2)	MEPS or fiscal/financial incentives (9)	Support for heating and cooling (1)		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
Transport	Energy and other taxes (3)				
	No fossil fuel subsidies				
	Urban planning and investment (5)	MEPS or support for energy efficient light duty vehicles (3)	Biofuel target	Modal share shift (2)	
		MEPS or support for energy efficient heavy duty vehicles (2)	Support for biofuels (2)	E-mobility (1)	
			Sustainability standards for biomass		
		Tax on fuel and/or emissions (4)			
Agriculture and forestry	No fossil fuel subsidies				
	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (2)				

Source: Climate Policy Database

Option 1: Counting if policies exist in a matrix of good practice policy areas

» Coverage of policy areas by the 30 largest emitters

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (2)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
Electricity and heat		National energy efficiency target	Renewable energy target		
		Highly efficiency power plants (7)	Renewable energy target (1)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (7)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				

Source: NewClimate Institute (2015) Progress towards good practice policies for reducing greenhouse gas emissions ([Link](#))

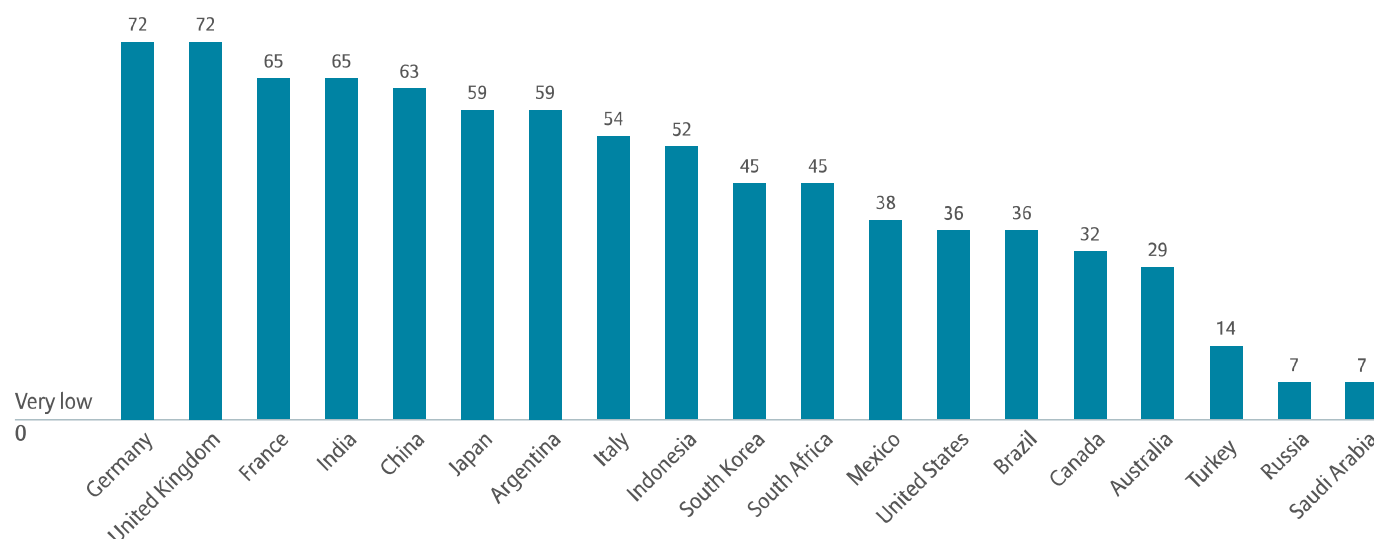
Option 2: Rating the stringency of a policy package

» Rating support policies for renewables in electricity supply

Indicator	Weight	
Incentives	1 National climate policy framework / strategy	20%
	2 Target for electricity production or capacity addition from renewable energy resources (excluding large hydro)	10%
	3 Long-term transition strategy for the electricity system	10%
	4 Support scheme for renewables or disincentives for carbon intensive electricity production	60%
Barrier	5 Fossil fuel subsidies that impact electricity production	-10%

100

Very high

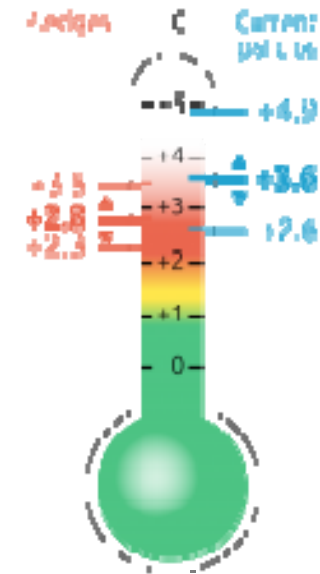


Source: Allianz Energy and Climate Monitor: <https://newclimate.org/2016/05/31/allianz-climate-and-energy-monitor/>

For a similar method for all sectors see: <http://climateactiontracker.org/publications/publication/120/Assessment-of-Mexicos-policies-impacting-its-greenhouse-gas-emissions-profile-English.html>

Conclusions

- » Use different, complementary approaches to assess climate action
- **Macro-economic indicators** – straight forward, commonly used
 - **Effort sharing calculations** – addresses fairness and “who should pay” for mitigation
 - **Sectoral decarbonisation indicators** – zooming in on what is happening and is realistic on the sectoral level
 - **A good practice policy package** – focus on concrete government action / inaction



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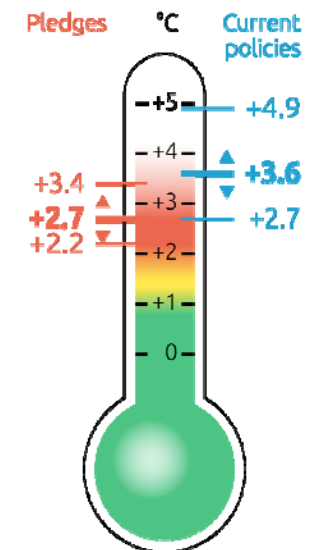
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Backup slides

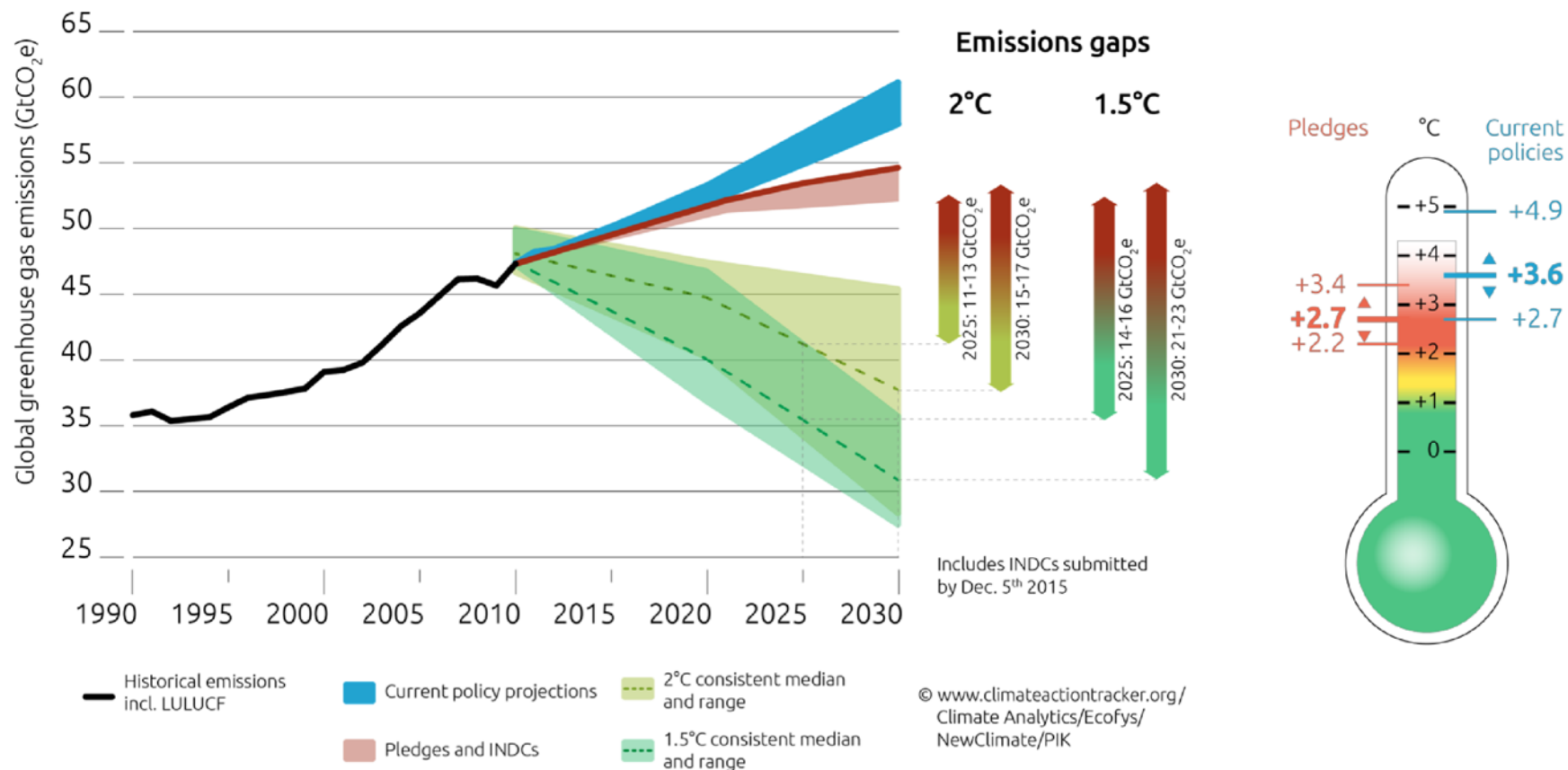
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Effect of “Intended nationally determined contributions” (INDCs)



Source: Climate Action Tracker update, 8 December 2015

<http://climateactiontracker.org/news/253/Climate-pledges-will-bring-2.7C-of-warming-potential-for-more-action.html>

Industry and buildings

	Changing activity	Energy efficiency	Renewables	switch	Non-energy	
General	Climate strategy (67%)					
	GHG reduction target (73%)					
	Coordinating body for climate strategy (57%)					
	Support for low-emission RD&D (47%)					
Electricity and heat		National energy efficiency target (43%)	Renewable energy target (40%)			
		Support for highly efficiency power plants (70%)	Renewable energy target for electricity sector (57%)	CCS support scheme (20%)		
		Reduction obligation schemes (7%)	Support scheme for renewables (83%)			
			Grid infrastructure development (67%)			
			Sustainability standards for biomass use			
		Overarching carbon pricing scheme or emissions limit (30%)				
		Energy and other taxes (20%) (not comprehensively addressed)				
		No fossil fuel subsidies (30%)				
		Strategy for material efficiency (23%)	Support for energy efficiency in industrial production (47%)	Support schemes for renewables (33%)	CCS support scheme (27%)	Landfill methane reduction (17%)
			Energy reporting and audits (47%)	Sustainability standards for biomass use (7%)		Incentives to reduce CH ₄ from oil and gas

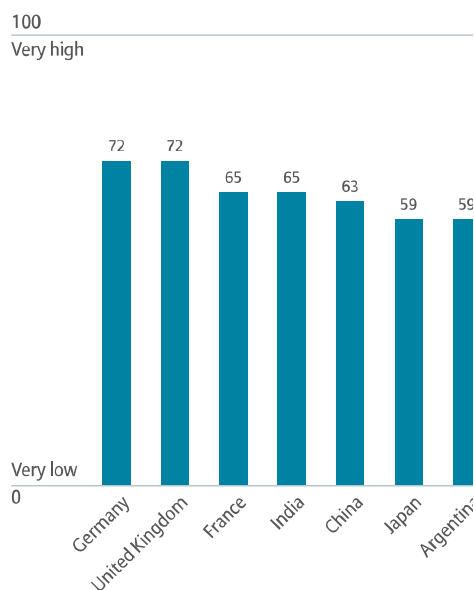
- » Energy efficiency (EE) in the industry: room for wider policy coverage
- » EE in buildings: relatively well covered
- » Low coverage for non-CO₂ emissions reductions
- » Fossil fuel subsidies still prevalent

Transport and agri/forestry

	Changing activity	Energy efficiency (7%)	Renewables (83%)	Nuclear, CCS or fuel switch	Non-energy
heat			Grid infrastructure		
General	Climate strategy (67%)				
	GHG reduction target (73%)				
	Coordinating body for climate strategy (57%)				
	Support for low-emission RD&D (47%)				
Electricity and heat		National energy efficiency target (43%)	Renewable energy target (40%)		
		Support for highly efficiency power plants (70%)	Renewable energy target for electricity sector (57%)	CCS support scheme (20%)	
		Reduction obligation schemes (7%)	Support scheme for renewables (83%)		
			Grid infrastructure development (67%)		
			Sustainability standards for biomass use		
		Overarching carbon pricing scheme or emissions limit (30%)			

- » >50% have support schemes for transport biofuels
- » Room for enhanced implementation of fuel efficiency standards
- » Fossil fuel subsidies still prevalent

Option 3: rating policy package

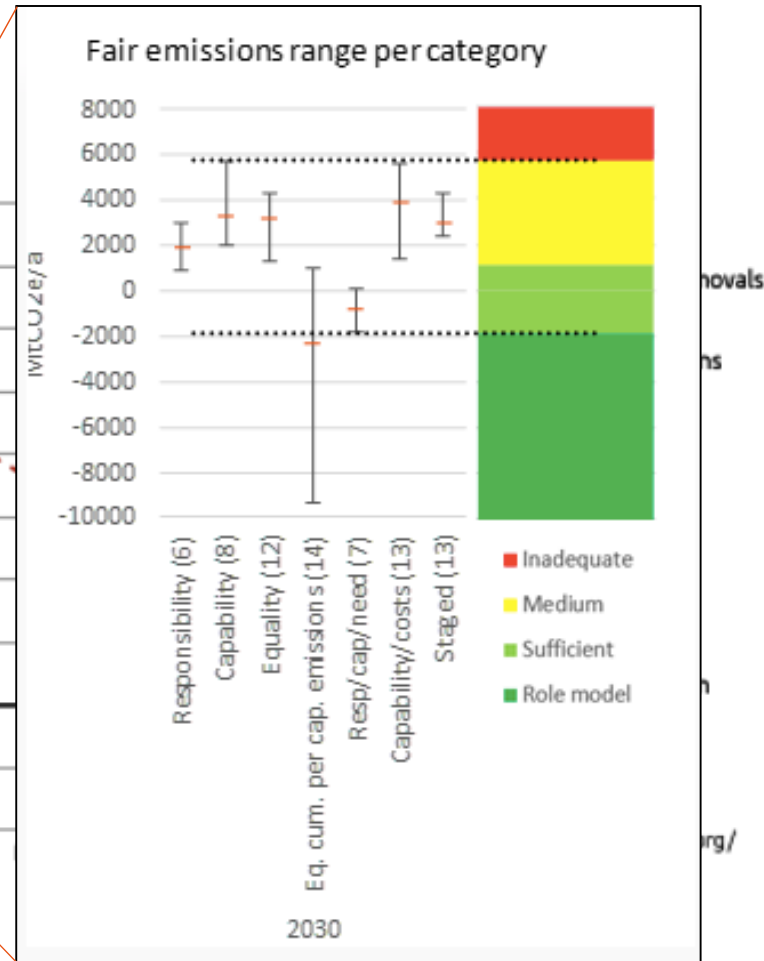
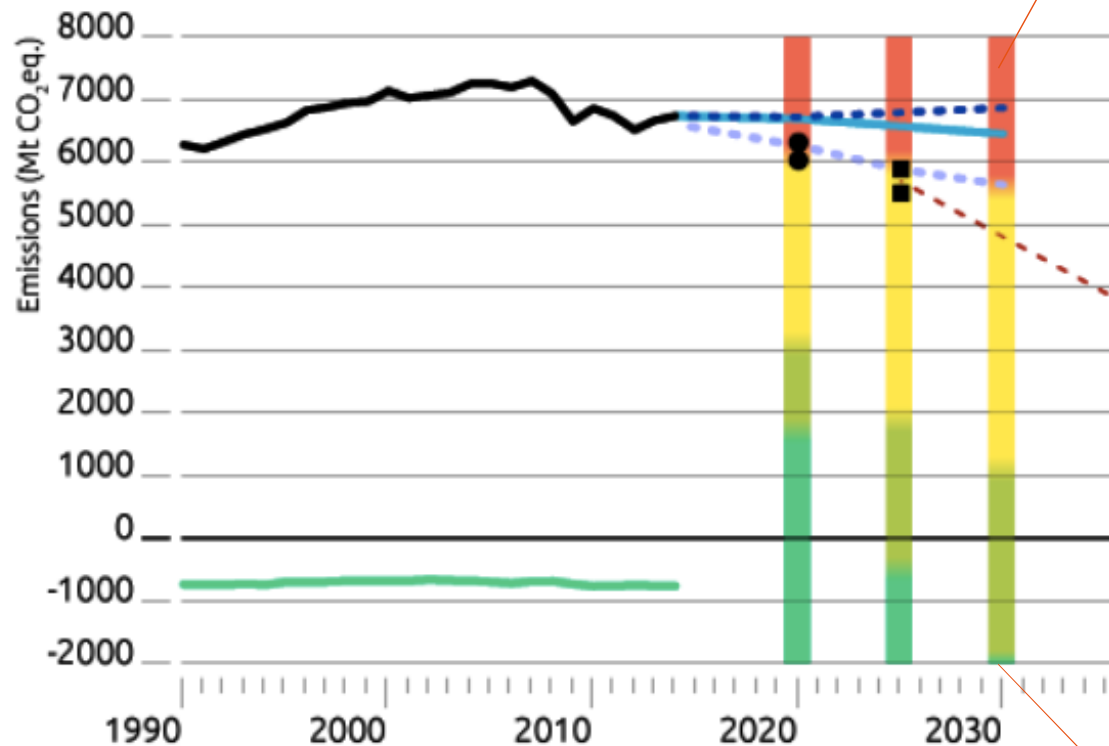


Source: Allianz Energy and Climate Mor

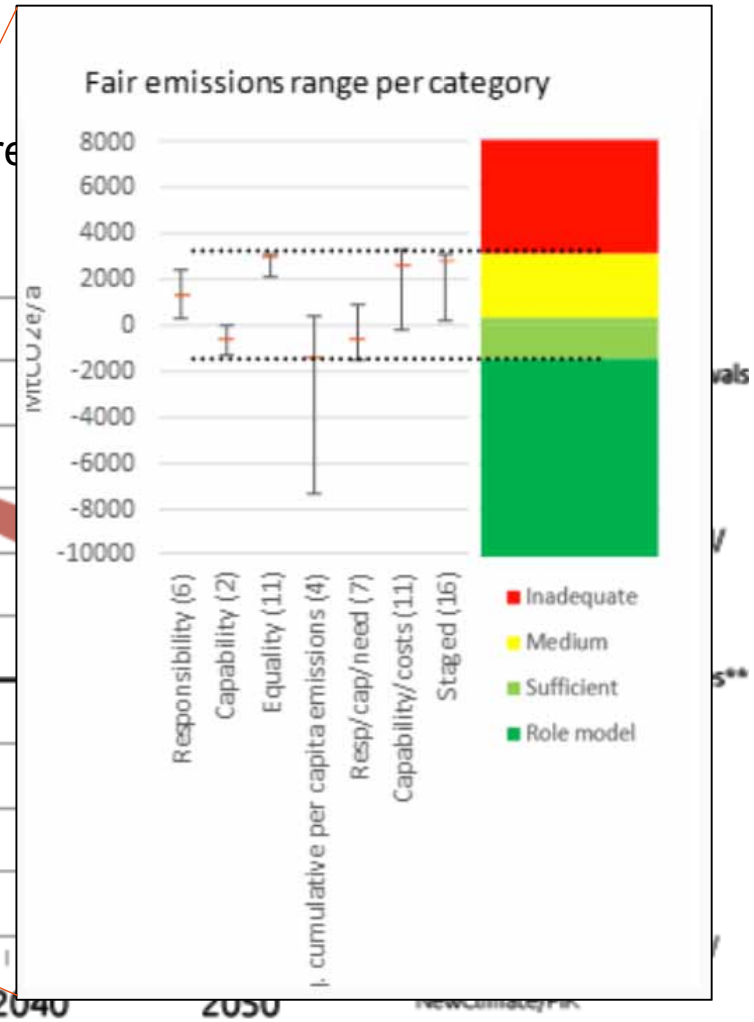
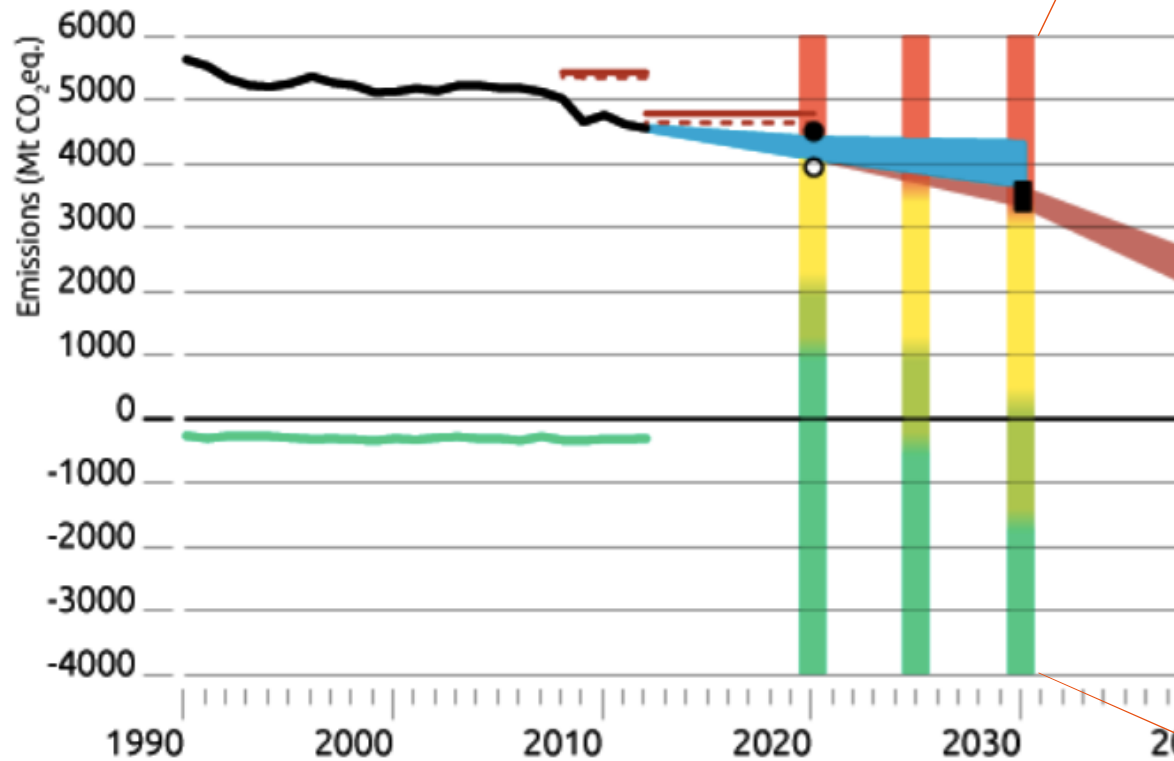
	INDICATOR	SCORING BENCHMARKS	WEIGHT
Policy Incentives (i)	1 National climate policy framework / strategy	<p>100: Strong national climate strategy for 2020/2030 with national legal force (parliament decision, executive order or equivalent) and sufficiently ambitious to deviate significantly from reference emissions or towards zero emissions in the electricity sector in 2050</p> <p>75: Legally enforced climate strategy of medium ambition level</p> <p>50: Climate strategy exists but the ambition level is not high or without legal force</p> <p>25: Climate strategy exists but ambition unclear / undefined</p> <p>0: No national climate strategy</p>	20%
	2 Target for electricity production or capacity addition from renewable energy resources (excluding large hydro)	<p>100: Equivalent of minimum increase of share of 1.5%-points per year of renewables over the next 10 years</p> <p>75: Between 1% and 1.5%</p> <p>50: Between 0.5% and 1%</p> <p>25: Below 0.5%</p> <p>0: No renewable energy target</p>	10%
	3 Long-term transition strategy for the electricity system	<p>100: Long-term strategy for the transition to a zero-carbon electricity system to balance supply and demand, e.g. through grid extensions, smart grids, storage</p> <p>50: Initial strategy but not comprehensive</p> <p>0: No strategy</p>	10%
	4 Support scheme for renewables or disincentives for carbon intensive electricity production	<p>100: Legally enshrined, long-term support schemes that provide favorable conditions for all renewable technologies over fossil fuel-fired technologies are implemented. Examples include pricing policies (e.g. feed-in tariffs) for renewables and mid-term investment certainty being applied to all renewable technologies (excl. large hydro), and clear disincentives for carbon-intensive electricity production (via an overarching carbon tax, ETS scheme, emission standards etc.) which in turn provide room for renewables' growth.</p> <p>75: Policies described above are implemented, but without assurance of their long-term implementation.</p> <p>50: Pricing policies are implemented only for selected renewable technologies and/or quantity-based policies (e.g. renewable portfolio standards and tendering schemes) that provide favorable conditions for mature renewable technologies over fossil fuel-fired technologies are implemented.</p> <p>25: Other support schemes for renewables that do not necessarily provide sufficient incentives to level the playing field for renewables (e.g. tax breaks and accelerated depreciation).</p> <p>0: No support for renewables / disincentives for carbon-intensive resources</p>	60%
Policy Barrier (PB)	5 Fossil fuel subsidies that impact electricity production	<p>0: No fossil fuel subsidies</p> <p>-100: Fossil fuel subsidies or financial barriers to renewable energy</p>	Maximum 10% discount of the total score for "Policy incentives"

USA

- » 2020: 17% below 2005
- » 2025: 26% to 28% below 2005

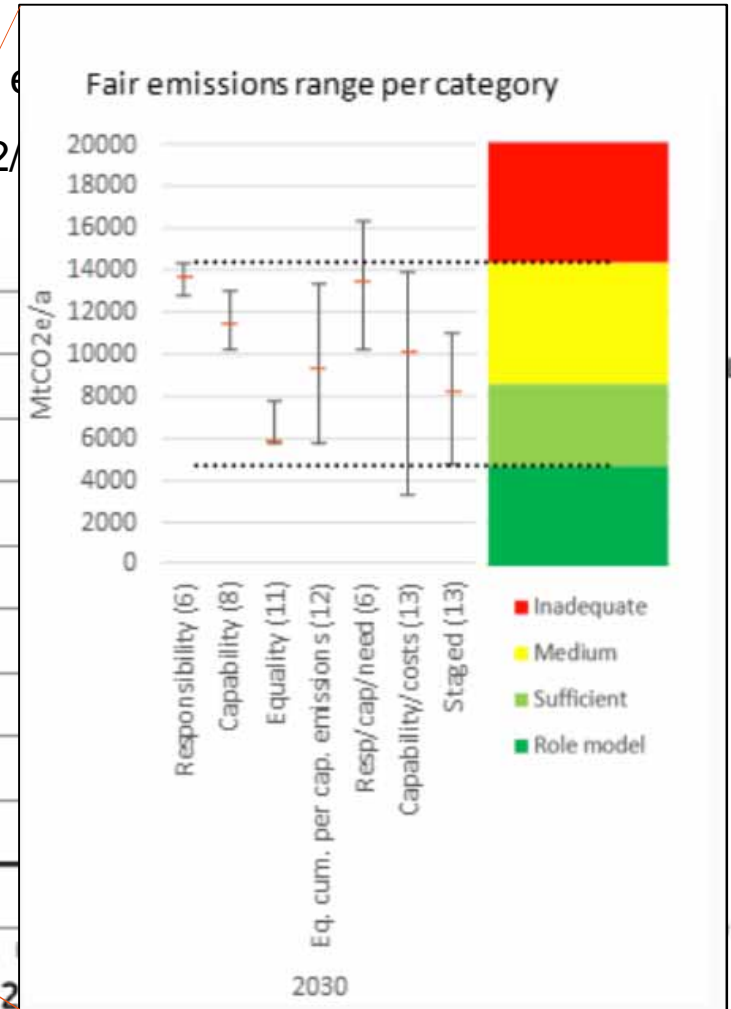
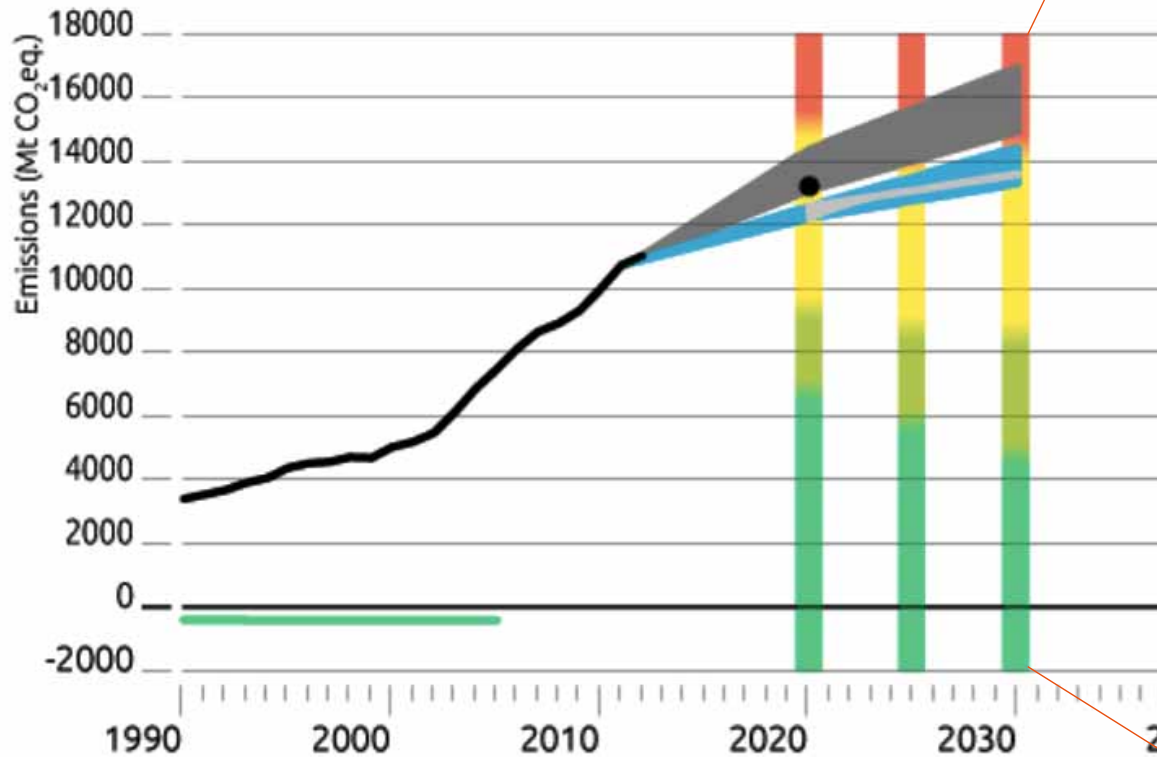


- » 20% below 1990 in 2020
- » 30% below 1990 in 2020 with ambitious international treaty
- » At least 40% below 1990 in 2030



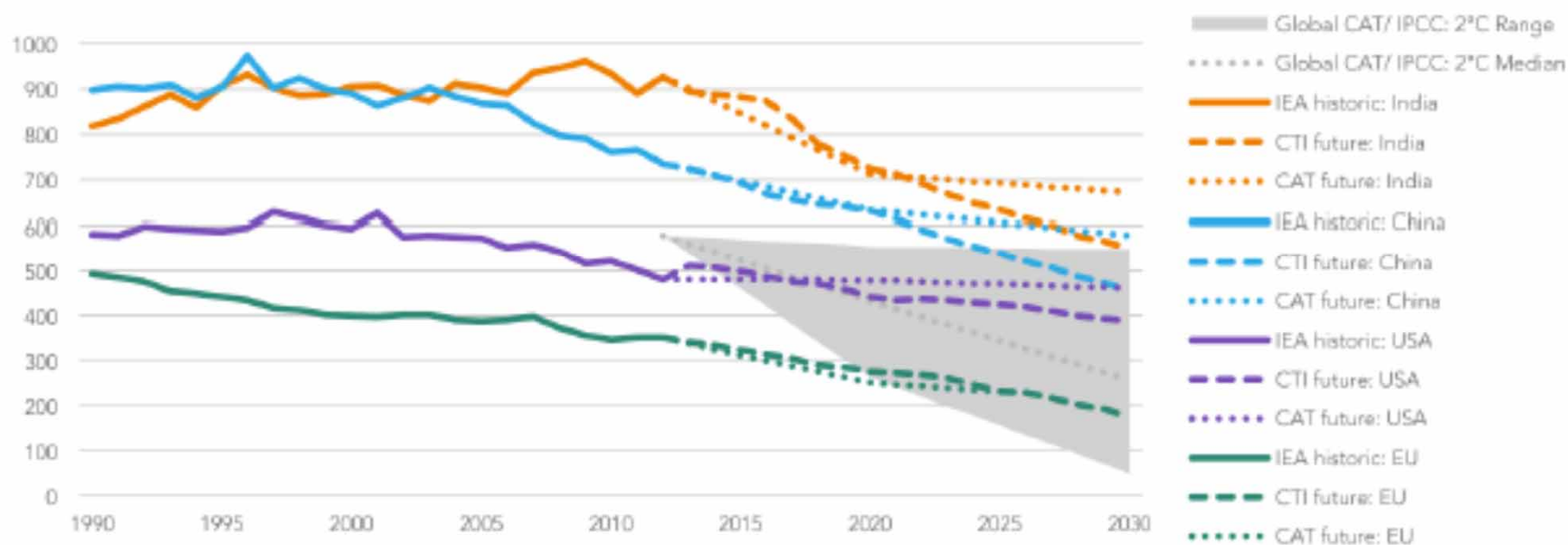
China

- » 2020: CO2/GDP 40-45% below 2005, 15% non-fossil energy
- » 2030: target to peak CO2 emissions at the latest, CO2/GDP 40-45% below 2005, 20% non-fossil energy, afforestation



Comparing emission intensity of power production

Figure 8 – Historic Emissions Factors (gCO₂/kWh) for China, the E.U., India, and the U.S. as Reported by the IEA and Projected by CAT and CTI



Note: IPCC – Intergovernmental Panel on Climate Change.

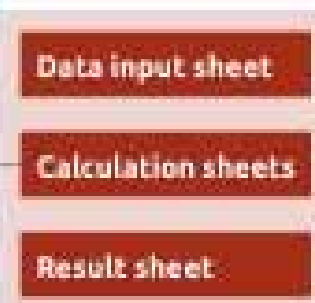
Source: <https://newclimate.org/2015/12/04/faster-and-cleaner-decarbonisation-in-the-power-and-transport-sectors-is-surpassing-predictions-and-offering-hope-for-limiting-warming/>

Methodology of the CAT country assessment 2011

Policy evaluation

Sector				Score Book keeping Model (0-100%)	Max. impact factor	Actual impact factor			
Indicators	Benchmarks	Assessment	Weighting						
Changing activity									
1	xyz	1	x 60%	32,6%	1%/a	0,33%/a			
2	xyz	2	x 40%						
Barriers									
a	123	-1	x 20%						
b	123	-3	x 10%						
Energy efficiency									
Renewables									
Low carbon									






Book keeping tool



What can policy achieve at the maximum?
Based on technological potential with option for country specific distinction

Good practice policy packages

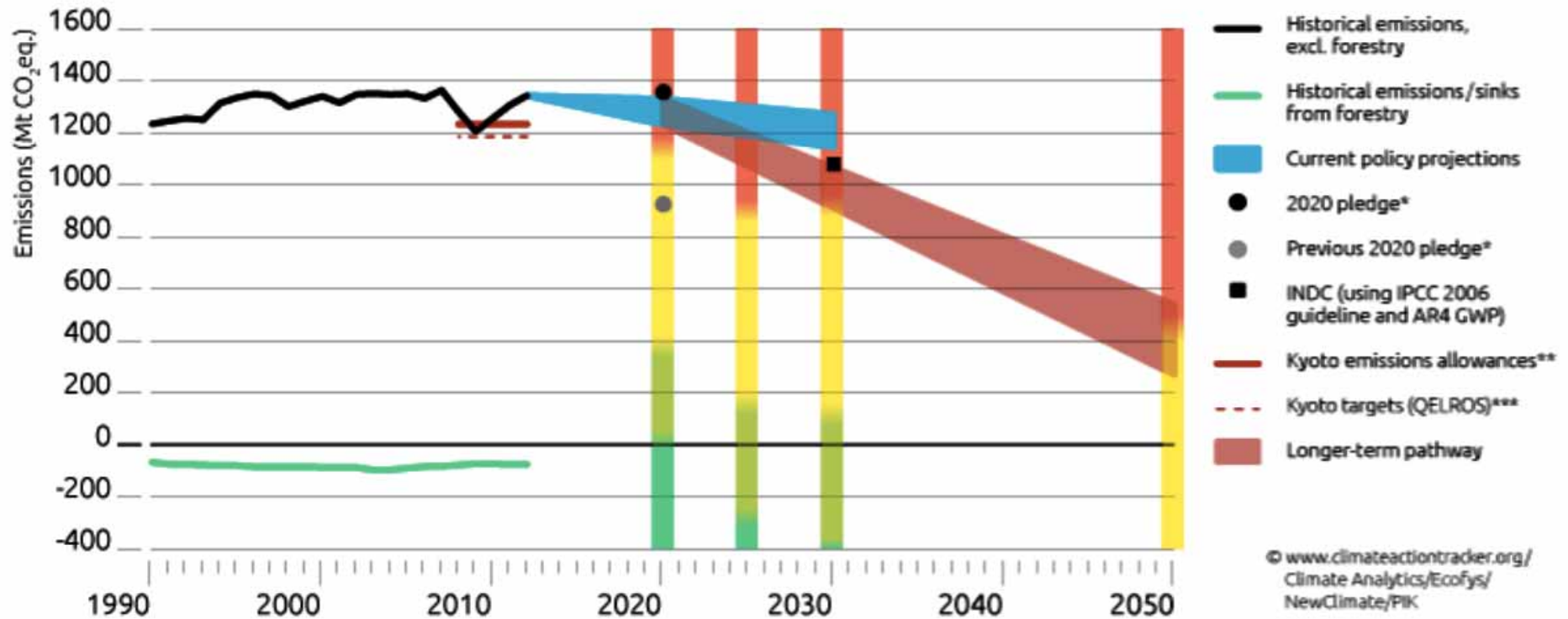
Table 1
Low carbon policy package

	Changing activity	Energy efficiency	Low carbon		Other	
			Renewables	Without nuclear/CCS (100% renewable vision)		
Climate Strategy	<ul style="list-style-type: none"> ► Ambitious binding greenhouse gas reduction target, consistent with major effort sharing approaches ► Comprehensive and consistent long term strategy beyond 2020 					
 Electricity (heat) supply	(Electricity production is driven by the demand of the other sectors)	<p>Efficiency of fossil fuel power plants: leading to average efficiency of 45 % (coal) and 60 % (natural gas) in 2030 or incentive is > 100 US\$/tCO₂e</p> <p>Combined heat and power production (CHP): leading to 10% additional share of electricity production in 10 years</p> <p>Reduction of distribution losses: leading to 4 % distribution losses in 2030</p>	<p>General incentives for the production of electricity from renewable energy sources: supporting at least 10 % points increase in share in 10 years</p> <p>Support different technologies: including sufficient support for 1-2 high price technologies (PV, geothermal power, biogas...)</p> <p>Support for adapted electricity grids</p> <p>Sustainability standards for biomass use</p> <p>Removal of administrative and grid barriers</p>	<p>Policies that influence fuel choice: taxes, emissions trading, emission performance standards in the order of 100US\$/tCO₂e</p> <p>Support for biomass CCS: demonstration scale plants are supported</p> <p>Support for coal CCS: support for substantial increase in capacity</p> <p>Support for substantial increase of nuclear capacity</p>	<p>Policies that influence fuel choice: taxes, emissions trading, emission performance standards in the order of 100US\$/tCO₂e</p> <p>Support for biomass CCS: demonstration scale plants are supported</p> <p>Support for coal CCS is a barrier to renewable energy</p> <p>Support for substantial increase of nuclear capacity is a barrier to renewable energy</p>	Not applicable
 Industry	Restructuring industry towards high material efficiency: leading to 0.5 % additional material efficiency improvement per year	General incentives such as taxes, subsidies, ETS: tax >100% of energy price or leading to 0.5% additional annual increase in energy efficiency	General incentives: energy taxes (> 100 % of energy price) and subsidies, ETS, overall leading to additional 5% in 10 years	Support for coal and gas CCS: 10% in 2030	Support for CCS on biomass and process emissions: 10% in 2030	<p>Reduce N₂O process emissions: to 10% of historical maximum by 2030</p> <p>Reduce Fugitive CH₄ from oil and gas production: to 10% of historical maximum by 2030</p> <p>Reduce CH₄ from waste: by 20% below BAU by 2030</p> <p>Reduce emissions of F-gases</p>
 Buildings	Urbanisation policy that leads to energy efficient development	<p>Efficiency standards for new buildings: zero energy by 2020</p> <p>Support to increase energy efficient retrofit rate: 3% per year</p> <p>Incentives for efficient electrical appliances: leading to 1-2 % less electricity use per year</p> <p>General incentives: taxes in the order of 100% of the energy price</p> <p>Removal of barriers, e.g. subsidies</p>	<p>Support for renewables in new and existing buildings: increase in share of 10% in 10 years</p> <p>General incentives: taxes in the order of 100% of the energy price</p> <p>Sustainability standards for biomass use: national and imported</p>	Support for fossil fuel switching (to gas)	Not applicable	
 Transport	<p>Strategies to avoid transport or to move to non-motorised transport: 4% avoided by 2020</p> <p>Strategies for modal shift: 8% increase of capacity by 2020</p> <p>General incentives: e.g. tax of the order of 100% of energy price</p>	<p>Incentives for efficiency in light vehicles: trajectory to reach 95g/km in 2020 for new cars</p> <p>Incentives for efficiency in freight transport: reduce specific emissions by 20% by 2020</p> <p>General incentives: e.g. tax of the order of 100% of energy price</p>	<p>Incentives for renewables in transport: additional share of 10% by 2020</p> <p>Sustainability standards for biomass use: national and imported</p>	Support for fossil fuel switching (to gas) or other low carbon technologies	Support for electro mobility (cars and infrastructure): 5% electric cars by 2020	Not applicable
 Agriculture, Forests and other land use	<p>Incentives for sustainable consumption practices</p> <p>Consistent land use strategy exists and is implemented</p> <p>Land use register exists</p>	Not applicable				<p>Decrease livestock CH₄ and N₂O emissions: by 3% below BAU in 2030</p> <p>Decrease cropland and organic/peaty soils, all non-CO₂ emissions (including rice production): 5% below BAU in 2030</p> <p>Implement measures CO₂ on cropland</p>

Source:
<http://climateactiontracker.org/publications/publication/120/Assessment-of-Mexico-policies-impacting-its-greenhouse-gas-emissions-profile-English.html>

Japan

- » 2020: 3.8% below 2005 (previously -25% below 1990)
- » 2030: 26% below 2013



Japan

- » 2020: 3.8% below 2005 (previously -25% below 1990)
- » 2030: 26% below 2013

