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Identifying and tracking successful policies

PEP1.5 symposium

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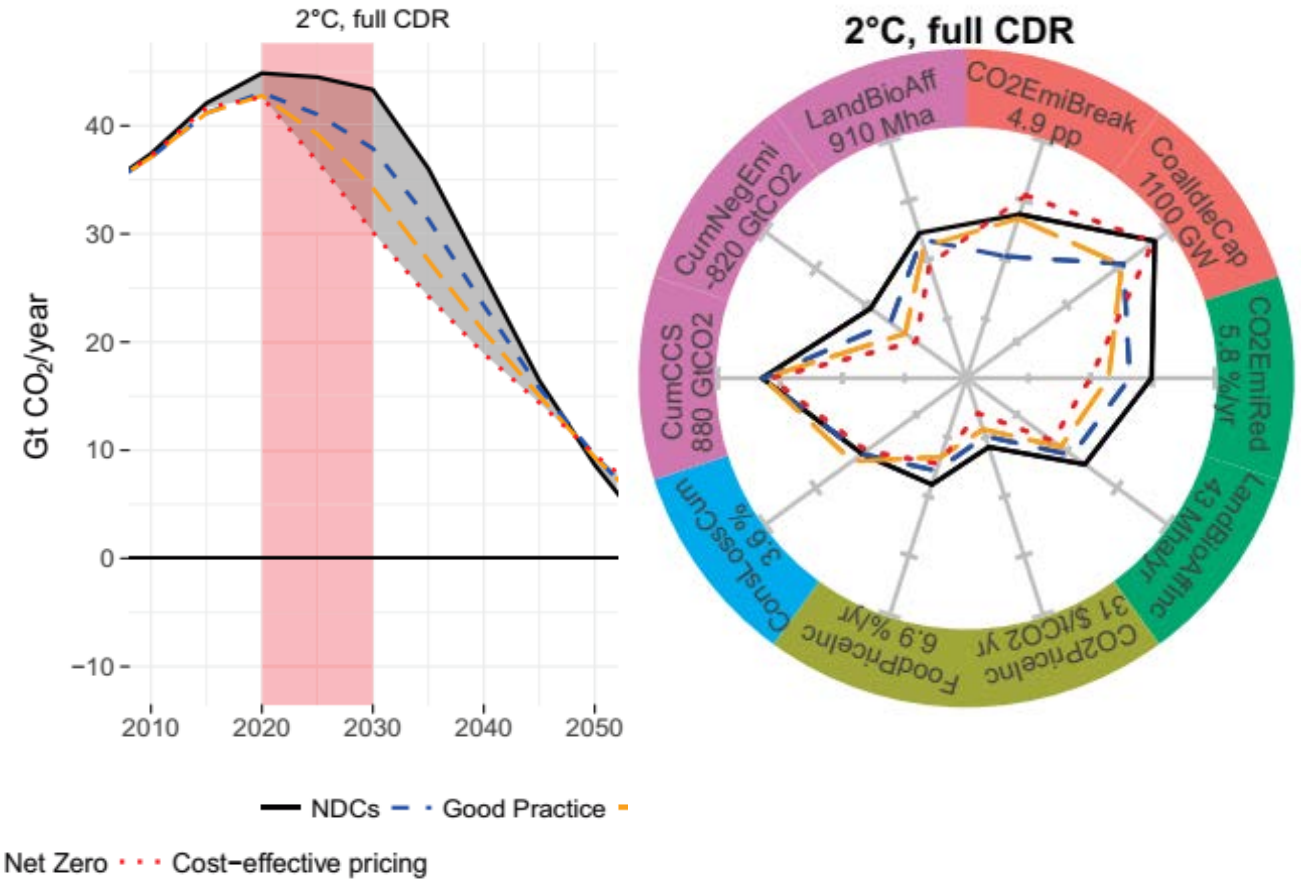
Potsdam, 4 September, 2019

Recap PEP1p5 article

- Point of departure: Roelfsema et al.
- Larger set of scenarios
- Up to 2050
- Feasibility indicators analysis



Source: Kriegler, Bertram, Kuramochi et al. (2018) ERL

‘Good practice’ and ‘Net zero’ policy packages

Sector	Current level (global values in 2015 given if not stated otherwise)	Good practice value (in 2030 if not stated otherwise)	Net-zero value toward 2030 (in 2030 if not stated otherwise	Conditional NDC value (moderate-ambition reference)	Value in well below 2°C cost-effective scenario (high-ambition reference)
Energy supply: renewables share in power generation	0.45 %-point/yr share increase	1.25–1.45 %-point/yr share increase	same as good practice	1.0%-point/yr (2020–2030 average)	2.5%-point/yr (2020–2030 average)
Energy supply: fossil fuel-fired power	270 GW coal power under construction	No new unabated coal power plants after 2023 (→123 GW coal 2020–2030 new installations)	No new unabated coal after 2018 beyond units under constr.; no new unabated gas after 2022–2032 (→24 GW coal 2020–2030)	278 GW of new unabated coal power (2020–2030)	24 GW of new unabated coal power (2020–2030)
Industry	Approx. 1%/yr energy efficiency (EE) improvement;	0.5%/yr additional EE improvement (→9% reduction of total final energy (FE) in 2030);	0.5%/yr additional EE improvement (→9% reduction in total FE in 2030);	5% reduction of total FE rel. to current policy in 2030;	14% reduction of total FE rel. to current policy in 2030
	No full scale commercial CCS	Approx. 200 $MtCO_2$ /yr CCS in industry.	Approx. 500 $MtCO_2$ /yr CCS in industry.	70 Mt CO_2/yr CCS in industry	200 Mt CO_2/yr CCS in industry
Buildings	1%/yr retrofit; Approx.	1.5-2.1%/yr retrofit; new buildings on average near zero energy by 2020–30;	3%/yr retrofit; new buildings on average near zero energy by 2020–25;	6% reduction of total FE rel. to current policy in 2030	15% reduction of total FE rel. to current policy in 2030
	1%/yr energy efficiency (EE) improvement for appliances and lighting	0.5%/yr additional EE for appliances and lighting; (→13% reduction of total final energy (FE))	0.5%/yr additional EE for appliances and lighting; lighting (→20% reduction of total FE)		

Source: Kriegler, Bertram, Kuramochi et al. (ERL, 2018)

Identify & quantify impact of past successful policies

Sector (share in 2014 global GHG emissions)	Sub-sector, policy area and/or policy action	Indicator	Historical global average performance	Best performers among major emitting economies	
				Performance value (unless otherwise stated)	Countries and example policies that contributed
Manufacturing industry (fossil fuel combustion and industrial processes)	Energy efficiency	Final energy consumption per physical output	Approximately 1%/yr energy intensity improvement *(limited information available)*	[Historical] Up to 0.5%/yr additional improvement *(limited information available)*	EU (energy efficiency standards, air pollutant emission standards, emissions trading scheme), Japan (voluntary agreements)
Transport	Passenger vehicles: fuel efficiency standards	Average km/l for new registrations	LDV fuel economy: 20 km/l (Japan, 2013, test mode);	[Historical] 13.7 km/l to 20.5 km/l between 2001 and 2016 (Japan) [Forward-looking] 32 km/l by 2030 (EU)	[Historical] Japan, EU [Forward-looking] EU

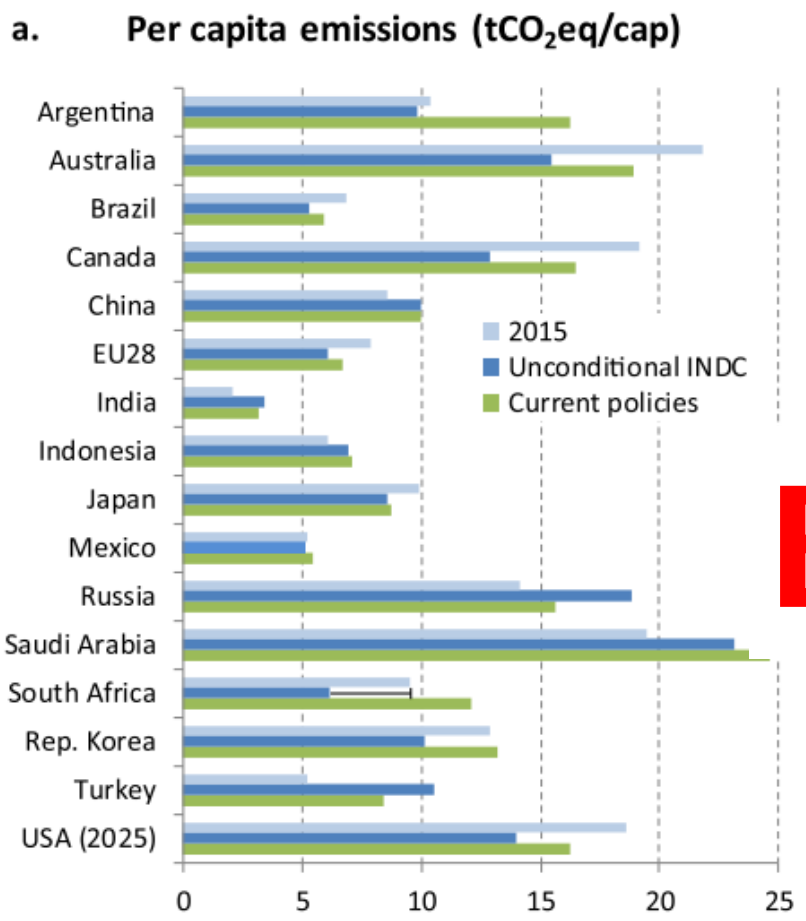
- Transport: straightforward indicators, more (comparable)(regularly published) data, regulation policies, large number of analyses
- Industry and buildings: data availability issues

Source: Fekete, Kuramochi, Roelfsema et al. (in preparation)

Identify & quantify impact of past successful policies

- Before all the replicability questions, there all kinds of questions on:
  - What's the net impact of policies?
  - How much impact is attributable to a certain policy measure?
  - How many years did you observe the impact?
  - 20 km/L is always more stringent than 15 km/L?
  - Contribution of preceding policies?
  - Etc. …
- There's often a time lag between currently implemented policies and policies assessed in the literature
- Possible solutions:
  - Decomposition analysis, regression analysis (to identify policy instruments that are statistically significant)
  - Comparison with best-available technologies
  - Interviews to policy experts

UNEP Emissions Gap Report 2019: G20 'Current policies' scenario projections for 2030 hardly changed over the last 3-4 years



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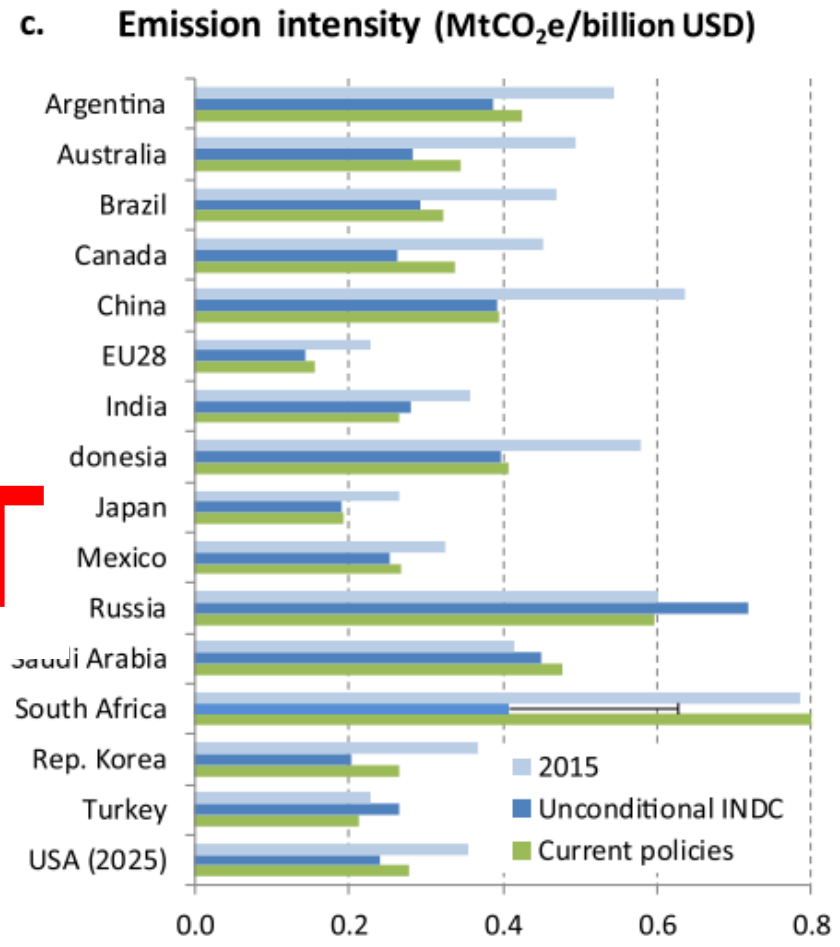
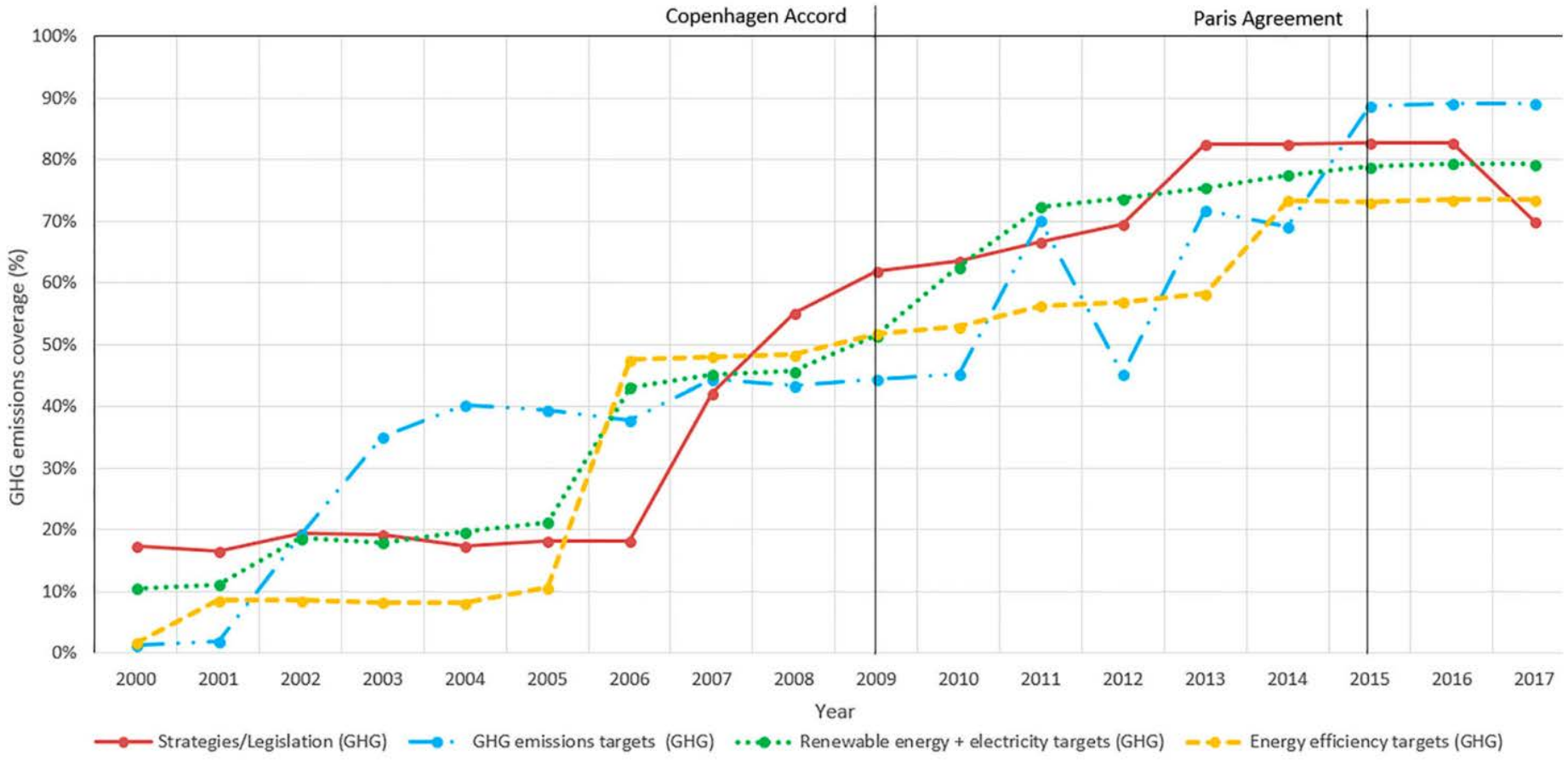


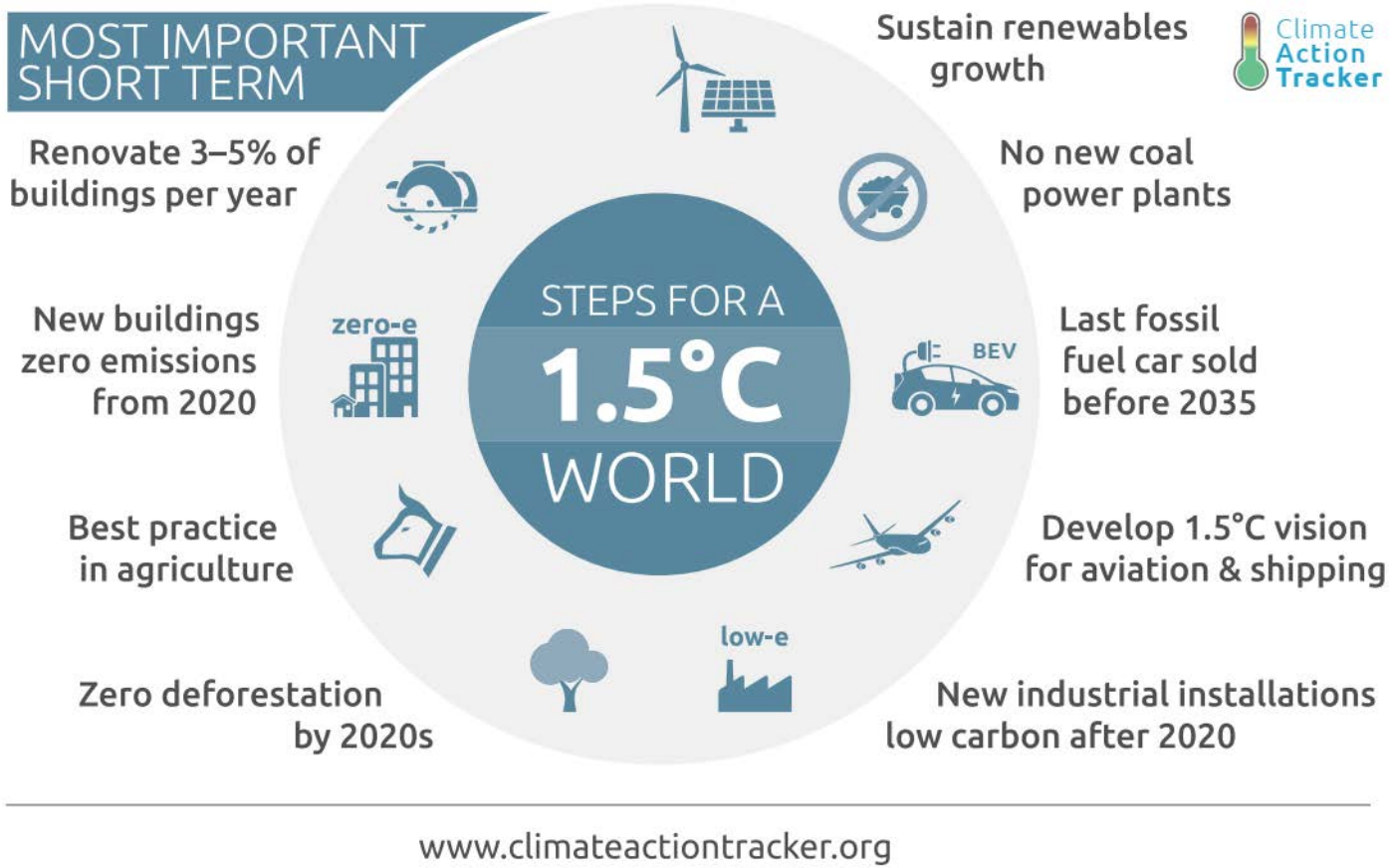
Source: Den Elzen, Kuramochi, Höhne et al. (2019) Energy Policy

Increasing number of high-level national targets and legislation



Source: Iacobuta, Dubash and Upadhyaya et al.. (2018) Climate Policy,

Setting 2/1.5°C-compatible benchmarks and tracking progress against them



Source: Climate Action Tracker (2016), later published as Kuramochi, Höhne, Schaeffer et al. (2018) Climate Policy

Increasing number of ambitious commitments, in some sectors

TRANSPORT

While an increasing number of countries, regions, and cities pledge to phase out combustion engines and initiate substantial modal shifts towards public transport, no such commitments have been made for aviation, shipping, and freight transport to date.

Target categories	G20 countries	Country level	Regional level
100% share of new zero-emission motor-bikes, cars and/ or buses as of year x	**5 G20** members (Canada, France, Japan, Mexico, UK) have announced target **2 G20** members (India, Indonesia) have announced target but confirmation is pending **13 G20** members have not announced target for 100% new zero-emission motorbikes, cars and/or buses	**21 countries** Canada, Costa Rica, Denmark, France, Iceland, India, India, Indonesia, Ireland, Israel, Japan, Mexico, Nepal, Netherlands, Norway, Portugal, Scotland, Slovenia, Spain, Sweden, UK	**5 regions** Australian Capital Territory, British Colombia, California, Hainan, Hawaii
Shift to x% public transport by year x *	**3 G20** members (China, India, Indonesia) with distinct modal shift targets No conclusion possible for all other G20 members	**4 countries** China, India, Indonesia, Singapore have distinct modal shift targets No comprehensive data available for all other countries	**No regions** ✖
100% carbon-free heavy trans-port and ships as of year x **	**No G20** member with legally binding target for 100% carbon-free heavy transport and ships	**No country** ✖	**No regions** ✖
100% carbon-free aviation as of year x ***	**No G20** member with legally binding target for 100% carbon free aviation	**No country** ✖	**No regions** ✖

Source:Höhne et al. (2019) UNEP

Policies and policy targets in place

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G20 Climate policy performance rating

Performance:
- low
- medium
- high
- frontrunner
- n.a. not applicable

	GHG emissions target for 2050 or beyond	Long term low emissions development strategy	Renewable energy in power sector	Coal phase-out	Phase-out of fossil fuel light duty vehicles	Near zero-energy new buildings	Low-carbon new industry installations	Net zero deforestation
Argentina	low	low	high	n.a.	medium	medium	medium	medium
Australia	low	low	low	low	low	medium	low	medium
Brazil	medium	low	high	medium	medium	medium	medium	medium
Canada	medium	medium	low	frontrunner	medium	high	medium	low
China	low	low	medium	low	medium	high	medium	frontrunner
European Union (28)	high	medium	n.a.	medium	medium	medium	high	high
France	high	high	high	frontrunner	high	frontrunner	medium	medium
Germany	high	high	high	medium	medium	frontrunner	medium	frontrunner
India	low	low	high	medium	medium	medium	medium	frontrunner
Indonesia	low	low	low	low	low	medium	medium	medium

Source: Climate Transparency (2018)

Policies and policy targets in place

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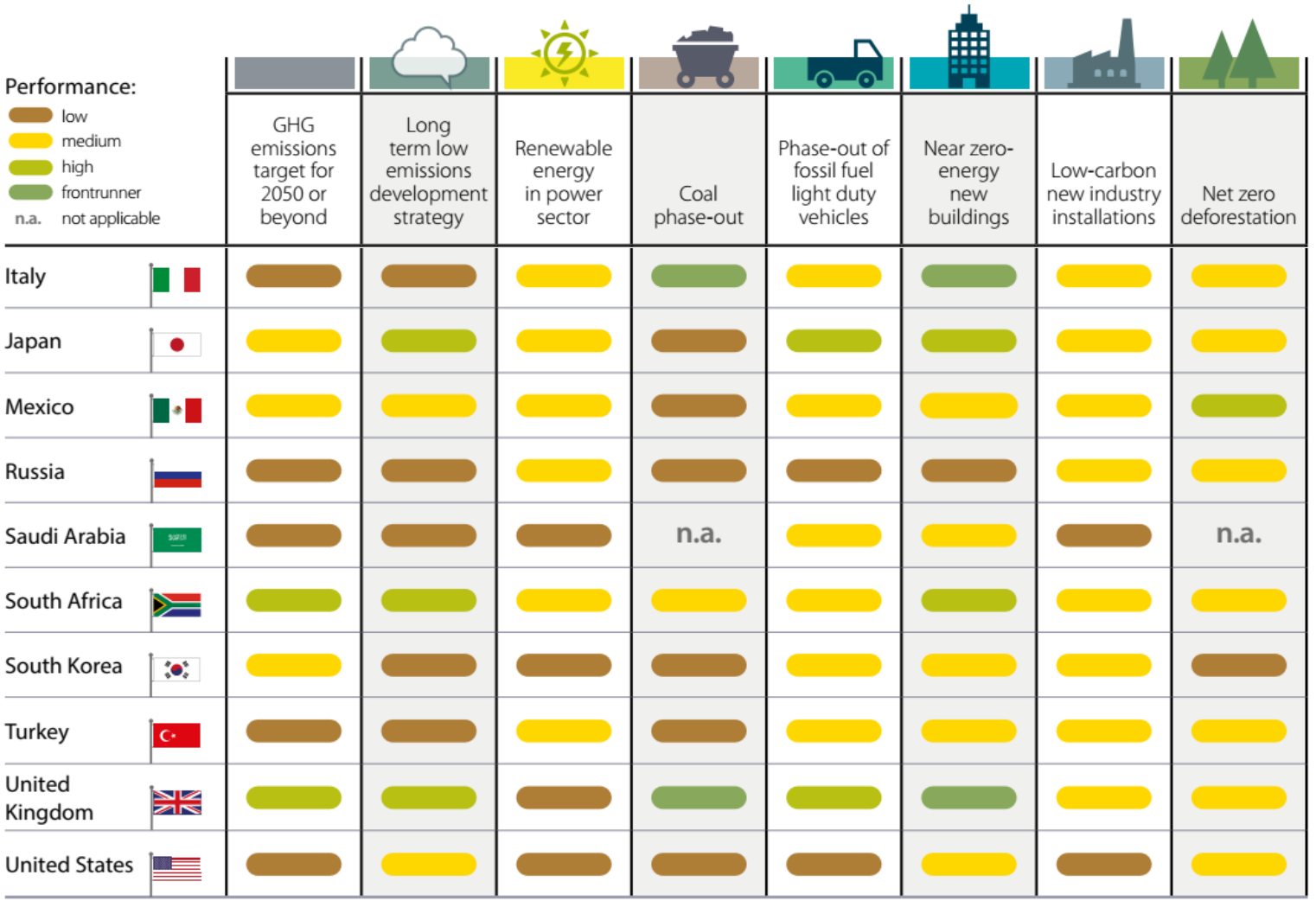
G20 Climate policy performance rating



Performance: low / medium / high / frontrunner / n.a. not applicable	GHG emissions target for 2050 or beyond	Long term low emissions development strategy	Renewable energy in power sector	Coal phase-out	Phase-out of fossil fuel light duty vehicles	Near zero-energy new buildings	Low-carbon new industry installations	Net zero deforestation
Italy	low	low	medium	frontrunner	medium	frontrunner	medium	medium
Japan	medium	high	medium	low	high	high	medium	medium
Mexico	medium	medium	medium	low	medium	medium	medium	high
Russia	low	low	medium	low	low	low	medium	medium
Saudi Arabia	low	low	low	n.a.	medium	medium	low	n.a.
South Africa	high	high	medium	medium	medium	high	medium	medium
South Korea	medium	low	low	low	medium	medium	medium	low
Turkey	low	low	medium	low	medium	medium	medium	medium
United Kingdom	high	high	low	frontrunner	high	frontrunner	medium	medium
United States	low	medium	low	low	low	medium	low	medium

Source: Climate Transparency (2018)

Conclusions

- Identification of successful policies and quantification of their impact are challenging
- Increasing number of policies and policy targets in line with the Paris Agreement goal
- However, ambitious commitments (near) non-existent in several sectors (e.g. industry, buildings, freight)

References

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