



Climate
Transparency

CLIMATE
ACTION
TRACKER 

CLIMATE CHANGE
PERFORMANCE
index
2015

FULL REPORT

G20 CLIMATE ACTION – A TURNING POINT?

An overview of climate mitigation action
by the G20 countries

Climate Transparency

Climate Transparency is an open consortium of organizations and initiatives with a shared mission to enhance assessments of action on climate change. Climate Transparency seeks to boost the impact of climate assessments by creating joint assessments and by communicating a composite picture of climate action for key influencers and decision makers.

Climate Transparency was established in 2014 following an initiative from the World Bank Group and the HUMBOLDT-VIADRINA Governance Platform. It is co-chaired by Alvaro Umaña (former Minister of Environment and Energy of Costa Rica and former Ambassador of Costa Rica to the United Nations Copenhagen Climate Change Conference), and Peter Eigen (Founder and Chair of the Advisory Council of Transparency International and co-founder of the HUMBOLDT-VIADRINA Governance Platform).

→ www.climate-transparency.org

Climate Action Tracker (CAT)

The Climate Action Tracker is a partnership of Climate Analytics, Ecofys, Potsdam Institute for Climate Impact Studies and the NewClimate Institute. It is an independent science-based group, which tracks emission commitments and actions of countries. It provides an assessment of individual national pledges of 14 developing and 14 developed countries to reduce their greenhouse gas emissions based on 2020 or unilateral pledges, current policy projections and INDCs. It has been produced annually since 2011.

→ www.climateactiontracker.org

Climate Change Performance Index (CCPI)

The Climate Change Performance Index is jointly published by Germanwatch e.V. and Climate Action Network Europe (CAN). The index compares and ranks the climate protection performance of 58 countries responsible for 90% of global energy-related CO₂ emissions. Countries are assessed according to their emission levels, energy efficiency, renewable energy and climate policies. The index has been published annually since 2006.

→ www.germanwatch.org/en/ccpi

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INTRODUCTION BY THE CO-CHAIRS

PARIS CI

Much has changed since countries met for the first Conference of Parties (COP) in Berlin in 1995. Scientists were still debating what effect human greenhouse gas (GHG) emissions had on the climate; poorer nations were arguing that climate change was an issue only for the developed countries which had caused it; and delegations were led by ministers, at best, if not merely senior diplomats.

Now, many heads of state attend climate talks, and there is no reasonable doubt that climate change is happening and is man-made. Reliable estimates exist for how much global temperature will rise in the next years and decades. Annual emissions of GHGs are a third higher than they were in 1995. Most countries now realize that climate change poses huge social, political, economic and environmental damage and risks.

We believe that action by the G20 can send a strong global signal for global climate action.

At the end of 2015, countries met at a conference in Paris to try and reach a new, global agreement for climate action beyond 2020. An unprecedented number of countries declared national action plans towards the agreement,

in advance of the conference. More than 180 countries have prepared these so called INDCs (Intended Nationally Determined Contributions), for the United Nations Climate Change Conference in Paris (COP21). Growing awareness of the global scale of the climate change challenge

was certainly a strong motivation for this high level of engagement.

The INDCs, impressive as their number is, have weaknesses. They do not follow a consistent structure, and they are therefore difficult to compare. As a result, it is difficult to assess whether each country is doing its fair share. In addition, a credible view of collective climate action is missing. These shortcomings may undermine government trust and engagement, and inhibit civil society and business from applying pressure for more ambitious action, as consistent with limiting global average warming to below 2 degrees Celsius (2°C).

As defined and submitted so far, the INDCs will not be enough to keep global temperature rise below 2°C. One of the main contributors to this report – the Climate Action Tracker – has shown that even if governments implemented these intentions, global temperatures in 2100 would still be about 2.7°C higher than pre-industrial levels.

While it is a good sign that countries have woken up to the need for global action on climate change, their present plans are not enough: greater ambition will be needed. A crucial step towards this greater ambition will be for countries themselves and for the world to know what progress we are making.

With this report, the first of Climate Transparency, we want to start filling this gap by providing a credible composite picture of global action. This will help encourage countries to raise their ambition for climate action in a race to the top, both in implementing their INDCs, and going further, towards the level of action that is needed.

This report presents a composite picture of the mitigation actions of G20 countries, based on two assessments: first, the Climate Action Tracker (CAT) produced by Climate Analytics, Ecofys, NewClimate Institute and the Potsdam Institute for Climate Impact Assessment, and second, the Climate Change Performance Index (CCPI) produced by Germanwatch and CAN (Climate Action Network) Europe. These two assessments were selected because they apply transparent methodologies for different aspects of climate performance, using recent data, and were available for each of the G20 economies at the time of preparation of this report.¹

A year ago, some of the most authoritative groups for assessing climate mitigation action accepted our invitation to explore together how their approaches could complement each other. These groups were: the Carbon Transparency Initiative, the Climate Action Tracker, the Climate Change Performance Index, the Yale Environmental Performance Index,

the Climate Equity Calculator, plus experts including the World Resources Institute (WRI) and various academics in the field. During the resulting discussions, it emerged that their various assessments complemented each other well, and between them offered a composite picture for climate action by countries. This frank and open discussion and subsequent workshops led us to form together a new initiative, Climate Transparency.

We have both seen in our long careers how credible information can drive change, whether in the field of corruption or environmental protection. For example, credible information allows comparisons, in turn creating peer pressure, which can be a powerful stimulus and input for change. Credible information can be generated from multi-stakeholder input, based on publicly available data sources and transparent value judgments.

¹ Another reason for focusing on these assessments is that their respective issuing organizations have been available to ensure that this report fairly represents their findings.

G20 countries have a key role to play in avoiding dangerous climate change. They represent about two thirds of the world's population, three quarters of annual GHGs and four fifths of global economic output, or gross domestic product (GDP).² In addition, they account for about three quarters of global greenhouse gas (GHG) emissions. Its members comprise developed and emerging economies from all major continents.

As a result, G20 countries have a particular responsibility and capability for climate action. Furthermore, the G20 has a mandate to safeguard global growth and financial stability. Taking a lead in combatting climate change by decarbonizing the economy fits well within this remit and special responsibility of all countries in the G20.

We believe that action by the G20 can send a strong signal for global climate action. We hope that in the coming year the G20 becomes a major driver for climate action by taking the lead in a goal to decarbonise the world economy. Such a goal fits perfectly with the G20's mandate of safeguarding global financial stability and economic growth.

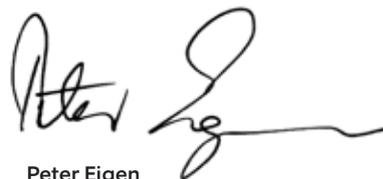


Alvaro Umaña

Former Minister of Environment and Energy of Costa Rica, and former Ambassador of Costa Rica to the United Nations Copenhagen Climate Change Conference

This report has stark messages. The analysis shows that the average per capita emissions of the G20 countries is three to four times higher than it must be to avoid dangerous climate change. And yet, we believe that we could be at a turning point. Most G20 countries have now committed to stronger climate action, their emission levels are converging, and growth in renewable energy is impressive. Partly as a result of these new trends, global energy-related emissions did not grow in 2014, according to the International Energy Agency. Such stalling of emissions growth has previously occurred only in periods of economic downturn. Climate policy is working, and that is very good news, but we must have higher ambition.

This report is only the first step in our plans for Climate Transparency: we intend to involve more organizations and experts, and our ambitions go beyond covering mitigation action. A comprehensive picture of climate action will also have to cover climate finance and climate adaptation, to provide a credible foundation and driver for action.



Peter Eigen

Founder and Chair of the Advisory Council, Transparency International, and Co-Founder of the HUMBOLDT-VIADRINA Governance Platform

² www.destatis.de/EN/FactsFigures/CountriesRegions/InternationalStatistics/Country/G20Start.html



STIMULATING A RACE TO THE TOP THROUGH TRANSPARENT ASSESSMENTS

Avoiding the most dangerous impacts of climate change requires holding global average warming to “well below” 2°C compared with pre-industrial levels, as countries agreed under the Paris Agreement in 2015.³ Before the Paris meeting, nearly 190 countries have pledged to take national climate action through 2025 or 2030 (Nationally Determined Contributions – INDCs). The latest assessment of INDCs shows that even after their full implementation, global emissions would remain substantially above levels consistent with meeting the 2°C warming limit.⁴ More ambitious national targets for faster and deeper action are therefore needed.

A composite picture that is trusted by all stakeholders will provide a sound basis for political decision-making.

One way to drive greater ambition is to provide a credible, transparent and comprehensive

composite picture of action by all countries. With proper interpretation and communication, such a composite picture can stimulate peer pressure between countries. In addition, it can empower civil society and businesses to demand stronger action, to reduce the severe social, political, economic, financial and environmental risks and costs associated with climate change, and to avoid the dangers of inadequate action. A composite picture that is trusted by all stakeholders will provide a sound basis for political decision-making; stimulate a broad discussion among experts and the public; and guide climate-friendly investment, both in the public and private sector.

³ Paris Agreement, <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

⁴ For more on the ‘emissions gap’ between INDCs and global targets, see <http://uneplive.unep.org/theme/index/13#indcs>

Achieving an holistic view of a country's climate action will include consideration of its mitigation action, provision of climate finance, steps towards adaptation, and the establishment of the enabling conditions for climate action. Achieving a high quality, credible and transparent composite picture, as a basis for faster and deeper action, will also take into account various practical considerations, and have a number of characteristics. Such transparent assessment will rely on high quality, publicly available data; it will state assumptions, value judgments and methodologies clearly; it will apply scientific rigor; strive for a comprehensive picture; enhance its quality through multi-stakeholder peer reviews; will take a global geographical perspective; and will be made accessible and communicated to a wide audience.

Such a transparent assessment can stimulate greater ambitions in various ways. First and foremost, it will show the gap between global targets to address climate change and national plans for climate action. That gap can form the basis for a moral and political imperative to take more ambitious action. A transparent assessment will allow countries to compare themselves with their peers, and assess what their fair share should be. It will also allow sub-national actors to work out what they have to do. Different sections of society and different economic sectors will need to contribute climate action, and thus similarly need a neutral reference point. Such sub-national action will include, in particular, substantial, long-term infrastructure investment, to build a low-carbon economy, as well as changes in the way economies are run.

A transparent assessment will allow countries to compare themselves with their peers, and assess what their fair share should be.

The underlying approach of the Paris Agreement has made such transparent assessment particularly necessary and relevant. The Paris Agreement has encouraged all countries to determine their own national contribution to solving the problem of climate change, and to do so independently of each other.⁵ This “bottom-up” approach has the advantage of accommodating countries' specific situations. It thus takes a different approach to the Kyoto Protocol, which countries adopted in 1997 under the UNFCCC. Kyoto assigned legally binding emissions limits to some 37 industrialized countries for the period 2008 to 2012. There was, however, insufficient support for such a top-down agreement to extend it beyond 2012.

A credible, transparent assessment can help ensure that national INDCs, under the bottom-up approach of the Paris Agreement, collectively keep global average warming well below 2°C. It will help governments, experts and civil society decide whether each country is doing its fair share, towards achieving that global goal.

⁵ For more on INDCs see http://unfccc.int/focus/indc_portal/items/8766.php

A multi-stakeholder discussion with actors from government, business and civil society can create a common understanding of the threat of climate change; emphasize the need for more ambitious action; mobilise broad support for such action; and contribute to effective monitoring, reporting and verification of the INDCs.

A thorough analysis of the drivers for climate action, policy responses and actual emission levels will provide the necessary background information to examine, adapt and improve a country's actions, towards better climate protection. A multi-stakeholder discussion with actors from government, business and civil society can create a common understanding of the threat of climate change; emphasize the need for more ambitious action; mobilise broad support for such action; and contribute to effective monitoring, reporting and verification of the INDCs. Transparent assessments are a precondition for such discussions, and they are also a tool in raising public awareness on climate change issues.

Finally, transparent assessments can contribute to the growth of global carbon markets, widely considered as one of the most important instruments to manage greenhouse gases. Carbon markets can support investment flows to programmes with low-cost opportunities to cut carbon emissions. Transparent assessment can help identify those opportunities, by removing information barriers. Transparent assessments can also inform investors' long-term decision-making about whether there is a stable outlook for low carbon policy in a country. When countries want to link their domestic carbon pricing schemes with other countries, they will need reliable and independent information about relevant schemes elsewhere.



COMPOSITE PICTURE OF CLIMATE MITIGATION ACTION BY G20 COUNTRIES

G20 CLIMATE ACTION – A TURNING POINT?

G20 countries represent two thirds of the world population, and four fifths of global economic output, as measured by gross domestic product (GDP). Collectively, these countries currently emit three quarters of global annual greenhouse gases (GHG). Average per capita GHG emissions in G20 countries are about seven tonnes of carbon dioxide equivalent (tCO₂e). To keep global average warming below two degrees Celsius (2°C), global average per capita emissions – not just of the G20 – should be around 1–3 tCO₂e, by 2050.

There are good reasons to draw attention to the climate mitigation action of the G20. Because of their collective size, it is vital that G20 countries reduce their per capita emissions to the safe range mentioned above, even though this would be insufficient on its own to tackle climate change. Because of their enormous political and economic power, these countries help determine the dynamics of the global economy. For example, much technological innovation arises from within the G20. And their share of global trade is even higher than their share of the world economy. Collectively, G20 countries drive the global trend in green-

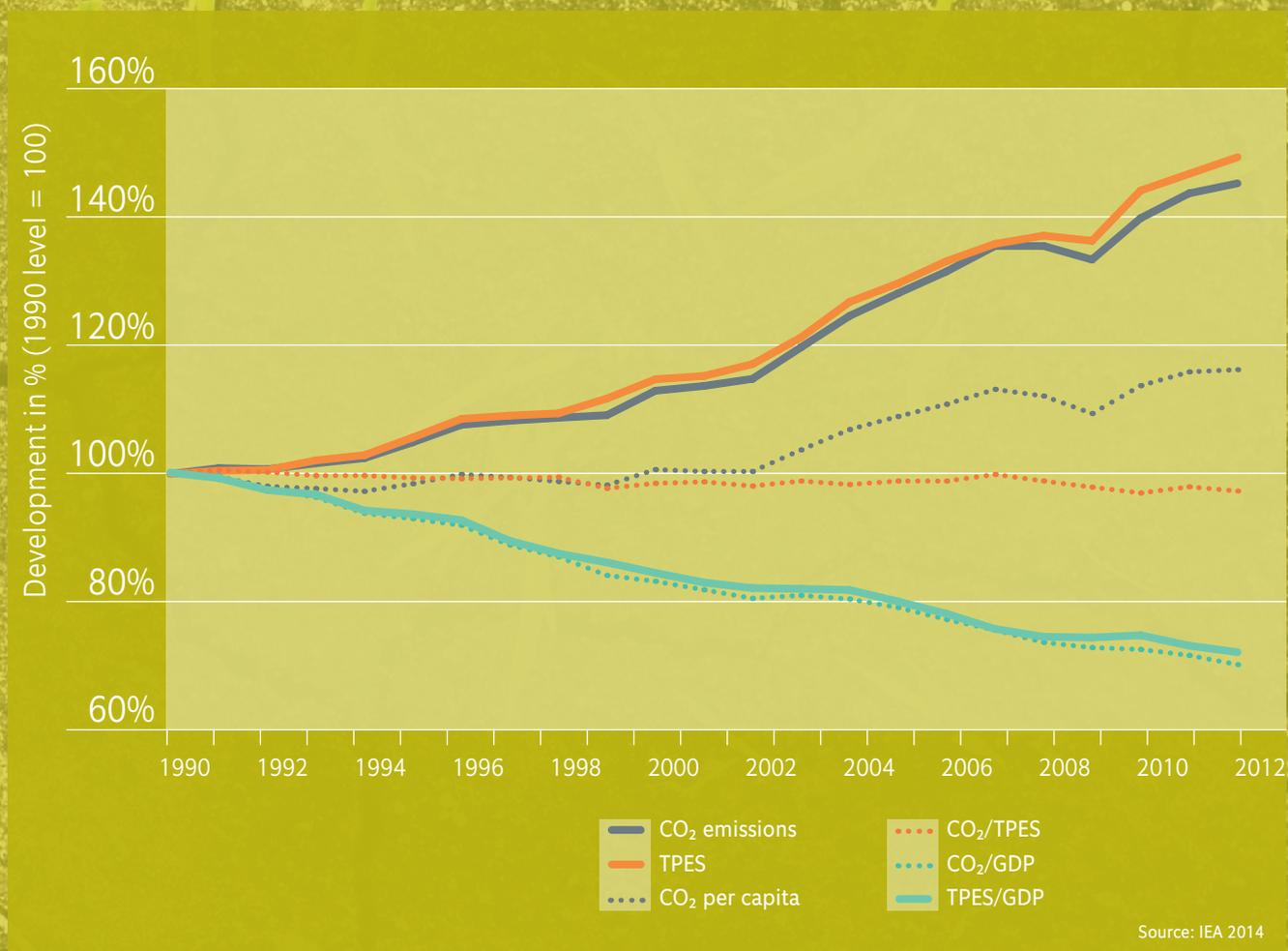
Most of the world's top-20 annual GHG emitters are G20 countries. That is unsurprising, given their large economic size. However, some of these countries would not appear on a top-20 list of the world's biggest cumulative emitters. And fewer than half would appear on a top-20 list of the world's biggest per capita emitters. Emerging economies, for example, still have smaller per capita emissions than most industrial nations.

house gas emissions, evening out structural economic changes which may shift emissions one way or another in individual nations.

The necessity for average per capita emissions to fall to 1–3 tCO₂e follows from climate science.

However, this prescription does not, on its own, translate into fair contributions across individual nations. A thorough comparison of the climate mitigation action of G20 countries is a vital precondition for stimulating national debates about what is fair and possible. A transparent comparison of climate action will inform such debate, hold governments to account, and help the world understand what it would take to avoid dangerous climate change. A comparison of climate action across nations must consider a range of criteria: the historical development of emissions; the capacities and capabilities of countries; indicators of decarbonisation, such as the development of renewable energy, and carbon and energy intensity; the national and international climate policy performance of governments; and policy ambition, as expressed in countries' Intended Nationally Determined Contributions (INDCs), in the context of the globally agreed 2°C target.

G20 – DEVELOPMENT OF KEY INDICATORS



Reviewing the trajectory of global emissions over the last 25 years makes sobering reading. In the space of a quarter of a century, G20 carbon dioxide (CO₂) emissions have increased by nearly 50%, with faster growth in the second half of this period.⁶ Per capita emissions have grown less strongly, by about 16%, reflecting population growth.

Two indicators have fallen by more than 25%, namely carbon and energy intensity of the economy, defined as CO₂ emissions and primary energy supply per unit of GDP. This shows that energy has been used more efficiently to produce goods and services, and that relatively less CO₂ was emitted to produce energy. Because global GDP has grown strongly in the last 25 years however, the overall effect has still been a big increase in emissions.

If the world continues along its present path, rising emissions will take the global average temperature far above 2°C, compared with preindustrial levels. The Intergovernmental Panel on Climate Change (IPCC) has highlighted this danger. Similarly, parties of the United Nations Framework Convention on Climate Change (UNFCCC) have recognised the need for urgent action, at their annual global climate conferences.

Parties to the UNFCCC comprise almost every nation on Earth. Aware of the urgency to cut GHG emissions, they have prepared new pledges for climate action, called Intended Nationally Determined Contributions (INDCs).

The INDCs are a major step forward. Never before have so many countries committed to take action on climate change, and published such detailed pledges for public scrutiny. Collectively, the INDCs will slow global growth in annual emissions, future review processes have the potential to strengthen the ambition. As the analysis of Climate Action Tracker (CAT) shows, even if these plans were fully implemented, they would still lead to an increase in global temperature of 2.7°C by 2100.⁷ The longer it takes to mobil-

ise the necessary ambition to keep global average warming below 2°C, the more difficult this target will become, requiring ever steeper, more challenging emissions reductions.

With present commitments global temperature would be 2.7 degrees higher in 2100.

However, while these numbers are sobering, there are strong indications that G20 countries are reaching a turning point.

In eleven G20 countries, annual per capita GHG emissions are now on a downward path. Renewable energy is continuing its strong growth worldwide. Costs have fallen sharply, and parity with traditional forms of energy is in sight, or already reached. Renewable energy sources are also helping to bring power to the millions of people who do not have access to electricity, where off grid renewable power can be installed faster and cheaper than a grid connection. Climate legislation has been introduced in many countries and targets have been strengthened over time. Increasingly, there is knowledge sharing and collaboration over policies to promote renewable power, energy efficiency and carbon pricing. A substantial number of countries and regions have introduced carbon markets. Climate mitigation action is increasingly seen not as a cost, but a necessary investment in the future, which brings multiple other benefits.

An important demonstration of the cumulative effect of these developments is that according to the International Energy Agency energy related emissions did not grow in 2014.⁸ Such a reversal of GHG emissions growth was previously seen only during periods of economic downturn. This time, it seems that climate policy is working. More ambition is needed, but there is room for hope and optimism.

6 There are more reliable data for CO₂ emissions than for GHG emissions. While there are variations between countries as to the relative part of CO₂, for the G20 they are a good indicator also for GHG emissions.

7 Source: [http://climateactiontracker.org/assets/publications/CAT_global](http://climateactiontracker.org/assets/publications/CAT_global_temperature_update_October_2015.pdf)

[temperature_update_October_2015.pdf](http://climateactiontracker.org/assets/publications/CAT_global_temperature_update_October_2015.pdf)

The analysis of CAT comes to the conclusion that there would be a “best guess” global temperature increase of 2.7°C in 2100 with a 66% likelihood of being below 3°C.

8 www.iea.org/newsroomandevents/news/2015/march/global-energy-related-emissions-of-carbon-dioxide-stalled-in-2014.html

EMISSIONS AND EMISSION TRENDS

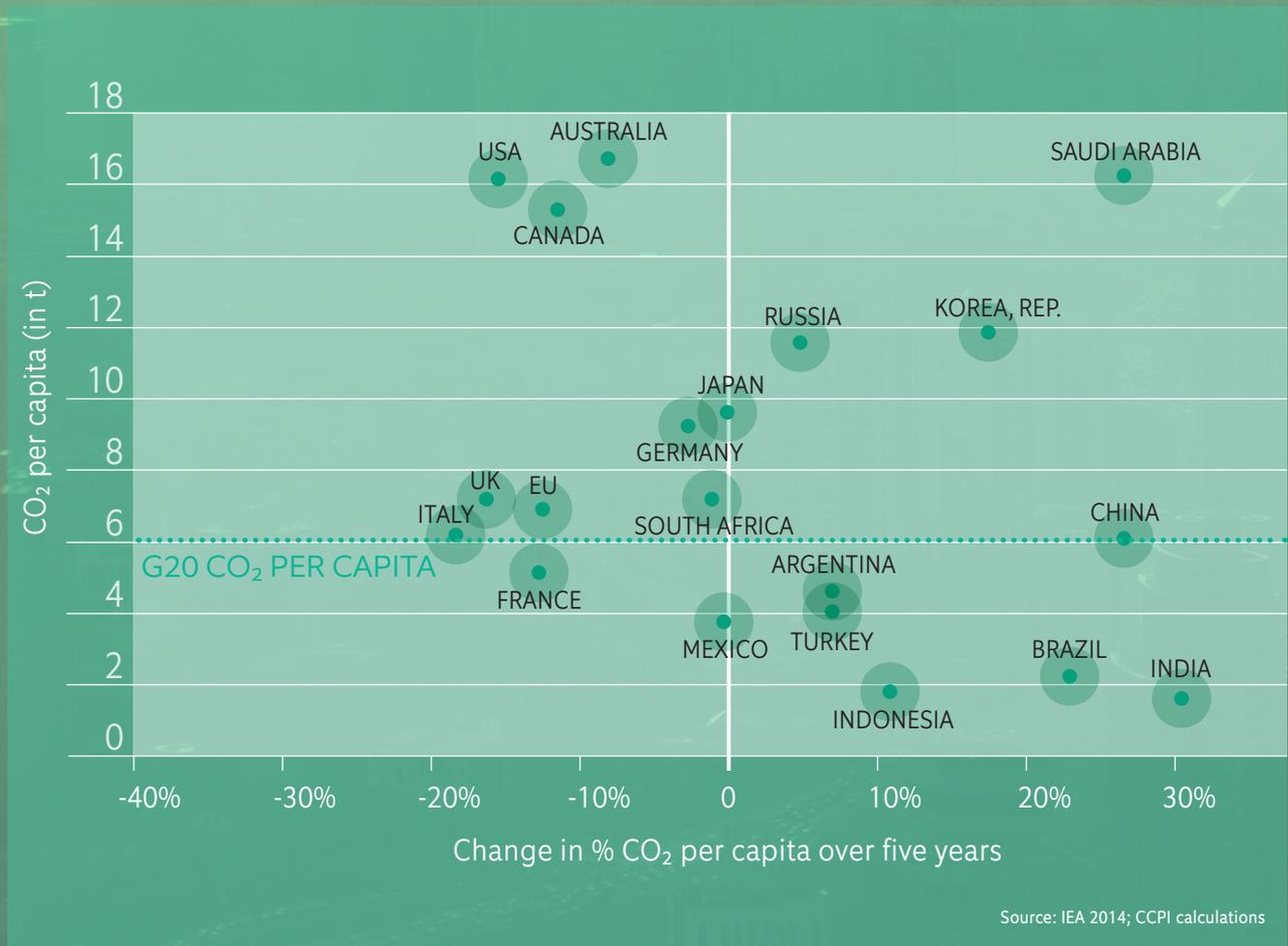
Climate policy
is working, but
more ambition
is needed.

G20 countries account for 74% of current global greenhouse gas emissions. Average annual per capita emissions are about 7 t CO₂e. The vast majority of these, at about six tonnes per capita, are carbon dioxide (CO₂) emissions from burning fossil fuels to produce energy. If the 2°C target is to be met, global average emissions should fall to be in the order of 1–3 t CO₂e by 2050, an order of magnitude lower than present.

While both per capita and overall emissions of the G20 have continued to rise, the IEA analysis of energy related CO₂ emissions suggests that such growth is not only slowing, but on the verge of stopping.

Half of G20 countries no longer show growth in energy-related CO₂ emissions. Among countries with high per capita emissions, Saudi Arabia and Korea, Rep. are still increasing their emissions, whereas emissions are falling in the United States, Canada and Australia. Among countries with lower per capita emissions, India, China and Brazil all have high growth rates, while emissions are falling in the EU as a whole, and in some of its member states, in particular, such as France, Italy and the UK.

ANNUAL CO₂ PER CAPITA EMISSIONS – LEVEL 2012 AND TREND 2007–2012



DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarbonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensity.

RENEWABLE ENERGY

The most positive change has been in the field of renewable energy. Twenty years ago, only a few countries had embarked on major programs to increase the share of renewable energy in their energy mix. Now, nearly all G20 countries have either already substantially increased their renewable energy portfolio, or have plans to do so.

Many G20 countries have seen strong growth rates in renewable energy production. In some cases, the overall share of renewable energy in total primary energy supply is also rising, thus cutting fossil fuel use. The share of renewable energy is rising, in this way, in Germany, Italy, France, the UK, the EU, the United States, Canada and Japan.

Across the G20, the average share of renewables in the total primary energy supply had a positive trend until 2012. This indicated that the production of energy from renewable sources was rising even faster than from other sources such as fossil fuels and nuclear power.

DECOUPLING OF CARBON- AND ENERGY INTENSITY⁹

Globally, there is a trend of weak decoupling of CO₂ emissions from growth in both GDP and total primary energy supply. Such a decoupling would be expected to follow rapid growth in the renewable energy sector. However, no clear trend is visible across the G20, reflecting strong growth also in the fossil fuel energy sector.

The G20 has seen falling energy intensity of the economy. Such a decline could have a variety of causes, including rising energy efficiency; structural economic change towards services industries away from energy-intensive manufacturing; or the relocation of energy-intensive industries to other countries.¹⁰

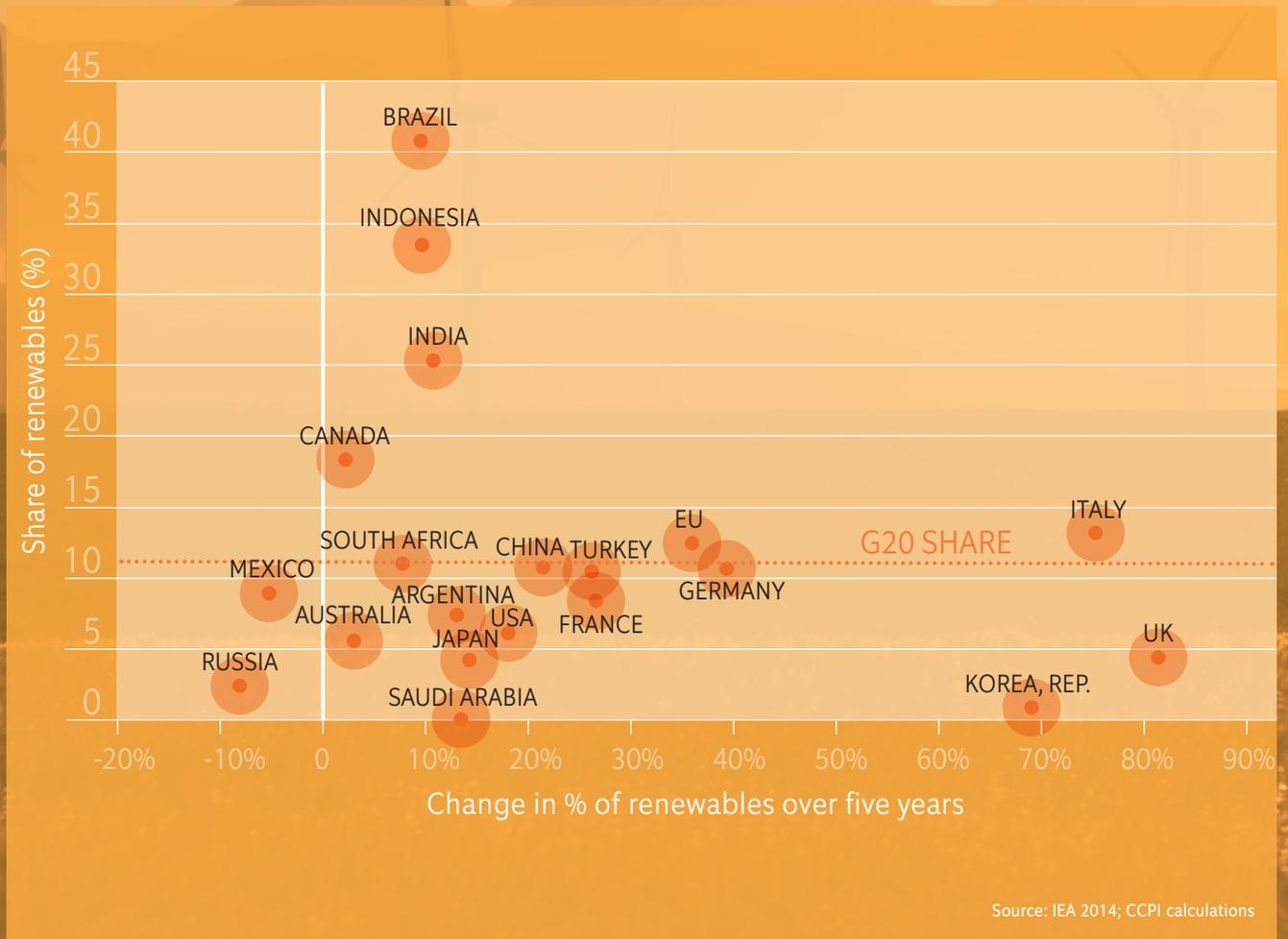
For a clear decoupling trend across the G20, both the energy intensity of the economy and carbon intensity of energy supply will have to decline. Within the G20, there are some leading countries where both indicators are falling, including the EU as a whole, EU member states such as France, the UK and Germany, and the United States and Russia.

Most positive change: renewable energy.

⁹ PwC produces an annual Low Carbon Economy Index, which in 2015 has ranked G20 economies by carbon intensity of GDP and also assessed national targets. More information is available at: www.pwc.co.uk/sustainability

¹⁰ These effects, which may have a substantial effect on the national indicators, largely compensate each other when looking at the G20 averages.

RENEWABLE ENERGY – SHARE 2012 AND TREND 2007–2012



CLIMATE POLICY PERFORMANCE

The CCPI policy evaluations show a growing sensibility among G20 governments of the need for and benefits from climate action. Many countries are investing heavily in renewable energy, and some are even developing decarbonisation pathways.

Across the G20, there is a wide spectrum of good and poor performers taking into account countries' respective capabilities. Because of its progressive attitude in climate negotiations, Mexico usually receives positive CCPI evaluations for its international policy performance. South Africa, Germany and the UK also rank relatively highly in this area. At the level of national climate policy, India, the Korea, Rep. and China rank highly, compared with other G20 countries. Poor performers in both national and international evaluations include Saudi Arabia, Canada, Australia and Turkey. Australia lost ground after its last general election, when the subsequent government reversed most climate policies. Turkey has also stopped promoting climate action. Canada is expected to improve its performance after its newly elected government announced plans to increase its climate ambition. The performance ranking of the United States and China benefited from taking the lead in international negotiations in 2014.

Countries are developing decarbonisation pathways.

INDCS

All G20 countries (with the exception of Saudi Arabia) have submitted new climate change plans, called “Intended Nationally Determined Contributions”, or INDCs, towards the Paris climate meeting. These proposals will bend downwards the emissions curve of the G20 as whole. However, the INDCs are insufficient to meet a trajectory compatible with limiting global average warming to 2°C (see figure).

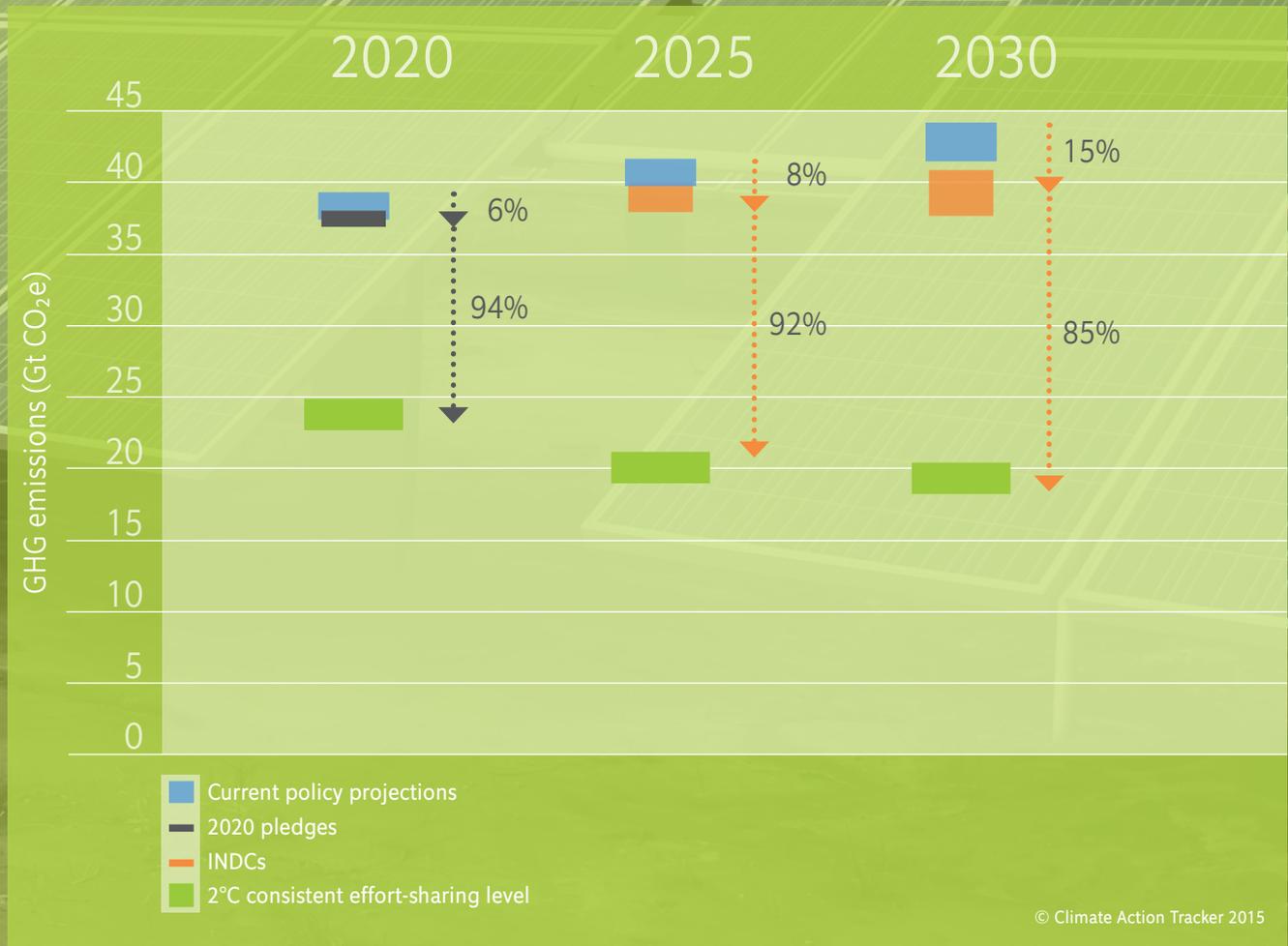
The Climate Action Tracker finds that the INDCs go beyond current G20 climate policies, resulting in lower emissions, if fully implemented. However, these emissions reductions still only go 15% of the way to making G20 climate action compatible with a goal to limit global average warming to below 2°C. The calculation of a level of ambition compatible with 2°C is based on analysis which makes various assumptions for sharing global effort fairly among countries.¹¹ This analysis indicates the level of ambition required by the G20 as a whole, while allowing for variation among individual members, according to the chosen approach for sharing effort.¹²

Beyond the G20, more than 140 countries have submitted INDCs towards a Paris agreement. If these were all implemented, they would lead to a “best guess” global temperature increase of 2.7°C in 2100, with a 66% likelihood of staying below 3°C, according to the assessment of the CAT. There is therefore a clear need, and room, for enhanced ambition in climate mitigation by G20 countries.

11 <http://climateactiontracker.org/methodology/85/Comparability-of-effort.html>

12 See also Bloomberg New Energy Finance: BNEF, “How ambitious are the past – 2020 Targets? – Assessing the INDCs”, October 2015.

DEVELOPMENT AND PROJECTIONS OF THE G20'S GHG EMISSIONS AND THE EFFECT OF THEIR INDCs





OVERVIEW OF CAT AND CCPI EVALUATION

	Evaluation in overall Score CCPI	CCPI Evaluation of Emissions Level	CCPI Evaluation of Renewable Energies	CCPI Evaluation of Energy and Carbon Intensity	CCPI Evaluation of Climate Policy	CAT INDC rating – with respect to 2°C scenario	CAT: How much additional effort beyond current policies is needed to achieve the INDC?
ARGENTINA	VERY POOR					INADEQUATE	A LITTLE
AUSTRALIA	VERY POOR					INADEQUATE	A LOT
BRAZIL	VERY POOR					MEDIUM	A LITTLE
CANADA	VERY POOR					INADEQUATE	A LOT
CHINA	POOR					MEDIUM	NONE
EU	N/A	N/A	N/A	N/A	N/A	MEDIUM	A LITTLE
FRANCE	GOOD					MEDIUM (EU rating)	A LITTLE (EU rating)
GERMANY	MEDIUM					MEDIUM (EU rating)	A LITTLE (EU rating)
INDIA	MEDIUM					MEDIUM	Emissions from current policies lower than INDC
INDONESIA	MEDIUM					INADEQUATE	Emissions from current policies lower than INDC
ITALY	MEDIUM					MEDIUM (EU rating)	A LITTLE (EU rating)
JAPAN	VERY POOR					INADEQUATE	A LITTLE
KOREA, REP.	VERY POOR					INADEQUATE	A LITTLE
MEXICO	MEDIUM					MEDIUM	A LITTLE
RUSSIA	VERY POOR					INADEQUATE	Emissions from current policies lower than INDC
SAUDI ARABIA	VERY POOR					INADEQUATE	A LITTLE
SOUTH AFRICA	POOR					INADEQUATE	A LOT
TURKEY	VERY POOR					INADEQUATE	A LITTLE
UK	GOOD					MEDIUM (EU rating)	A LITTLE (EU rating)
USA	POOR					MEDIUM	A LOT



KEY INDICATORS FOR G20 COUNTRIES

The table below provides an overview of key indicators and trends, across G20 countries.

	Share of global GHG emissions*	Share of global GDP	Share of global population	GHG emissions per capita [t CO ₂ e/cap]	Energy intensity of GDP [TPES (MJ)/GDP (US\$)]	CO ₂ emission intensity of energy [t CO ₂ /TJ]	CO ₂ emission intensity of GDP [kg CO ₂ /(2000 US\$)]	2012 Share of fossil in primary energy	2012 Share of coal in electricity production	2012 Share of renewables in primary energy
ARGENTINA*	0.65%	0.79%	0.58%	↗ 7.94	↘ 5.36	↗ 56.12	↘ 0.29	89.8%	2.73%	7.30%
AUSTRALIA	1.19%	1.05%	0.33%	↘ 24.39	↘ 6.15	↘ 71.92	↘ 0.44	94.39%	68.8%	5.53%
BRAZIL	3.22%	3.05%	2.82%	↘ 5.91	↗ 4.57	↗ 37.32	↗ 0.17	56.55%	2.56%	40.72%
CANADA	1.45%	1.56%	0.50%	↘ 21.21	↘ 8.33	↘ 50.76	↘ 0.41	73.4%	10.04%	18.30%
CHINA*	21.69%	16.03%	19.30%	↗ 7.16	↘ 9.31	↘ 67.75	↘ 0.62	88.23%	75.93%	10.71%
EU	9.95%	17.08%	7.21%	↘ 8.41	↘ 4.86	↘ 50.93	↘ 0.25	73.4%	28.13%	12.40%
FRANCE	1.06%	2.36%	0.93%	↘ 7.11	↘ 5.49	↘ 31.6	↘ 0.17	48.73%	3.87%	8.36%
GERMANY	1.91%	3.44%	1.16%	↘ 11.63	↘ 4.73	↗ 57.72	↘ 0.26	80.41%	46.06%	10.58%
INDIA*	5.65%	6.72%	17.57%	↗ 1.92	↘ 5.97	↗ 59.22	→ 0.35	73.64%	71.07%	25.19%
INDONESIA*	3.83%	2.35%	3.51%	↘ 6.02	↘ 4.79	↗ 48.7	↘ 0.22	66.46%	48.66%	33.42%
ITALY	1.00%	1.94%	0.87%	↘ 7.41	↘ 4.26	↘ 56.37	↘ 0.23	83.87%	18.2%	13.12%
JAPAN	2.71%	4.82%	1.81%	↘ 9.99	↘ 4.98	↗ 64.6	↗ 0.31	94.56%	29.55%	4.13%
KOREA. REP.	1.31%	1.69%	0.71%	↗ 12.85	↗ 7.91	↗ 53.76	↗ 0.42	83.23%	45.08%	0.85%
MEXICO*	1.28%	1.90%	1.66%	↗ 6.31	↘ 5.06	↘ 55.25	↘ 0.28	90.15%	11.68%	8.83%
RUSSIA	4.99%	2.63%	2.04%	↗ 12.25	↘ 14.60	↘ 52.37	↘ 0.76	91.07%	15.75%	2.36%
SAUDI ARABIA*	1.02%	1.54%	0.40%	↗ 17.31	↗ 6.53	↘ 54.72	↗ 0.36	99.997%	0%	0.00%
SOUTH AFRICA*	0.98%	0.67%	0.74%	↗ 10.91	↘ 10.91	↗ 64.17	↘ 0.67	86.97%	93.84%	10.91%
TURKEY	0.84%	1.22%	1.06%	↗ 5.08	↗ 4.79	↘ 61.78	→ 0.3	89.36%	28.4%	10.39%
UK	1.20%	2.50%	0.91%	↘ 9.11	↘ 3.94	↘ 56.84	↘ 0.22	85.16%	39.96%	4.36%
USA	13.48%	17.17%	4.47%	↘ 17.62	↘ 6.58	↘ 56.62	↘ 0.36	83.71%	38.48%	6.03%
G20 – TOTAL*	Σ 74.24%	Σ 80.27%	Σ 64.72%	Ø 7.19	Ø 6.63	Ø 63.07	Ø 0.42	Ø 83.43%	Ø 35.67%	Ø 11.11%

* GHG data from 2010

Data Sources: Climate Action Tracker (2015): Country Tools. Available at: <http://climateactiontracker.org/countries.html>** | International Energy Agency (2014a): Emissions from fuel combustion: Beyond 2020 documentation. IEA, Paris | International Energy Agency (2014b): Energy Balances of OECD Countries 2014. IEA, Paris. | United Nations, Department of Economic and Social Affairs (2015): World Population Prospects: The 2015 Revision. Available at: <http://esa.un.org/unpd/wpp> | UNFCCC (2015): GHG Data – UNFCCC: Time series – Annex I. Available at: http://unfccc.int/ghg_data/ghg_data_unfccc/time_series_annex_i/items/3814.php | World Bank (2015a): Fossil fuel energy consumption. Available at: <http://data.worldbank.org/indicator/EG.USE.COMM.FO.ZS/countries> | World Bank (2015b): Electricity production from coal sources. Available at: <http://data.worldbank.org/indicator/EG.ELC.COAL.ZS>.

** Climate Action Tracker collects the latest data for every country from different sources. Detailed information can be gathered at the different country profiles at their online presence.

COUNTRY PROFILES

Climate

and
steps to so

ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Argentina



This Country Profile assesses Argentina's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.

COUNTRY CHARACTERISTICS

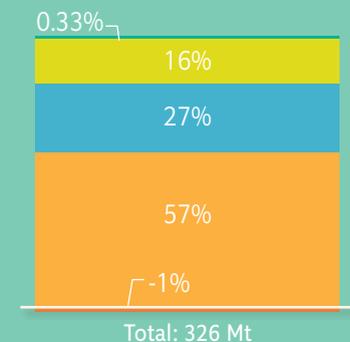
KEY INDICATORS*	ARGENTINA	G20
Population [million]	41	4,587
GDP per capita (PPP) [US\$]	16,028	14,505
Share of global GHG emissions**	0.7%	74.2%
Share of global GDP	0.8%	80.3%
Share of global population	0.6%	64.7%
GHG per capita [t CO ₂ e/cap]**	7.9	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	5.4	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	56.1	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.29	0.42
Share of fossil fuels in primary energy supply	89.8%	83.4%
Share of coal in electricity production	2.7%	35.7%
Share of renewables in primary energy supply	7.3%	11.1%

*year 2012 (unless stated otherwise)
**year 2010

GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

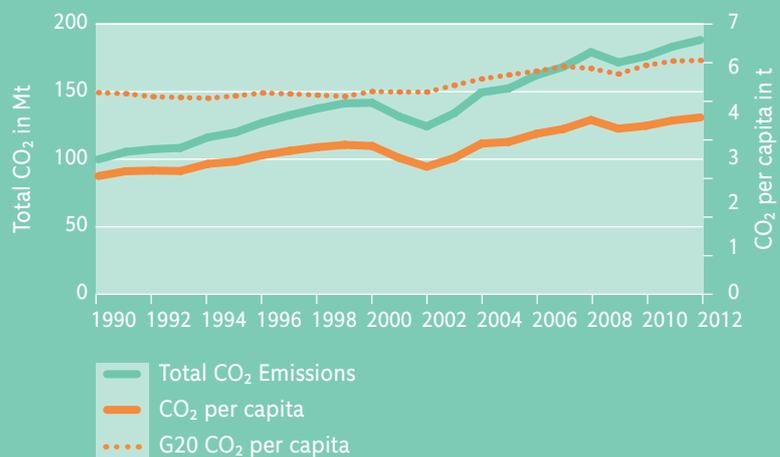
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – ARGENTINA 2010



- F-Gases
 - N₂O
 - CH₄
 - CO₂ incl. LULUCF*
 - CO₂ from LULUCF**
- * from Energy, Industry & other

ENERGY-RELATED CO₂-EMISSIONS – ARGENTINA



Source: IEA 2014; **CAT 2015

Source: IEA 2014

The greenhouse gases (GHGs) methane (CH₄) and nitrous oxide (N₂O) account for a relatively large proportion of Argentina's annual (GHG) emissions compared with other G20 countries, at 27% and 16% respectively. These emissions are largely related to agriculture. Total energy-related carbon dioxide

(CO₂) emissions and CO₂ emissions per capita are below the G20 average, but rising. Argentina's emissions level is ranked as relatively poor, in the CCPI evaluation. The trend is negative, due to the country's rising emissions.

CCPI EVALUATION OF ARGENTINA'S EMISSIONS



Source: CCPI 2015

DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN ARGENTINA



Source: IEA 2014

The contribution of renewables to Argentina's energy supply grew by about 100,000 TJ from 1990 to 2012. This development was uneven, especially in the period from 1999 to 2008. Since 2008, there has been a notable increase. The share of renewable energy has remained approximately constant, at about

7–8%, notwithstanding a temporary increase from around 2001 to 2003. The share of renewables is well below the G20 average. The CCPI assessment ranks Argentina's level of renewable energy as relatively poor, with a positive trend.

CCPI EVALUATION OF ARGENTINA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

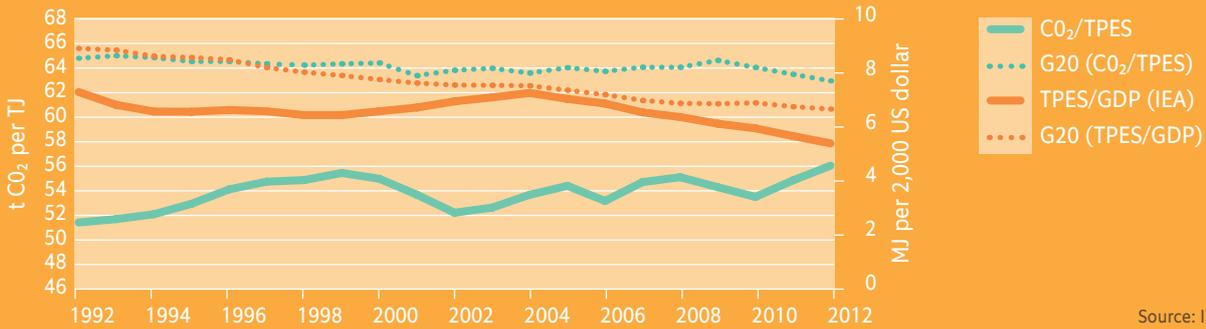
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN ARGENTINA



Source: IEA 2014

The energy intensity of Argentina's economy (TPES/GDP) has fallen since a peak in 2004. The carbon intensity of energy supply (CO₂/TPES) has fluctuated in recent decades, with a peak in 1999 and a low in 2002. Since 2002, the carbon intensity has risen. Both the energy intensity of the economy and the carbon

intensity of energy supply are below the G20 average. The CCPI ranks Argentina's energy and carbon intensity level as medium. With the two indicators developing in different directions, there is no clear trend.

CCPI EVALUATION OF ARGENTINA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

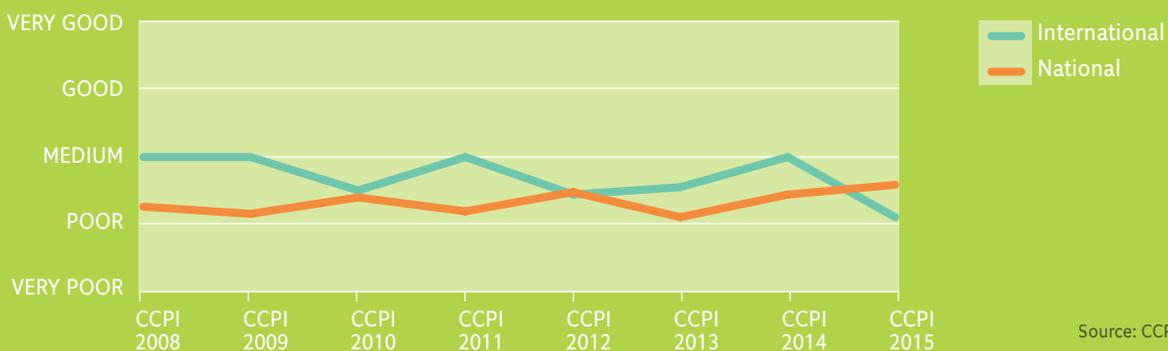
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

ARGENTINA'S CLIMATE POLICY



Source: CCPI 2008-2015

Argentina's climate policy performance, as evaluated by the experts of the CCPI, is relatively poor. There were no strong climate initiatives visible in recent years, neither at the national nor international level.

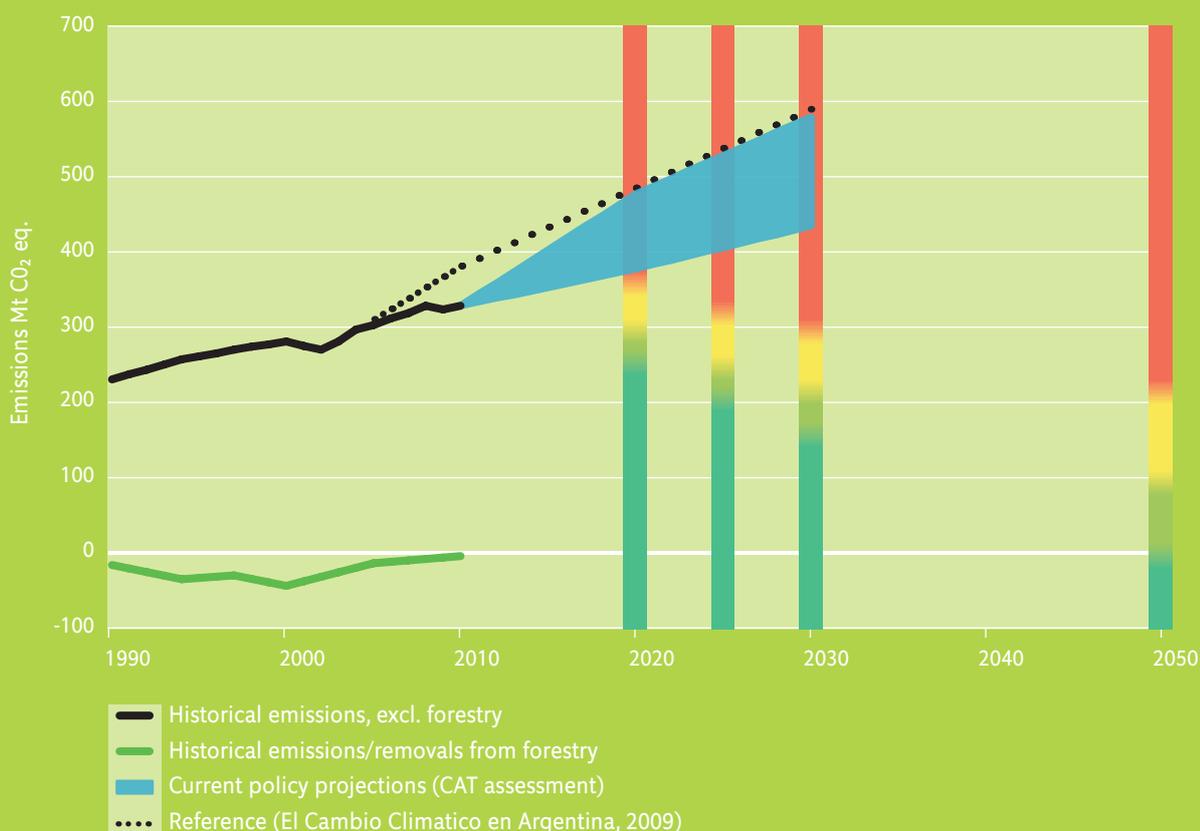
Experts found that there was no clear strategy to combine and connect isolated policy measures. CCPI evaluation of Argentina's international climate policy performance therefore saw its worst rating in 2015.

CCPI EVALUATION OF ARGENTINA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Argentina submitted its Intended Nationally Determined Contribution (INDC) on October 1st, 2015. The INDC includes an unconditional target to reduce greenhouse gas (GHG) emissions by 15% below business as usual (BAU) levels by 2030. The targets includes the Land Use, Land Use Change and Forestry (LULUCF) sector. After excluding LULUCF, it is equivalent to GHGs in 2030 which are 60% above 2010 levels or 128% above 1990 levels. Argentina has also put forward a conditional target to reduce its emissions by 30% below BAU by 2030, including LULUCF. After excluding LULUCF, that target is equivalent to GHGs which are 30% above 2010 levels or 85% above 1990 levels. The CAT rates Argentina's INDC as "inadequate", meaning that its targets are inconsistent with limiting warming to below 2°C. If all countries adopted such a level of ambition, global warming would likely exceed 3–4°C in the 21st century.

Argentina is likely to meet its proposed targets even with policies as currently implemented. Considering the wide range of estimates, it is fair to say that the Argentinian INDC represents little – if any – effort beyond what it's doing today. More importantly, under Argentina's current plan of action to achieve its unconditional INDC, emissions from all sectors are still projected to grow significantly by more than 25% in the period 2012–2030. The energy, agriculture and cattle-ranching sectors will account for more than 87% of the country's total emissions by 2030. More ambitious and updated policies, particularly in these three sectors, are needed for the country to tap its potential and get closer to what it would be a fair contribution in emissions reduction, given its potentials and capabilities.

CAT EVALUATION OF THE ARGENTINA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Australia

This Country Profile assesses Australia's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



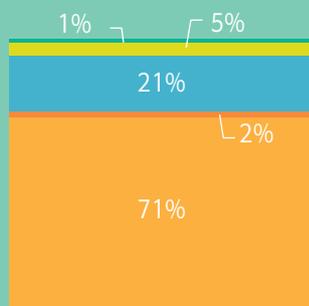
COUNTRY CHARACTERISTICS

KEY INDICATORS*	AUSTRALIA	G20
Population [million]	23	4,587
GDP per capita (PPP) [US\$]	37,718	14,505
Share of global GHG emissions	1.2%	74.2%
Share of global GDP	1.1%	80.3%
Share of global population	0.3%	64.7%
GHG per capita [t CO ₂ e/cap]	24.4	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	6.2	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	71.9	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.44	0.42
Share of fossil fuels in primary energy supply	94.4%	83.4%
Share of coal in electricity production	68.8%	35.7%
Share of renewables in primary energy supply	5.5%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – AUSTRALIA 2012

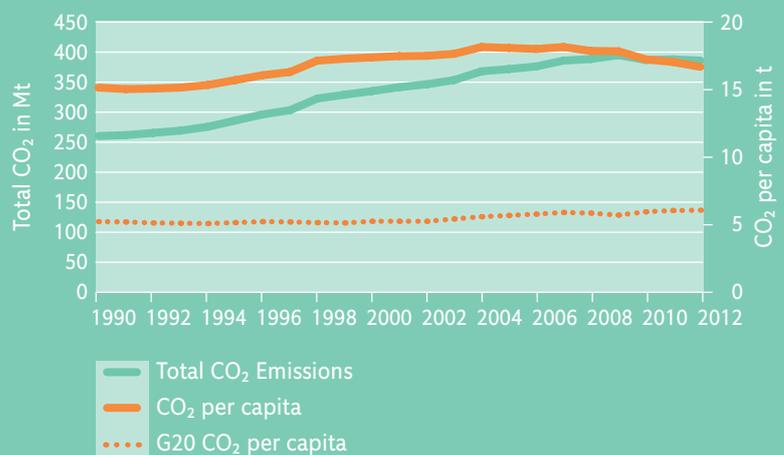


Total: 559 Mt

- F-Gases
 - N₂O**
 - CH₄**
 - CO₂ from LULUCF
 - CO₂ excl. LULUCF*
- * from Energy & Industry
** including LULUCF

Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – AUSTRALIA



Source: IEA 2014

In Australia, carbon dioxide (CO₂) accounts for about three quarters of annual greenhouse gas (GHG) emissions, and almost exclusively from the energy sector. Methane emissions (CH₄) are very high compared with other G20 countries, at a about 21% of the total. The main sources of methane emissions are agriculture and fugitive emissions, e.g. from coal mining.

Until 2008, annual energy-related CO₂ emissions and per capita CO₂ emissions were rising steadily. Since then, emissions have gradually fallen. Australia's emissions level is among the worst performers, compared with both G20 members and countries worldwide. CCPI ranks Australia's emissions level as very poor. There is not a clear trend in emissions.

CCPI EVALUATION OF AUSTRALIA'S EMISSIONS



Source: CCPI 2015

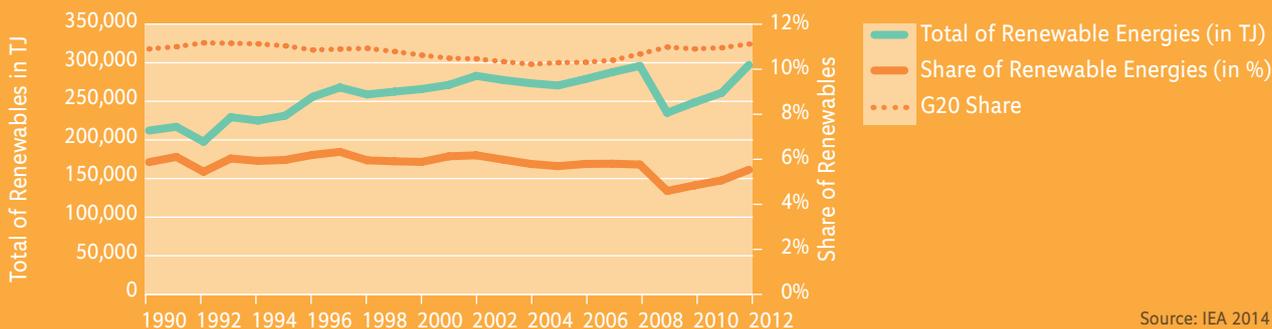
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN AUSTRALIA



Source: IEA 2014

The total supply of renewable energy in Australia has seen a gradual increase in recent years. The share of renewables is well below the G20 average, however, and has remained constant at a level of 5–6%. In other words, renewable energy supply has only

grown in line with overall energy production. The CCPI ranks Australia's level of renewables as relatively poor, with no clear positive or negative trend in the last five years.

CCPI EVALUATION OF AUSTRALIA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN AUSTRALIA



Source: IEA 2014

In Australia, the energy intensity of the economy (TPES/GDP) fell gradually from 1990 to 2012. The carbon intensity of energy supply (CO₂/TPES) increased until 2007, and has since gradually declined. While the energy intensity of the economy is below

the G20 average, the carbon intensity of energy supply is above average. The CCPI ranks the country's energy and carbon intensity as very poor compared to other G20 countries, with a slightly positive trend.

CCPI EVALUATION OF AUSTRALIA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

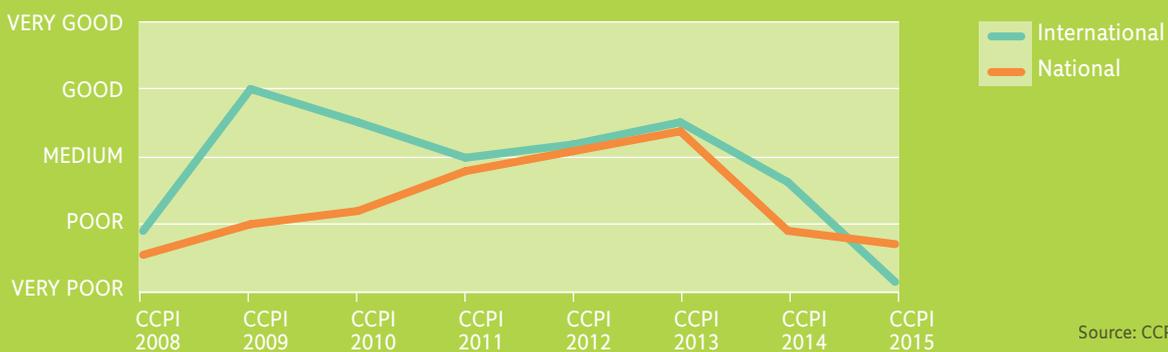
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

AUSTRALIA'S CLIMATE POLICY



Source: CCPI 2008-2015

Historically, the strength of Australia's commitment to climate policy has varied hugely. Starting from a very poor performance in international climate policy, Australia was evaluated as a relatively good performer by CCPI country experts in 2009, when the country signed the Kyoto Protocol. Since then, the new

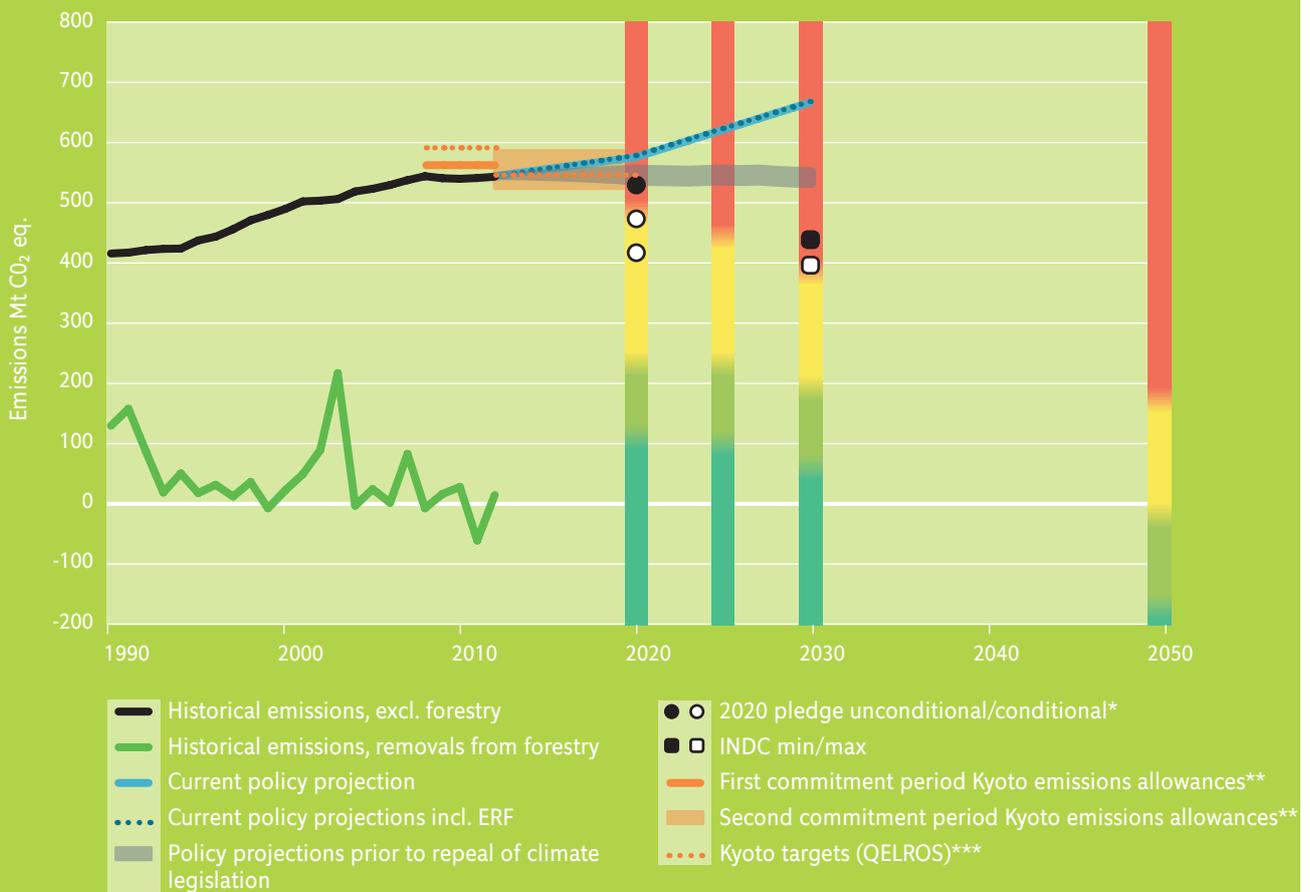
government has reversed many climate protection policies, for example abandoning a planned emissions trading scheme. Australia received a very poor rating for climate policy performance from CCPI experts in its latest edition.

CCPI EVALUATION OF AUSTRALIA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Australia submitted its Intended Nationally Determined Contribution (INDC) on 11 August 2015. The Climate Action Tracker rates as “inadequate” Australia’s INDC 2030 target to reduce greenhouse gas (GHG) emissions by 26–28% from 2005 levels by 2030, including Land Use, Land Use Change and Forestry (LULUCF). If all governments showed similarly low ambition, global average warming would likely exceed 3–4°C. Australia’s target for 2030 is close to its GHG emissions in 1990, ranging from +5% to -5% compared with 1990 levels, after excluding LULUCF.

With currently implemented policy measures, Australia’s emissions are on course to rise to more than 61% above 1990 levels by 2030, which is equivalent to an increase of around 27% above 2005 levels. To meet its target, Australia will have to decrease its emissions by an average annual rate of 2% until 2030. Instead, under current policies, emissions are on course to rise by an average rate of 1.5% a year. Australia reserves the right to adjust its target, which adds an unusually high level of uncertainty.

CAT EVALUATION OF AUSTRALIA’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Brazil

This Country Profile assesses Brazil's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



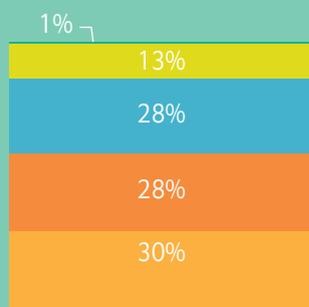
COUNTRY CHARACTERISTICS

KEY INDICATORS*	BRAZIL	G20
Population [million]	198	4,587
GDP per capita (PPP) [US\$]	12,747	14,505
Share of global GHG emissions**	3.2%	74.2%
Share of global GDP	3.1%	80.3%
Share of global population	2.8%	64.7%
GHG per capita [t CO ₂ e/cap]**	5.9	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	4.6	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	37.3	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.17	0.42
Share of fossil fuels in primary energy supply	56.5%	83.4%
Share of coal in electricity production	2.6%	35.7%
Share of renewables in primary energy supply	40.7%	11.1%

*year 2012 (unless stated otherwise)
 GDP = gross domestic product
 GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
 TPES = total primary energy supply
 PPP = purchasing power parity in prices of 2005

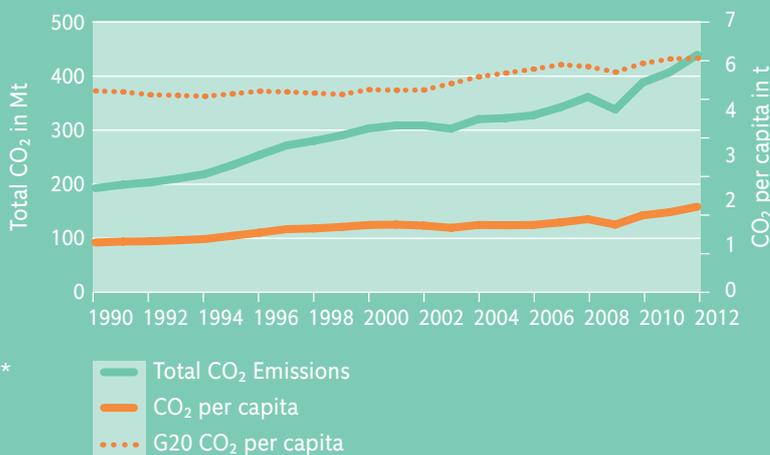
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – BRAZIL 2010



■ F-Gases
 ■ N₂O
 ■ CH₄
 ■ CO₂ from LULUCF**
 ■ CO₂ excl. LULUCF*
 * from Energy, Industry & other

ENERGY-RELATED CO₂-EMISSIONS – BRAZIL



Source: IEA 2014; **CAT 2015

Source: IEA 2014

In Brazil, carbon dioxide (CO₂) emissions from Land Use, Land-Use Change and Forestry (LULUCF) account for over one quarter of all greenhouse gas emissions. The share of methane emissions is high compared with other countries, reflecting a significant agriculture sector. Energy-related per capita CO₂ emissions are about one third of the G20 average.

While Brazil's overall CO₂ emissions are growing relatively strongly, the country's emissions level is still rated medium in the CCPI ranking. While the trend recorded here is negative, the country made improvements in the forestry sector in the very recent past, which will be reflected in the 2016 edition of the CCPI, to be published at COP21 in Paris.

CCPI EVALUATION OF BRAZIL'S EMISSIONS



Source: CCPI 2015

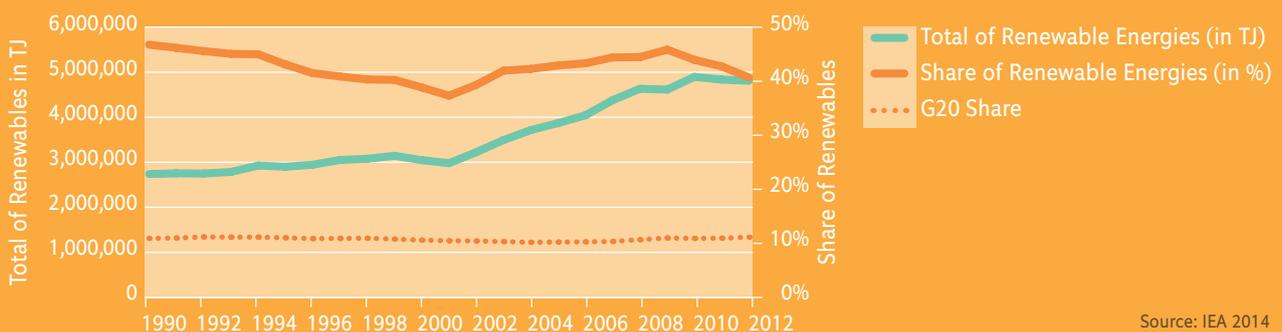
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN BRAZIL



Source: IEA 2014

In Brazil, 40% of primary energy supply comes from renewable sources, which is the highest share of all G20 countries. The CCPI ranks Brazil therefore as

good. Further growth in the renewable sector over the past five years contributes to a positive trend.

CCPI EVALUATION OF BRAZIL'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN BRAZIL



Source: IEA 2014

Both the energy intensity (CO₂/Primary Energy) and carbon intensity (Primary Energy/GDP) of Brazil's economy have remained at the same level in recent years. In contrast, most G20 countries have seen fall-

ing energy intensity. As a result, there is no indication of a decarbonisation pathway. Nevertheless, the current level of energy and carbon intensity is relatively good, according to the CCPI evaluation.

CCPI EVALUATION OF BRAZIL'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

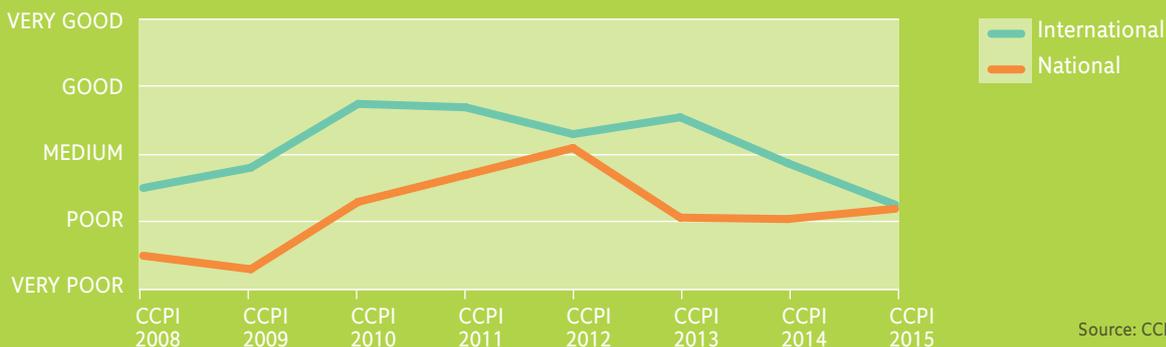
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

BRAZIL'S CLIMATE POLICY



Source: CCPI 2008-2015

Brazil's national policy performance has improved over the assessment period, from very poor initially. Experts still criticise weak governance, and poor appreciation of climate change risks, and the economic opportunities from low carbon development. Historically, Brazil's international evaluation has varied from medium to good, reflecting its role as a

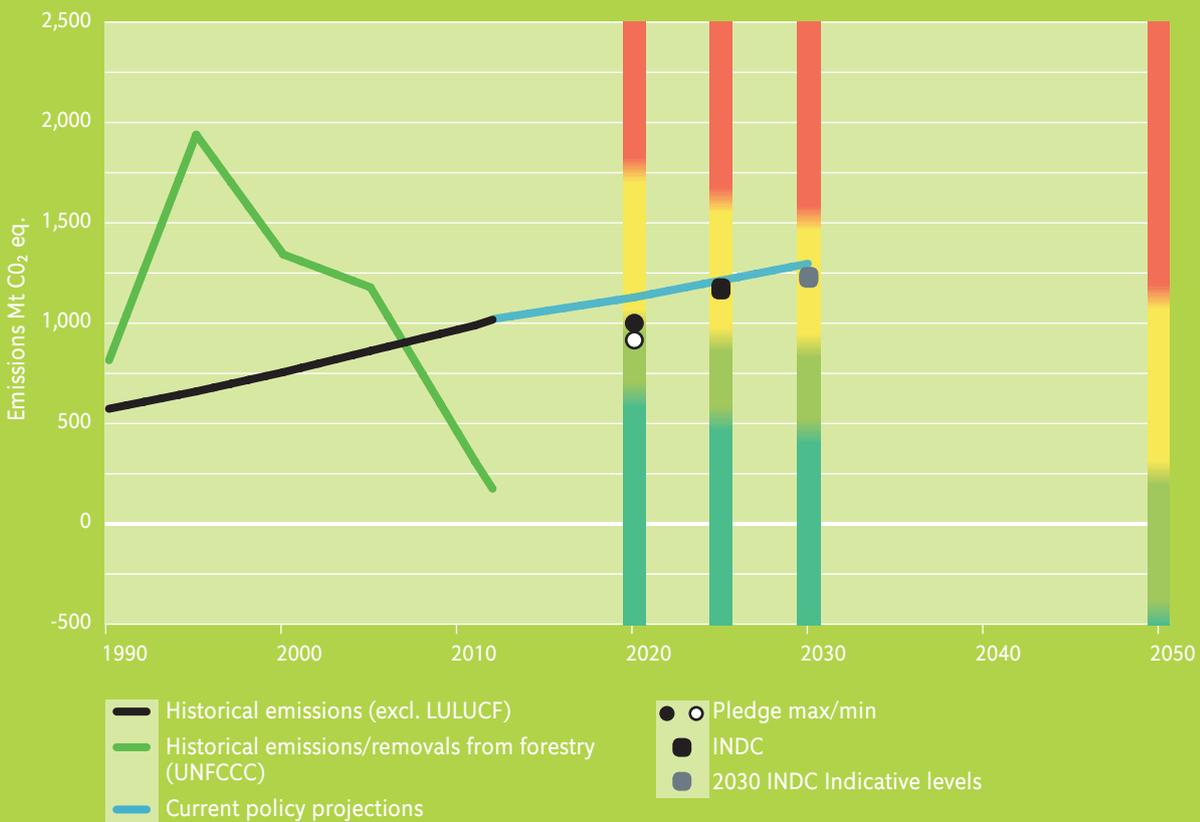
progressive negotiator. Most recently, however, its international performance has dropped. National experts criticise a poor willingness to compromise in international negotiations. Brazil's overall national and international climate policy performance receive a poor rating.

CCPI EVALUATION OF BRAZIL'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Brazil submitted its Intended Nationally Determined Contribution (INDC) on 28 September 2015. The INDC included a target to reduce net greenhouse gas (GHG) emissions by 37% below 2005 levels by 2025, after accounting for the Land Use, Land Use Change and Forestry (LULUCF) sector. In addition, the INDC mentioned an “indicative contribution” to reduce emissions by 43% below 2005 levels by 2030, also including LULUCF. The INDC outlined steps to help achieve these targets, including reaching a share of 45% renewables in the total energy mix by 2030. After excluding LULUCF, the CAT estimates that the INDC will result in an increase in emissions of about

36% above 2005 levels by 2025. Based on this target, it rates Brazil “medium”, meaning that it is not consistent with limiting warming to below 2°C unless other countries make much deeper reductions and comparably greater effort.

According to CAT’s assessment, Brazil is very close to meeting its INDC targets under current policies. For example, the 45% renewable energy target represents a very small improvement relative to baseline projections. Currently implemented policies already lead to about 41% renewables in the Brazilian energy mix by 2030, close to today’s level of 41.3%.

CAT EVALUATION OF BRAZIL’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Canada

This Country Profile assesses Canada’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



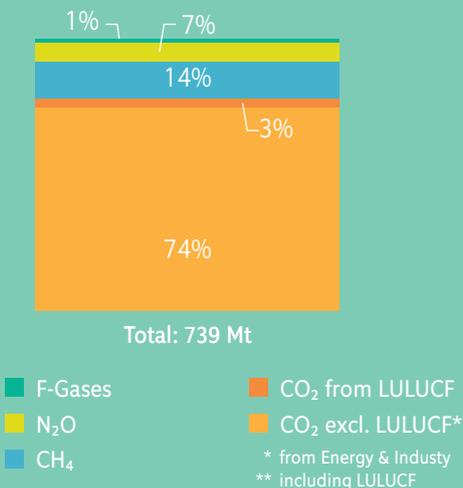
COUNTRY CHARACTERISTICS

KEY INDICATORS*	CANADA	G20
Population [million]	34	4,587
GDP per capita (PPP) [US\$]	37,017	14,505
Share of global GHG emissions	1.4%	74.2%
Share of global GDP	1.6%	80.3%
Share of global population	0.5%	64.7%
GHG per capita [t CO ₂ e/cap]	21.2	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	8.3	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	50.8	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.41	0.42
Share of fossil fuels in primary energy supply	73.4%	83.4%
Share of coal in electricity production	10.0%	35.7%
Share of renewables in primary energy supply	18.3%	11.1%

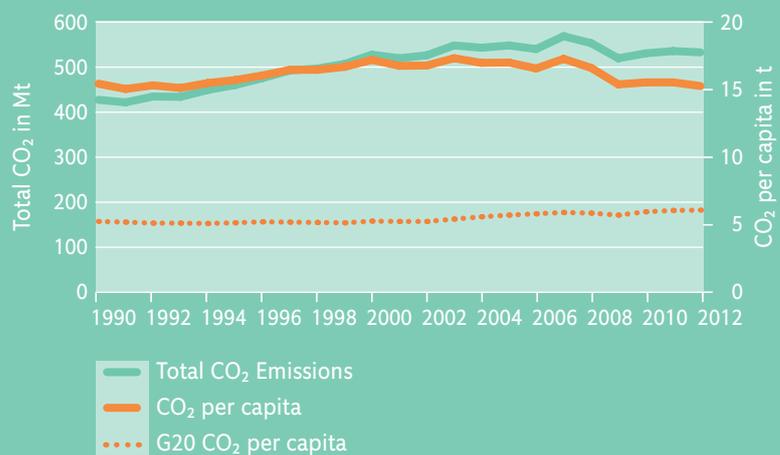
*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – CANADA 2012



ENERGY-RELATED CO₂-EMISSIONS – CANADA



Source: UNFCCC 2015

Source: IEA 2014

In Canada, carbon dioxide (CO₂) accounts for three quarters of greenhouse gas (GHG) emissions. Both total energy-related CO₂ emissions and per capita CO₂ emissions are at a high level, compared with other countries. Per capita emissions are more than double

the G20 average. On a positive note, both indicators have fallen slightly compared with 2007 levels. Canada's emission level is ranked very poor by the CCPI, in comparison with other G20 countries. There is a weak trend towards lower emissions in the last five years.

CCPI EVALUATION OF CANADA'S EMISSIONS



Source: CCPI 2015

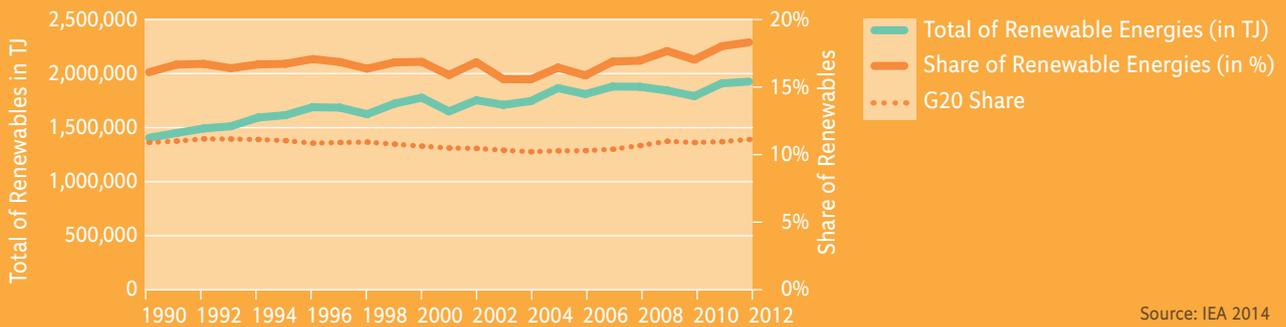
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGIES IN CANADA



Source: IEA 2014

Total annual renewable energy production has increased gradually over the past several decades. The share of renewables has been relatively stable,

with a small increase in the past decade. Canada is ranked as a medium performer with a slightly positive trend.

CCPI EVALUATION OF CANADA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

ii Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN CANADA



Source: IEA 2014

There have not been visible changes in the carbon intensity of Canada's energy supply (CO₂/TPES). Since 1992, the indicator has remained at a level of about 50 tonnes of CO₂ per terajoule (TJ), which is

just below the G20 average. The energy intensity of the economy (TPES/GDP) is declining in line with the G20 average. Canada's energy and carbon intensity is ranked as poor with a slightly positive trend.

CCPI EVALUATION OF CANADA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

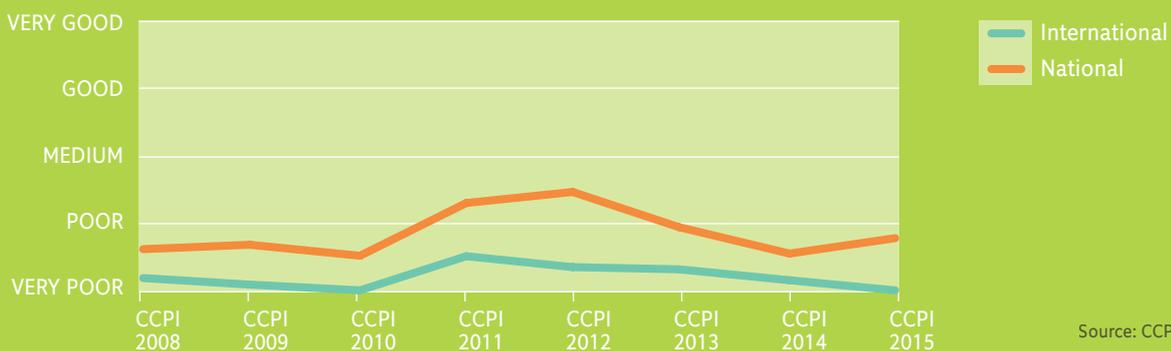
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

CANADA'S CLIMATE POLICY



Source: CCPI 2008-2015

Canada's climate policy performance on both the national and international levels is ranked as very poor to poor by the CCPI country experts. Canada left the Kyoto Protocol in 2011. In the following years,

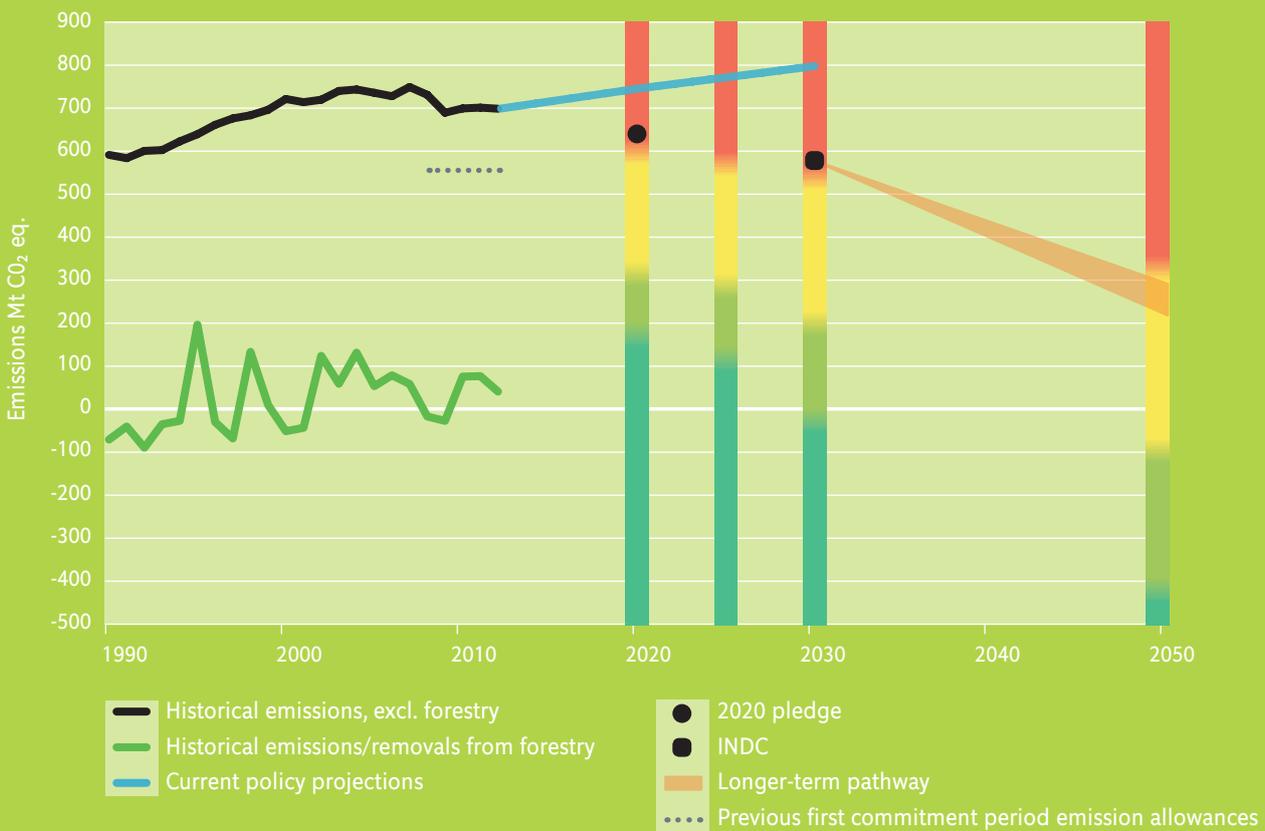
there have been no positive developments. Performance at the national level is slightly better, but still ranges between poor and very poor. Positive developments can be observed on a regional level.

CCPI EVALUATION OF CANADA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Canada submitted its Intended Nationally Determined Contribution (INDC) on 15 May 2015, communicating an economy-wide target to reduce greenhouse gas (GHG) emissions by 30% below 2005 levels in 2030. After accounting for forestry, the Climate Action Tracker (CAT) estimates that this is a reduction of 21% below 2005 levels of industrial GHG emissions. That is equivalent to a reduction of just 2% below 1990 industrial GHG emissions levels. According to the effort-sharing principles considered in the CAT methodology, this INDC is rated “inadequate”. Such a rating indicates that Canada’s INDC is not consistent with various interpretations of an equitable approach to reach a 2°C pathway, meaning that if all governments showed such low ambition levels warming would likely exceed 3–4°C.

Canada’s INDC confirms the inclusion of Land Use, Land Use Change and Forestry (LULUCF) accounting (based on a net-net approach) in its 2030 GHG mitigation framework. CAT estimates that net-net accounting in the LULUCF sector is likely to provide credits of 63Mt CO₂e, and therefore increase the allowed level of industrial GHG emissions in 2030 by an amount equivalent to about 11% of 1990 industrial GHG emissions. Under current policy projections, Canada is not expected to meet its targets. In 2030, emissions are projected to increase by 35% above 1990 levels, to 798 Mt CO₂e.

CAT EVALUATION OF CANADA’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

China

This Country Profile assesses China's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



COUNTRY CHARACTERISTICS

KEY INDICATORS*	CHINA	G20
Population [million]	1,357	4,587
GDP per capita (PPP) [US\$]	9,787	14,505
Share of global GHG emissions**	21.7%	74.2%
Share of global GDP	16.0%	80.3%
Share of global population	19.3%	64.7%
GHG per capita [t CO ₂ e/cap]**	7.2	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	9.3	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	67.8	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.62	0.42
Share of fossil fuels in primary energy supply	88.2%	83.4%
Share of coal in electricity production	75.9%	35.7%
Share of renewables in primary energy supply	10.7%	11.1%

*year 2012 (unless stated otherwise)

**year 2010

GDP = gross domestic product

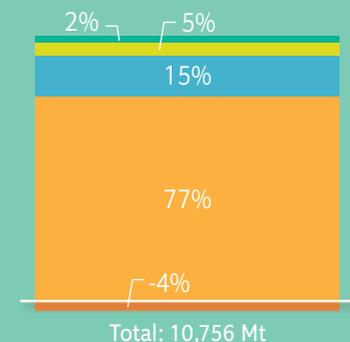
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)

TPES = total primary energy supply

PPP = purchasing power parity in prices of 2005

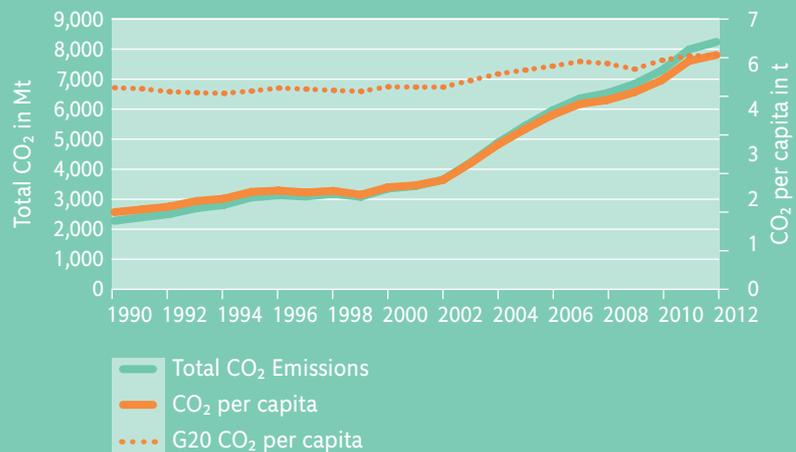
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – CHINA 2010



- F-Gases
 - N₂O
 - CH₄
 - CO₂ incl. LULUCF*
 - CO₂ from LULUCF**
- * from Energy, Industry & other

ENERGY-RELATED CO₂-EMISSIONS – CHINA



Source: IEA 2014; **CAT 2015

Source: IEA 2014

China is the world's largest emitter of greenhouse gases (GHG). Carbon dioxide (CO₂) accounts for about three quarters of total annual GHG emissions. The country has slightly negative emissions from land use and forestry. Both total energy-related CO₂ emissions and per capita CO₂ emissions have been

rising, although growth has slowed in recent years. In 2012, per capita emissions have reached the G20 average for the first time. China's INDCs commits to a peaking of carbon emissions in around 2030. As a result, the CCPI ranks China's emissions level as medium with a strong negative trend.

CCPI EVALUATION OF CHINA'S EMISSIONS



Source: CCPI 2015

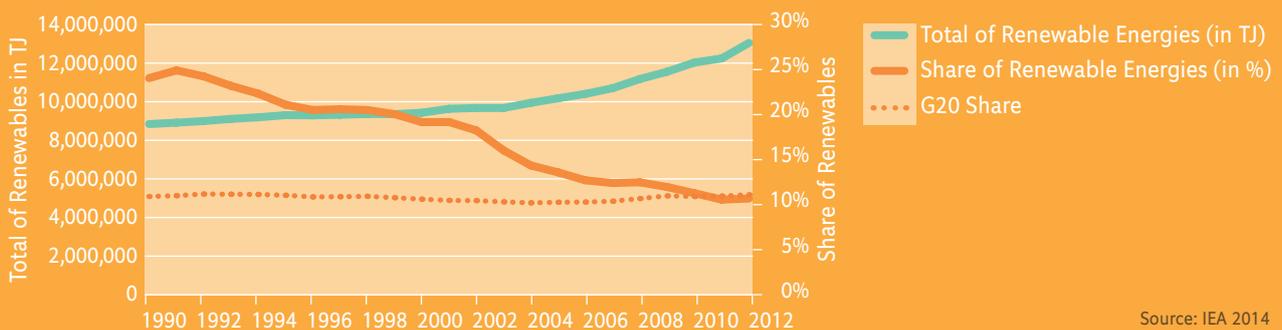
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN CHINA



Source: IEA 2014

While the share of renewable energy in total energy supply has fallen since 1992, the total production of renewable energy has risen continuously. Since 2011, China's share of renewables has fallen below the G20 average. However, the country remains the largest producer of renewable energy worldwide, and con-

tinues its expansion. CCPI assigns a strong positive trend, given this rapid growth in China's renewable sector. Reflecting the relatively low share of renewable energy, China is evaluated as medium compared with other G20 countries.

CCPI EVALUATION OF CHINA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

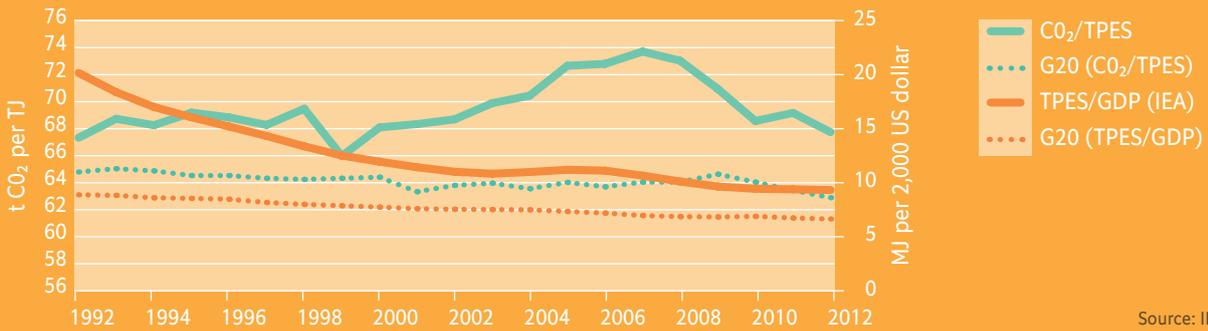
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN CHINA



Source: IEA 2014

The energy intensity of China's economy (TPES/GDP) is steadily falling. Since 2007, the carbon intensity of energy supply (CO₂/TPES) has also fallen, even though it is still among the highest worldwide. Both curves remain on a relatively high level, above the

G20 average, where only Australia has a higher value. Despite the initial position as very poor performer as rated by the CCPI, the CCPI assessment notes a positive trend.

CCPI EVALUATION OF CHINA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

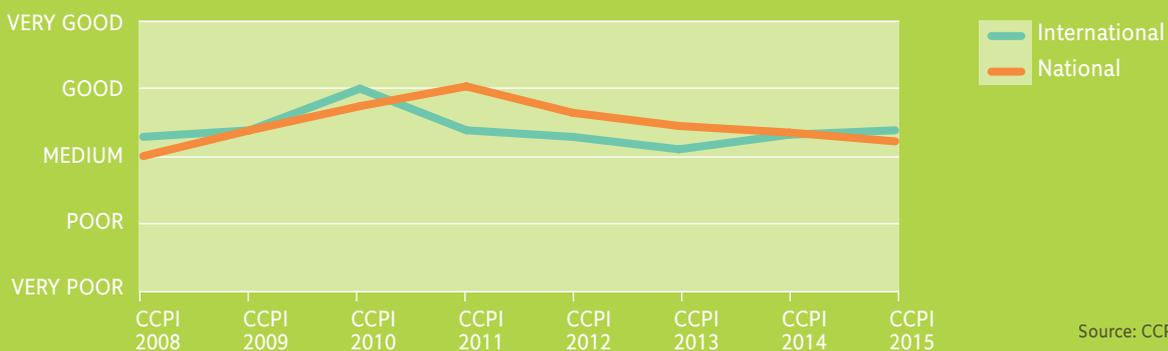
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

CHINA'S CLIMATE POLICY



Source: CCPI 2008-2015

CCPI experts evaluate China's national and international policy performance efforts as good. They value the country's good performance in cleaning its electric power sector, not only by promoting renewables,

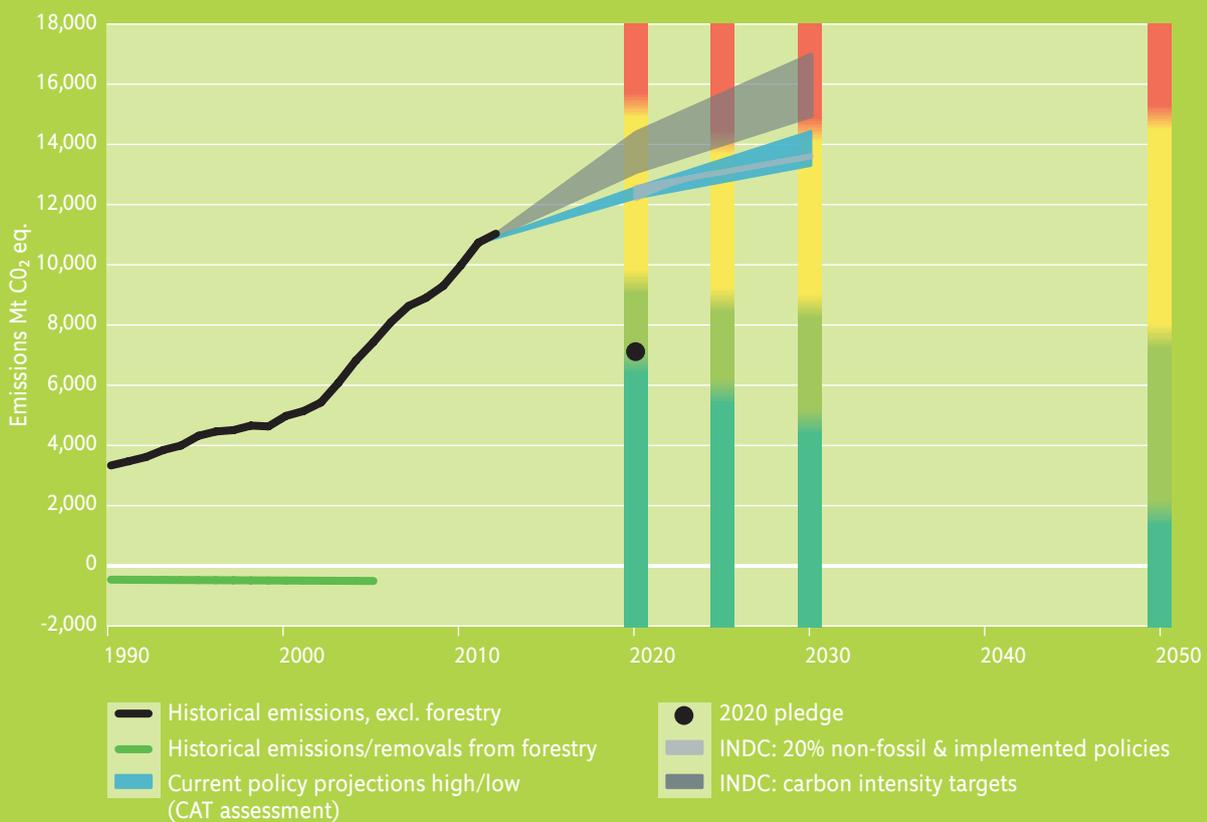
but also by constantly increasing the energy efficiency of its coal-fired power plants. At the same time, the experts demand more ambitious structural changes, especially in the energy sector.

CCPI EVALUATION OF CHINA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

China submitted its Intended Nationally Determined Contribution (INDC) on 30 June 2015. The INDC included a target to peak CO₂ emissions by 2030 at the latest, and to reduce the carbon intensity of GDP by 60–65% below 2005 levels by 2030. Other targets included to increase the share of non-fossil energy in total primary energy supply to around 20% by 2030, and to increase its forest stock volume to a total of around 4.5 billion cubic meters, above 2005 levels.

China's collective INDC action, with the exception of the carbon intensity target, would reduce emissions in 2025 and 2030 to levels rated as medium by CAT. The emissions resulting from the 2030 carbon intensity targets, if taken in isolation, would be significantly higher, and rated as "inadequate." Based on

the CAT analysis, the weak INDC carbon intensity targets, if taken literally, would only be reached at the expense of important national policies and actions, for example in relation to air pollution. This appears unlikely, according to CAT. Consequently, a hybrid rating "medium with inadequate carbon intensity targets" is given. Total GHG emissions are likely to continue to increase in 2030, as only few specific actions are proposed to address non-CO₂ GHG emissions. The difference between the INDC carbon intensity goal and national actions and goals which have already been implemented is disappointing, and may reflect a desire by the Chinese government to have a "safe" international goal.

CAT EVALUATION OF CHINA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

European Union



This Country Profile assesses EU's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.

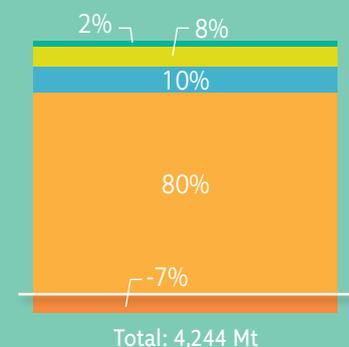
COUNTRY CHARACTERISTICS

KEY INDICATORS*	EU	G20
Population [million]	504	4,587
GDP per capita (PPP) [US\$]	28,064	14,505
Share of global GHG emissions	9.9%	74.2%
Share of global GDP	17.1%	80.3%
Share of global population	7.2%	64.7%
GHG per capita [t CO ₂ e/cap]	8.4	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	4.9	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	50.9	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.25	0.42
Share of fossil fuels in primary energy supply	73.4%	83.4%
Share of coal in electricity production	28.1%	35.7%
Share of renewables in primary energy supply	12.4%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

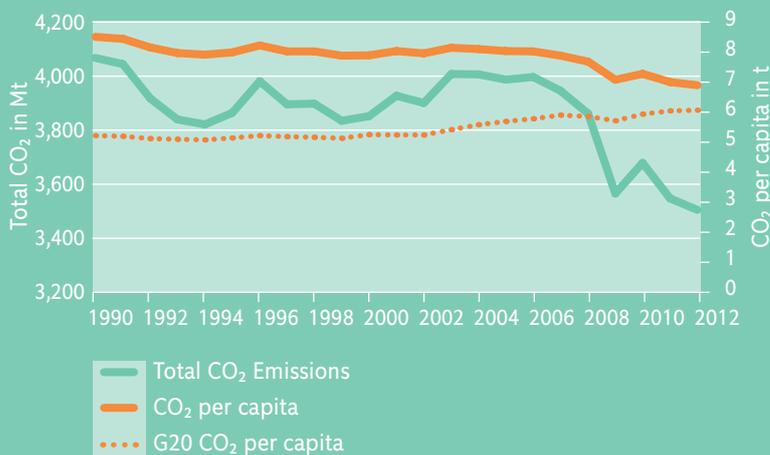
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – EU 2012



■ F-Gases
■ N₂O**
■ CH₄**
■ CO₂**
■ CO₂ from LULUCF*
* from Energy & Industry
** including LULUCF

ENERGY-RELATED CO₂-EMISSIONS – EU



Source: UNFCCC 2015

Source: IEA 2014

In 2012, carbon dioxide (CO₂) accounted for some 80% of the EU's total 4,244Mt greenhouse gas (GHG) emissions. Total CO₂ emissions have fluctuated over the assessment period, with peaks in 1996 (3,981.89Mt) and 2003 (4,008.58Mt). Since 2006,

emissions have declined sharply. Overall, the EU reduced its total CO₂ emissions from 4,067.76Mt in 1990 to 3,504.88Mt in 2012. Per capita CO₂ emissions have fallen since 2003, but are still above the G20 average.

CCPI EVALUATION OF THE EU'S EMISSIONS

No CCPI evaluation available.

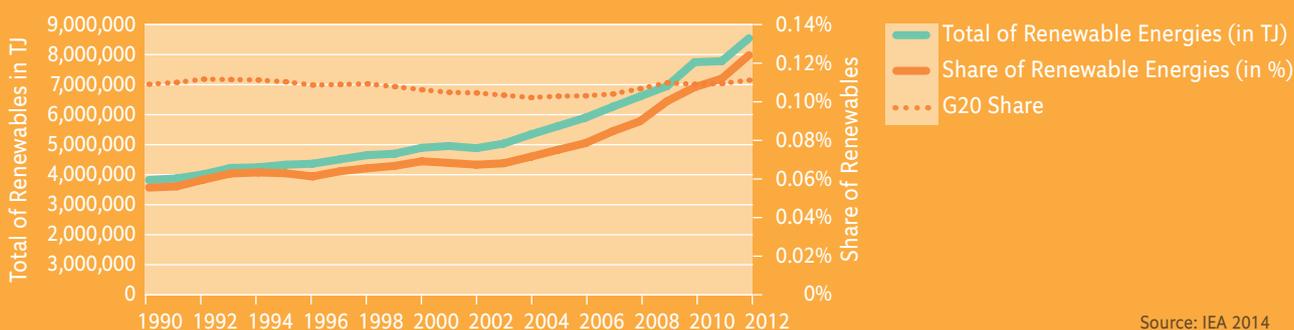
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN THE EU



Source: IEA 2014

The annual supply of renewable energy and its share in all energy production have constantly risen since 1990. Both scores doubled since 1990. In 2011, the

EU's share of renewable energy passed the G20 average of 11%.

CCPI EVALUATION OF THE EU'S RENEWABLE ENERGY

No CCPI evaluation available.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

ENERGY- AND CARBON INTENSITY IN THE EU



Source: IEA 2014

The energy intensity of the EU's economy (TPES/GDP) has gradually fallen over the assessment period. The carbon intensity of the energy supply

(CO₂/TPES) has also declined. EU levels of energy and carbon intensity are both below the G20 average.

CCPI EVALUATION OF THE EU'S ENERGY AND CARBON INTENSITY

No CCPI evaluation available.

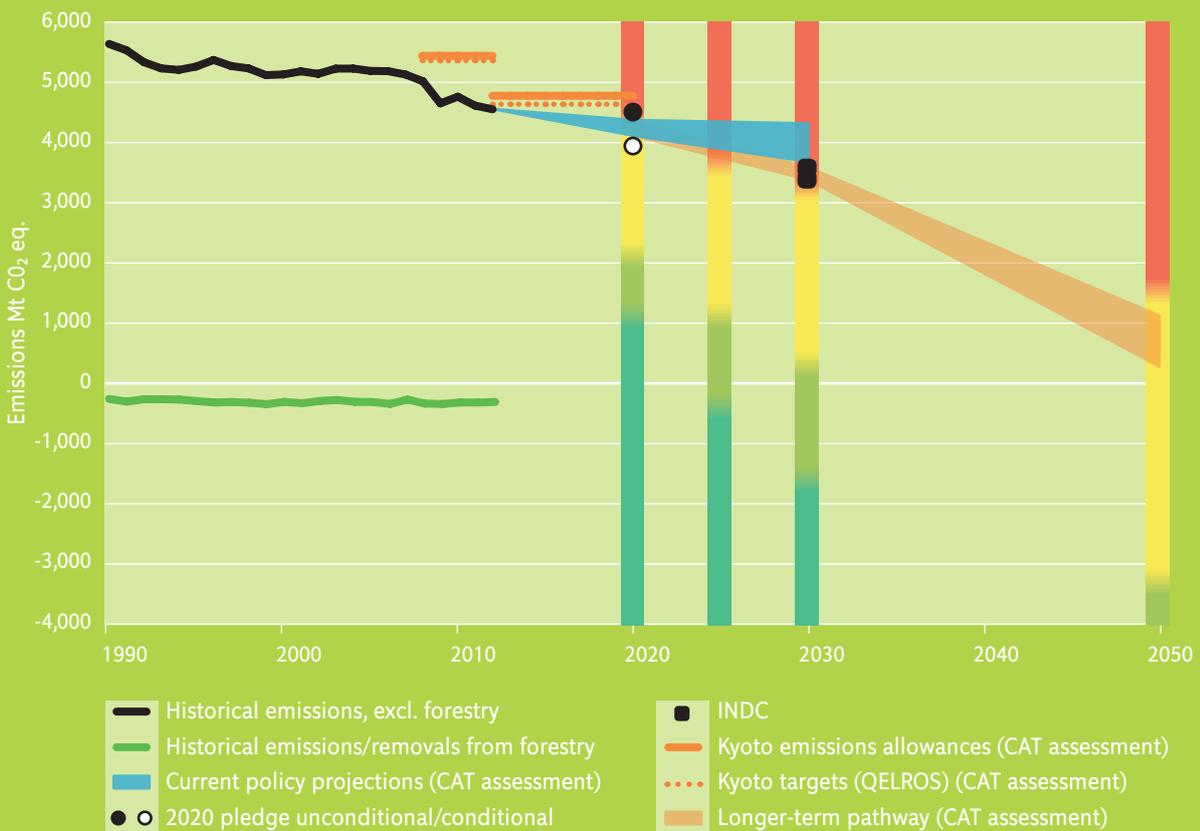
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

CCPI EVALUATION OF THE EU'S CLIMATE POLICY

No CCPI evaluation available.

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Under its INDC, the EU proposed on 6 March 2015 a binding, economy-wide target to cut domestic greenhouse gas emissions by at least 40% below 1990 levels in 2030. No individual EU member state has its own INDC, but some countries, such as Germany, may have more ambitious, domestic targets.

The Climate Action Tracker (CAT) rates the EU emissions target as “medium”, meaning that the INDC is not consistent with limiting warming below 2°C. It would require other countries to make a comparably greater effort and much deeper emissions reductions.

The overall level of GHG emissions reductions proposed in the INDC is not yet sufficient to fall within the range of approaches for fair and equitable emission reductions by the EU28. Current policies are projected to reduce domestic emissions by 23–35% below 1990 levels in 2030, and so do not yet put the EU on a trajectory towards meeting either its 2030 or 2050 targets. The EU’s Emissions Trading Scheme is the bloc’s most important instrument to achieve its 2020 and 2030 emissions reduction targets. However, an accumulated surplus of emissions allowances could dilute the 40% GHG target by 7% in 2030. It is therefore important that the EU creates a robust market reserve for eliminating that surplus, to keep in line with the 40% GHG target.

CAT EVALUATION OF THE EU’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

France

This Country Profile assesses France’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



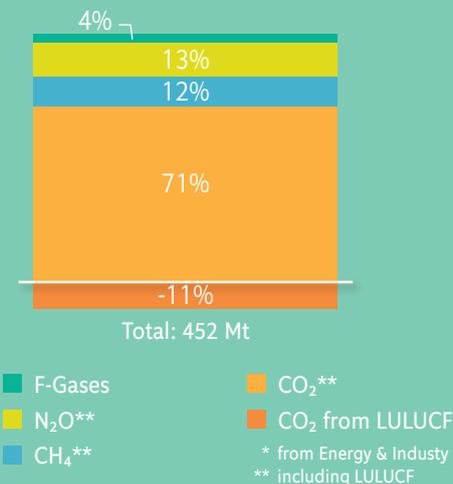
COUNTRY CHARACTERISTICS

KEY INDICATORS*	FRANCE	G20
Population [million]	65	4,587
GDP per capita (PPP) [US\$]	29,941	14,505
Share of global GHG emissions	1.1%	74.2%
Share of global GDP	2.4%	80.3%
Share of global population	0.9%	64.7%
GHG per capita [t CO ₂ e/cap]	7.1	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	5.5	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	31.6	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.17	0.42
Share of fossil fuels in primary energy supply	48.7%	83.4%
Share of coal in electricity production	3.9%	35.7%
Share of renewables in primary energy supply	8.4%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

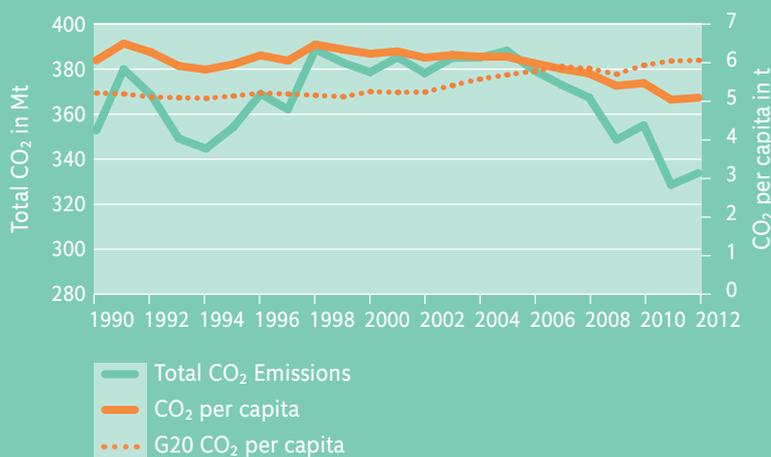
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – FRANCE 2012



Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – FRANCE



Source: IEA 2014

In France, carbon dioxide (CO₂) accounts for over two thirds of greenhouse gas (GHG) emissions. Nitrous oxide (N₂O) and methane (CH₄) have nearly equal shares of about 12% each. Total energy related

CO₂ emissions and per capita emissions are both falling, and are relatively low compared with other G20 countries. France's emissions level is evaluated in the CCPI as medium, with a positive trend.

CCPI EVALUATION OF FRANCE'S EMISSIONS



Source: CCPI 2015

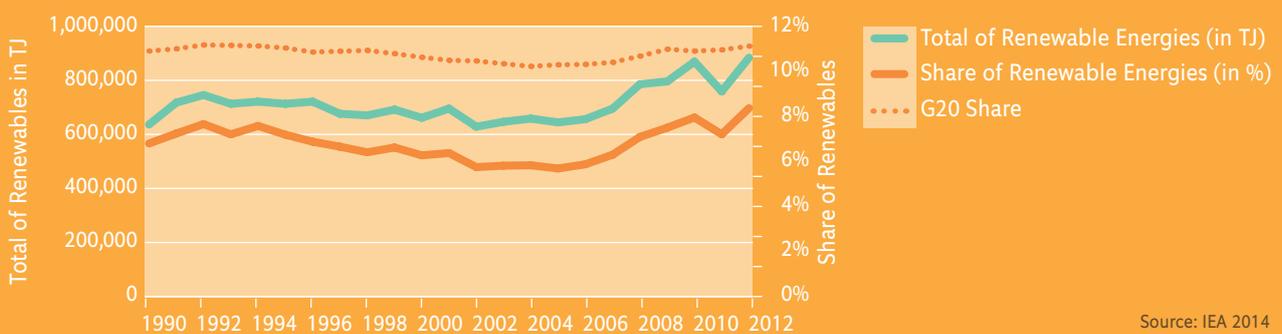
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN FRANCE



Source: IEA 2014

France's renewable energy sector is dominated by hydro power, while the supply of other renewable energy sources (such as wind and solar) has grown in the last decade. France wants to reduce its dependence on nuclear power, cutting the share of nuclear in electricity generation from 75% to 50%. Energy efficiency and renewable energy will play a major

role in filling the gap. The share of renewable energy in the total energy supply has increased slowly over the last decade, but is still relatively low compared with other G20 members. In the CCPI evaluation, France's renewables level is ranked as medium, with a strongly increasing trend.

CCPI EVALUATION OF FRANCE'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

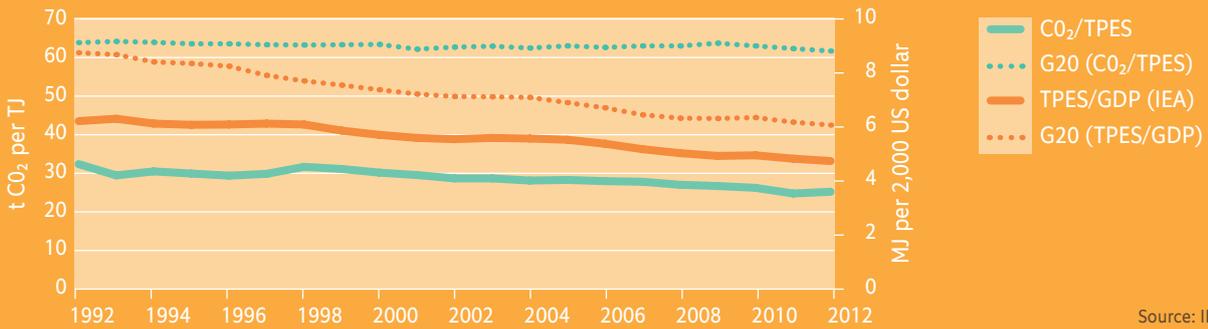
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN FRANCE



Source: IEA 2014

France's carbon and energy intensity are both below the G20 average and steadily falling. Because they already are at a relative low level, the CCPI evaluated

France's energy and carbon intensity as good compared with the other G20 countries. Further positive developments are reflected in a positive trend.

CCPI EVALUATION OF FRANCE'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

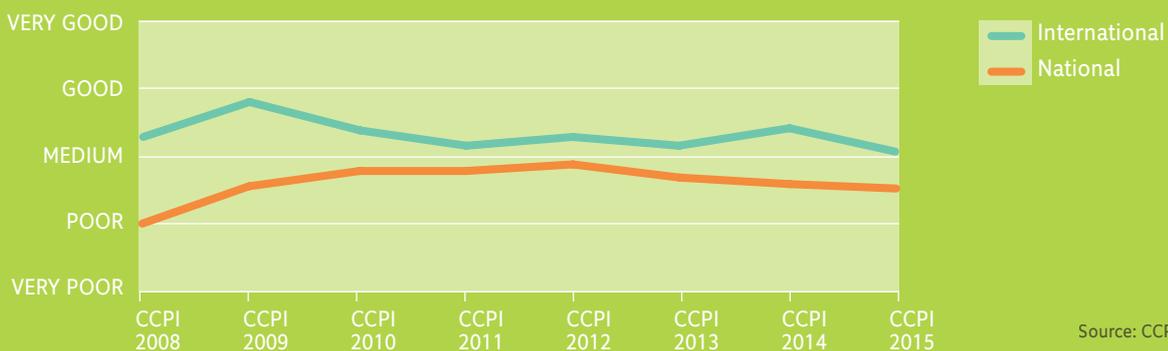
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

FRANCE'S CLIMATE POLICY



Source: CCPI 2008-2015

France's climate policy performance is rated as medium relative to other countries. The country's experts criticise a lack of ambition in international negotiations, before taking over the COP presidency.

The country was judged to have a weak position in the negotiations over the EU's 2030 targets, but actively promoted a G7 statement on decarbonisation.

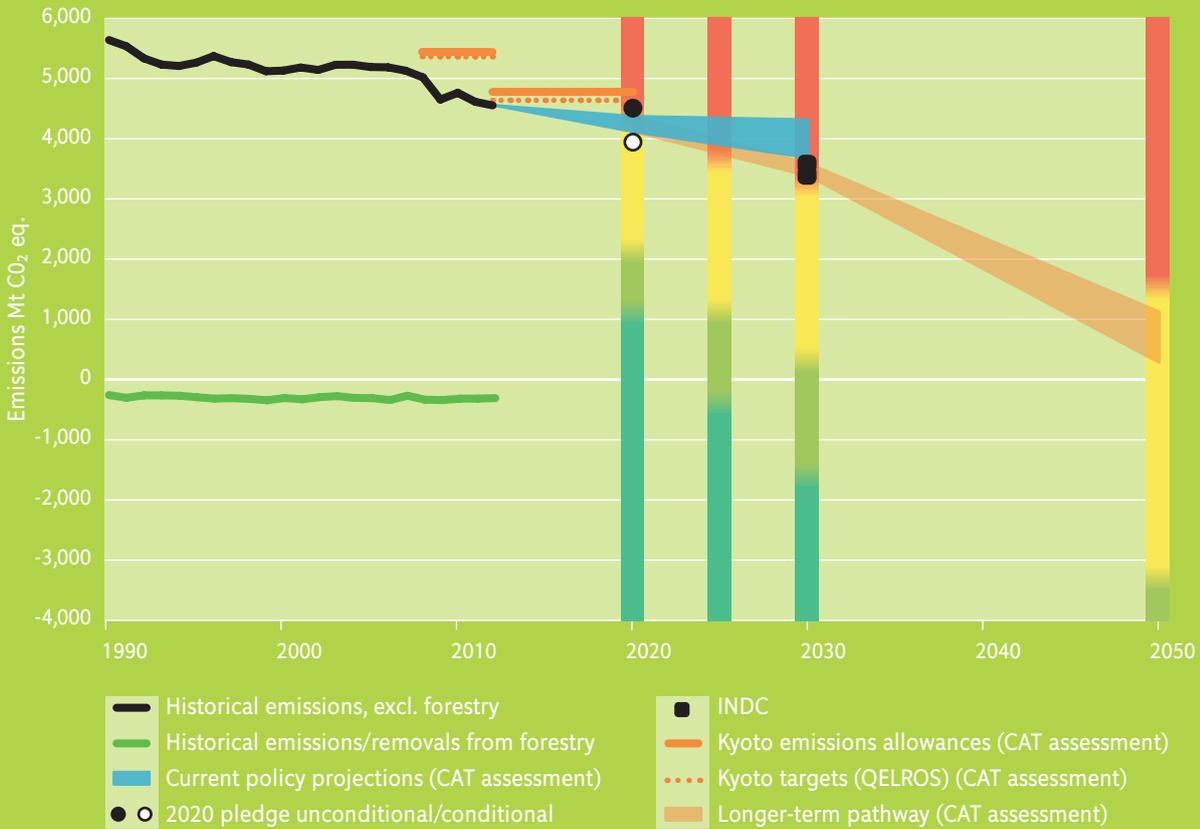
CCPI EVALUATION OF FRANCE'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C

As an EU member state, France did not submit its own Intended Nationally Determined Contribution (INDC) or emissions reduction target towards COP21.



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Under its INDC, the EU proposed on 6 March 2015 a binding, economy-wide target to cut domestic greenhouse gas emissions by at least 40% below 1990 levels in 2030. No individual EU member state has its own INDC, but some countries, such as Germany, may have more ambitious, domestic targets.

The Climate Action Tracker (CAT) rates the EU emissions target as “medium”, meaning that the INDC is not consistent with limiting warming below 2°C. It would require other countries to make a comparably greater effort and much deeper emissions reductions.

The overall level of GHG emissions reductions proposed in the INDC is not yet sufficient to fall within the range of approaches for fair and equitable emission reductions by the EU28. Current policies are projected to reduce domestic emissions by 23–35% below 1990 levels in 2030, and so do not yet put the EU on a trajectory towards meeting either its 2030 or 2050 targets. The EU’s Emissions Trading Scheme is the bloc’s most important instrument to achieve its 2020 and 2030 emissions reduction targets. However, an accumulated surplus of emissions allowances could dilute the 40% GHG target by 7% in 2030. It is therefore important that the EU creates a robust market reserve for eliminating that surplus, to keep in line with the 40% GHG target.

CAT EVALUATION OF THE EU’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Germany

This Country Profile assesses Germany's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



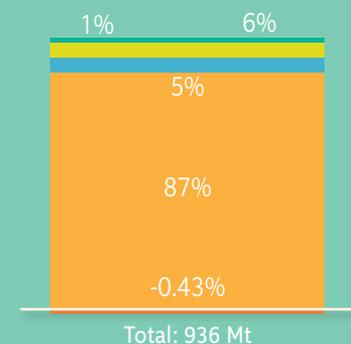
COUNTRY CHARACTERISTICS

KEY INDICATORS*	GERMANY	G20
Population [million]	81	4,587
GDP per capita (PPP) [US\$]	34,806	14,505
Share of global GHG emissions	1.9%	74.2%
Share of global GDP	3.4%	80.3%
Share of global population	1.2%	64.7%
GHG per capita [t CO ₂ e/cap]	11.6	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	4.7	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	57.7	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.26	0.42
Share of fossil fuels in primary energy supply	80.4%	83.4%
Share of coal in electricity production	46.1%	35.7%
Share of renewables in primary energy supply	10.6%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

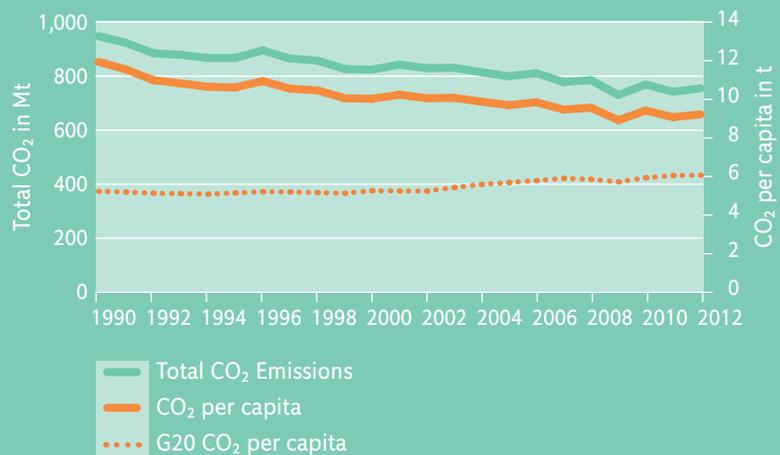
COMPOSITION OF GHG – GERMANY 2012



■ F-Gases
■ N₂O**
■ CH₄**
■ CO₂**
■ CO₂ from LULUCF*
 * from Energy & Industry
 ** including LULUCF

Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – GERMANY



Source: IEA 2014

Carbon dioxide (CO₂) accounts for some 87% of Germany's overall GHG emissions; emissions from land use and deforestation do not play a role. Germany's electricity sector is relatively carbon-intensive, accounting for 46% of GHG emissions, with industrial energy users accounting for the largest part of this. Germany's

greenhouse gas (GHG) emissions have declined by 25–27% since 1990, yet the country still has energy related per capita emissions of around 9t per person, which is relatively high compared with other G20 countries. Germany's CCPI evaluation of the emissions level is poor but with a slightly positive trend.

CCPI EVALUATION OF GERMANY'S EMISSIONS



Source: CCPI 2015

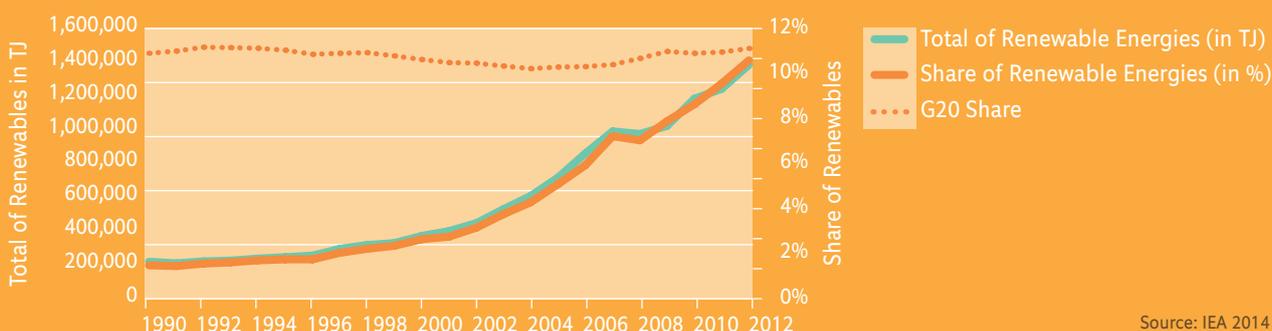
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN GERMANY



Source: IEA 2014

Germany has strongly increased its share of renewables in total energy supply, through feed in tariffs, and the support and engagement of citizens. In 2014, renewable energy reached 11.3% of the primary energy supply and 27.2% of the electricity mix,

which is near the G20 average. The share of renewable energy in primary energy consumption is on course to reach 30% in 2030. The CCPI evaluates Germany as medium performer with a strong positive trend.

CCPI EVALUATION OF GERMANY'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

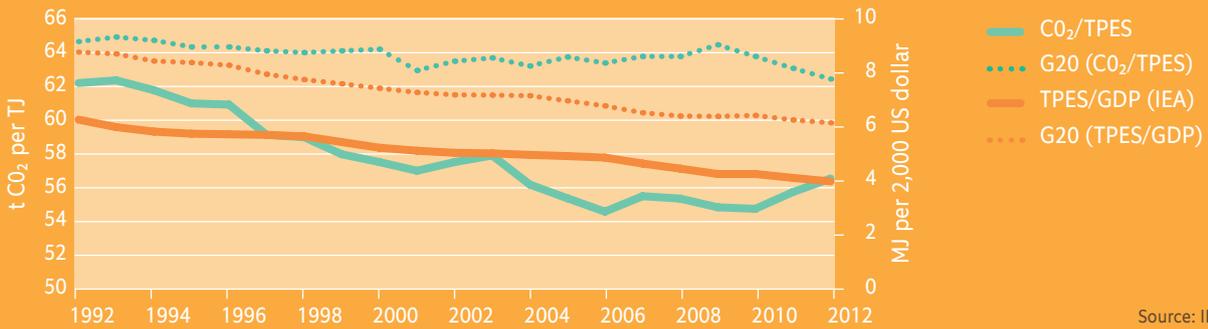
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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ENERGY- AND CARBON INTENSITY IN GERMANY



Source: IEA 2014

The carbon intensity of Germany's energy supply (CO₂/TPES) has fallen, reflecting the increased role of renewable energy. The country's energy intensity (TPES/GDP) is also gradually falling. Both indicators

point to the start of a decoupling process. The CCPI evaluates Germany's performance regarding energy and carbon intensity as poor, but with a positive trend.

CCPI EVALUATION OF GERMANY'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

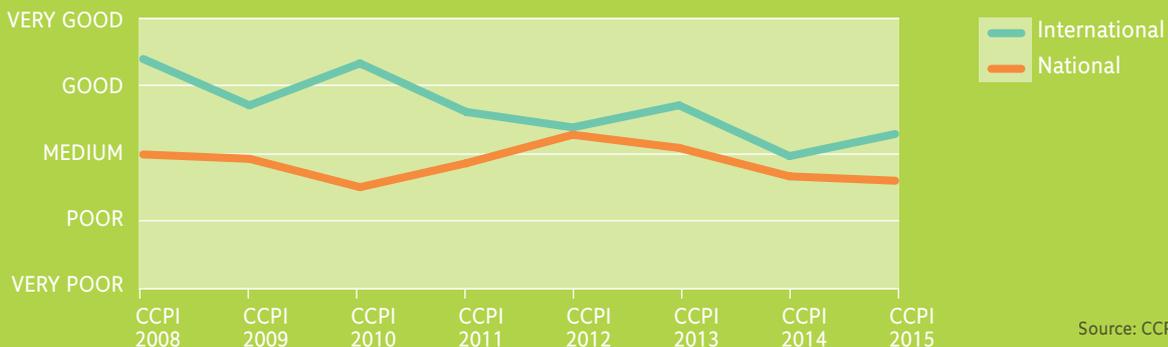
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

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The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

GERMANY'S CLIMATE POLICY



Source: CCPI 2008-2015

For many years, Germany has been a leading actor in international and EU climate policy. In recent years, Germany's climate leadership has weakened internationally, and especially at the EU level. Such weakness was one reason accounting for the recent poor performance of the EU Emissions Trading Scheme (ETS). Most recently, the country has become more active

again, and deserves credit for pushing for a decarbonisation agenda in the G7.

Nationally, the "Energiewende" is a ground-breaking effort, with an ambitious target for 80% renewables in the energy system by 2050. Nonetheless, at the moment Germany still relies on an increasing use of lignite, after deciding to phase out nuclear power.

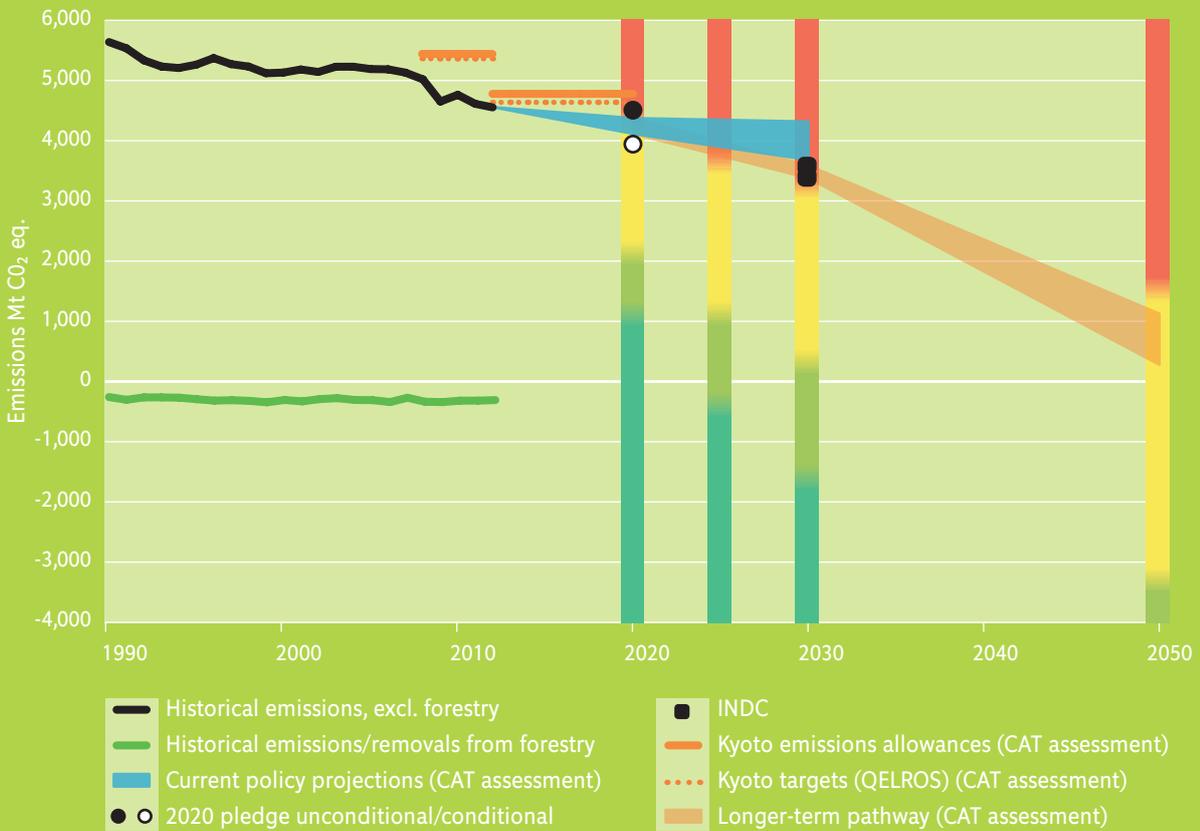
CCPI EVALUATION OF GERMANY'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C

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Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Under its INDC, the EU proposed on 6 March 2015 a binding, economy-wide target to cut domestic greenhouse gas emissions by at least 40% below 1990 levels in 2030. No individual EU member state has its own INDC, but some countries, such as Germany, may have more ambitious, domestic targets.

The Climate Action Tracker (CAT) rates the EU emissions target as “medium”, meaning that the INDC is not consistent with limiting warming below 2°C. It would require other countries to make a comparably greater effort and much deeper emissions reductions.

The overall level of GHG emissions reductions proposed in the INDC is not yet sufficient to fall within the range of approaches for fair and equitable emission reductions by the EU28. Current policies are projected to reduce domestic emissions by 23–35% below 1990 levels in 2030, and so do not yet put the EU on a trajectory towards meeting either its 2030 or 2050 targets. The EU’s Emissions Trading Scheme is the bloc’s most important instrument to achieve its 2020 and 2030 emissions reduction targets. However, an accumulated surplus of emissions allowances could dilute the 40% GHG target by 7% in 2030. It is therefore important that the EU creates a robust market reserve for eliminating that surplus, to keep in line with the 40% GHG target.

CAT EVALUATION OF THE EU’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

India

This Country Profile assesses India’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



COUNTRY CHARACTERISTICS

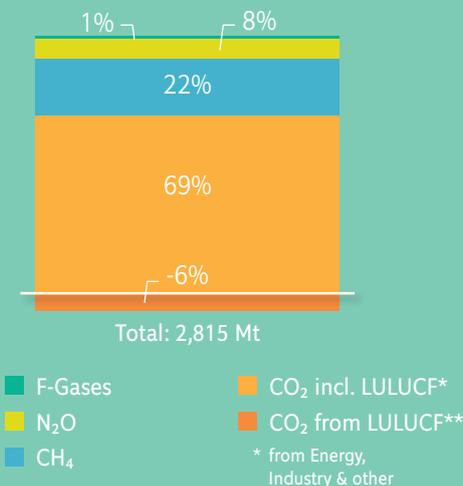
KEY INDICATORS*	INDIA	G20
Population [million]	1,236	4,587
GDP per capita (PPP) [US\$]	4,502	14,505
Share of global GHG emissions**	5.7%	74.2%
Share of global GDP	6.7%	80.3%
Share of global population	17.6%	64.7%
GHG per capita [t CO ₂ e/cap]**	1.9	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	6.0	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	59.2	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.35	0.42
Share of fossil fuels in primary energy supply	73.6%	83.4%
Share of coal in electricity production	71.1%	35.7%
Share of renewables in primary energy supply	25.2%	11.1%

*year 2012 (unless stated otherwise)
**year 2010

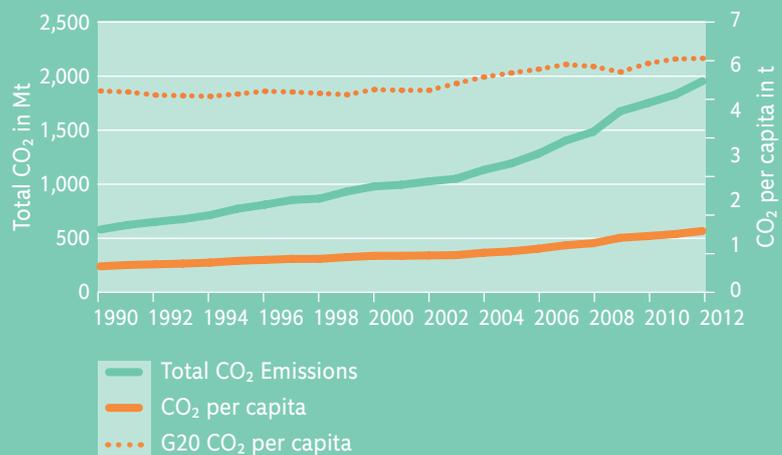
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – INDIA 2010



ENERGY-RELATED CO₂-EMISSIONS – INDIA



Source: IEA 2014; **CAT 2015

Source: IEA 2014

In India, carbon dioxide (CO₂) emissions account for about two thirds of total greenhouse gas (GHG) emissions, while methane (CH₄) accounts for about one fifth. Energy-related CO₂ emissions more than doubled between 1990 and 2012. The country has

very low per capita emissions compared with other G20 countries, and therefore has a good ranking under the CCPI evaluation. The rapid growth in emissions contributes towards a strong negative trend.

CCPI EVALUATION OF INDIA'S EMISSIONS



Source: CCPI 2015

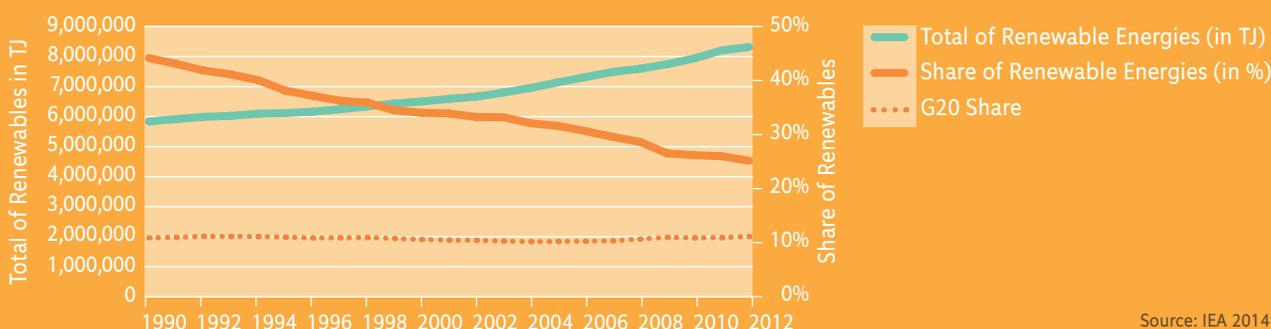
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN INDIA



Source: IEA 2014

India's absolute production of renewable energy is rising. It has a high share in the country's total energy supply, at more than 10% above the G20 average. This share is falling, however, while fossil energy

sources are growing. The CCPI ranks India's level of renewable energy as good, reflecting the high share. The rising absolute renewable energy production contributes a positive trend.

CCPI EVALUATION OF INDIA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN INDIA



Source: IEA 2014

India's carbon intensity of energy supply (CO₂/TPES) is increasing, and the energy intensity of its economy (TPES/GDP) falling. Both indicators and trends are

close to the G20 average. The CCPI evaluation of India's level of energy and carbon intensity is relatively poor, with no clear trend.

CCPI EVALUATION OF INDIA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

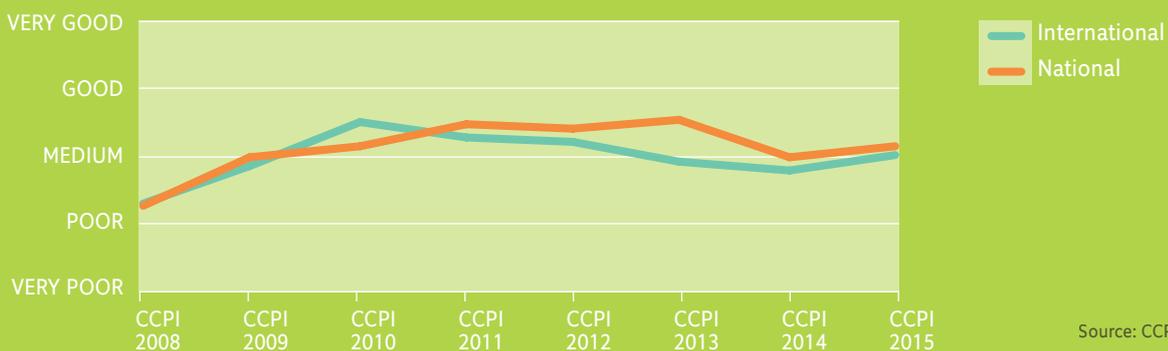
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

INDIA'S CLIMATE POLICY



Source: CCPI 2008-2015

Indian experts acknowledge the country's ability to reach its domestic and international climate policy targets. Some note that the targets could be more

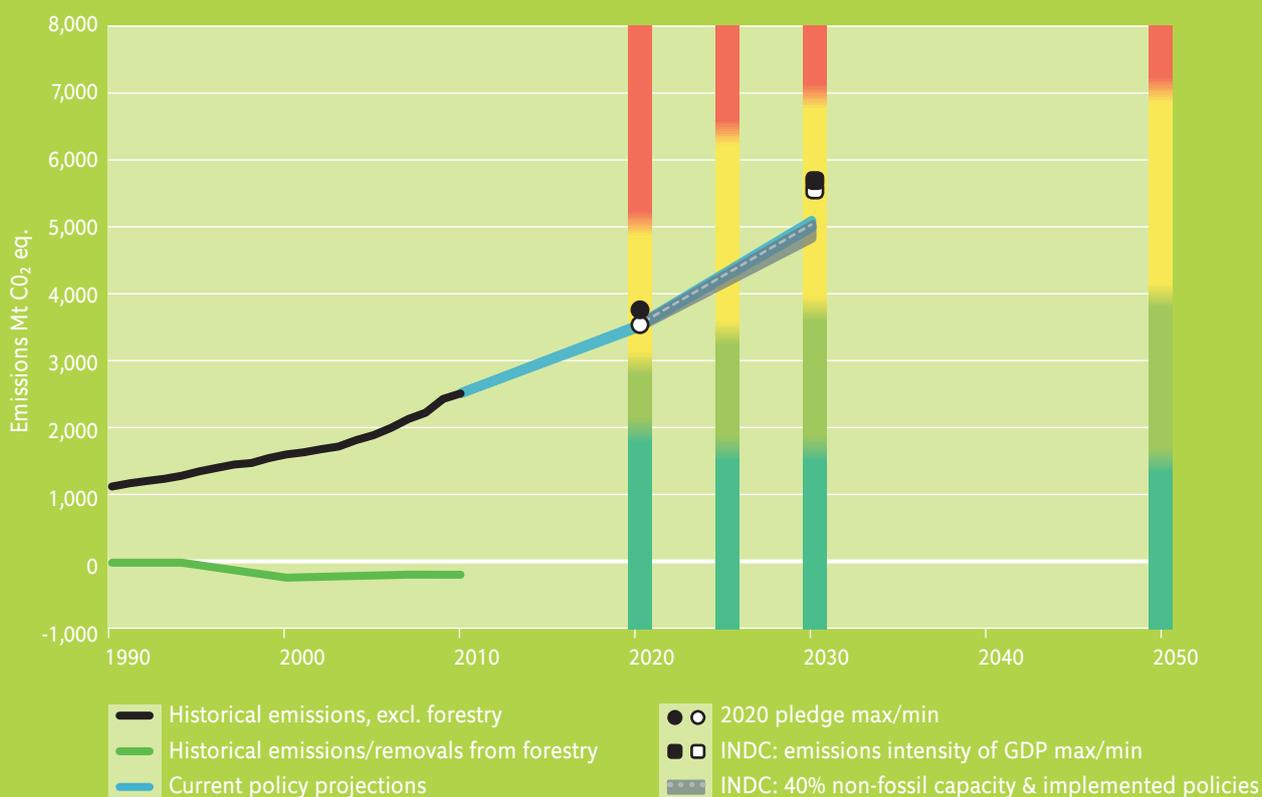
ambitious. Their overall evaluation of India's climate policy performance is good.

CCPI EVALUATION OF INDIA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

India's Intended Nationally Determined Contribution, submitted 1 October 2015, (INDC) includes several targets. First, the INDC aims to lower the emissions intensity of GDP by 33–35% by 2030 below 2005 levels. That compares with an existing 2020 pledge to cut the emissions intensity of GDP by 20–25% by 2020, also below 2005 levels. Second, India's INDC aims to increase the share of non fossil fuels in installed power generating capacity, to 40% in 2030. That is equivalent to 26–30% of electricity generation in 2030. Third, the INDC aims to create by 2030 an additional, cumulative carbon sink of 2.5–3 billion tonnes of carbon dioxide equivalent, by increasing national forest and tree cover.

CAT rates the Indian INDC as “medium”, meaning that their INDC is only consistent with limiting warming below 2°C, if other countries would make a comparably greater effort and much deeper reductions.

With currently implemented policies, including a target to install some 175 GW of renewable power generating capacity by 2022, CAT projects the share of non-fossil fuels in power generation capacity will already reach 36% in 2030, corresponding to a 24% share of electricity generation. Depending on the way India plans to achieve its 40% non-fossil target (whether through renewable energy or nuclear power, or a combination of both), it is estimated that this would result in emissions savings of 58–155 Mt CO₂e, in 2030, or 1–3% below current policy projections. Achieving this in 2030 would see India exceed its INDC intensity target by a wide margin, at 41–44% below 2005 levels. If the non-fossil target were dominant in the INDC implementation, therefore, absolute emissions would be lower, but the target would still be rated “medium”.

CAT EVALUATION OF INDIA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Indonesia



This Country Profile assesses Indonesia's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.

COUNTRY CHARACTERISTICS

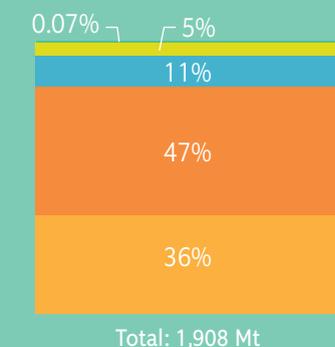
KEY INDICATORS*	INDONESIA	G20
Population [million]	246	4,587
GDP per capita (PPP) [US\$]	7,895	14,505
Share of global GHG emissions**	3.8%	74.2%
Share of global GDP	2.4%	80.3%
Share of global population	3.5%	64.7%
GHG per capita [t CO ₂ e/cap]**	6.0	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	4.8	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	48.7	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.22	0.42
Share of fossil fuels in primary energy supply	66.5%	83.4%
Share of coal in electricity production	48.7%	35.7%
Share of renewables in primary energy supply	33.4%	11.1%

*year 2012 (unless stated otherwise)
**year 2010

GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

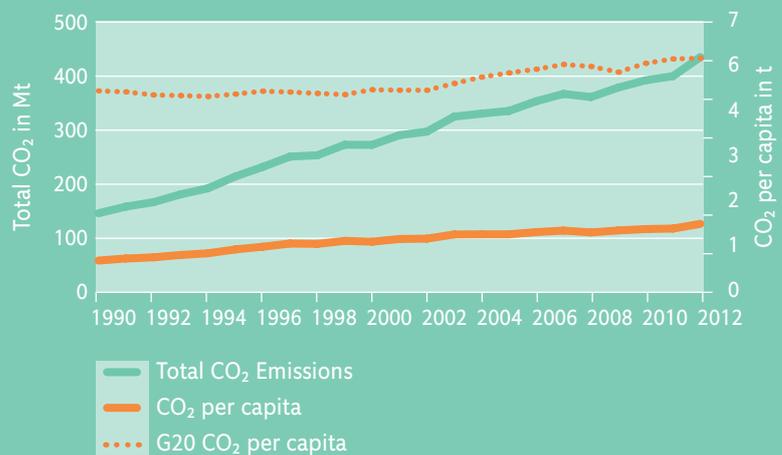
COMPOSITION OF GHG – INDONESIA 2010



- F-Gases
 - N₂O
 - CH₄
 - CO₂ from LULUCF**
 - CO₂ excl. LULUCF*
- * from Energy, Industry & other

Source: IEA 2014; **CAT 2015

ENERGY-RELATED CO₂-EMISSIONS – INDONESIA



Source: IEA 2014

Carbon dioxide (CO₂) emissions from Land Use, Land Use Change and Forestry (LULUCF) account for nearly 50% of Indonesia's greenhouse gas (GHG) emissions. Indonesia's energy-related CO₂ emissions are rising, but from a very low level. Per capita emis-

sions are rising slowly, but are about a third of the G20 average. This is reflected in the CCPI evaluation, where Indonesia is rated good for its emissions level, with a negative trend.

CCPI EVALUATION OF INDONESIA'S EMISSIONS



Source: CCPI 2015

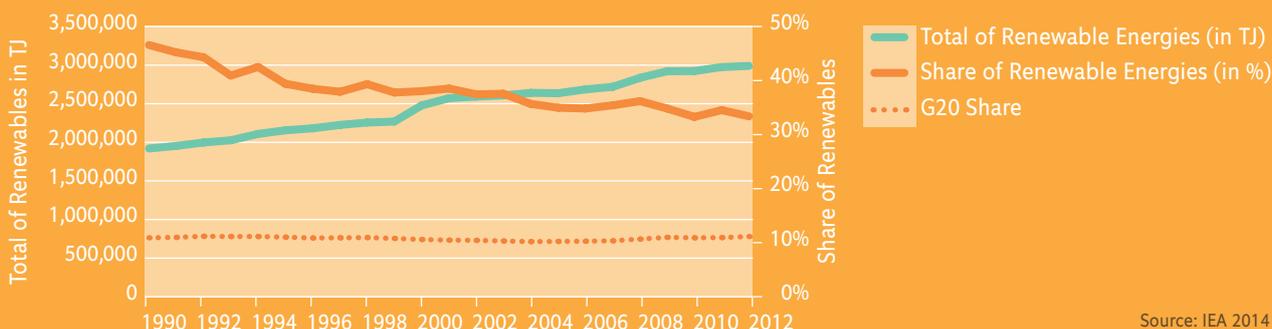
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN INDONESIA



Source: IEA 2014

Although the absolute amount of renewable energy production is rising, the share of renewable energy in the country's total energy supply is falling. Nevertheless, its 33% share of renewables is about three times

the G20 average, Indonesia is one of the best performers in the sector across the G20, reflected in a good CCPI ranking. The rising absolute production of renewables is reflected in a strongly positive trend.

CCPI EVALUATION OF INDONESIA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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ENERGY- AND CARBON INTENSITY IN INDONESIA



Source: IEA 2014

While the energy intensity of Indonesia's economy (TPES/GDP) is falling, the carbon intensity of energy supply (CO₂/TPES) is increasing. Both indicators are below the G20 average. The carbon intensity of energy supply rose slightly in the last five years, while

the energy intensity of the economy declined, resulting in a slightly positive, five-year trend. The CCPI ranks Indonesia in energy and carbon intensity as relatively good.

CCPI EVALUATION OF INDONESIA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

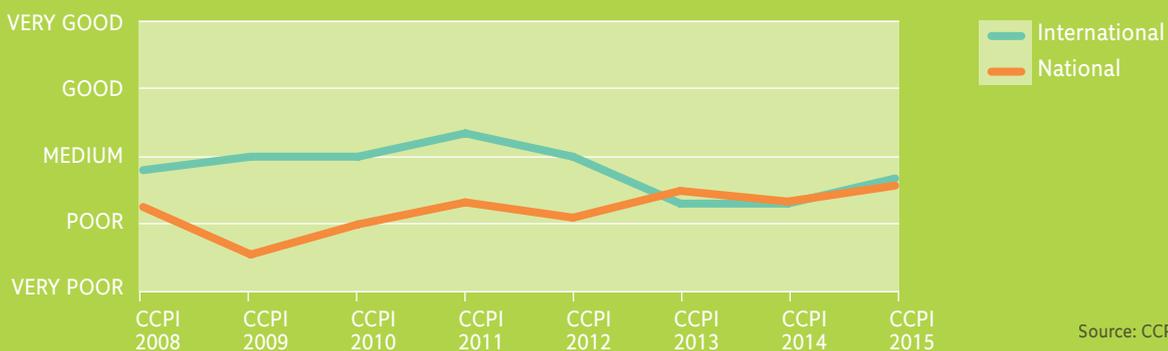
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EVALUATION OF RECENT CLIMATE POLICY

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INDONESIA'S CLIMATE POLICY



Source: CCPI 2008-2015

International and national climate policy performance is rated as being poor in the CCPI policy evaluation. National experts value the country's legisla-

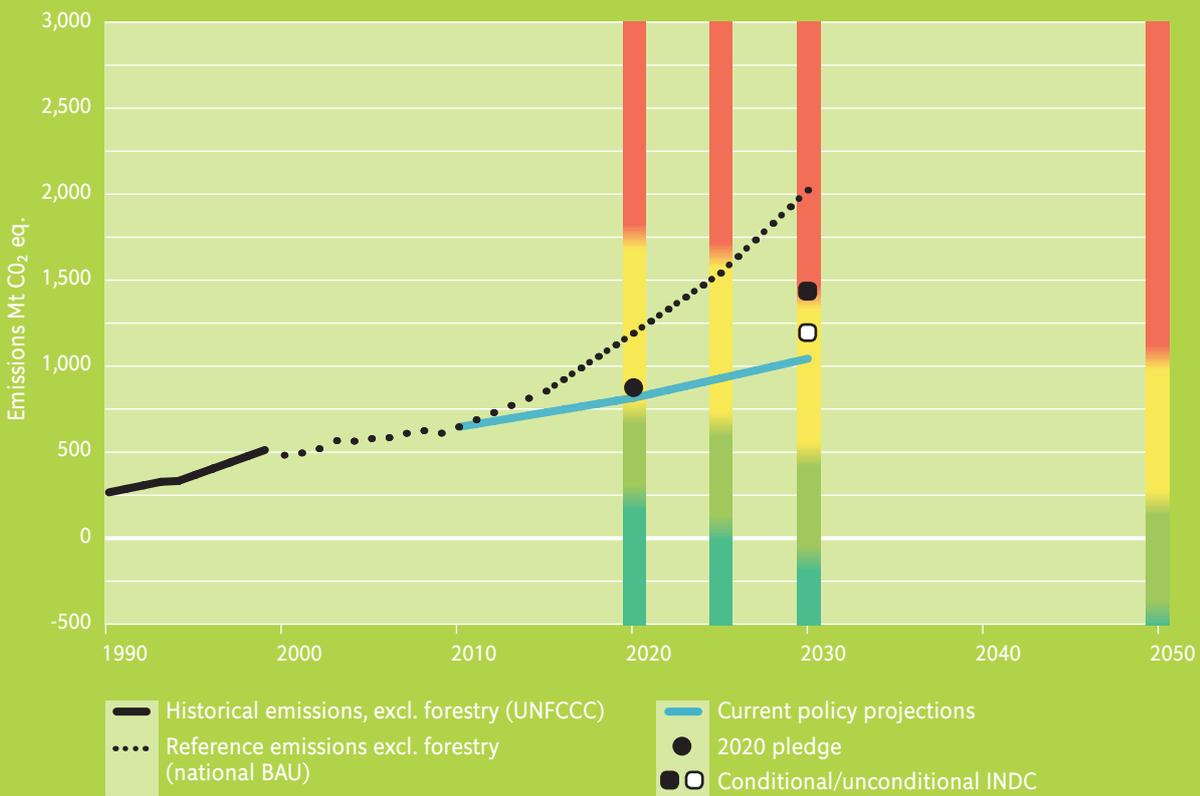
tion, which includes feed in tariffs for renewable energy, while criticising poor implementation.

CCPI EVALUATION OF INDONESIA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Indonesia's Intended Nationally Determined Contribution (INDC), released on 24 September 2015, includes an unconditional 2030 GHG emissions reduction target (including land-use, land-use change and forestry – LULUCF – emissions) of 29% below business-as-usual (BAU) and a conditional 41% reduction below BAU by 2030 (with sufficient international support). We rate the INDC “inadequate”. Under different assumptions as to what fraction of effort is devoted to deforestation, the INDC could be rated either “medium” or “inadequate”. Indonesia would need to quantitatively clarify how it intends to reduce emissions across the different sectors to permit a revision of our “inadequate” assessment.

Indonesia's INDC targets include deforestation emissions due to deforestation and peatland destruction, which at present account for the largest source of the country's emissions, an average of 60% of total emissions over the last ten years (based on national data). The effect of the INDC on future deforestation emissions is not made clear in Indonesia's submission.

With currently implemented policies Indonesia will likely overachieve its 2020 pledge (26% below BAU). However, Indonesia is working on the construction of new coal-fired power plants to meet rapidly increasing electricity demand, a development which is likely to bind the country to this carbon-intensive technology for many decades.

CAT EVALUATION OF INDONESIA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Italy

This Country Profile assesses Italy’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



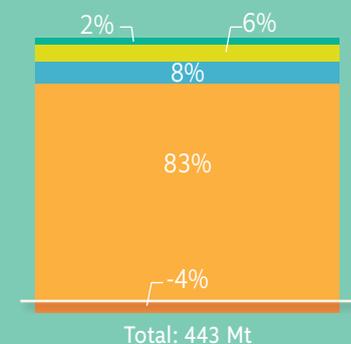
COUNTRY CHARACTERISTICS

KEY INDICATORS*	ITALY	G20
Population [million]	60	4,587
GDP per capita (PPP) [US\$]	26,351	14,505
Share of global GHG emissions	1.0%	74.2%
Share of global GDP	1.9%	80.3%
Share of global population	0.9%	64.7%
GHG per capita [t CO ₂ e/cap]	7.4	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	4.3	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	56.4	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.23	0.42
Share of fossil fuels in primary energy supply	83.9%	83.4%
Share of coal in electricity production	18.2%	35.7%
Share of renewables in primary energy supply	13.1%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

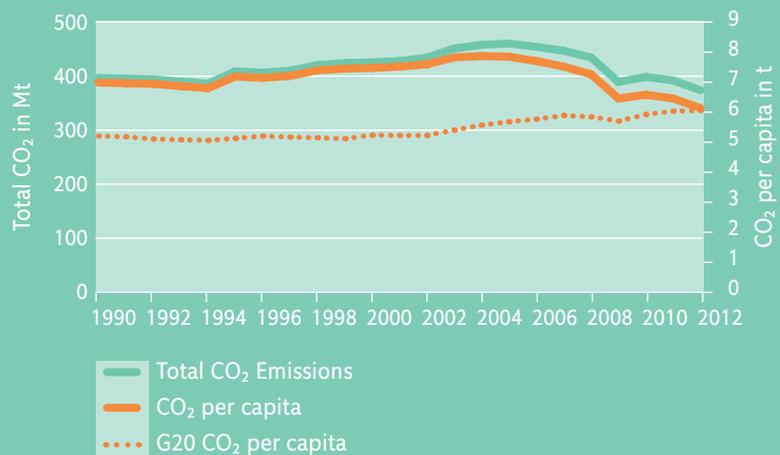
COMPOSITION OF GHG – ITALY 2012



- F-Gases
 - N₂O**
 - CH₄**
 - CO₂**
 - CO₂ from LULUCF*
- * from Energy & Industry
** including LULUCF

Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – ITALY



Source: IEA 2014

Carbon dioxide (CO₂) accounts for some 83% of Italy's greenhouse gas (GHG) emissions. Energy-related CO₂ emissions increased from 1990 to 2005, and have since fallen below their 1990 level. Per capita emissions are close to the G20 average. Italy's

emissions level is rated medium compared with other G20 countries, in the CCPI ranking. The fall in emissions over the past decade contributes a strongly positive trend.

CCPI EVALUATION OF ITALY'S EMISSIONS



Source: CCPI 2015

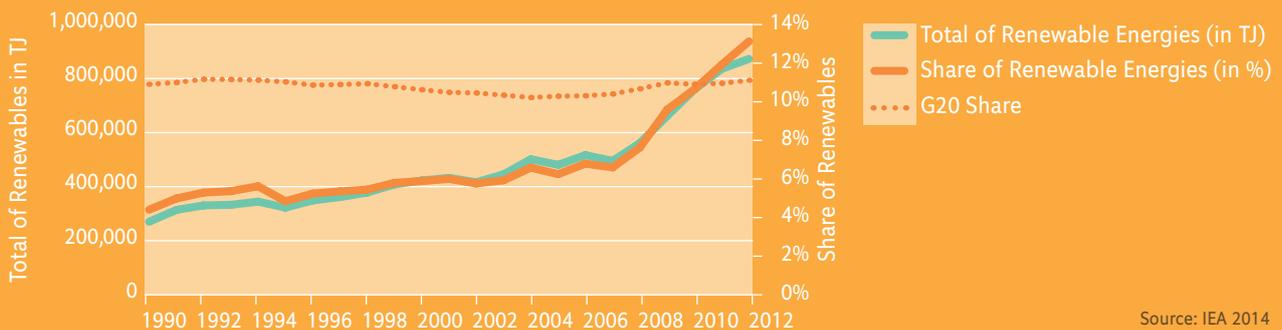
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decarboni-

sation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN ITALY



Source: IEA 2014

Both, the absolute production of renewable energy and its share of the energy supply have risen strongly, doubling between 2007 and 2012. In the CCPI rank-

ing, Italy's level of renewables is rated as medium compared with other G20 members, while its rapid growth contributes a strongly positive trend.

CCPI EVALUATION OF ITALY'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

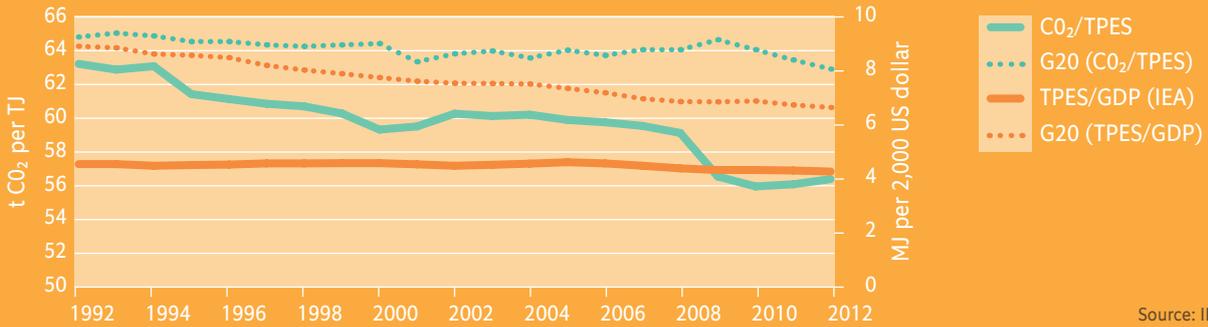
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN ITALY



Source: IEA 2014

The energy intensity of Italy's economy (TPES/GDP) has hardly changed in recent years, at one third below the G20 average. The carbon intensity of

energy supply (CO₂/TPES) has fallen strongly. In the CCPI, Italy's level of energy and carbon intensity is evaluated as medium with a positive trend.

CCPI EVALUATION OF ITALY'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

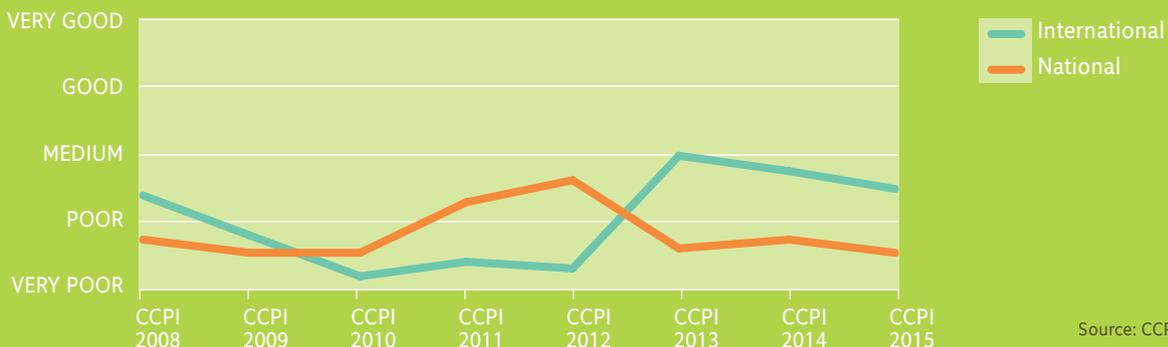
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

ITALY'S CLIMATE POLICY



Source: CCPI 2008-2015

Italy's national climate policy performance is rated as very poor compared with other countries. Experts have criticised recent changes in domestic renewable energy policy, which has cut investment and

slowed growth in the sector. They also point out that the country lacks a coherent climate and energy policy.

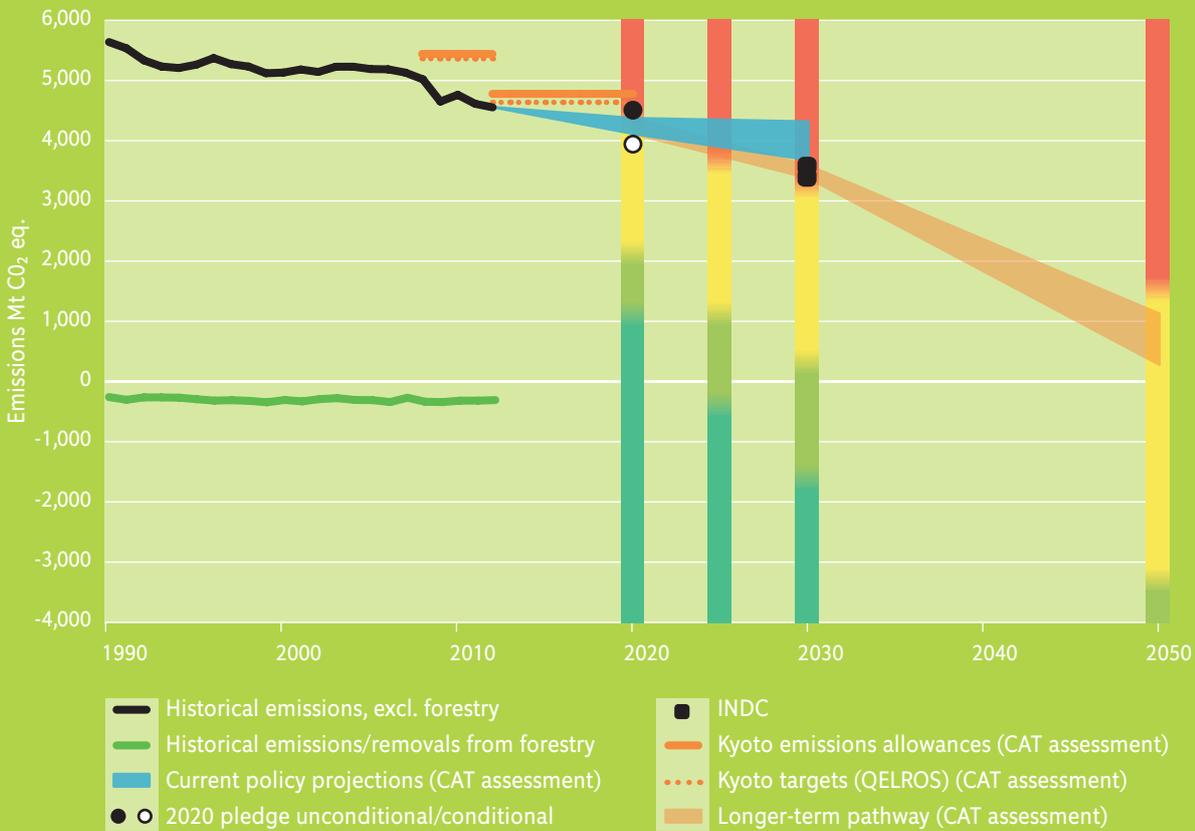
CCPI EVALUATION OF ITALY'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C

As an EU member state, Italy did not submit its own Intended Nationally Determined Contribution (INDC) or emissions reduction target towards COP21.



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Under its INDC, the EU proposed on 6 March 2015 a binding, economy-wide target to cut domestic greenhouse gas emissions by at least 40% below 1990 levels in 2030. No individual EU member state has its own INDC, but some countries, such as Germany, may have more ambitious, domestic targets.

The Climate Action Tracker (CAT) rates the EU emissions target as “medium”, meaning that the INDC is not consistent with limiting warming below 2°C. It would require other countries to make a comparably greater effort and much deeper emissions reductions.

The overall level of GHG emissions reductions proposed in the INDC is not yet sufficient to fall within the range of approaches for fair and equitable emission reductions by the EU28. Current policies are projected to reduce domestic emissions by 23–35% below 1990 levels in 2030, and so do not yet put the EU on a trajectory towards meeting either its 2030 or 2050 targets. The EU’s Emissions Trading Scheme is the bloc’s most important instrument to achieve its 2020 and 2030 emissions reduction targets. However, an accumulated surplus of emissions allowances could dilute the 40% GHG target by 7% in 2030. It is therefore important that the EU creates a robust market reserve for eliminating that surplus, to keep in line with the 40% GHG target.

CAT EVALUATION THE EU’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Japan

This Country Profile assesses Japan's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



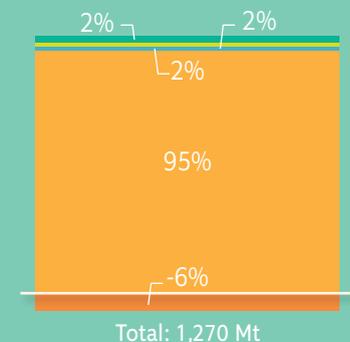
COUNTRY CHARACTERISTICS

KEY INDICATORS*	JAPAN	G20
Population [million]	127	4,587
GDP per capita (PPP) [US\$]	31,312	14,505
Share of global GHG emissions	2.7%	74.2%
Share of global GDP	4.8%	80.3%
Share of global population	1.8%	64.7%
GHG per capita [t CO ₂ e/cap]	10.0	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	5.0	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	64.6	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.31	0.42
Share of fossil fuels in primary energy supply	94.6%	83.4%
Share of coal in electricity production	29.6%	35.7%
Share of renewables in primary energy supply	4.1%	11.1%

*year 2012 (unless stated otherwise)
**year 2010
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

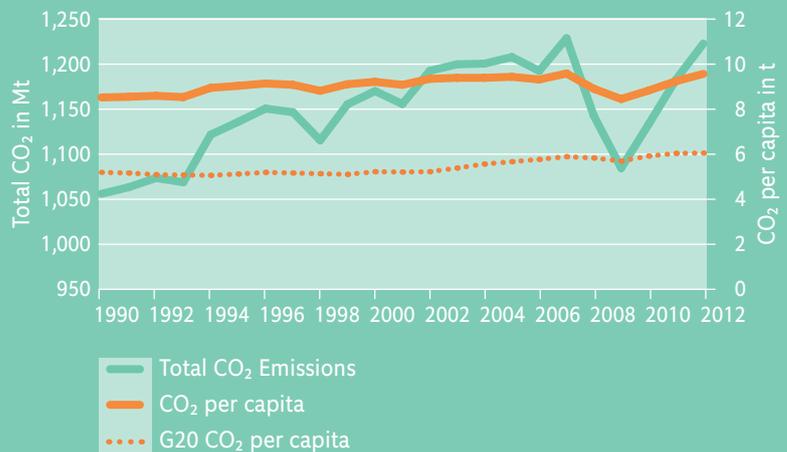
COMPOSITION OF GHG – JAPAN 2012



■ F-Gases
■ N₂O**
■ CH₄**
■ CO₂**
■ CO₂ from LULUCF*
 * from Energy & Industry
 ** including LULUCF

Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – JAPAN



Source: IEA 2014

Carbon dioxide (CO₂) accounts for over 90% of Japan's greenhouse gas emissions. Total and per capita energy-related CO₂ emissions have barely changed in the past five years, and are above the G20

average. The CCPI evaluates the country's emissions level as very poor compared with other G20 countries.

CCPI EVALUATION OF JAPAN'S EMISSIONS



Source: CCPI 2015

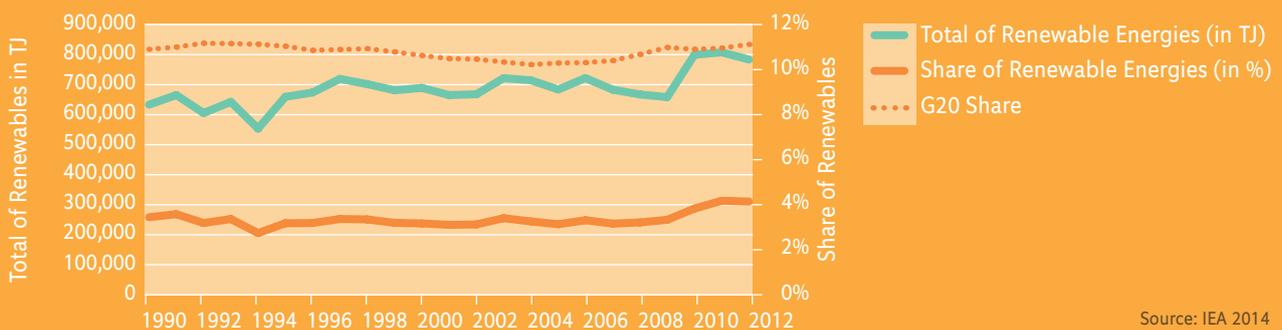
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN JAPAN



Source: IEA 2014

At just 4%, the share of renewable energy, in total primary energy supply, is about a third of the G20 average. The CCPI evaluation rates this as a very poor

level, but also sees a positive trend, given strong recent growth in absolute renewable energy supply.

CCPI EVALUATION OF JAPAN'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN JAPAN



Source: IEA 2014

The energy intensity of Japan's economy (TPES/GDP) has declined throughout the last decade, but more slowly than the G20 average. The carbon intensity of primary energy (CO₂/TPES) was approximately constant until 2011, when the Fukushima disaster led to the closure of all of Japan's 48 nuclear reactors. The resulting gap in energy production was mainly filled

by an increased use of natural gas, which led to a higher carbon intensity of Japan's energy supply. With the two curves developing in different directions, there is no clear trend. The current level of energy and carbon intensity is relatively poor, according to the CCPI evaluation.

CCPI EVALUATION OF JAPAN'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

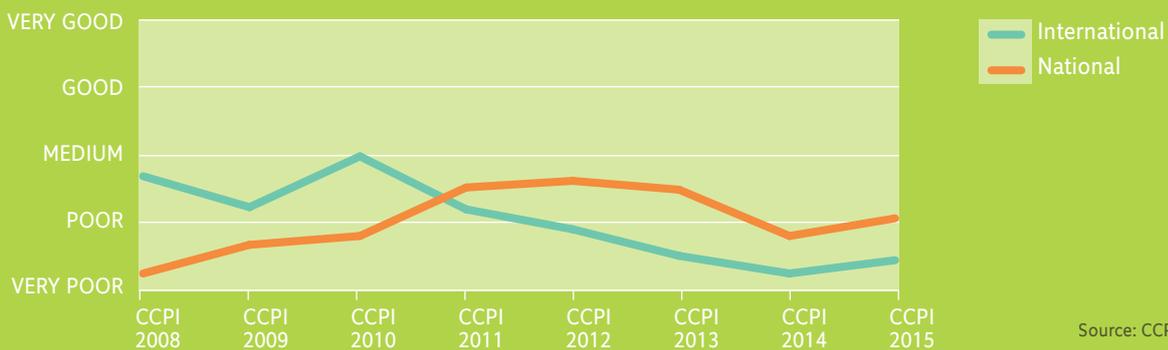
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

JAPAN'S CLIMATE POLICY



Source: CCPI 2008-2015

In the first four years of the CCPI evaluation, Japan's national climate policy performance improved, from a bad rating to nearly average. At the international level, Japan started as a medium performer, but then

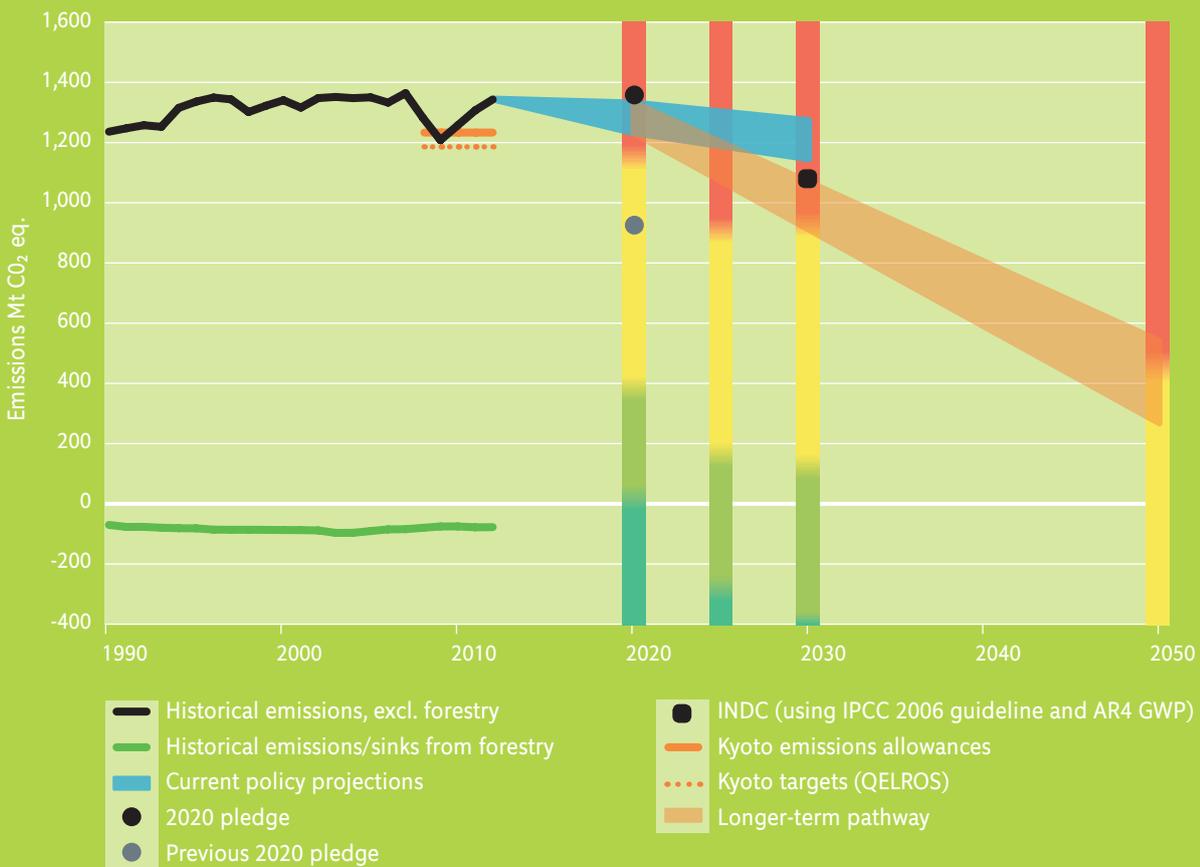
deteriorated. Overall, Japan's climate policy performance is now rated very poor. Experts criticise a lack of policy direction to limit carbon-intensive power generation.

CCPI EVALUATION OF JAPAN'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Japan's Intended Nationally Determined Contribution (INDC) was submitted on 17 July 2015 and comprises a range of targets. On greenhouse gases, the target is to cut emissions to 26% below 2013 emission levels by 2030, equivalent to an 18% reduction below 1990 levels by 2030. After accounting for the proposed credits under Land Use, Land Use Change and Forestry (LULUCF), this target is equivalent to 23.3% below 2013 levels of emissions of greenhouse gases excluding LULUCF, and 15% below 1990 levels. Japan also proposes using the Japanese Crediting Mechanism (JCM), which could reduce the domestic target further, to approximately 16–20% below 2013 levels (7–11% below 1990).

Climate Action Tracker (CAT) rates this target as "inadequate". If all countries adopted this level of ambition, global warming would likely exceed 3–4°C by the end of this century. With the policies it already has in place, Japan can almost reach its proposed INDC target without taking any further action. The INDC implies that fossil fuel power will continue to play an important role in Japan's energy mix (at 56% of generation in 2030), of which 26% is expected to come from coal-fired power plants.

CAT EVALUATION OF JAPAN'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Korea, Rep.



This Country Profile assesses the Republic of Korea's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.

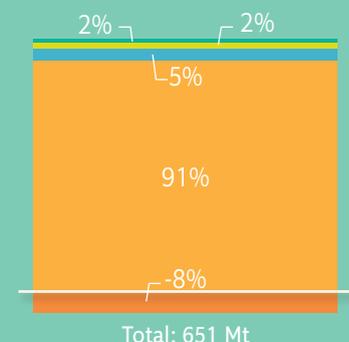
COUNTRY CHARACTERISTICS

KEY INDICATORS*	KOREA, REP.	G20
Population [million]	50	4,587
GDP per capita (PPP) [US\$]	27,993	14,505
Share of global GHG emissions**	1.3%	74.2%
Share of global GDP	1.7%	80.3%
Share of global population	0.7%	64.7%
GHG per capita [t CO ₂ e/cap]**	12.9	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	7.9	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	53.8	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.42	0.42
Share of fossil fuels in primary energy supply	83.2%	83.4%
Share of coal in electricity production	45.1%	35.7%
Share of renewables in primary energy supply	0.9%	11.1%

*year 2012 (unless stated otherwise)
**year 2010
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

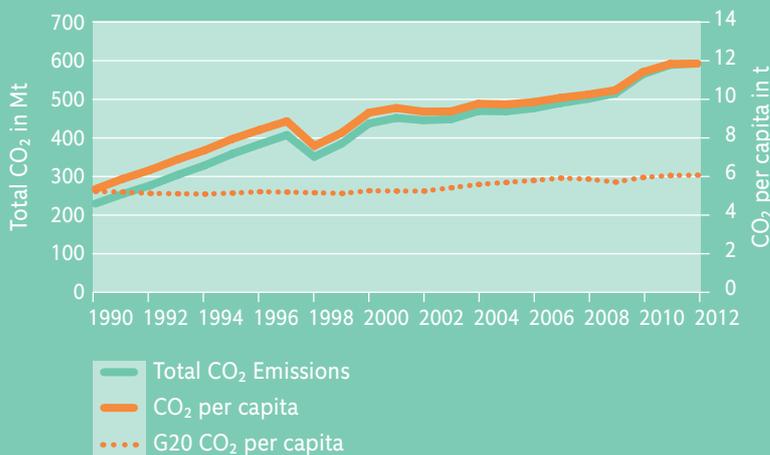
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – KOREA, REP. 2010



■ F-Gases
■ N₂O
■ CH₄
■ CO₂ incl. LULUCF*
■ CO₂ from LULUCF**
* from Energy, Industry & other

ENERGY-RELATED CO₂-EMISSIONS – KOREA, REP.



Source: IEA 2014; **CAT 2015

Source: IEA 2014

Carbon dioxide (CO₂) accounts for some 91% of Korea's greenhouse gas emissions. The country has negative emissions from the land use and forestry sector. Total and per capita energy-related CO₂ emissions are both steadily increasing. Per capita

emissions are nearly twice as much as the G20 average. Reflecting the high and steady rise in emissions, CCPI ranks the country's emissions level as very poor, compared with other countries, and with a negative trend.

CCPI EVALUATION OF KOREA'S EMISSIONS



Source: CCPI 2015

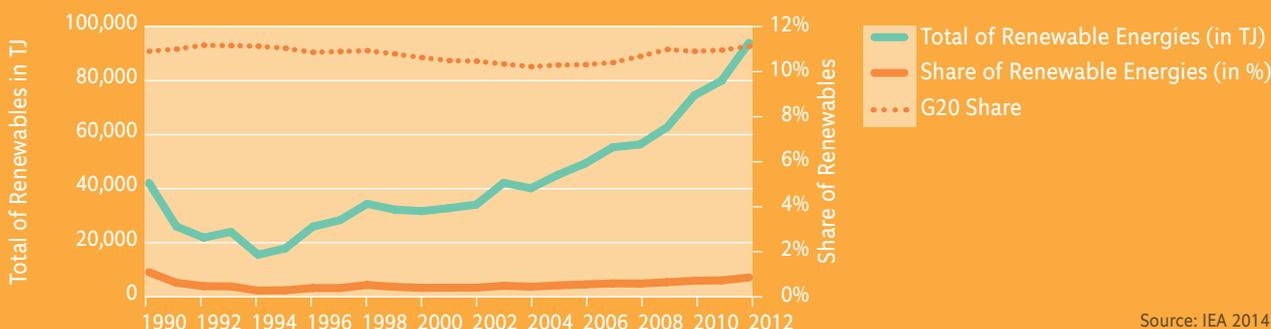
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN KOREA, REP.



Source: IEA 2014

Korea's total annual renewable energy production has risen consistently over the past two decades. However, the share of renewables in the country's energy supply is below 1%, far below the G20

average. As a result, the CCPI evaluation of the renewables level ranks the country as a very poor performer. However, the trend is strongly positive.

CCPI EVALUATION OF KOREA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

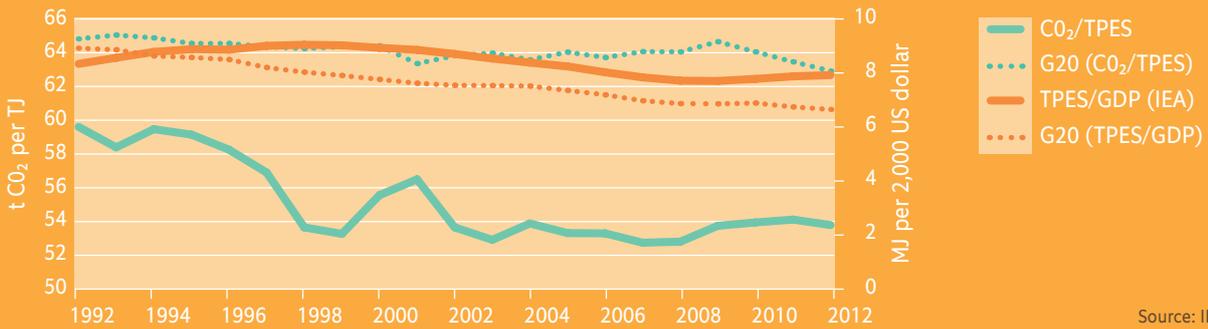
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN KOREA, REP.



Source: IEA 2014

Korea's carbon intensity of primary energy (CO₂/TPES) has only gradually fallen over the assessment period. The energy intensity of Korea's economy (TPES/GDP) has also fallen only slightly. There is no

clear trend. Korea's level of energy and carbon intensity is ranked as very poor, in comparison with other countries.

CCPI EVALUATION OF KOREA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

CLIMATE POLICY PERFORMANCE IN KOREA, REP.



Source: CCPI 2008-2015

Korea's climate experts evaluated the country's climate policy performance as good. They especially value the country's new emissions trading scheme, which will play an important role in reducing emis-

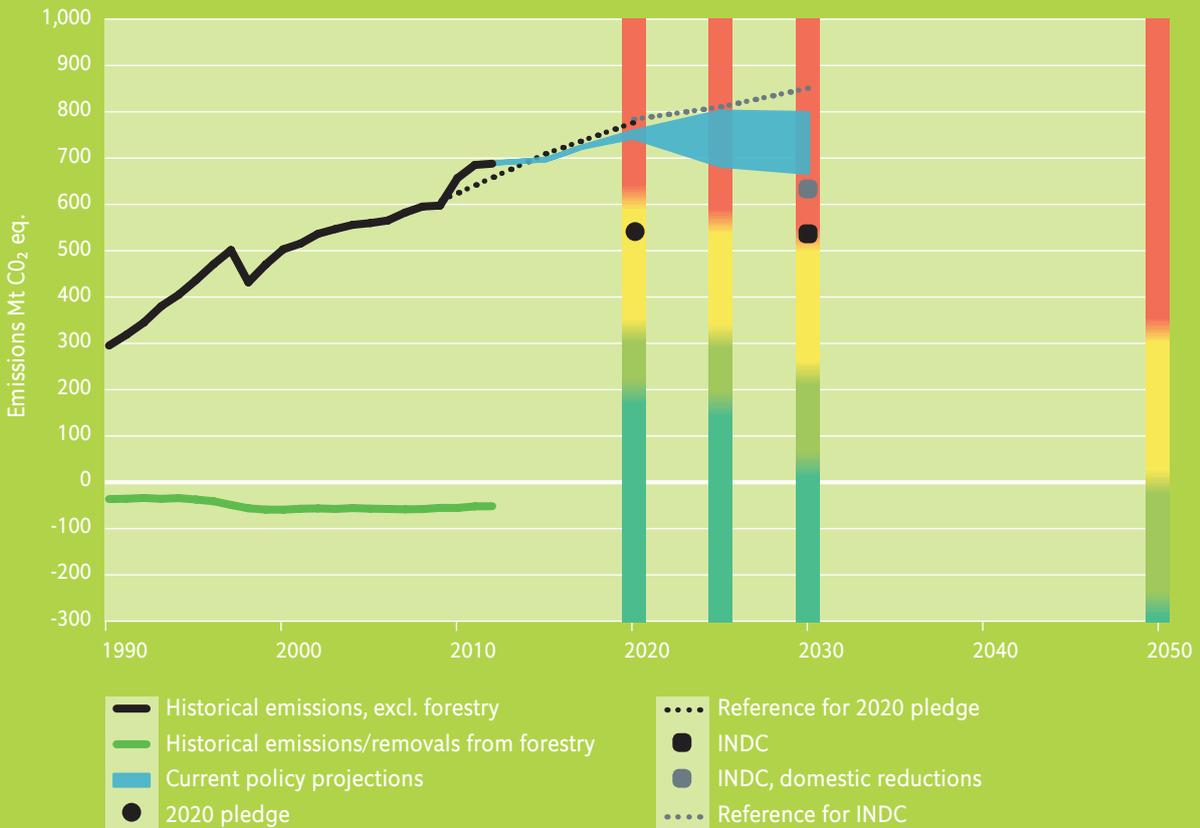
sions in the energy sector, as well as a system of carbon credits which will help cut emissions in the residential sector.

CCPI EVALUATION OF KOREA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

South Korea's Intended Nationally Determined Contribution (INDC) was submitted on 30 June 2015 and proposes an economy-wide target to reduce its greenhouse gas (GHG) emissions by 37% below business-as-usual (BAU) levels of 850.6Mt CO₂e by 2030. The target is equivalent to limiting GHG emissions in 2030 to 536Mt CO₂e, which is 81% above 1990 emission levels, excluding land-use, land-use change and forestry (LULUCF). Climate Action Tracker (CAT) rates this target "inadequate". If all governments showed such low ambition levels, global average warming would likely exceed 3–4°C this century. To reach a "medium" pathway by 2030, South Korea's annual emissions would need to fall below 500Mt CO₂e in 2030.

South Korea intends to achieve part of this target through "carbon credits from international market mechanisms". Despite some growth in renewable energy technologies, the country is still dependent on coal, implying ample potential for more ambition.

CAT EVALUATION OF THE REPUBLIC OF KOREA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Mexico

This Country Profile assesses Mexico’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



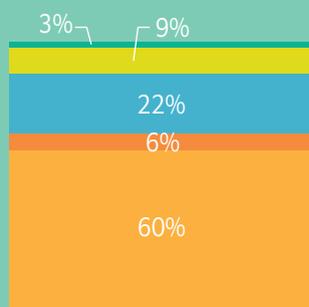
COUNTRY CHARACTERISTICS

KEY INDICATORS*	MEXICO	G20
Population [million]	117	4,587
GDP per capita (PPP) [US\$]	13,423	14,505
Share of global GHG emissions**	1.3%	74.2%
Share of global GDP	1.9%	80.3%
Share of global population	1.7%	64.7%
GHG per capita [t CO ₂ e/cap]**	6.3	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	5.1	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	55.3	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.28	0.42
Share of fossil fuels in primary energy supply	90.2%	83.4%
Share of coal in electricity production	11.7%	35.7%
Share of renewables in primary energy supply	8.8%	11.1%

*year 2012 (unless stated otherwise)
**year 2010
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

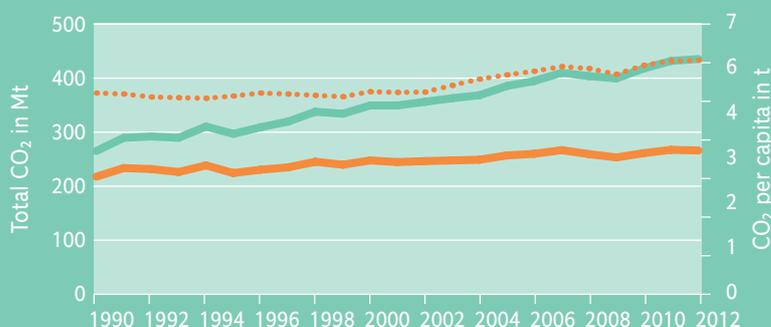
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – MEXICO 2010



■ F-Gases
■ N₂O
■ CH₄
■ CO₂ from LULUCF**
■ CO₂ excl. LULUCF*
* from Energy, Industry & other

ENERGY-RELATED CO₂-EMISSIONS – MEXICO



— Total CO₂ Emissions
— CO₂ per capita
... G20 CO₂ per capita

Source: IEA 2014; **CAT 2015

Source: IEA 2014

Energy-related carbon dioxide (CO₂) emissions account for some 60% of Mexico's greenhouse gas (GHG) emissions. The share of emissions from deforestation and land use is below that of many other Central and South American countries.

Mexico's overall CO₂ emissions and per capita CO₂ emissions are rising, but are still below the G20 average. The CCPI evaluation therefore ranks the country's emissions level as good, with a negative trend, pushing the country towards the medium range.

CCPI EVALUATION OF MEXICO'S EMISSIONS



Source: CCPI 2015

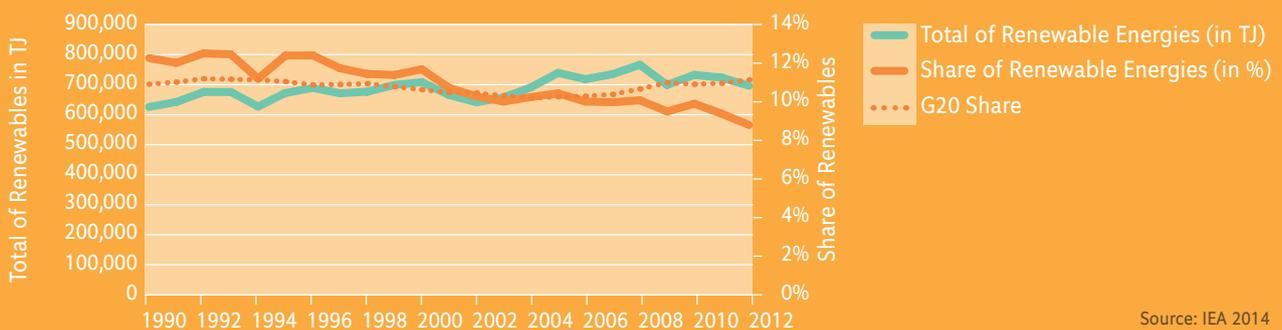
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN MEXICO



Source: IEA 2014

Mexico's share of renewables in the primary energy supply fell to 8.8% in 2012, from more than 10% in 1990, and is below the G20 average. The total amount

of renewable energy has stagnated over the assessment period. The CCPI evaluation ranks Mexico as poor, with a negative trend.

CCPI EVALUATION OF MEXICO'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

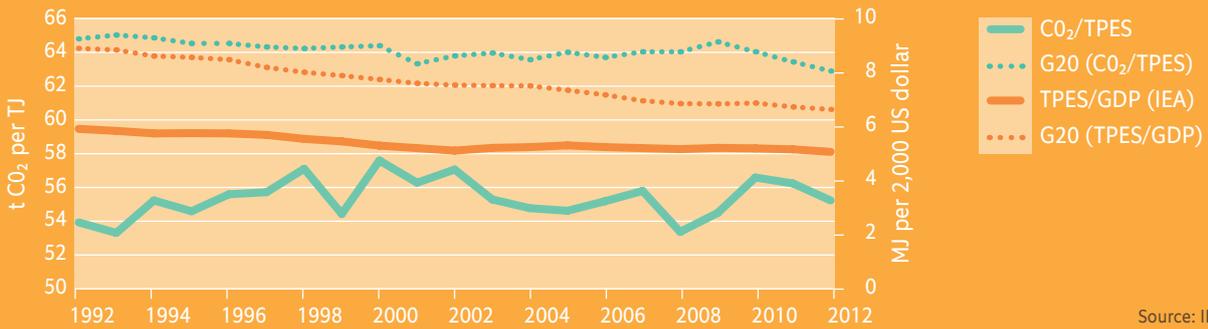
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN MEXICO



Source: IEA 2014

While the energy intensity of Mexico's economy (primary energy/GDP) is declining, the country's carbon intensity of energy supply (CO₂/Primary Energy) is rising. Since the two indicators are devel-

oping in different directions, a clear trend cannot be detected. The level of energy and carbon intensity is therefore rated medium.

CCPI EVALUATION OF MEXICO'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

MEXICO'S CLIMATE POLICY



Source: CCPI 2008-2015

Mexico's international climate policy performance is judged better than at the domestic level. Overall, country experts assess Mexico's policy performance as good. Experts highlighted proposals to phase out

fossil fuels, at the G20 summit hosted by Mexico in 2012. At the national level, experts appreciate ambitious emissions reduction targets, but state that Mexico has to improve policy implementation.

CCPI EVALUATION OF MEXICO'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Mexico's Intended Nationally Determined Contribution (INDC) was submitted on 28 March 2015 and proposes unconditionally to reduce its emissions of greenhouse gases (GHGs) and black carbon by 25% below baseline levels in 2030, equivalent to an increase of 35.8% above 1990 levels (including Land Use and Land Use Change and Forestry – LULUCF). Based on this target, CAT rates Mexico as “medium”. In other words, Mexico's ambition level is not yet consistent with limiting warming below 2°C, and would require other countries to make much deeper reductions and comparably greater effort.

Current policies imply emissions levels some 8–17% above the INDC target in 2030.

Mexico's has shown strong recent progress in policy planning and institution building, including its adoption in 2012 of the General Law on Climate Change (LGCC in Spanish). This was one of the world's first laws on climate change, and the first in a developing country. Under the law, Mexico aims to reduce its emissions by 50% from 2000 levels by 2050. The INDC is consistent with this objective.

CAT EVALUATION OF MEXICO'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Russia



This Country Profile assesses Russia’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.

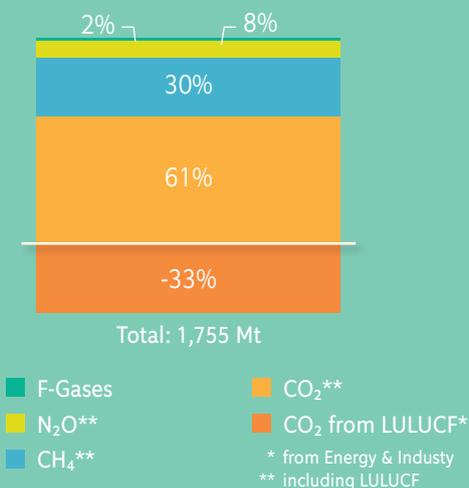
COUNTRY CHARACTERISTICS

KEY INDICATORS*	RUSSIA	G20
Population [million]	143	4,587
GDP per capita (PPP) [US\$]	15,178	14,505
Share of global GHG emissions	5.0%	74.2%
Share of global GDP	2.6%	80.3%
Share of global population	2.0%	64.7%
GHG per capita [t CO ₂ e/cap]	12.2	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	14.6	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	52.4	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.76	0.42
Share of fossil fuels in primary energy supply	91.1%	83.4%
Share of coal in electricity production	15.7%	35.7%
Share of renewables in primary energy supply	2.4%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

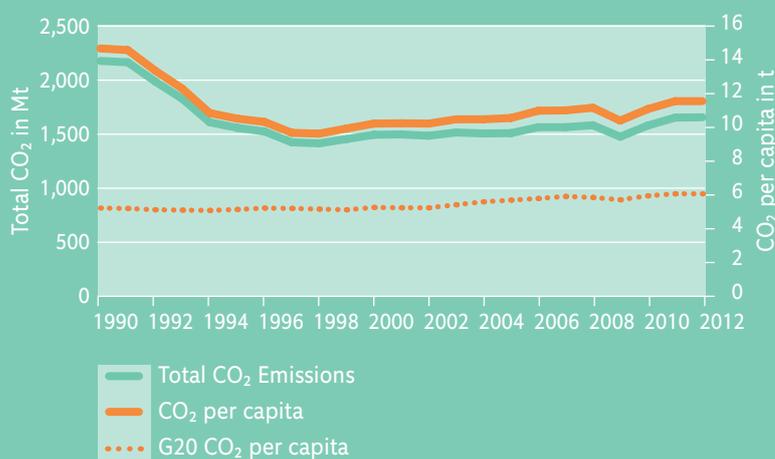
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – RUSSIA 2012



Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – RUSSIA



Source: IEA 2014

Carbon dioxide (CO₂) accounts for a relatively low share of total greenhouse gases, at 61%. Methane (CH₄) accounts for a relatively high 30%, from coal and gas production and agricultural activities. Russia has high negative emissions from Land Use, Land Use Change and Forestry (LULUCF). Energy-related

CO₂ emissions fell sharply after the collapse of the Soviet Union in 1990, and its industrial economy. Since 1997, both total and per capita CO₂ emissions have risen. Russia's emissions are above the G20 average and rising. The CCPI evaluation ranks the country as very poor, with a negative trend.

CCPI EVALUATION OF RUSSIA'S EMISSIONS



Source: CCPI 2015

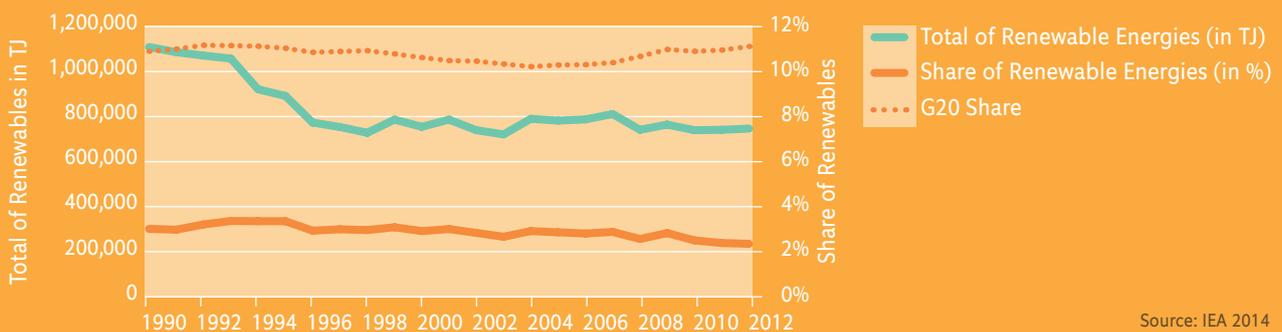
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN RUSSIA



Source: IEA 2014

The share of renewable energy in Russia's total energy supply declined slowly from 3% in 1990 to around 2% in 2012, which is far below the G20 average. The absolute production of renewable energy

also declined in recent decades, in contrast with the trend in most G20 countries. Therefore Russia is evaluated as a very poor performer, with a negative trend.

CCPI EVALUATION OF RUSSIA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN RUSSIA



Source: IEA 2014

The energy intensity of Russia's economy (TPES/GDP) declined until 2008, and has since stagnated at a relatively high level. The carbon intensity of energy supply (CO₂/TPES) has also declined since 1990, and

is well below the G20 average. The CCPI ranks Russia's energy and carbon intensity as very poor. However, the fall in carbon intensity in the last five years contributes a positive trend.

CCPI EVALUATION OF RUSSIA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

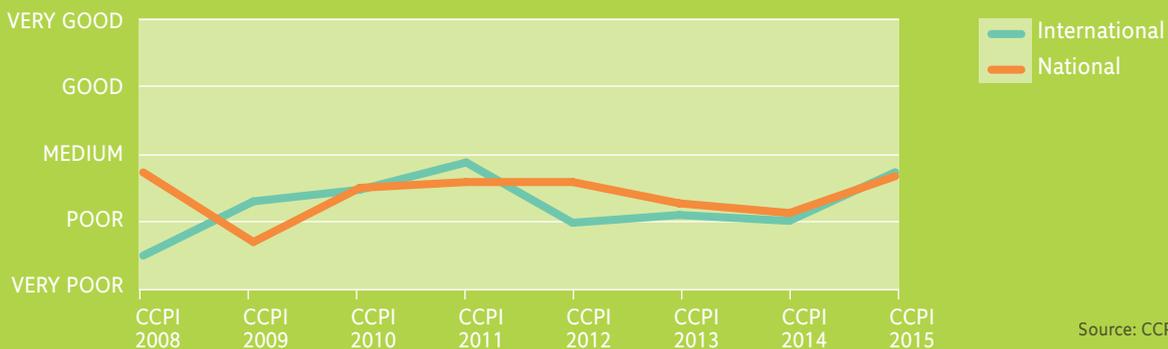
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

RUSSIA'S CLIMATE POLICY



Source: CCPI 2008-2015

Russia's performance in international climate policy has varied between near average and very bad, according to the CCPI evaluation. Its performance shows recent improvement. At the national level, Russia's climate policy performance has varied

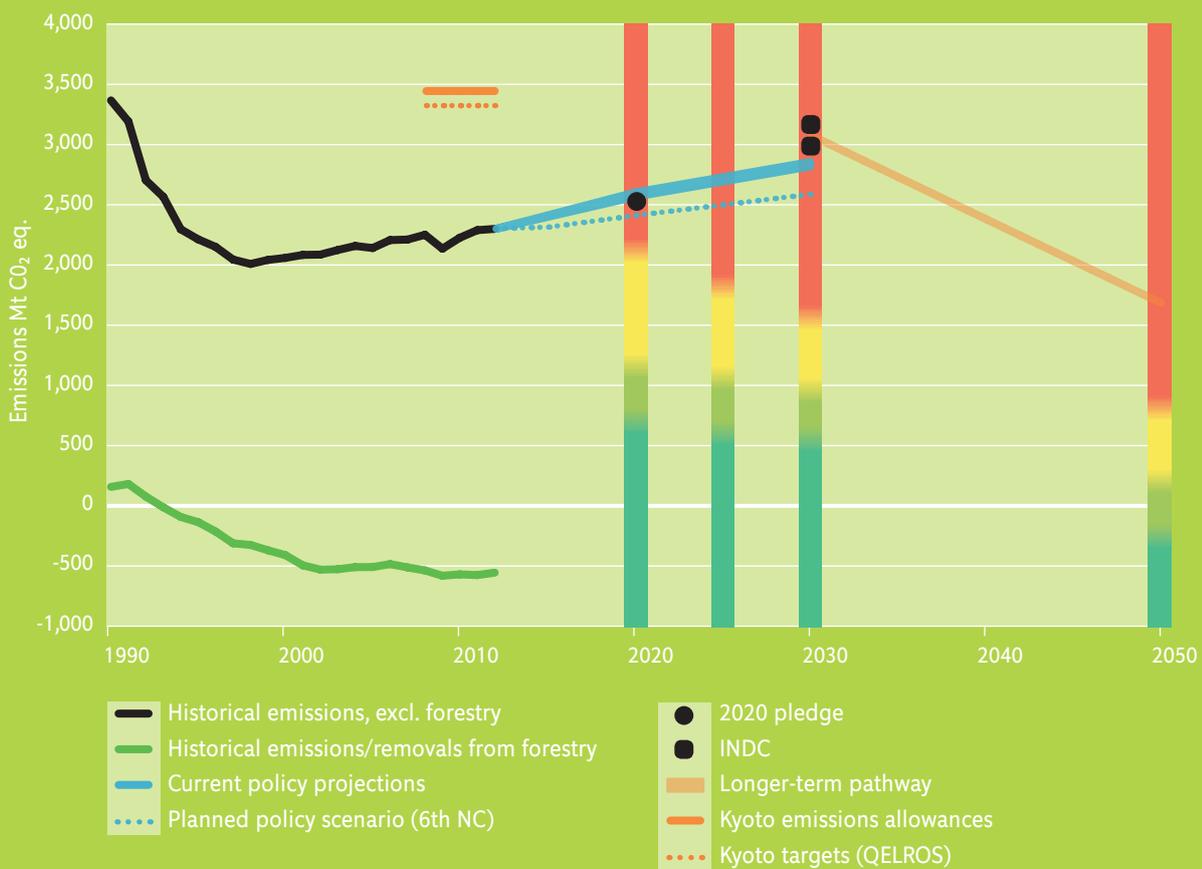
between medium and relatively poor. National experts state that existing policies are driven by economic objectives rather than climate protection. They also identify poor implementation of policies.

CCPI EVALUATION OF RUSSIA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

The Russian Federation submitted its Intended Nationally Determined Contribution (INDC) on 31 March 2015. It proposed to reduce its emissions of net greenhouse gases (GHG) by 25–30% below 1990 levels by 2030. After accounting for the land use and forestry sector, this is a reduction of only 6–11% below 1990 levels of industrial GHG emissions, and an increase of 30–38% compared with 2012 levels. Based on this target, CAT rates Russia “inadequate”, meaning that if all governments showed such low ambition levels, global average warming would likely exceed 3–4°C. Current policies are projected to fail even to reach this INDC target, demonstrating an extreme case of lack of ambition.

Russia’s emissions dropped substantially after 1990, and forestry emissions have turned from an emissions source into an emissions sink. Given Russia’s projected forestry sink of around 0.5Gt CO₂e in 2030, CAT’s assessment is that Russia’s proposed commitment for 2030 allows emissions of industrial GHG to grow significantly from the current levels to 3.0–3.2Gt CO₂e in 2030 (excluding LULUCF). To achieve this proposed target, Russian needs to take no further action other than its currently implemented policies.

CAT EVALUATION OF RUSSIA’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Saudi Arabia

This Country Profile assesses Saudi Arabia's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



COUNTRY CHARACTERISTICS

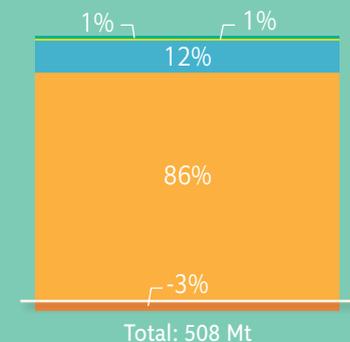
KEY INDICATORS*	SAUDI ARABIA	G20
Population [million]	28	4,587
GDP per capita (PPP) [US\$]	45,271	14,505
Share of global GHG emissions**	1.0%	74.2%
Share of global GDP	1.5%	80.3%
Share of global population	0.4%	64.7%
GHG per capita [t CO ₂ e/cap]**	17.3	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	6.5	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	54.7	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.36	0.42
Share of fossil fuels in primary energy supply	100%	83.4%
Share of coal in electricity production	0%	35.7%
Share of renewables in primary energy supply	0%	11.1%

*year 2012 (unless stated otherwise)
**year 2010

GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

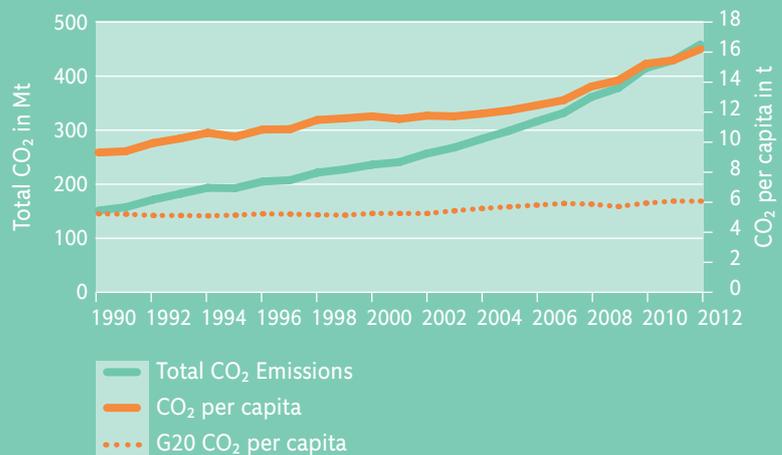
EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – SAUDI ARABIA 2010



- F-Gases
 - N₂O
 - CH₄
 - CO₂ incl. LULUCF*
 - CO₂ from LULUCF**
- * from Energy, Industry & other

ENERGY-RELATED CO₂-EMISSIONS – SAUDI ARABIA



Source: IEA 2014; **CAT 2015

Source: IEA 2014

Saudi Arabia is the biggest economy in the Arabian Gulf. As member of OPEC, its economy relies primarily on oil production, processing and refining. Such activities have led to very high per capita emissions of carbon dioxide (CO₂). Both, total and per capita

emissions have risen steadily. Per capita emissions are more than twice the G20 average, resulting in a very poor performance in the CCPI, and a strong negative trend.

CCPI EVALUATION OF SAUDI ARABIA'S EMISSIONS



Source: CCPI 2015

DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN SAUDI ARABIA



Source: IEA 2014

Saudi Arabia's energy production relies almost exclusively on fossil fuels. Expansion of renewable energy, especially solar energy, is planned, but there are no

firm commitments yet. Saudi Arabia has the lowest share of renewables in the G20, and is therefore ranked as very poor by the CCPI.

CCPI EVALUATION OF SAUDI ARABIA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

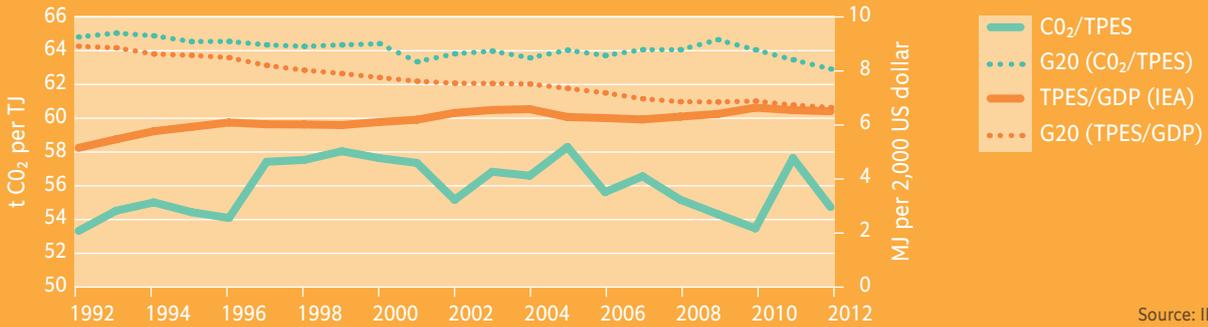
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN SAUDI ARABIA



Source: IEA 2014

Saudi Arabia's carbon intensity of energy supply (CO₂/TPES) has been fairly constant, while the energy intensity of the economy (TPES/GDP) is slowly rising. In the CCPI, the country's level of energy and carbon

intensity is ranked poor in comparison with other G20 countries. Since the two indicators are developing in different directions, there is no clear trend.

CCPI EVALUATION OF SAUDI ARABIA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

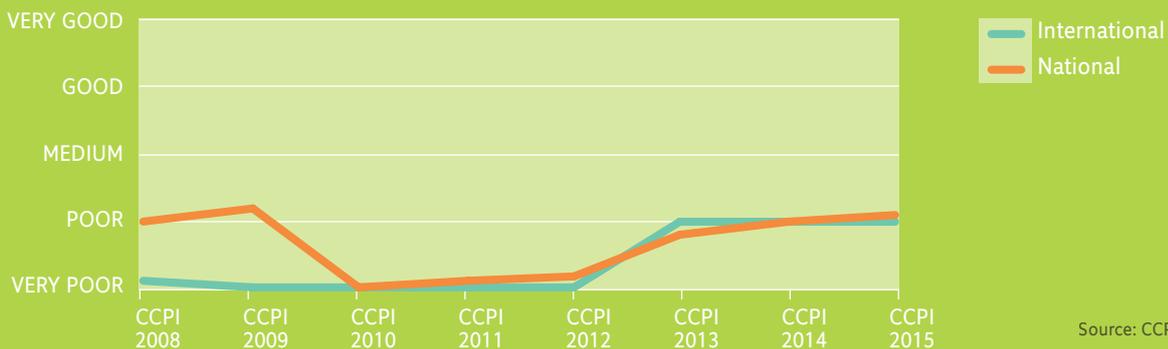
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

SAUDI ARABIA'S CLIMATE POLICY



Source: CCPI 2008-2015

In international climate diplomacy, Saudi Arabia has strongly defended its fossil fuel interests, making it a stumbling block in climate negotiations. At the national level, the country has made only limited

effort, such as a plan to establish a national sustainable energy program. The CCPI rates the country's climate policy performance as very poor.

CCPI EVALUATION OF SAUDI ARABIA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

On 10 November 2015, Saudi Arabia submitted its Intended Nationally Determined Contribution (INDC), seeking to reduce its emissions annually by up to 130MtCO₂e in 2030 through measures that have co-benefits in pursuing economic diversification from oil while contributing to greenhouse gas abatement and adaptation to climate change. Assuming those baseline levels, of the most recent national emissions projections, the INDC results in emissions levels at around 1,160MtCO₂e excl. LULUCF by 2030, a 132% increase above 2010 levels, or a 600% increase above 1990 levels. Based on this target, the CAT rates Saudi Arabia “inadequate”. The proposed abatement far from being enough for Saudi Arabia to contribute fairly in limiting global warming by 2°C. To do so with a minimum effort, Saudi Arabia would need to at least quadruple its proposed abatement and overall ambition.

This is highly inconsistent with the fact that Saudi Arabia is very sensitive to climate change. Average warming for 2040 in Saudi Arabia is higher than the global average and, in a 3–4°C world, three quarters of the country will suffer from excessive dryness by the end of the century (Presidency of Meteorology and Environment, 2011). Equally alarming is the fact that important planned policies aiming at diversifying the energy mix and to achieve 54 GW of renewable and 17 GW of nuclear energy by 2032 have been delayed by eight years in response to low oil prices. The delay appears also to be linked to the country’s desire to build its own renewable manufacturing business in line with its diversification strategy. Overall, we estimate this delay leads cumulatively to an additional 1 GtCO₂e emitted between 2017 and 2030 and additional emissions of 120MtCO₂e/year after 2030, representing 0.6% of the G20 emissions gap to hold global warming below 2°C.

CAT EVALUATION OF SAUDI ARABIA’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

South Africa



This Country Profile assesses South Africa’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.

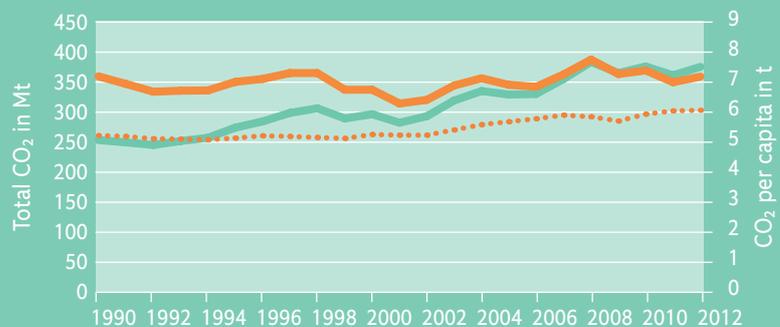
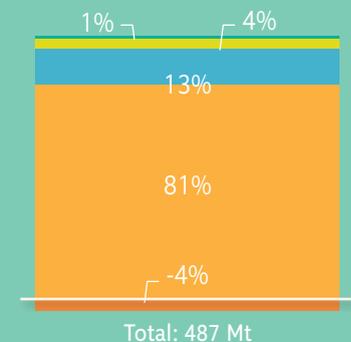
COUNTRY CHARACTERISTICS

KEY INDICATORS*	SOUTH AFRICA	G20
Population [million]	52	4,587
GDP per capita (PPP) [US\$]	10,686	14,505
Share of global GHG emissions**	1.0%	74.2%
Share of global GDP	0.7%	80.3%
Share of global population	0.7%	64.7%
GHG per capita [t CO ₂ e/cap]**	10.9	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	10.9	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	64.2	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.67	0.42
Share of fossil fuels in primary energy supply	87%	83.4%
Share of coal in electricity production	93.8%	35.7%
Share of renewables in primary energy supply	10.9%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – SOUTH AFRICA 2010 ENERGY-RELATED CO₂-EMISSIONS – SOUTH AFRICA



- F-Gases
 - N₂O
 - CH₄
 - CO₂ incl. LULUCF*
 - CO₂ from LULUCF**
- * from Energy, Industry & other

Source: IEA 2014; **CAT 2015

Source: IEA 2014

Energy and industry-related carbon dioxide (CO₂) emissions accounted for some 81% of South Africa's 487Mt GHG emissions in 2010. Methane (CH₄) accounted for 13%. Per capita CO₂ emissions have remained relatively constant, at about 7t, above the

G20 average. Total emissions have risen slowly but steadily. South Africa is evaluated as a relatively poor performer in the CCPI ranking, with a negative trend.

CCPI EVALUATION OF SOUTH AFRICA'S EMISSIONS



Source: CCPI 2015

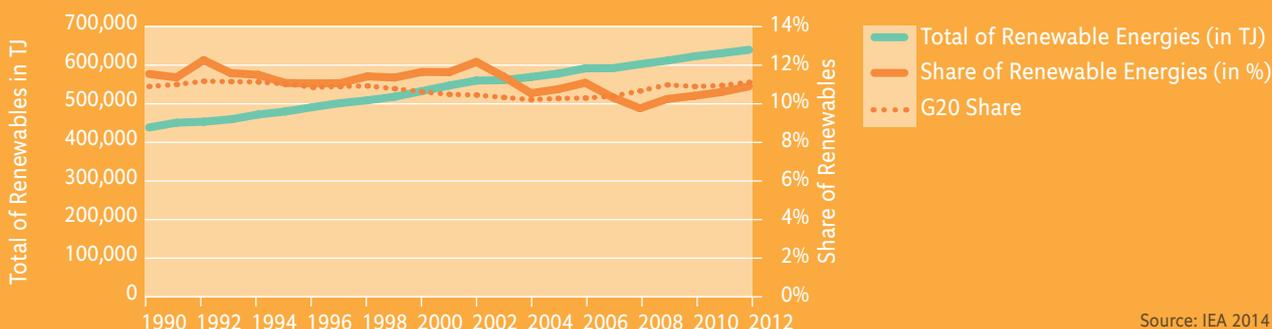
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN SOUTH AFRICA



Source: IEA 2014

Total annual renewable energy production in South Africa has risen strongly since 1990. However, the share of renewables has remained fairly constant, and is slightly below the G20 average. The CCPI eval-

uated South Africa as a medium performer compared with other countries, with a strongly positive trend.

CCPI EVALUATION OF SOUTH AFRICA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

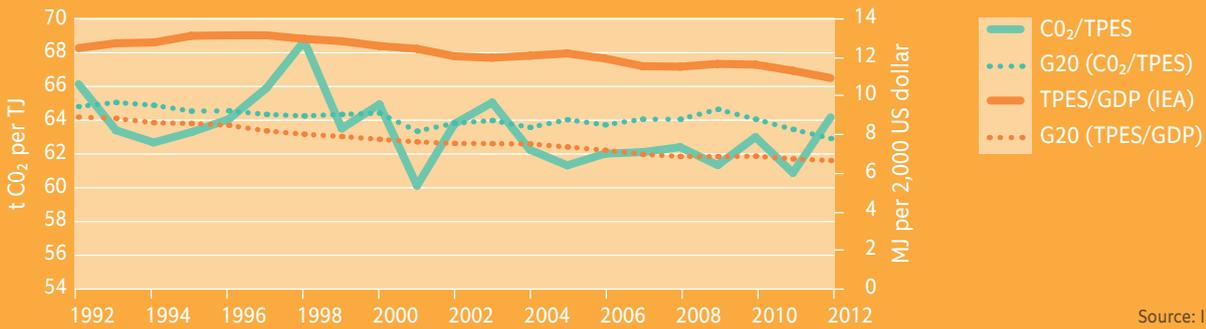
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN SOUTH AFRICA



Source: IEA 2014

Both South Africa's carbon intensity of energy supply (CO₂/TPES) and energy intensity of the economy (TPES/GDP) are rather unchanged in recent decades. Both indicators are above the G20 average. The CCPI

ranks South Africa as very poor. The energy intensity of the economy is slowly declining, contributing to a slightly positive trend.

CCPI EVALUATION OF SOUTH AFRICA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

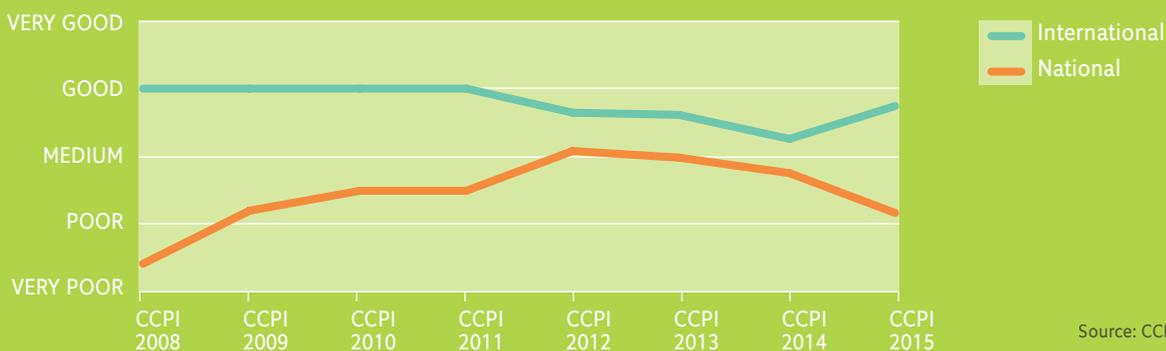
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

SOUTH AFRICA'S CLIMATE POLICY



Source: CCPI 2008-2015

South Africa's international climate policy performance is rated as relatively good. Experts state that national climate policies are good in general, but often contradict energy legislation related to mining

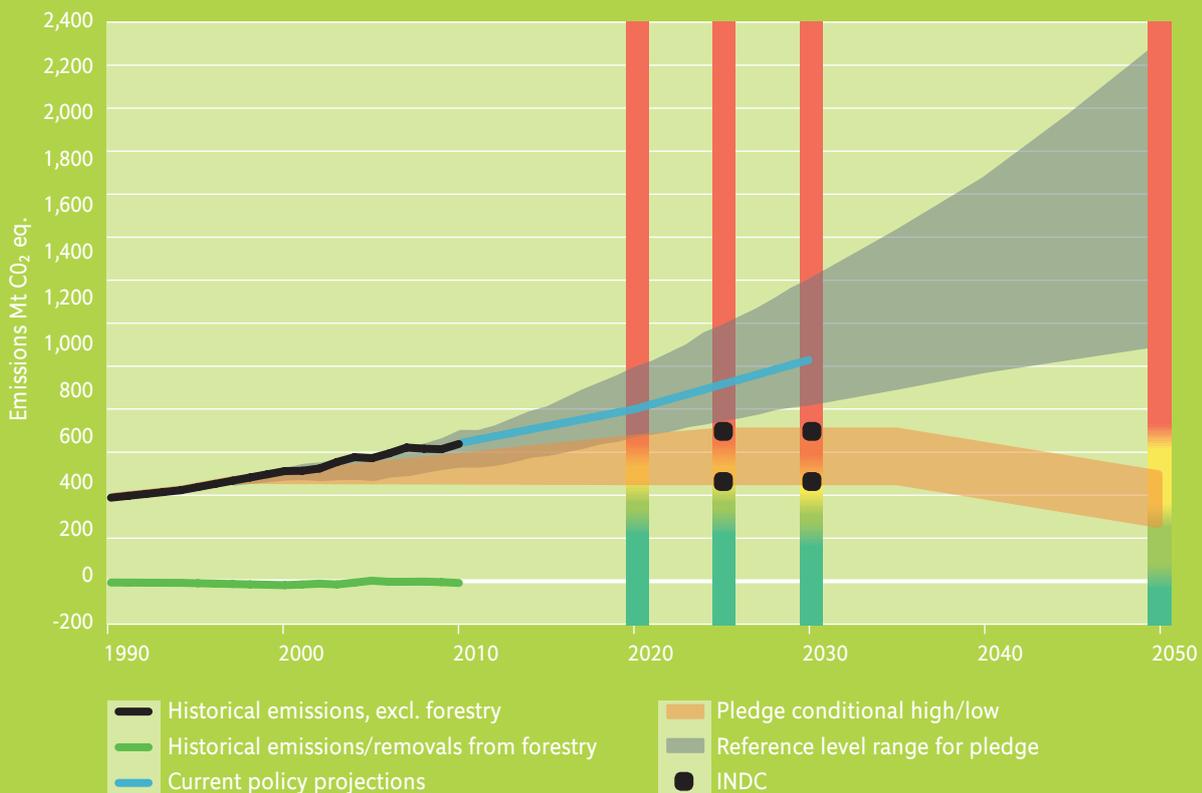
and economic development. In addition, regional and local policies tackling mitigation and adaptation are sometimes more important than national policies.

CCPI EVALUATION OF SOUTH AFRICA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

South Africa submitted its Intended Nationally Determined Contribution (INDC) on 25 September 2015. The INDC includes a target to limit annual greenhouse gas (GHG) emissions to between 398 and 614 Mt CO₂e (including Land Use, Land Use Change and Forestry, or LULUCF), over the period 2025–2030. Based on this target, CAT rates South Africa “inadequate”, meaning that if all governments showed such low ambition levels warming would likely exceed 3–4°C.

Currently implemented policies have so far had little effect on the emissions trend compared with business as usual (BAU). Projections based on current policies lead to emissions of 729 Mt CO₂e in 2020, excluding LULUCF, equivalent to a 110% increase in emissions above 1990 levels (also excluding LULUCF). In 2030, projections based on current policies suggest a further increase in emissions, to 943 Mt CO₂e, excluding LULUCF, representing a 172% increase in emissions compared with 1990 levels (also excluding LULUCF).

CAT EVALUATION OF SOUTH AFRICA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

Turkey

This Country Profile assesses Turkey’s past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



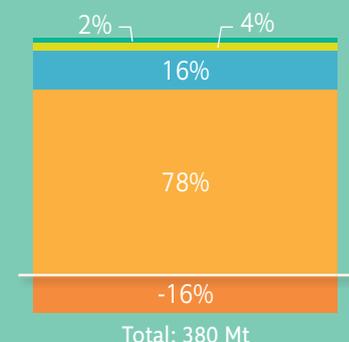
COUNTRY CHARACTERISTICS

KEY INDICATORS*	TURKEY	G20
Population [million]	74	4,587
GDP per capita (PPP) [US\$]	13,557	14,505
Share of global GHG emissions	0.8%	74.2%
Share of global GDP	1.2%	80.3%
Share of global population	1.1%	64.7%
GHG per capita [t CO ₂ e/cap]	5.1	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	4.8	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	61.8	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.3	0.42
Share of fossil fuels in primary energy supply	89.4%	83.4%
Share of coal in electricity production	28.4%	35.7%
Share of renewables in primary energy supply	10.4%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

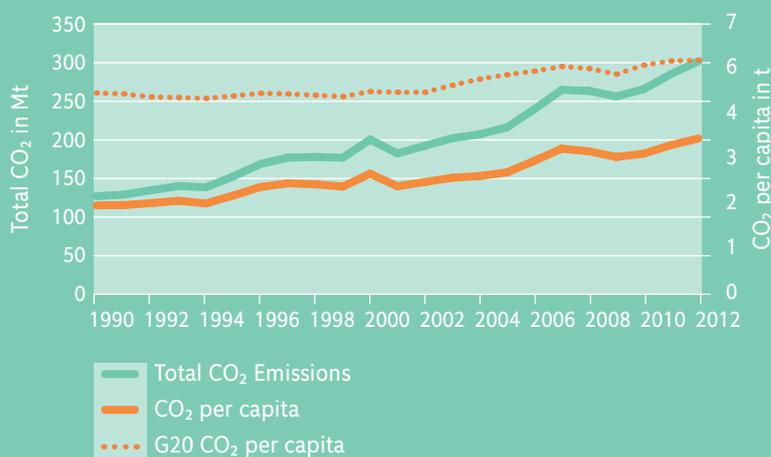
COMPOSITION OF GHG – TURKEY 2012



■ F-Gases
■ N₂O**
■ CH₄**
■ CO₂**
■ CO₂ from LULUCF*
 * from Energy & Industry
 ** including LULUCF

Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – TURKEY



Source: IEA 2014

Carbon dioxide (CO₂) accounts for some 78% of all greenhouse gas emissions. Turkey has negative emissions from the land use and forest sector. Energy-related CO₂ emissions have increased, but per capita

emissions are still below the G20 average. The country's emissions level is rated by the CCPI as good in comparison with other G20 countries, with a negative trend.

CCPI EVALUATION OF TURKEY'S EMISSIONS



Source: CCPI 2015

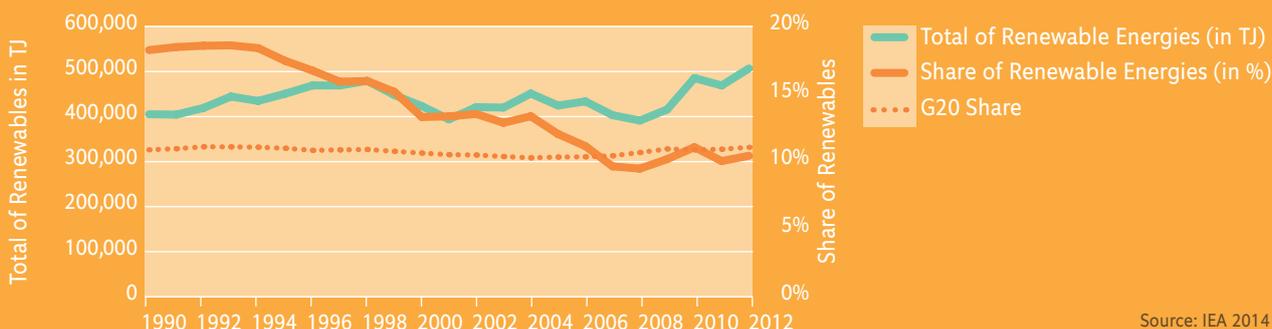
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN TURKEY



Source: IEA 2014

In the past five years, Turkey has reversed an earlier trend of stagnating absolute renewable energy production and a falling share in total energy supply.

Both indicators are now rising. The CCPI ranks Turkey's renewable energy as medium with a positive trend.

CCPI EVALUATION OF TURKEY'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

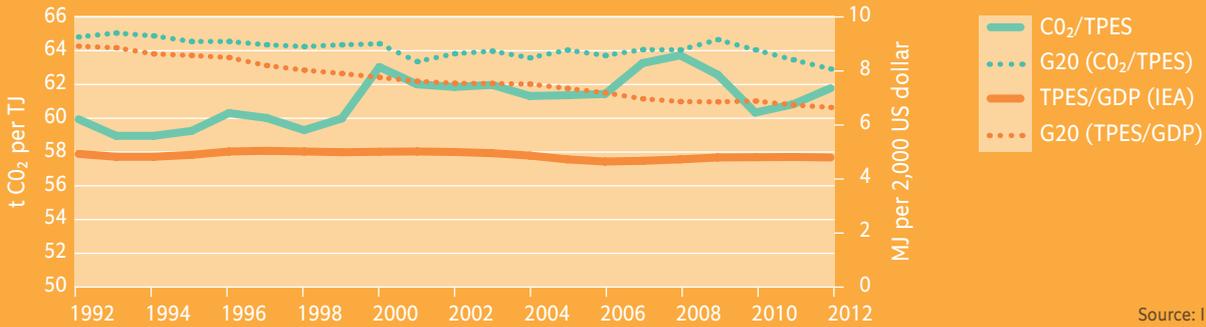
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN TURKEY



Source: IEA 2014

The carbon intensity of Turkey's energy supply (CO₂/TPES) is slowly increasing but still below G20 average. The energy intensity of the country's economy (TPES/GDP) is unchanged, and below the G20 aver-

age. The level of energy and carbon intensity is rated as poor by the CCPI. The indicators do not show a clear trend.

CCPI EVALUATION OF TURKEY'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

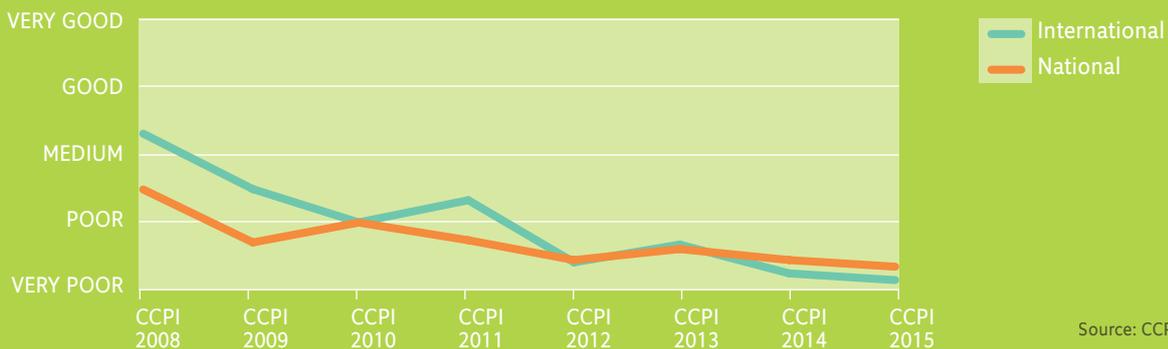
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

TURKEY'S CLIMATE POLICY



Source: CCPI 2008-2015

Turkey's climate policy performance has deteriorated, both nationally and internationally from medium to very poor, in the CCPI ranking. Country experts criticise very poor implementation of exist-

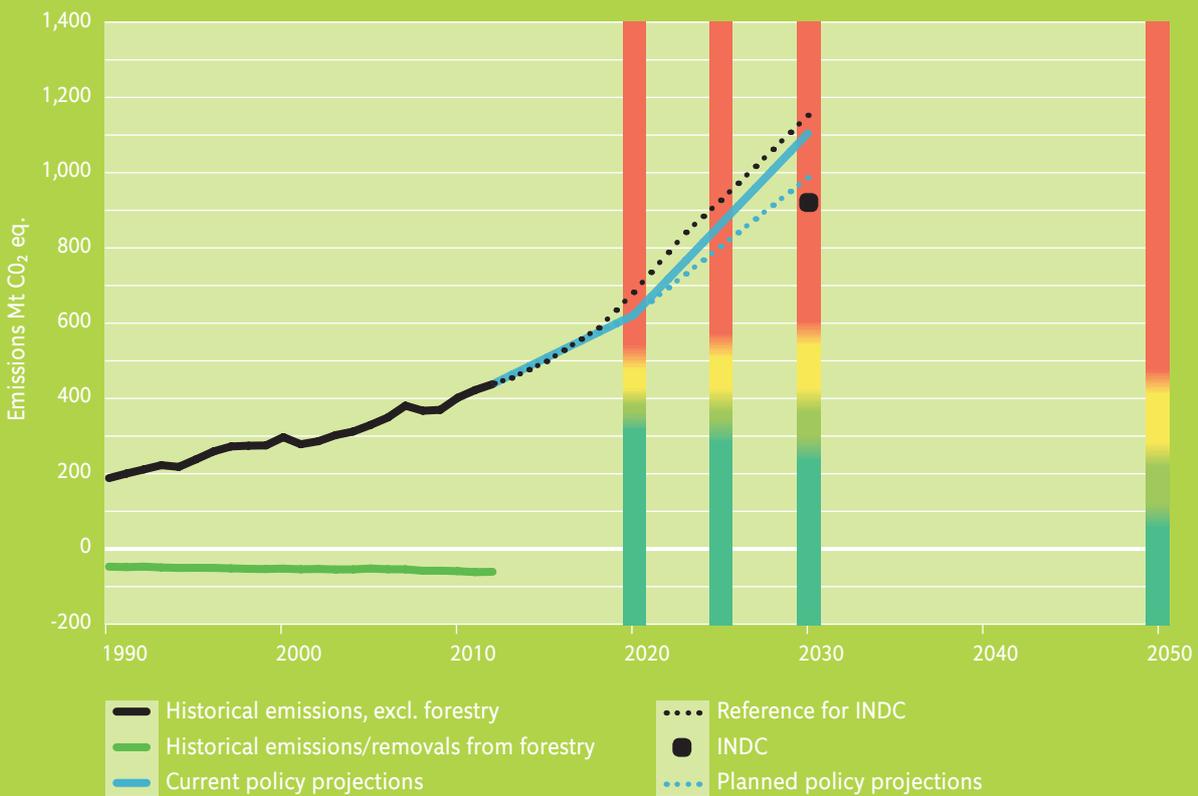
ing policies; promotion of coal-fired power plants; and an unsupportive or even destructive role in international negotiations.

CCPI EVALUATION OF TURKEY'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Turkey submitted its Intended National Determined Contribution (INDC) on 30 September 2015. The INDC included a target to reduce net greenhouse gas (GHG) emissions, including Land Use, Land Use Change and Forestry (LULUCF), by up to 21% below business as usual (BAU) levels in 2030. Excluding LULUCF emissions, this target is equivalent to a 389% increase in GHG emissions over 1990 levels, or a 110% increase over 2012 levels. By comparison, under Turkey's BAU, emissions are expected to increase by 512% over 1990 levels, or 162% over 2012 levels. CAT rates this target "inadequate", since it is not in line with interpretations of a "fair" approach to reach a 2°C pathway. To make a fair contribution to keeping global average warming below 2°C, Turkey would need to double, or even triple, its post-2020 target, in terms of its percentage reduction in net GHG emissions below BAU levels in 2030.

According to CAT analysis, Turkey's current policies can already achieve around a third of the reductions proposed INDC. If the INDC's energy sector pledges were implemented, Turkey would achieve more than two thirds of its INDC target. The lion's share of emissions abatement in Turkey in 2030 depends on its capability to fully exploit its hydro potential, which on its own can achieve more than a third of the reductions required in the INDC target.

CAT assessment shows that Turkey has both to boost its ambition to limit global warming, and set out a plan with detailed measures to achieve its INDC target in 2030.

CAT EVALUATION OF TURKEY'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

United Kingdom



This Country Profile assesses the United Kingdom's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.

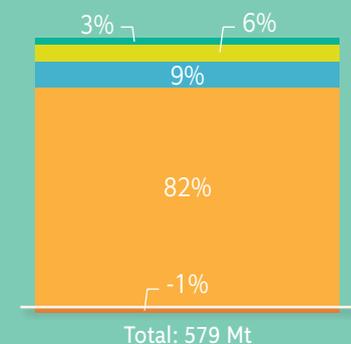
COUNTRY CHARACTERISTICS

KEY INDICATORS*	UK	G20
Population [million]	63	4,587
GDP per capita (PPP) [US\$]	32,473	14,505
Share of global GHG emissions	1.2%	74.2%
Share of global GDP	2.5%	80.3%
Share of global population	0.9%	64.7%
GHG per capita [t CO ₂ e/cap]	9.1	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	3.9	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	56.8	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.22	0.42
Share of fossil fuels in primary energy supply	85.2%	83.4%
Share of coal in electricity production	40.0%	35.7%
Share of renewables in primary energy supply	4.4%	11.1%

*year 2012 (unless stated otherwise)
**year 2010
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

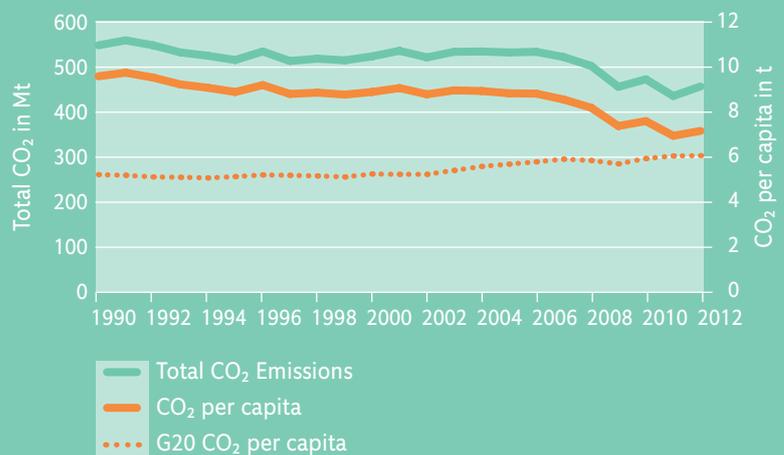
COMPOSITION OF GHG – UK 2012



■ F-Gases
■ N₂O**
■ CH₄**
■ CO₂**
■ CO₂ from LULUCF*

* from Energy & Industry
** including LULUCF

ENERGY-RELATED CO₂-EMISSIONS – UK



Source: UNFCCC 2015

Source: IEA 2014

Carbon dioxide (CO₂) accounted for some 82% of the UK's total 579Mt greenhouse gas (GHG) emissions in 2012. Total energy-related CO₂ emissions and per capita emissions have been slowly but

steadily declining. Compared to other G20 countries, the CCPI evaluates the UK's emissions level performance as medium, with a strong positive trend in the last five years.

CCPI EVALUATION OF THE UK'S EMISSIONS



Source: CCPI 2015

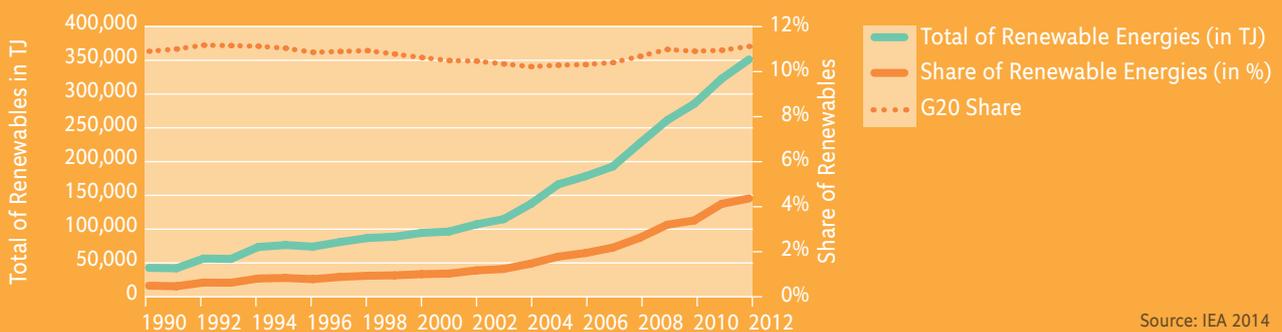
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN THE UK



Source: IEA 2014

Approximately 30% of the UK's energy sector is still coal-based. Until the turn of the millennium, renewable energy accounted for 1% of total energy supply, which made the UK one of the worst G20 performers

for renewables. In 2012, the share of renewables was about the half of the G20 average, reflected in a very poor performance ranking by the CCPI, but with a positive trend.

CCPI EVALUATION OF THE UK'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

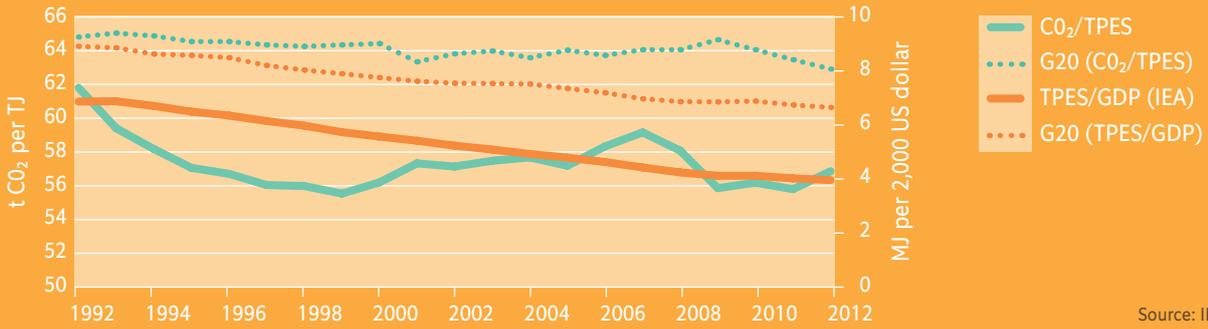
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN THE UK



Source: IEA 2014

While carbon intensity of energy supply (CO₂/TPES) has fluctuated, the energy intensity of the UK's economy (TPES/GDP) has declined steadily. The country's

energy intensity is about two thirds of the G20 average. The CCPI ranks the UK's energy and carbon intensity as good.

CCPI EVALUATION OF THE UK'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

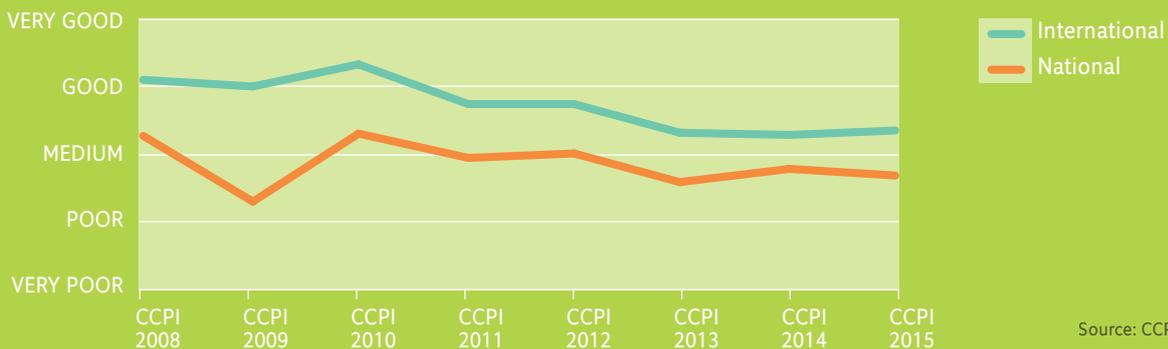
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

THE UK'S CLIMATE POLICY



Source: CCPI 2008-2015

Experts have noted deterioration in the UK's international climate policy performance, from good to medium. Country experts criticise a lack of leader-

ship within the EU. Nationally, they consider that the UK is still on track to meet its short-term goals, and its longer term decarbonisation trajectory.

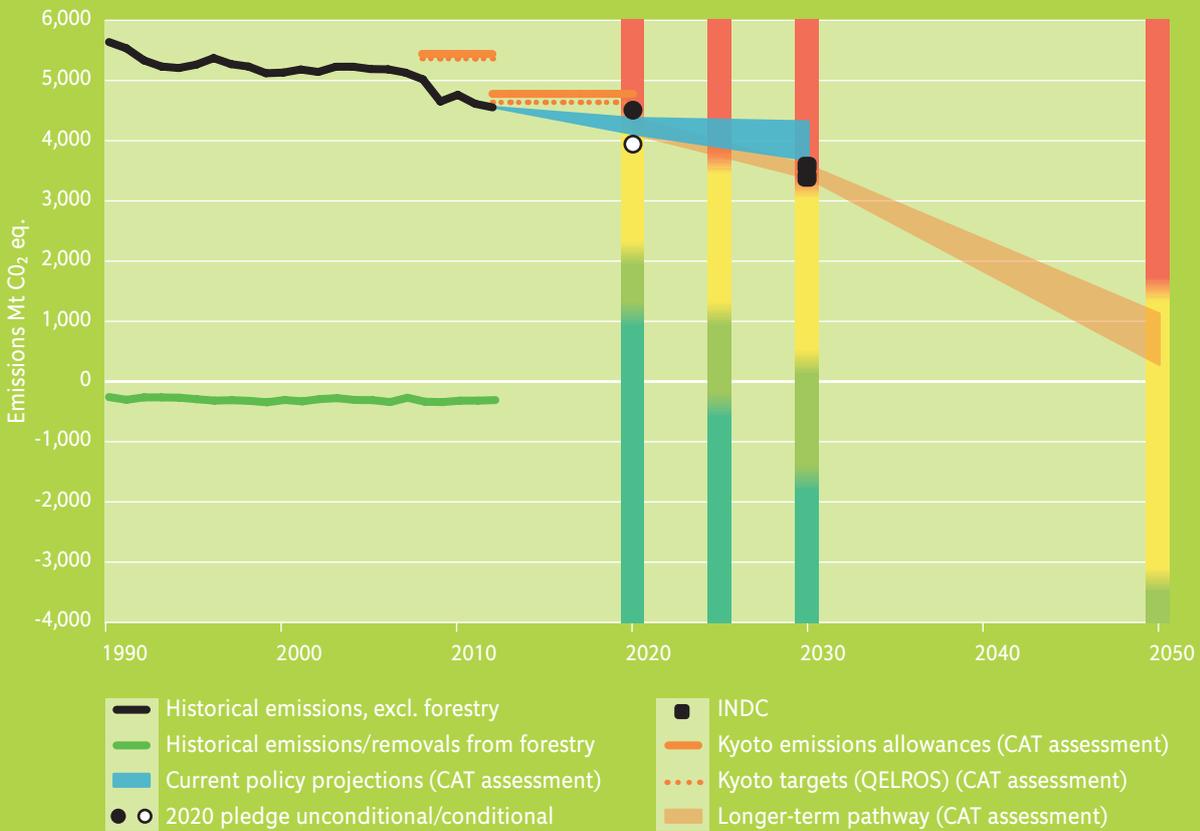
CCPI EVALUATION OF THE UK'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C

As an EU member state, the UK did not submit its own Intended Nationally Determined Contribution (INDC) or emissions reduction target towards COP21.



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

Under its INDC, the EU proposed on 6 March 2015 a binding, economy-wide target to cut domestic greenhouse gas emissions by at least 40% below 1990 levels in 2030. No individual EU member state has its own INDC, but some countries, such as Germany, may have more ambitious, domestic targets.

The Climate Action Tracker (CAT) rates the EU emissions target as “medium”, meaning that the INDC is not consistent with limiting warming below 2°C. It would require other countries to make a comparably greater effort and much deeper emissions reductions.

The overall level of GHG emissions reductions proposed in the INDC is not yet sufficient to fall within the range of approaches for fair and equitable emission reductions by the EU28. Current policies are projected to reduce domestic emissions by 23–35% below 1990 levels in 2030, and so do not yet put the EU on a trajectory towards meeting either its 2030 or 2050 targets. The EU’s Emissions Trading Scheme is the bloc’s most important instrument to achieve its 2020 and 2030 emissions reduction targets. However, an accumulated surplus of emissions allowances could dilute the 40% GHG target by 7% in 2030. It is therefore important that the EU creates a robust market reserve for eliminating that surplus, to keep in line with the 40% GHG target.

CAT EVALUATION OF THE EU’S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



ASSESSING CLIMATE PROTECTION PERFORMANCE:
G20 COUNTRY PROFILE

USA

This Country Profile assesses the USA's past and present actions to help mitigate climate change, and its Intended Nationally Determined Contribution (INDC) towards future global action. The profile summarises the respective findings of the Climate Change Performance Index (CCPI)ⁱ and Climate Action Tracker (CAT)ⁱⁱ.



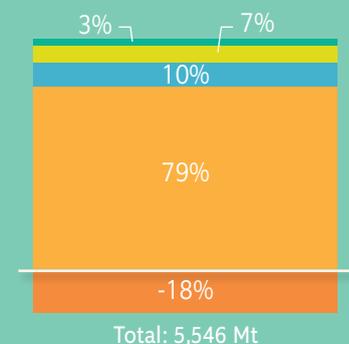
COUNTRY CHARACTERISTICS

KEY INDICATORS*	USA	G20
Population [million]	314	4,587
GDP per capita (PPP) [US\$]	45,283	14,505
Share of global GHG emissions	13.5%	74.2%
Share of global GDP	17.2%	80.3%
Share of global population	4.5%	64.7%
GHG per capita [t CO ₂ e/cap]	17.6	7.2
Energy intensity of the economy (TPES/GDP [MJ/US\$])	6.6	6.6
Carbon intensity of energy supply (CO ₂ /TPES [t CO ₂ /TJ])	56.6	63.1
Carbon intensity of the economy (CO ₂ /GDP [kg CO ₂ /US\$])	0.36	0.42
Share of fossil fuels in primary energy supply	83.7%	83.4%
Share of coal in electricity production	38.5%	35.7%
Share of renewables in primary energy supply	6.0%	11.1%

*year 2012 (unless stated otherwise)
GDP = gross domestic product
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)
TPES = total primary energy supply
PPP = purchasing power parity in prices of 2005

EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – USA 2012

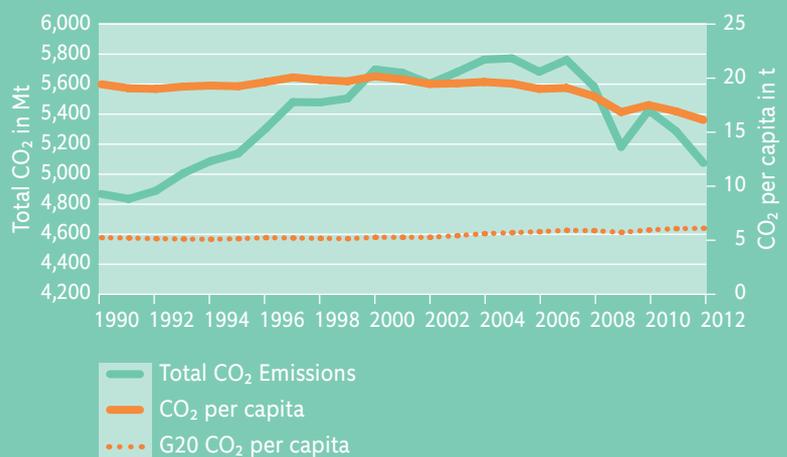


■ F-Gases
■ N₂O**
■ CH₄**
■ CO₂**
■ CO₂ from LULUCF*

* from Energy & Industry
** including LULUCF

Source: UNFCCC 2015

ENERGY-RELATED CO₂-EMISSIONS – USA



Source: IEA 2014

Carbon dioxide (CO₂) accounted for some 79% of the USA's greenhouse gas (GHG) emissions in 2012. In the land use and forest sector, the country has negative emissions. The total amount of energy-related CO₂ emissions makes the United States the second biggest emitter, among G20 countries and globally.

The USA's per capita emissions peaked in 2000 and since then have declined gradually. In 2009, Australia passed the USA as the biggest per capita emitter within the G20. In comparison with other G20 countries, the CCPI ranks the US emissions level as a very poor performer, with a positive trend.

CCPI EVALUATION OF THE USA'S EMISSIONS



Source: CCPI 2015

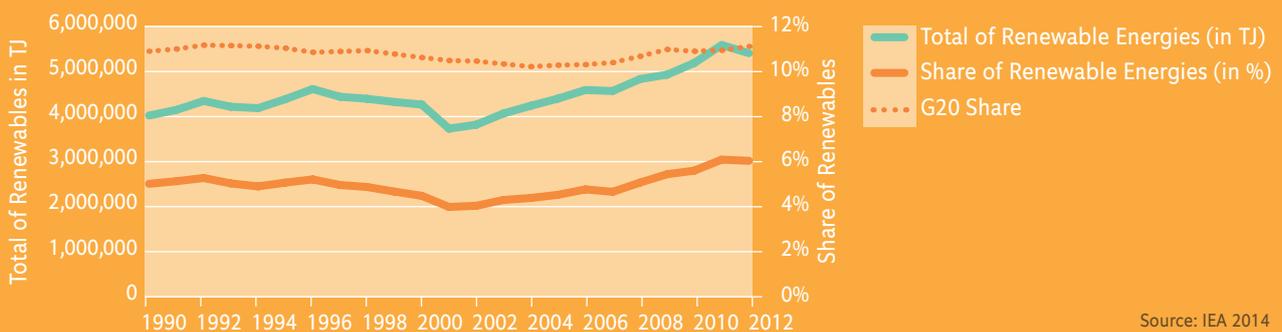
DECARBONISATION

Decarbonisation of the global economy will be a crucial element for staying below the 2°C threshold. Two important steps towards achieving such decar-

bonisation are a shift from fossil fuels to renewable energy sources, and a reduction in carbon and energy intensityⁱⁱⁱ.

RENEWABLE ENERGY

RENEWABLE ENERGY IN THE USA



Source: IEA 2014

In 2012, the United States had a relatively low share of energy from renewable sources, at 6%. The major energy sources remain coal, natural gas and nuclear. However, both absolute renewable energy produc-

tion and its share in the energy mix have risen since 2001. The CCPI ranks the USA as very poor with a positive trend.

CCPI EVALUATION OF THE USA'S RENEWABLE ENERGY



Source: CCPI 2015

ENERGY- AND CARBON INTENSITY

The measurement of carbon and energy intensity uses macroeconomic data. A country's progress towards decarbonisation is indicated by decoupling of its GDP growth from growth in carbon and energy

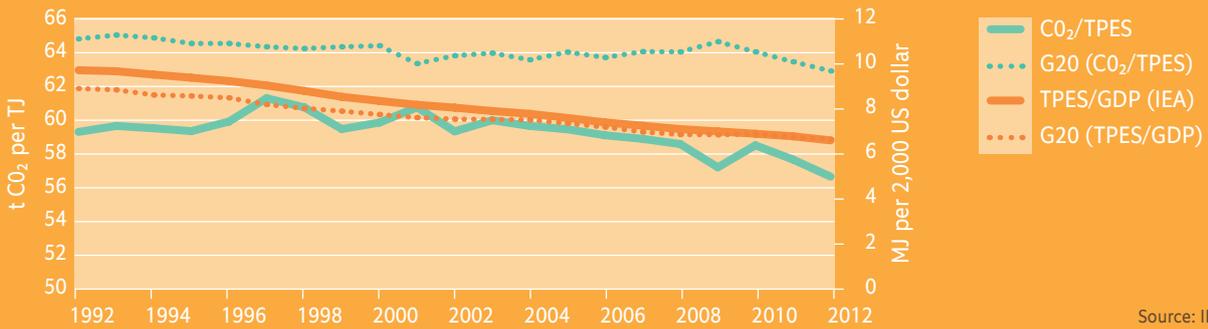
intensity. The latter are measured as CO₂ emissions per unit of Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

i Climate Change Performance Index is jointly published by Germanwatch and Climate Action Network Europe, a coalition of over 120 member organizations. The Index is 80% based on objective indicators of emissions trend and level, renewable energies and energy efficiency and 20% on national and international climate policy assessments by more than 300 experts from the respective countries. www.germanwatch.org/en/ccpi

ii Climate Action Tracker is an independent scientific analysis produced by four research organizations: Climate Analytics, Ecofys, the Potsdam Institute for Climate Impact Studies and the NewClimate Institute. www.climateactiontracker.org

iii Another indicator is energy efficiency. However, energy efficiency is complex to measure, requiring a sector by sector analysis, where comparable data sources across G20 countries are not available at present.

ENERGY- AND CARBON INTENSITY IN THE USA



Source: IEA 2014

The US carbon intensity (CO₂/TPES) of energy supply is steadily falling. The energy intensity of the country's economy (TPES/GDP) has developed in line with the G20 average and is declining. The curves indicate a decoupling of CO₂ emissions from energy produc-

tion, and decoupling of growth in energy supply from GDP growth. The CCPI ranks the country's energy and carbon intensity as poor with a positive trend.

CCPI EVALUATION OF THE USA'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

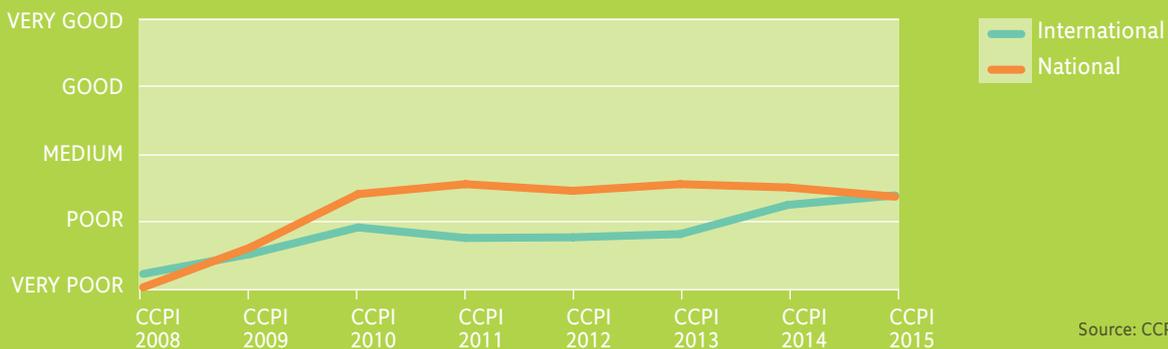
CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

The experts assess the country's performance in international negotiations, national policy making and in the implementation of climate policies.

USA'S CLIMATE POLICY



Source: CCPI 2008-2015

Experts rank both national and international climate policy performance as poor, with improvements since 2008. National climate policy performance has

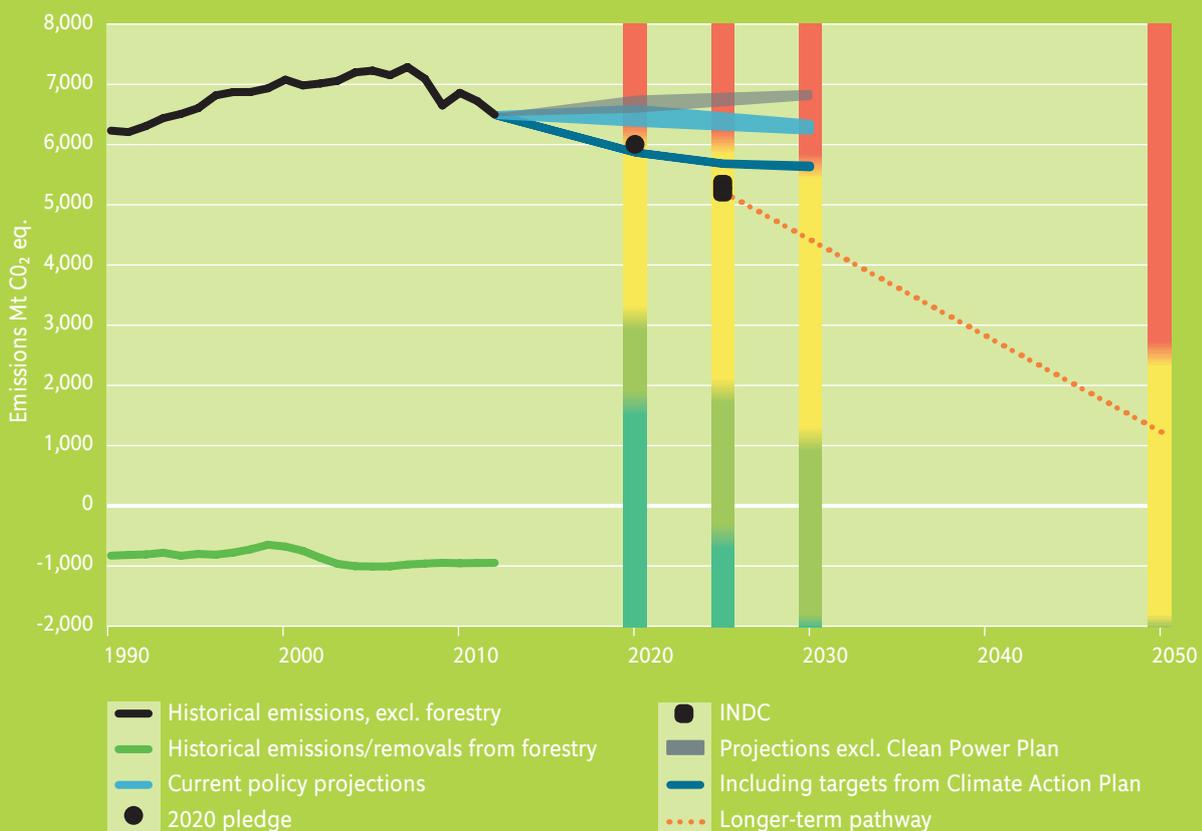
remained on a constant level since 2010. Efforts in climate diplomacy have led to a slightly improved international policy performance since 2013.

CCPI EVALUATION OF THE USA'S CLIMATE POLICY



Source: CCPI 2015

COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C



Source: © www.climateactiontracker.org/Climate Analytics/Ecofys/ NewClimate/PIK

The USA's Intended Nationally Determined Contribution (INDC) was submitted on 31 March 2015 and commits to reduce net GHG emissions by 26–28% below 2005 in 2025, including Land Use, Land Use Change and Forestry (LULUCF). That is equivalent to a reduction of 24–31% below 2005 levels, or 12–19% below 1990 levels, after excluding LULUCF. Based on this target, and taking into account the effect of LULUCF accounting, CAT rates the US “medium”. The target is not yet consistent with limiting warming to below 2°C, unless other countries make much deeper reductions and comparably greater effort than the USA.

Current US implemented policies fall short of the INDC target, leading to emissions which are 28–31% above the INDC target level for 2025. However, planned policies, such as the Climate Action Plan, would bring the USA close to meeting its INDC, if they are fully implemented. Such planned policies would lead to emissions 9% above the INDC. The USA needs to implement further policies to achieve its INDC for 2025. For meeting the pledge for 2020, the additional measures outlined by the Obama government in the “President’s Climate Action Plan” in June 2013 would be sufficient.

CAT EVALUATION OF THE USA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



CO-BENEFITS OF CLIMATE ACTION

Countries are increasingly aware of the additional benefits that result from taking climate action to reduce greenhouse gas emissions. These so-called co-benefits can reduce or entirely offset perceived costs of carbon mitigation, and so can be a powerful argument to raise climate action ambition. The benefits include positive impacts from burning fewer fossil fuels, for economic growth, jobs, energy security, balance of payments from fewer imports, and reduced health hazards due to less air pollution.

At present, analysis is still incomplete of the co-benefits associated with the INDCs of G20 countries. However, one estimate of the co-benefits of selected G20 mitigation targets shows that these could lead to significant cost savings, from reduced fossil fuel imports, prevention of premature deaths from lower air pollution, and from the creation of local green jobs in domestic renewable energy sectors.

In total, for all the countries studied, the potential co-benefits that could be achieved through a 100% renewable trajectory were several orders of magnitude larger than those achieved by the current INDC submissions. Regarding job creation, for example, the total potential benefits were three times greater than those achieved under the present INDCs. Regarding reduced air pollution, the total potential health cost savings were more than ten times greater than those achieved under the present INDCs.

Estimates are taken from the paper by the New Climate Institute Assessing the missed benefits of countries' national contributions: Quantifying potential co-benefits (Day, Thomas / Höhne, Niklas / Gonazles, Sofia; 2015). The study analyses INDCs by sector. It assumes that they are implemented as indicated by accompanying national reports. It takes account of reduced coal imports for power generation, reduced oil imports for transport and reduced natural gas demand. Projected market prices for these fuels are taken from the International Energy Agency, to quantify the monetary savings. For air pollution, the study assumes a direct link between the level of air pollution and energy-related CO₂ emissions, because many air pollutants derive from fossil fuel combustion. Air pollution is then linked to health impacts applying standard factors from the literature. For jobs, a range of job factors per gigawatt (GW) installed capacity are used from the literature for the installation, operation and maintenance of renewable energy, to derive estimates for the number of jobs created in the electricity sector. The study also estimated the scale of the extra co-benefits which could be achieved, if countries increased the ambition of their INDCs to meet a trajectory for 100% renewable energy by 2050, in line with keeping temperature increase below 2°C, and possibly below 1.5°C (see Table). For more details see the Country Tools of the Climate Action Tracker of 2015 available at <http://climateactiontracker.org/countries.html>.

CO-BENEFITS ACHIEVED IN 2030 BY INDCS, COMPARED TO CURRENT POLICIES TRAJECTORIES

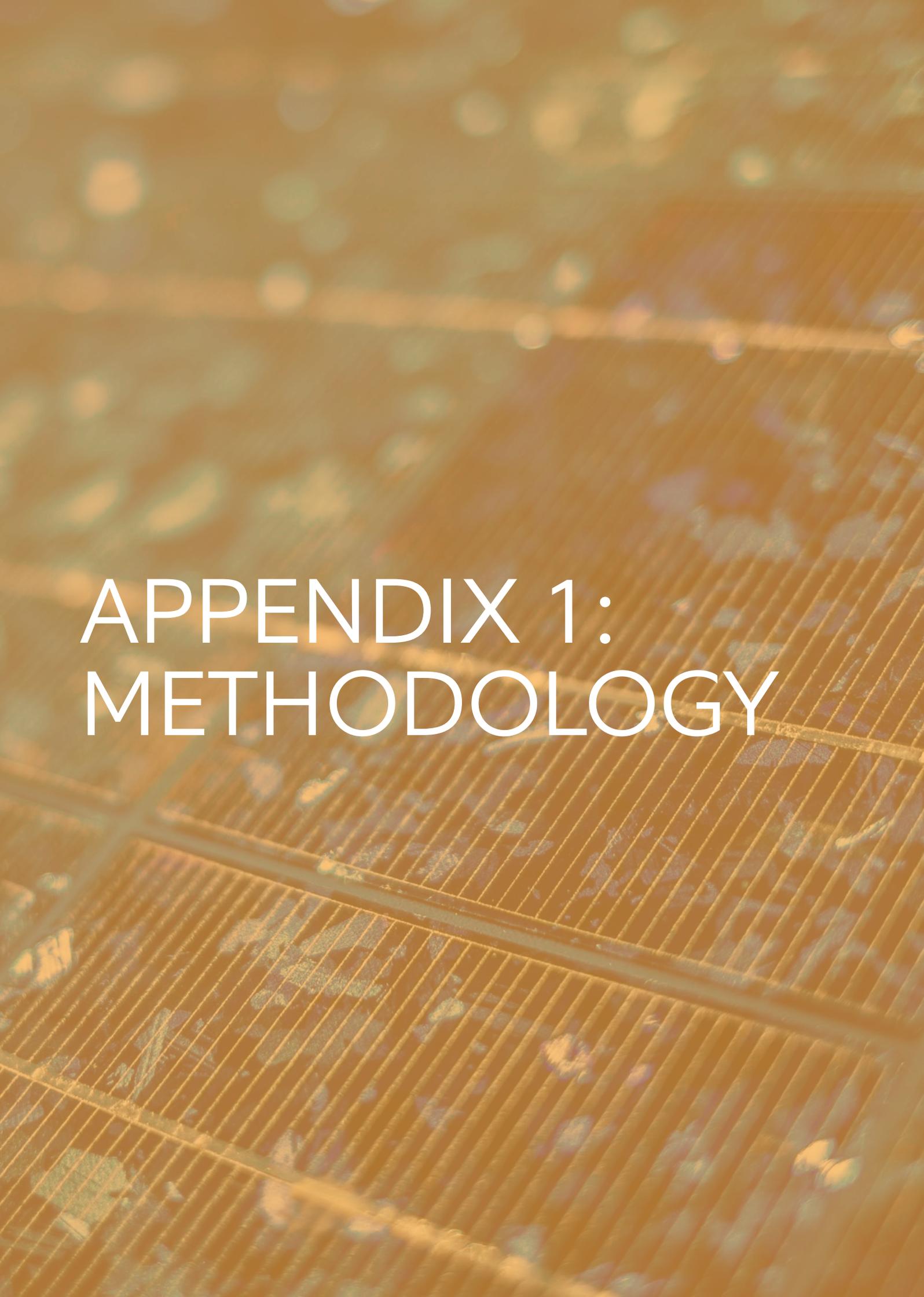
CO-BENEFIT	Cost savings from reduced fossil fuel imports (bn USD)	Prevented premature deaths from ambient air pollution	Job creation from renewable energy
CANADA	Reduced reliance on fuels	100	3,000
CHILE	0.8 – 2.9	200 – 700	1,000 – 7,000
CHINA	Reduced reliance on scarce fuels	100,000	500,000
EU	33	6,000	70,000
INDIA	2.5	28,000	50,000
JAPAN	8	1,500	No job gain
SOUTH AFRICA	1.5 – 5	300 – 1,500	20,000 – 60,000
USA	Reduced reliance on fuels	7,000	470,000
TOTAL	~ USD 50 billion	~ 150,000	~ 1.1 million

Data: International Energy Agency (2014d): World Energy Outlook. IEA, Paris

ADDITIONAL POTENTIAL CO-BENEFITS IN 2030 FROM STRENGTHENING INDCS TO MEET A 100% RENEWABLE TRAJECTORY

CO-BENEFIT	Potential co-benefits in 2030 of a strengthened INDC which would meet a 100% renewable by 2050 trajectory		
	Cost savings from reduced fossil fuel imports (bn USD)	Prevented premature deaths from ambient air pollution	Job creation from renewable energy
CANADA	-	700	5k
CHILE	2.4	800	4k
CHINA	190	1.1 million	1.4 million
EU	140	40,000	350k
INDIA	195	1.3 million	625k
JAPAN	25	15,000	67k
SOUTH AFRICA	2	1,200	25k
USA	160	20,000	180k
TOTAL	~ USD 715 billion	~ 2.5 million	~ 2.7 million

Data: International Energy Agency (2014d): World Energy Outlook. IEA, Paris



APPENDIX 1: METHODOLOGY

CHALLENGES IN MAKING TRANSPARENT ASSESSMENTS

Climate performance assessments measure actions by countries, regions and cities and the private sector, to mitigate or adapt to climate change. These assessments also typically explore how compatible actions are with meeting the internationally agreed, upper limit of 2°C global average warming.¹³

There is a range of such climate action assessments, addressing different circumstances and situations. The differences between these assessments make for a demanding task to develop a composite picture across countries, as required by non-experts for a more comprehensive view. Assessments differ according to a range of factors, and can generate different results, reflecting different assumptions:

→ **Different assumptions on equity and responsibility:** There is no universally accepted definition for equity and responsibility, in climate change and other fields; both terms can be highly controversial.

→ **Different assumptions on targets:** Assessments results depend on choices over baselines and targets. Climate performance assessments are normally based on a limited number of measurable indicators, with the aim of capturing difference between the current or historical situation (baseline) and the desired situation (target). Different climate performance assessments often refer to different baselines, as well as different types of targets, such as sectoral-, national- and/or international targets.

→ **Choice and interpretation of indicators:** Although climate performance assessments typically rely on measurable indicators, the choice and interpretation of these indicators involves value judgments. This has an impact on the final result of the assessment. Putting more emphasis on policy targets may yield different results from focusing on historical emissions, for example. Due to the complexity of this issue, no assessment covers all possible indicators. Sometimes, choices may be considered mutually exclusive.

¹³ Emissions and trends in emissions are the key indicators to determine compatibility with the 20 C upper temperature limit. However, these data can only show the impact of actions after the fact. For proposing improvements, it is important to assess actions planned and taken, and the enabling conditions that will determine emission outcomes. Such an approach can shorten the feedback loop.

→ **Data availability and quality:** Comparability depends on having sufficient, comparable data, both in terms of the time period, and the benchmarks covered. The more recent the data, the more useful they are for policy evaluation and public relevance. But more recent data may also be less certain. The longer the time series, the easier it is to identify trends and the effect of policy actions.¹⁴ In addition, when it comes to assessing progress made in implementing policy targets, different approaches to gathering data are used. Data system improvements have been made over recent years, but there is still significant variability between countries, and especially between Annex 1 countries and non-Annex 1 countries, or developed and developing countries as defined under the 1992 United Nations Framework Convention on Climate Change.

Establishing a composite picture of climate action by combining the insight from different climate assessments is therefore a challenging task. It can only be done through incremental steps, including more and more assessments over time, and verifying the quality and completeness of the picture with all relevant actors.¹⁵

¹⁴ For example, the OECD notes that the consistency and completeness of time series data vary greatly by issue and country, often hampering systematic and meaningful presentations of trends.

¹⁵ Climate Transparency is at the beginning of such a process. This first reports concentrates on mitigation, later reports will also include adaptation and climate finance and may also take a more sectorial approach.

METHODOLOGIES USED IN THE ASSESSMENTS MADE BY CAT AND CCPI

A comparison of the assessments of CAT and CCPI demonstrates the spectrum of categories and the criteria that can be chosen in assessments of climate mitigation efforts.

Between them, these assessments study past performance, present status or emissions, and expected future performance. They also consider renewable energy and energy efficiency. Future targets are also considered, which may or may not be related to the 2° C upper limit for global warming. They may take a national perspective, a regional perspective, or a sectoral (with respect to the economy) or company perspective.

The assessment criteria can be divided into relative and absolute criteria. Relative criteria contribute to a ranking of countries. There are at least three groups of absolute criteria used for the assessments: moral obligation, technical potential and co-benefits. With moral obligation, one can consider responsibility for historical emissions, or the capability to take remedial action. Within technical potential, assessments may consider the mitigation potential an actor possesses, or define benchmarks for decarbonisation indicators, or a best practice policy package. Regarding co-benefits, assessment may examine missed benefits, or avoided damage resulting from a lack of climate action.

The results of the assessment mostly concern the current situation and future performance, and the compatibility of future performance with the 2°C target.

CAT assesses the climate action of countries by analyzing their INDCs and climate policies. It uses both moral responsibility (historical responsibility and capacity to act) and technical necessity (mitigation potential, benchmarks for decarbonisation indicators and best practice policy) as evaluation criteria. The results of the assessment mostly concern the current situation and future performance, and the compatibility of future performance with the 2°C target.

CCPI assesses climate action primarily according to objective indicators, examining past and current performance of sectoral-, national- and international climate protection. A country's performance is based on the current state and development of emissions, renewable energy and energy efficiency. CCPI also includes a qualitative assessment of the country's climate policies, comprising both legislation and implementation at a national level, and progressiveness and efforts in international negotiations.

COUNTRY PROFILES – EXPLANATIONS

Below is an explanation of the indicators and graphics, and how they should be interpreted:

COUNTRY CHARACTERISTICS

TABLE: KEY INDICATORS

This table contains a selection of key indicators which characterise the country. The indicators are the same as in the Key Indicator section of the “G20 Climate Action – A Turning Point” paragraph of this report.

Population [million]

This indicator describes the total population of a country in millions in the year 2012.

- Data source: United Nations, Department of Economic and Social Affairs (2015): World Population
- Prospects: The 2015 Revision. Available at: <http://esa.un.org/unpd/wpp>

GDP per capita (PPP) [US\$]

Gross Domestic Product (GDP) indicates a country’s overall output of goods and services. There are different ways to measure GDP; in this case, GDP is measured per capita using purchasing power parity rates (PPP). GDP per capita using PPP is further defined by the World Bank, available at: <http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>

- Data source: International Energy Agency (2014a): CO₂ Emissions from Fuel Combustion. Paris.
- World Bank (2015c): World Development Indicators: GDP. Available at: <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD>

GHG per capita [t CO₂e/cap]

The indicator greenhouse gas emissions per capita shows the average emission contribution of each individual, and is calculated by dividing total emissions by population.

- Data source: Climate Action Tracker (2015): Country Tools. Available at: <http://climateactiontracker.org/countries.html>
- UNFCCC (2015): GHG Data – UNFCCC: Time series – Annex I. Available at: http://unfccc.int/ghg_data/ghg_data_unfccc/time_series_annex_i/items/3814.php
- United Nations, Department of Economic and Social Affairs (2015): World Population Prospects: The 2015 Revision. Available at: <http://esa.un.org/unpd/wpp>

Energy intensity of the economy (TPES/GDP [MJ/US\$])

Total Primary energy supply per unit of GDP describes how much energy is needed to produce one unit of GDP, and can therefore be an indicator for how efficiently energy is used in the economy. A lower indicator may be attributed to a variety of causes, such as rising energy efficiency; structural economic change towards services industries away from energy-intensive manufacturing; or the relocation of more energy-intensive industries to other countries.

This indicator is part of the CCPI evaluation of energy efficiency (see chapter “Energy and Carbon Intensity”).

- Data sources: International Energy Agency (2014a): CO₂ Emissions From Fuel Combustion. Paris;
- International Energy Agency (2014b): Energy Balances of OECD Countries 2014. IEA, Paris.

Carbon intensity of energy supply (CO₂/TPES [t CO₂/TJ])

Carbon dioxide (CO₂) emissions per unit of primary energy supply describes the carbon intensity of a country's energy sector and indicates the share of fossil fuels in the energy supply. This indicator is part of the CCPI evaluation of energy efficiency (see chapter "Energy and Carbon Intensity").

→ Data source: International Energy Agency (2014a): CO₂ Emissions From Fuel Combustion. Paris.

Carbon intensity of the economy (CO₂/GDP [kg CO₂/US\$])

CO₂ emissions per unit of GDP is a macroeconomic view of the carbon intensity of a country's economy. A fall in this indicator may reflect an increase in efficiency, but can also reflect structural changes. The indicator is related to TPES per GDP and CO₂ per TPES.

→ Data source: International Energy Agency (2014a): CO₂ Emissions From Fuel Combustion. Paris.

Share of fossil fuels in primary energy supply

This indicator expresses the share of fossil fuels in total primary energy supply of a country in percentage terms

→ Data source: World Bank (2015a): Fossil fuel energy consumption. Available at:
<http://data.worldbank.org/indicator/EG.USE.COMM.FO.ZS/countries>.

Share of coal in electricity production

This indicator expresses the share of coal in the electricity mix of a country in percentage terms.

→ Data source: World Bank (2015b): Electricity production from coal sources. Available at:
<http://data.worldbank.org/indicator/EG.ELC.COAL.ZS>.

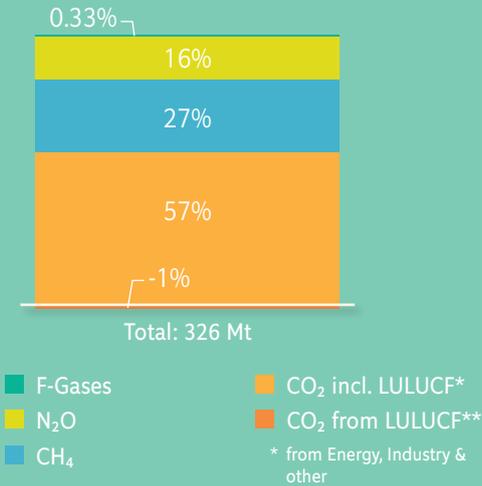
Share of renewables in primary energy supply

This indicator expresses the share of renewable energy in primary energy supply in percentage terms. Renewables are defined as wind power, photovoltaic, solar thermal, geothermal, bioenergy, hydro power and waste.

→ Data source: International Energy Agency (2014a): CO₂ Emissions from fuel combustion. Paris.

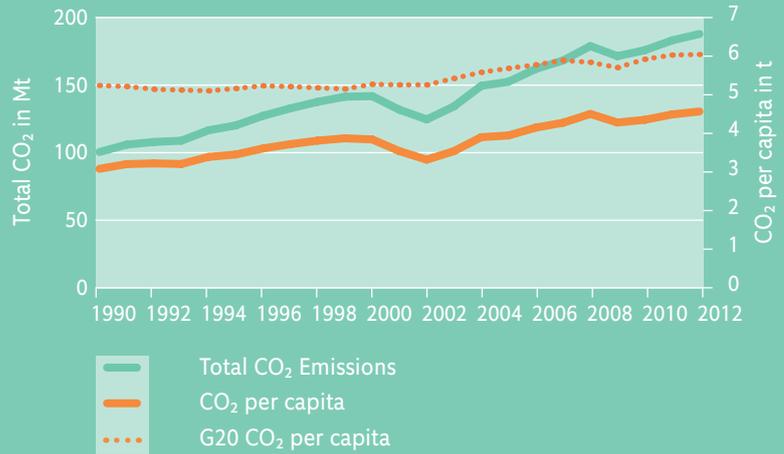
EMISSIONS AND EMISSIONS TRENDS

GRAPH: COMPOSITION OF GHG



Source: Source: IEA 2014; **CAT 2015

GRAPH: ENERGY-RELATED CO₂-EMISSIONS



Source: IEA 2014

A number of gases contribute to the greenhouse effect and to the rise in global temperatures. The most important greenhouse gas is CO₂, which originates from the use of fossil fuels in energy production, transport and also from land use, and land use changes and forestry (LULUCF). For countries with a large, mostly tropical, forest cover, CO₂ emissions from forestry, such as deforestation, can be very important. The so called f-gases are industrial gases, which are emitted in much lower concentrations than CO₂ but are more potent greenhouse gases. Methane (CH₄) and Nitrous oxide (N₂O) are mostly related to agricultural activities. The relative share of greenhouse gases indicates the importance of industrial emissions in relation to emissions from land use and forestry.

→ Data sources: IEA 2014, CAT 2015 and UNFCCC (2015): GHG Data – UNFCCC: Time series – Annex I. Available at: http://unfccc.int/ghg_data/ghg_data_unfccc/time_series_annex_i/items/3814.php

Total energy-related CO₂ emissions describes the development of a country's absolute contribution to global energy-related CO₂ emissions. Data for energy-related CO₂ emissions are typically more up to date than data for GHG emissions. Energy-related CO₂ emissions comprise all emissions originating from fuel combustion. CO₂ emissions from land use and forestry and from industrial processes are not taken into account. A country's CO₂ emissions per capita is one potential indicator of its "fair" share of global climate action. If a country's per capita emissions grow more slowly than its population, then this is a sign of a relative decrease in the use of fossil fuels.

The CCPI evaluation does not rate countries in absolute terms but in relation to the other countries. The dot on the scale describes the country's emissions level; the arrow shows the strength and direction of its emissions trend. If no clear trend can be noted, then no arrow is included. Low emissions are considered positive, while growing emissions are considered negative, a trend towards the red zone.

The CCPI assesses a country's emissions level (the dot on the scale) by taking into account three indicators: per capita energy-related CO₂ emissions, per capita supply of primary energy and a target-performance-comparison. The trend (the arrow on the scale) reflects the development of the indicator energy-related CO₂ emissions over the last five years.¹⁶

→ Data source: International Energy Agency (2014a): CO₂ Emissions from Fuel Combustion. Paris.

GRAPH: CCPI EVALUATION OF A COUNTRY'S EMISSIONS



Source: CCPI 2015

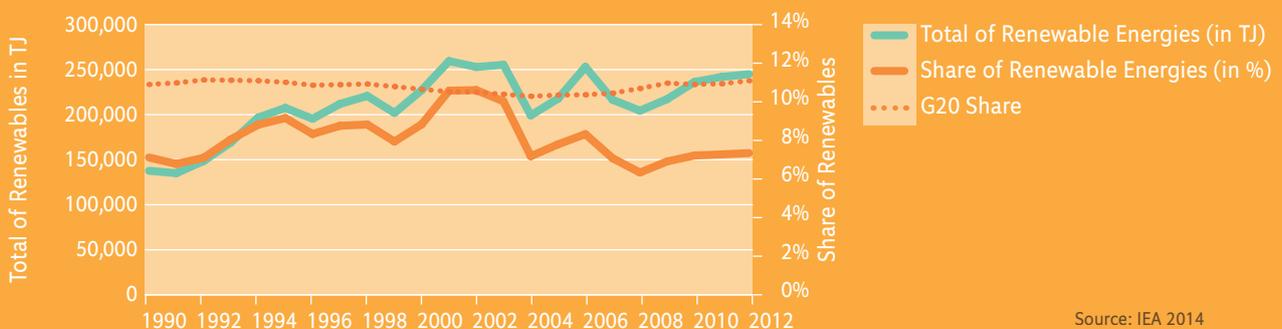
16 For more detailed information about the methodology of the CCPI, please also see the methodology brochure: Burck, J., Hermwille, L. and Bals, C. (2015): The Climate Change Performance Index: Background and Methodology. Available at: http://germanwatch.org/en/ccpi_bame.

DECARBONISATION

The decarbonisation of the economy is a crucial element on the path of staying below the 2°C threshold. Decarbonisation is a term that describes the actions that lead to a reduction of CO₂ emissions and fossil fuel dependency in the economy. These actions are typically sector-specific. For an adequate assessment, a sector-specific analysis would be needed. For an initial, simplified approach, this report concentrates on developments in renewable energy and energy efficiency. A shift from fossil fuels to renewable energy sources and an improvement in carbon and energy intensity are important steps along a decarbonisation pathway for a country. Energy efficiency is measured as a combination of energy and carbon intensity.

RENEWABLE ENERGY

GRAPH: RENEWABLE ENERGY IN ...



Total Renewable Energy (in TJ) measures the absolute renewable energy supply and its change over time. Share of Renewable Energy (in %) measures the relative share of renewable energy in the primary energy supply, and its development. Combined, the two indicators provide an overview about a country's energy sector. A growing total amount of renewable energy in combination with a declining share indicates that the use of fossil fuels is growing more strongly than renewable energy.

GRAPH: CCPI EVALUATION OF A COUNTRY'S RENEWABLE ENERGY



Source: CCPI 2015

The CCPI evaluation does not rate countries in absolute terms but in relation to the other countries. The dot on the scale describes the country's performance regarding its share of renewables. The arrows show the strength and direction of its renewables trend. If no clear trend can be noted, then no arrow is included. A high level is considered positive, a decline in total amount (a trend towards the red zone) is considered negative.

The CCPI evaluates a country's renewable energy level and trend by taking into account the share of renewable energy in total primary energy supply, and the development of renewable energy supply over the last five years.¹⁷

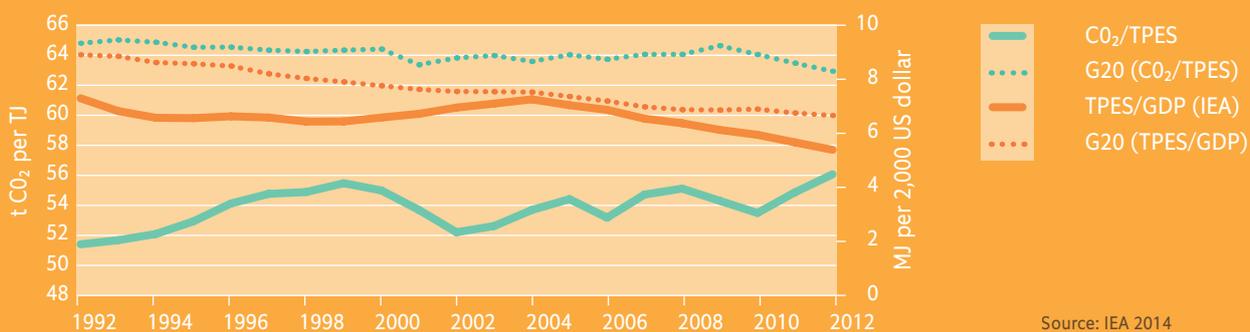
→ Data source: International Energy Agency (2014c): Renewables Information. IEA, Paris.

17 For more detailed information about the methodology of the CCPI, please also see the methodology brochure: Burck, J., Hermwille, L. and Bals, C. (2015): The Climate Change Performance Index: Background and Methodology. Available at: http://germanwatch.org/en/ccpi_bame.

ENERGY- AND CARBON INTENSITY

Energy efficiency is complex to measure and would require a sector by sector approach. At present there are no suitable, comparable data across all G20 countries. The carbon intensity of the economy takes a macroeconomic view. A decoupling from GDP growth of the two indicators, CO₂ per Primary Energy Supply (CO₂/TPES) and Primary Energy Supply per GDP (TPES/GDP), offers one perspective on a country's progress towards decarbonisation. The CCPI assesses a country's energy efficiency based on these two indicators. Since the expression energy efficiency does not apply precisely in this context, this section is called "Energy and Carbon Intensity".

GRAPH: ENERGY- AND CARBON INTENSITY



Source: IEA 2014

CO₂ per unit of total primary energy supply (CO₂/TPES) is a top-line indicator of the extent that fossil fuels are used in energy production. A decrease in this indicator suggests a shift away from fossil fuels. Total Primary energy supply per GDP (TPES/GDP) describes how much energy is needed to produce one unit of GDP, and can therefore be one indicator for how efficiently energy is used in the economy. A lower value for this indicator can indicate increased efficiency, but it could also be a consequence of structural change, or of variations in the economy.

The lower the values are, the less energy or CO₂ is needed for economic activities. Lower values can be good for the climate, but they could also be the result of structural change, for example if energy-intensive sectors move to another country, where there is little benefit for the climate but only a relative shift between countries, called carbon leakage.

GRAPH: CCPI EVALUATION OF A COUNTRY'S ENERGY AND CARBON INTENSITY



Source: CCPI 2015

The CCPI does not rate countries in absolute terms but in relation to other countries. The dot on the scale describes the country's performance regarding efficiency level; the arrow shows the strength and direction of its efficiency trend. If no clear trend can be noted, there is no arrow included. Declining carbon and energy intensity are considered positive.

The CCPI assesses a country's efficiency level by taking into account the two indicators CO₂ per total primary energy supply and total primary energy supply per GDP. The trend reflects the development of those indicators over the last five years.¹⁸

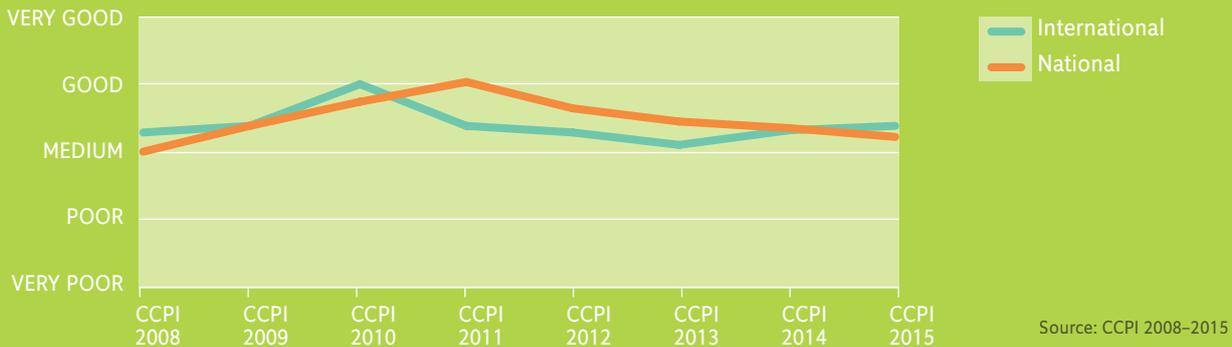
→ Data source: International Energy Agency (2014a): CO₂ Emissions from Fuel Combustion. Paris.

18 For more detailed information about the methodology of the CCPI, please also see the methodology brochure: Burck, J., Hermwille, L. and Bals, C. (2015): The Climate Change Performance Index: Background and Methodology. Available at: http://germanwatch.org/en/ccpi_bame.

CLIMATE POLICY PERFORMANCE

EVALUATION OF RECENT CLIMATE POLICY

GRAPH: A COUNTRY'S CLIMATE POLICY



The CCPI assesses a country's performance in national and international climate policy through feedback from national energy and climate experts regarding the country's performance in international negotiations, national policy making and implementation of climate policies. The CCPI ranks countries not in absolute terms but in relation to each other. A good evaluation does not necessarily mean that a country's climate policy is ambitious and progressive, rather only that other countries are performing worse. The CCPI does not calculate a trend for a country's policy evaluation.

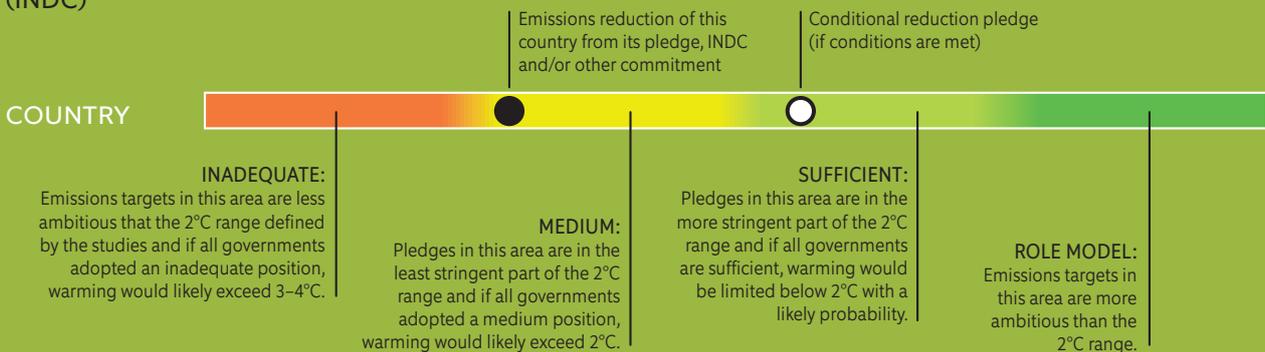
GRAPH: CCPI EVALUATION OF A COUNTRY'S CLIMATE POLICY



Source: CCPI 2015

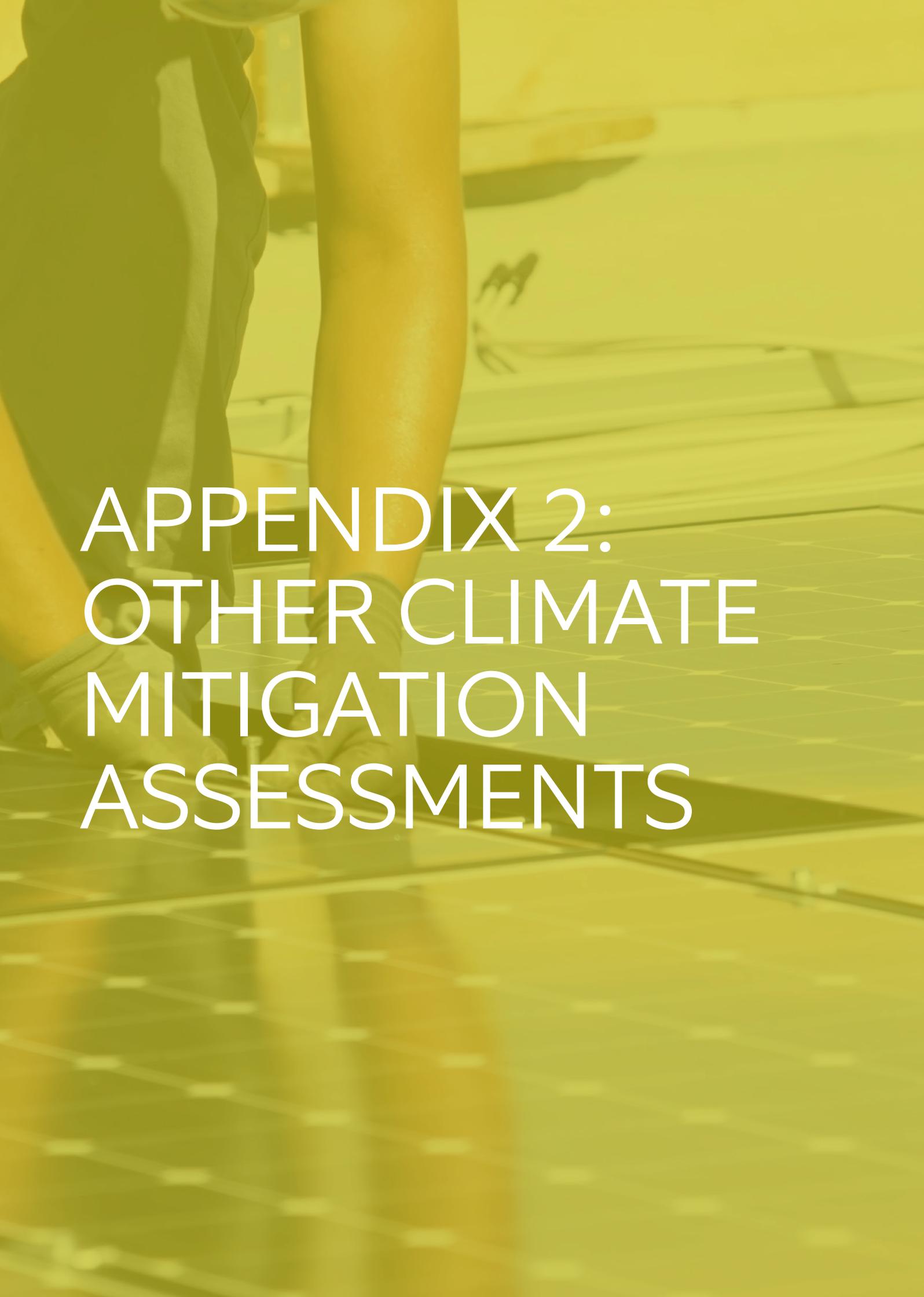
COMPATIBILITY OF NATIONAL CLIMATE TARGETS WITH 2°C

GRAPH: CAT EVALUATION OF A COUNTRY'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDC)



The Climate Action Tracker (CAT) quantifies, assesses and rates INDCs against effort-sharing ranges consistent with holding global average warming to below 2°C. The CAT Effort Sharing assessment methodology applies a wide range of literature, including over 40 studies used by the IPCC, plus additional analyses the CAT has performed to compare the fairness of government efforts and INDC proposals against the level and timing of emission reductions needed to hold warming below 2°C. Using this approach, CAT abstains from defining what is fair, but covers a holistic inclusion of very different viewpoints of what could be fair, including considerations of equity, historical responsibility, capability and equality.

For more details see the Country Tools of the Climate Action Tracker of 2015 available at <http://climateactiontracker.org/countries.html>

A photograph showing the lower legs and feet of a person walking on a large array of solar panels. The image is heavily tinted with a yellow color. The text is overlaid in the center-left area.

APPENDIX 2: OTHER CLIMATE MITIGATION ASSESSMENTS

Full climate assessment could have a broad scope, covering mitigation, adaptation and finance. This appendix gives an overview of some of the most important mitigation assessments available, in addition to those of the partners of Climate Transparency.

THE LOW CARBON ECONOMY INDEX OF PWC

PricewaterhouseCoopers (PwC) provides audit, consulting, tax and other professional services globally. Their work includes an annual Low Carbon Economy Index which, for 2015, tracks the rate at which G20 countries are decarbonizing their economies, and also assesses countries' Intended Nationally Determined Contributions (INDCs), ahead of the UN climate conference in Paris.

→ www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html

BLOOMBERG NEW ENERGY FINANCE (BNEF)

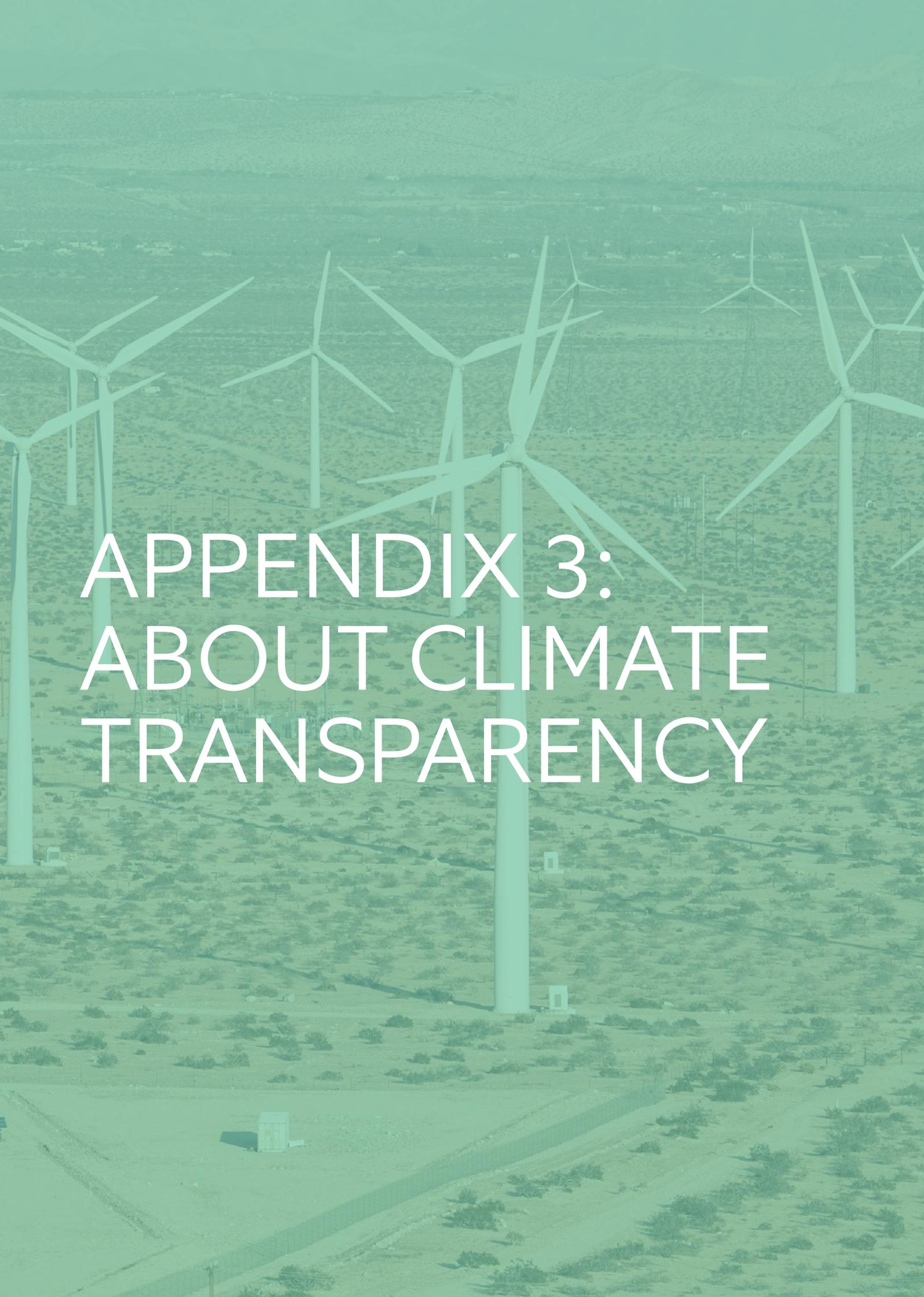
Bloomberg New Energy Finance provides news, data and analysis on clean energy and carbon markets globally. In addition to country-, company- and sectoral information, BNEF issued a report “How ambitious are the post-2020 targets”, in 2015, which contained an assessment of countries' Intended Nationally Determined Contributions (INDCs), ahead of the UN climate conference in Paris.

→ <http://about.bnef.com/white-papers/ambitious-post-2020-targets>

FINANCIAL TIMES STOCK EXCHANGE (FTSE)

The FTSE provides stock market indices and data services globally. Their work includes the “FTSE LCE”, a model which benchmarks corporate activities against the transition to a low carbon economy. The model identifies changes to how some 7,400 companies provide goods, products and services that help adapt, mitigate and remediate the impact of climate change, resource depletion and environmental erosion. The model is combined with the Global Green Bond Principles for use by bond issuers, underwriters and investors.

→ www.lce.ftse.com

An aerial photograph of a wind farm in a desert landscape. The wind turbines are arranged in rows across a flat, arid plain with sparse vegetation. In the background, there are low mountains under a clear sky. The entire image has a semi-transparent green overlay.

APPENDIX 3: ABOUT CLIMATE TRANSPARENCY

Climate Transparency is an open consortium of organizations and initiatives with a shared mission to enhance assessments of action on climate change. Climate Transparency seeks to boost the impact of climate assessments by creating joint assessments and by communicating a composite picture of climate action for key influencers and decision makers.

Climate Transparency was established in 2014 following an initiative from the World Bank Group and the HUMBOLDT-VIADRINA Governance Platform. It is co-chaired by Alvaro Umaña (former Minister of Environment and Energy of Costa Rica and former Ambassador of Costa Rica to the United Nations Copenhagen Climate Change Conference), and Peter Eigen (Founder and Chair of the Advisory Council of Transparency International and co-founder of the HUMBOLDT-VIADRINA Governance Platform).

Climate Transparency seeks to boost the impact of climate assessments by creating joint assessments and by communicating a composite picture of climate action for key influencers and decision makers.

Climate Transparency provides a repository of data, information and knowledge on the credibility and ambition of different climate actions by countries, acts as a forum for joint discussion and develops joint reports and publications by all or some of its partners. Climate

Transparency engages in shared outreach activities and wants to increase the usability of climate assessments by better serving and prioritizing the needs of users. It is also exploring to develop a common conceptual framework for climate performance. A common conceptual framework may be based on: the common language, terminology and concepts and agreement on general principles; identification of criteria to help in selecting indicators and validating their choice; identification and definition of indicators and credible methods to organize them; and provision of guidance for the use of indicators.

In its initial work Climate Transparency has focused on assessing mitigation efforts. It plans to integrate climate adaptation and climate finance in the future.

PARTNERS AND OBSERVERS

CARBON TRANSPARENCY INDEX (CTI)

The Carbon Transparency Initiative (CTI) is a new project of ClimateWorks Foundation that seeks to create a transparent and granular current development scenario based on current policies, decarbonization trends, and energy related investments. It uses an 'open source' indicator-led methodology based on fundamental analysis of a small number of underlying drivers that shape emission trends and reveal progress toward building a low-carbon economy. Models have been built for China, the European Union, India, Mexico and the United States. Less detailed analysis for the rest of the G20 countries are being included through a partnership with the Climate Action Tracker.

→ www.climateworks.org

CLIMATE ACTION TRACKER (CAT)

The Climate Action Tracker is a partnership of Climate Analytics, Ecofys, Potsdam Institute for Climate Impact Studies and the New Climate Institute. It is an independent science-based group, which tracks emission commitments and actions of countries. It provides an assessment of individual national pledges of 14 developing and 14 developed countries to reduce their greenhouse gas emissions based on 2020 or unilateral pledges, current policy projections and INDCs. It has been produced annually since 2011.

→ <http://climateactiontracker.org>

CLIMATE CHANGE PERFORMANCE INDEX (CCPI)

The Climate Change Performance Index is jointly published by Germanwatch e.V. and Climate Action Network Europe (CAN). It evaluates, compares and ranks the climate protection performance of 58 countries which are responsible for 90% of global energy-related CO₂ emissions. Countries are evaluated based on emission levels, energy efficiency, renewable energy and climate policies. It has been produced annually since 2006.

→ <https://germanwatch.org/en/ccpi>

**CLIMATE EQUITY REFERENCE
CALCULATOR – STOCKHOLM
ENVIRONMENT INSTITUTE**

The Climate Equity Reference Calculator and the Climate Equity Pledge Scorecard are general equity reference tools, designed to allow users to specify their own preferred interpretation of national responsibility and capacity for climate action. This interpretation is then used to determine each country's fair share of the global climate effort, on both the mitigation and adaptation sides.

→ www.sei-international.org/equity-calculator

**YALE ENVIRONMENTAL PERFORMANCE
INDEX (EPI)**

The Environmental Performance Index (EPI) is published by Yale University. It ranks how well countries perform on high-priority environmental issues in two broad policy areas: protection of human health from environmental harm and protection of ecosystems. It contains a number of indicators relevant to climate.

→ www.epi.yale.edu

**WORLD RESOURCES INSTITUTE (WRI),
OBSERVER**

WRI is a global research organization that spans more than 50 countries, with offices in the United States, China, India, Brazil, Indonesia and more. Climate is one of the six critical issues at the intersection of environment and development which WRI focuses on.

→ www.wri.org

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Secretariat of Climate Transparency:
HUMBOLDT-VIADRINA Governance Platform
Pariser Platz 6
10117 Berlin
Germany

→ www.climate-transparency.org
→ info@climate-transparency.org