

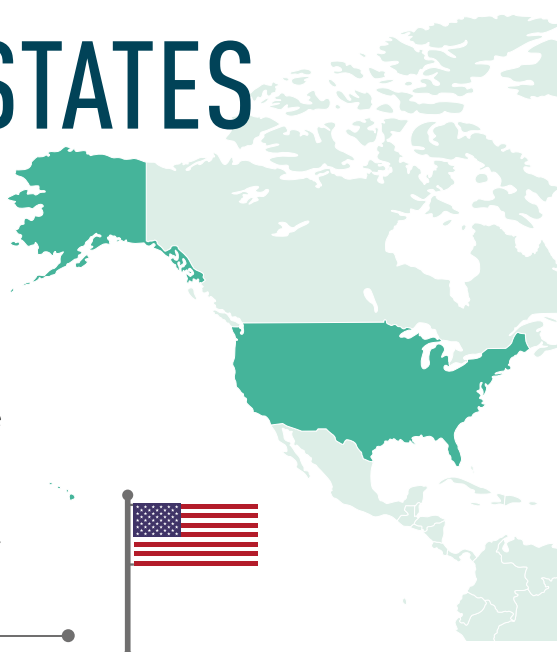


## BROWN TO GREEN:

## THE G20 TRANSITION TO A LOW-CARBON ECONOMY | 2017

# UNITED STATES

This Country Profile assesses the United States' past, present – and indications of future – performance towards a low-carbon economy by evaluating emissions, climate policy performance, climate finance and decarbonisation. The profile summarises the findings of several studies by renowned institutions across the above-mentioned topics.



### HUMAN DEVELOPMENT INDEX<sup>1</sup>

0.92



0.70

G20 average

Source: UNDP, 2016

### GDP PER CAPITA<sup>2</sup> (\$ (const. 2011, international))

52,773

USA



18,373

G20 average

Source: WB databank, 2017

### SHARE OF GLOBAL GDP<sup>2</sup>

15%



Global GDP

Source: WB databank, 2017

### GHG EMISSIONS PER CAPITA<sup>3</sup> (tCO<sub>2</sub> e/cap)

19.8

USA

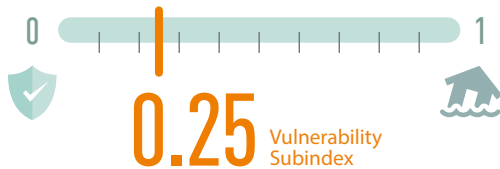


8.3

G20 average

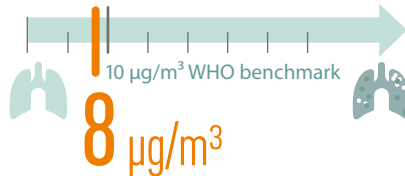
Source: PRIMAP-hist, 2017

### NOTRE DAME GLOBAL ADAPTATION INITIATIVE (ND-GAIN) INDEX<sup>4</sup>



Source: ND-GAIN, 2015

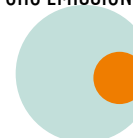
### AIR POLLUTION INDEX<sup>5</sup> (PM 2.5)



Source: WB databank, 2017

### SHARE OF GLOBAL GHG EMISSIONS<sup>3</sup>

13%



USA

Source: PRIMAP-hist, 2017



This country profile is part of the **Brown to Green 2017** report. The full report and other G20 country profiles can be downloaded at:

<http://www.climate-transparency.org/g20-climate-performance/g20report2017>



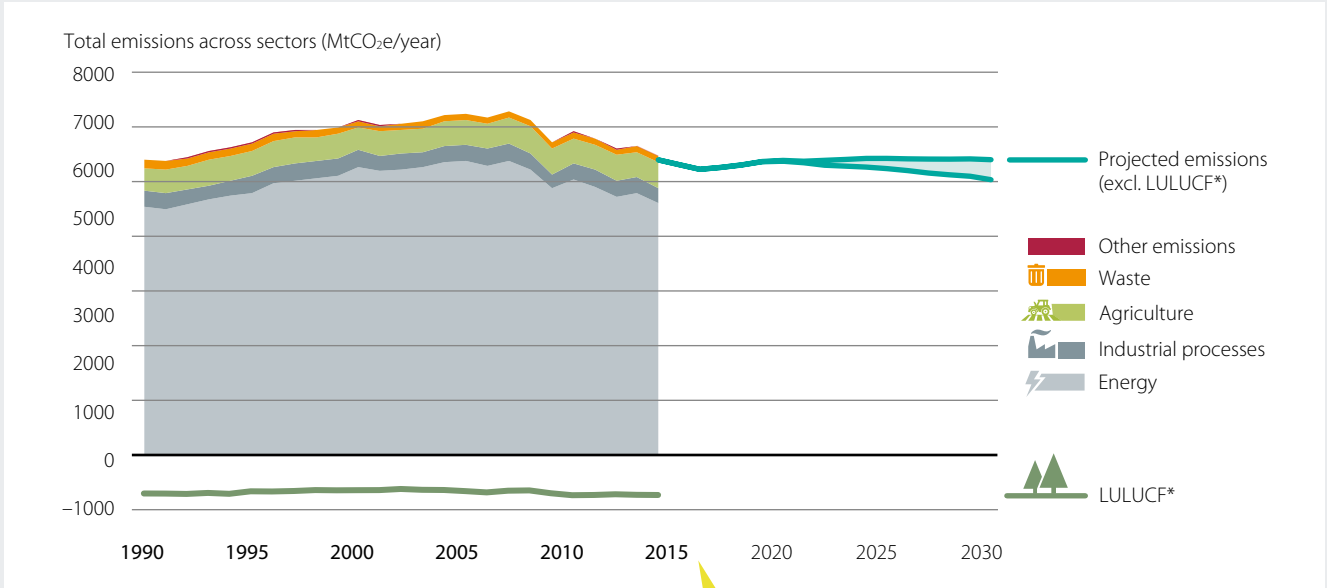
CONTENT

<b>GREENHOUSE GAS (GHG) EMISSIONS DEVELOPMENT</b> .....2	<b>FINANCING THE TRANSITION</b> ..... 4	<b>DECARBONISATION</b> .....7
<b>CLIMATE POLICY PERFORMANCE</b> .....3	INVESTMENTS ..... 4	SECTOR-SPECIFIC INDICATORS .....7
POLICY EVALUATION .....3	Investment attractiveness ..... 4	ENERGY MIX ..... 8
CCPI EXPERTS' POLICY EVALUATION .....3	Green Bonds ..... 5	SHARE OF COAL IN ENERGY SUPPLY ..... 8
REGULATORY INDICATORS FOR SUSTAINABLE ENERGY (RISE) INDEX .....3	Emissions of new investments in the power sector ..... 5	SHARE OF RENEWABLES IN ENERGY SUPPLY..... 8
COMPATIBILITY OF CLIMATE TARGETS WITH A 2°C SCENARIO ..... 4	FISCAL POLICIES ..... 5	ENERGY USE PER CAPITA ..... 9
	Fossil fuel subsidies (for production and consumption) ..... 5	ENERGY INTENSITY OF THE ECONOMY ..... 9
	Effective carbon rate ..... 5	CARBON INTENSITY OF THE ENERGY SECTOR ... 10
	PROVISION OF INTERNATIONAL PUBLIC SUPPORT .. 6	Annex .....11
	Pledge to the Green Climate Fund (GCF) ..... 6	
	Contributions through the major multilateral climate funds ..... 6	
	Bilateral climate finance contributions ..... 6	
	Climate finance contributions through Multilateral Development Banks (MDBs) ..... 6	
	Future climate finance commitments ..... 6	

# UNITED STATES

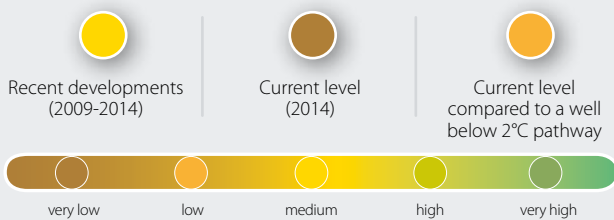


## GREENHOUSE GAS (GHG) EMISSIONS DEVELOPMENT



\*Land Use, Land Use Change and Forestry emissions according to the Climate Action Tracker  
Source: PRIMAP, 2017; CAT, 2017

### CCPI PERFORMANCE RATING OF GHG EMISSIONS PER CAPITA<sup>7</sup>



Source: CCPI 2017 – G20 Edition

While US emissions have been decreasing since 2006, with CO<sub>2</sub> emissions over 5GtCO<sub>2</sub>e, it is the world's and G20's second highest emitter after China, accounting for almost 13% of global GHG emissions.<sup>6</sup>

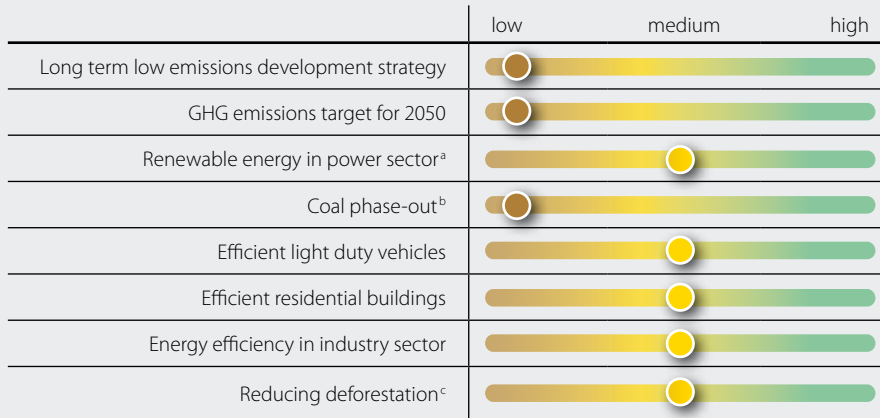


# UNITED STATES



## CLIMATE POLICY PERFORMANCE

### POLICY EVALUATION <sup>8</sup>



Climate Transparency evaluates sectoral policies and rates them whether they are in line with the Paris Agreement temperature goal. For more detail, see Annex.

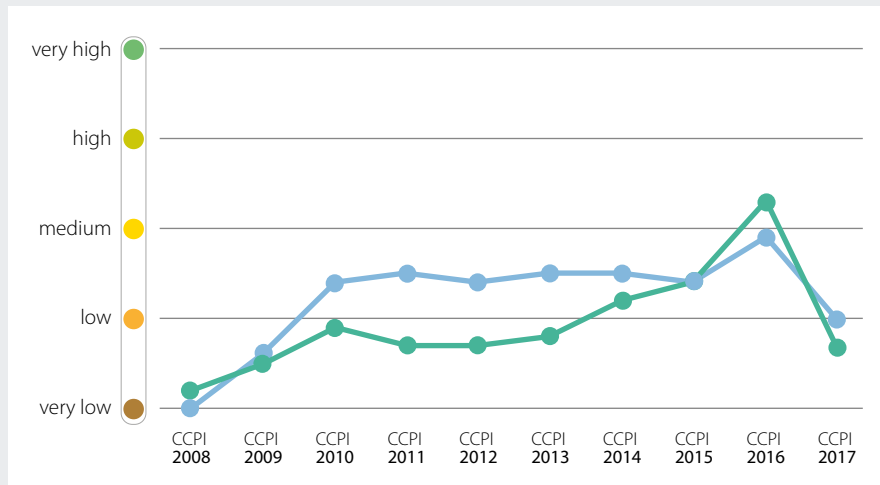
a) Share of renewables in the power sector (2014): 13%  
 b) Share of coal in total primary energy supply (2014): 21%  
 c) Forest area compared to 1990 levels (2014): 102%

Source: own evaluation

### CCPI EXPERTS' POLICY EVALUATION <sup>9</sup>

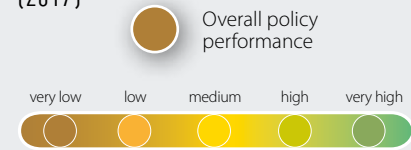
Since the election of Donald Trump and the resulting uncertainty around US climate policy, it significantly lost ground in the CCPI's policy evaluation. National experts have rated the US downward, on both a national and international scale, as climate policy may change under the Trump administration and already started to

do so. The US exit from the Paris Agreement is an immense step backwards. However, some states follow their individual goals in e.g. renewable energy expansion so they partly offset the declining federal policy ambition in that sector.



— Evaluation of international climate policy  
 — Evaluation of national climate policy

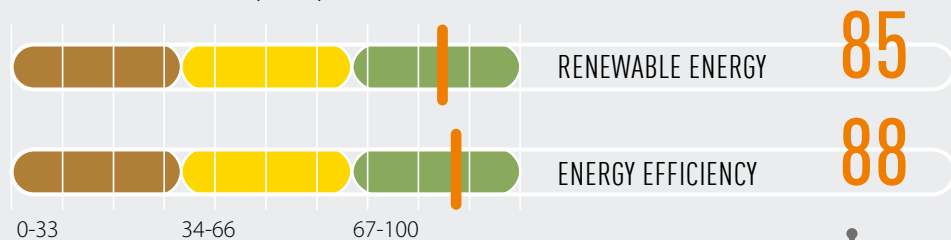
### CCPI EVALUATION OF CLIMATE POLICY (2017)



Source: CCPI 2017 – G20 Edition

### REGULATORY INDICATORS FOR SUSTAINABLE ENERGY (RISE) INDEX

RISE scores reflect a snapshot of a country's policies and regulations in the energy sector. Here Climate Transparency shows the RISE evaluation for Renewable Energy and Energy Efficiency.



Source: RISE index, 2017

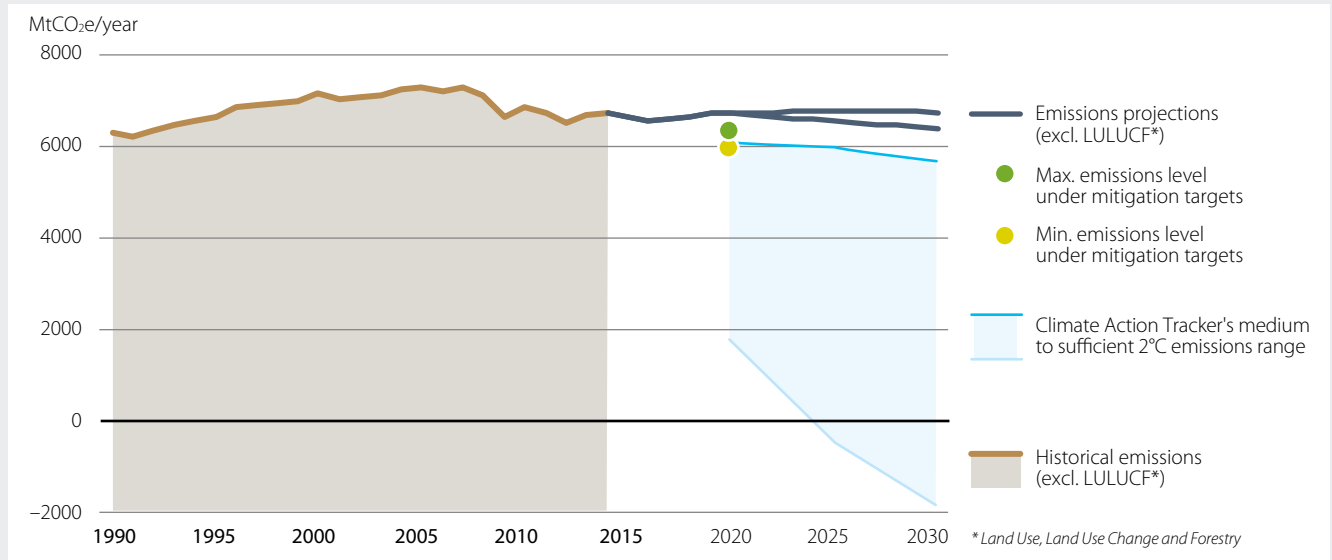


# UNITED STATES



## CLIMATE POLICY PERFORMANCE

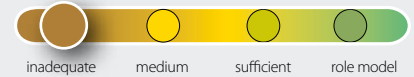
### COMPATIBILITY OF CLIMATE TARGETS WITH A 2°C SCENARIO<sup>10</sup>



Source: CAT, 2017

The Climate Action Tracker does not have a rating category for countries that have announced their intention to withdraw from the Paris Agreement and to immediately cease all implementation of the Agreement, including implementation of their Nationally Determined Contribution (NDC) and the Green Climate Fund. As the US will not implement its NDC, CAT rates it as 'inadequate', the lowest rating category, as it is not in line any interpretations of a "fair" approach to reach a 2°C warming limit, let alone with the Paris Agreement's stronger 1.5°C limit.

### CLIMATE ACTION TRACKER EVALUATION OF NATIONAL PLEDGES, TARGETS AND NDC<sup>10</sup>



Source: CAT, 2017

# UNITED STATES



## FINANCING THE TRANSITION

### INVESTMENTS

#### INVESTMENT ATTRACTIVENESS

A marked shift in US policy has made renewable investors more nervous about possible reductions to the Investment Tax Credit and Production Tax Credit. Concerns also include if gas prices continue to remain low and transmission capacity remains stagnant (RECAI, 2017).

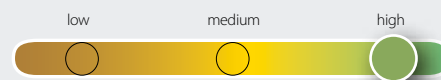


#### ALLIANZ CLIMATE AND ENERGY MONITOR<sup>11</sup>



Source: Allianz, 2017; EY, 2017

#### RENEWABLE ENERGY COUNTRY ATTRACTIVENESS INDEX (RECAI)<sup>12</sup>



#### TREND



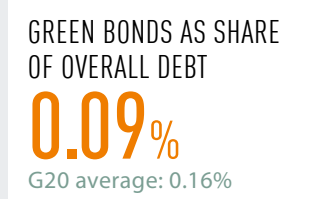
# UNITED STATES



## FINANCING THE TRANSITION

### GREEN BONDS

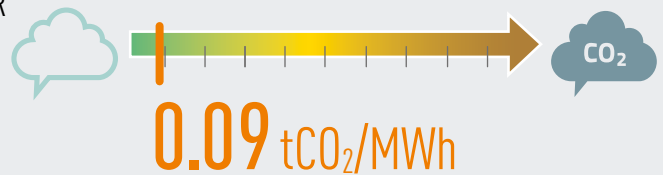
Green bonds are bonds that earmark proceeds for climate or environmental projects and have been labelled as 'green' by the issuer.<sup>13</sup>



Source: Calculations done by Climate Bonds Initiative for Climate Transparency, 2017

### EMISSIONS OF NEW INVESTMENTS IN THE POWER SECTOR

This indicator shows the emissions per MWh coming from newly-installed capacity in 2016. The smaller the value, the more decarbonised the new installed capacity.

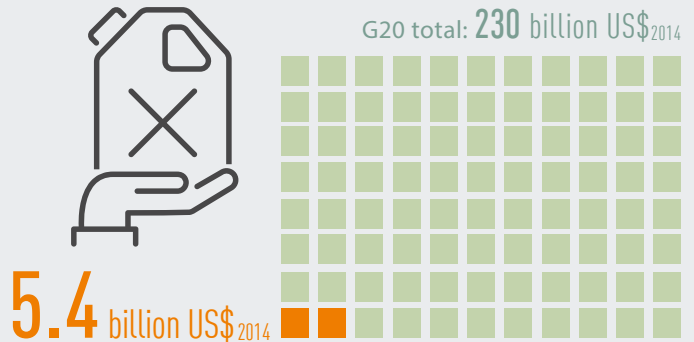


Source: Calculations done by IDDRI for Climate Transparency, 2017

## FISCAL POLICIES

### FOSSIL FUEL SUBSIDIES (FOR PRODUCTION AND CONSUMPTION)<sup>14</sup>

Fossil fuel production has sharply increased in recent years. Despite a decline in coal-fired power, federal tax breaks support various types of offshore oil and gas production. OECD estimates production tax provisions to cost US\$ 1.2 billion in foregone annual revenue. Several programmes support consumption, including grant provision to support poor households to pay energy bills, amounting to US\$ 3.4 billion. The US identified US\$ 8.2 billion in subsidies as part of the G20 peer-review process it conducted with China in 2016, of which US\$ 4.8 billion was deemed inefficient. However, other estimates show that federal level subsidies to production alone totalled US\$ 17.2 billion per year between 2013 and 2014.



Source: Calculations done by ODI based on OECD inventory, 2017; Doukas and Whitley, 2015; The Guardian, 2016

### EFFECTIVE CARBON RATE<sup>16</sup>

In 2012, effective carbon rates consisted primarily of specific federal taxes on energy use. Other pricing instruments were applied at the subnational level, covering roughly 8% of CO<sub>2</sub> emissions from energy use. The United States priced 37% of carbon emissions from energy use, none of which were priced above € 30/tCO<sub>2</sub> (US\$ 37).<sup>17</sup>

EFFECTIVE CARBON RATE IN 2012<sup>17</sup>  
for non-road energy, excluding biomass emissions



Source: OECD, 2016; World Bank, 2016



# UNITED STATES



## FINANCING THE TRANSITION

### PROVISION OF INTERNATIONAL PUBLIC SUPPORT

In 2013–14, the US provided the fifth largest amount of bilateral climate finance and the second largest to multilateral climate funds in the G20. Its bilateral climate finance contribution includes export credits to support US company investment in developing

countries. It made the largest pledge to the GCF by volume. However, President Trump has stated he will stop all GCF contributions.



#### PLEDGE TO THE GREEN CLIMATE FUND (GCF)

Obligation to provide climate finance under the UNFCCC	Signed pledge to the GCF (Million US\$)	Pledge per 1000 dollars of GDP (US\$ <sub>2011</sub> (constant))
yes	1,000*	0.06

\*The US had pledged US\$ 3 billion but President Trump has stated he will stop all GCF contributions. The Obama administration had transferred US\$ 1 billion of the US\$ 3 billion pledged.

Source: GCF, 2017

#### CONTRIBUTIONS THROUGH THE MAJOR MULTILATERAL CLIMATE FUNDS<sup>18</sup>

Annual average contribution 2013-2014 (Billion US\$)	Annual average contribution 2013-2014 per 1000 dollars of GDP (Billion US\$)	Adaptation	Mitigation
0.40	0.024	17%	83%

Source: Climate Funds Update, 2017

#### BILATERAL CLIMATE FINANCE CONTRIBUTIONS<sup>19</sup>

Bilateral finance commitments (annual average 2013-14) (Billion US\$)	Bilateral finance commitments per 1000 dollars of GDP (annual average 2013-14) (Billion US\$)	Financial instrument (average 2013-2014)				
		Grant	Concessional Loan	Non-Concessional loan	Equity	Other
2.27	0.14	34%	0%	18%	0%	48%
		Theme of support (average 2013-14)				
		Mitigation	Adaptation	Cross-cutting	Other	
		87%	13%	0%	0%	

Source: Party reporting to the UNFCCC, 2013-14

#### CLIMATE FINANCE CONTRIBUTIONS THROUGH MULTILATERAL DEVELOPMENT BANKS (MDBs)<sup>20</sup>

MDBs in aggregate spent US\$21.2 billion on mitigation and US\$4.5 billion on adaptation in developing countries in 2014.

**No national disaggregation available**

Source: MDB report, 2015

#### FUTURE CLIMATE FINANCE COMMITMENTS

The Obama administration pledged to double US grant-based public finance for adaptation by 2020 –an increase of more than US\$ 400 million annually. However, President Trump has stated the US will cease all implementation of the Paris Agreement.

Source: "Roadmap to US\$100 Billion" report, 2016.



# UNITED STATES

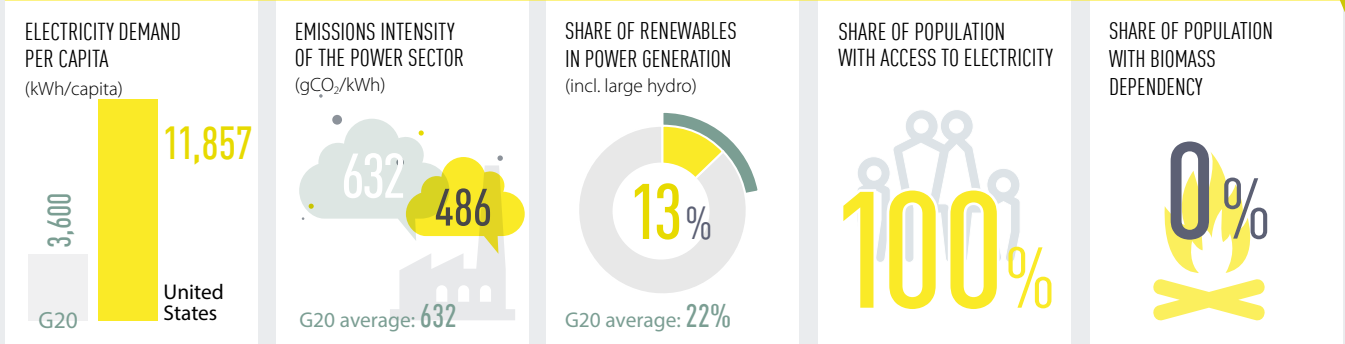


## DECARBONISATION

### SECTOR-SPECIFIC INDICATORS

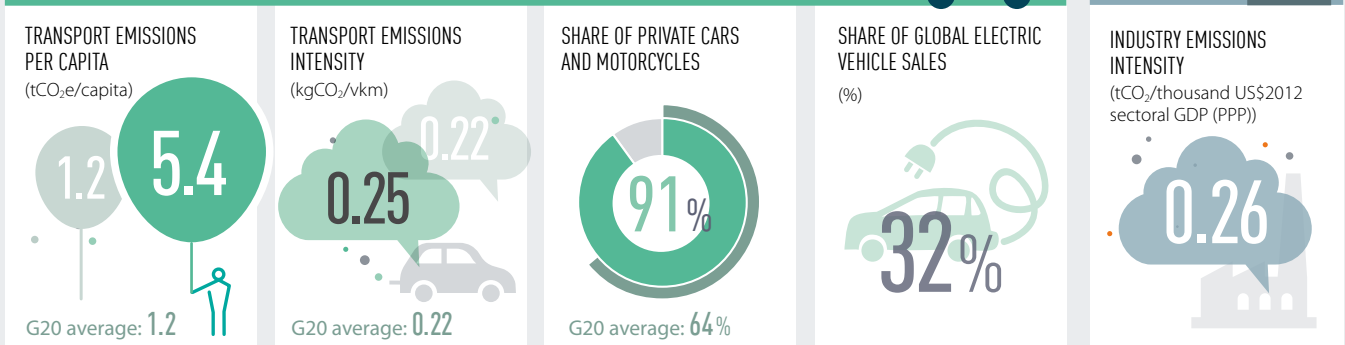


#### POWER SECTOR



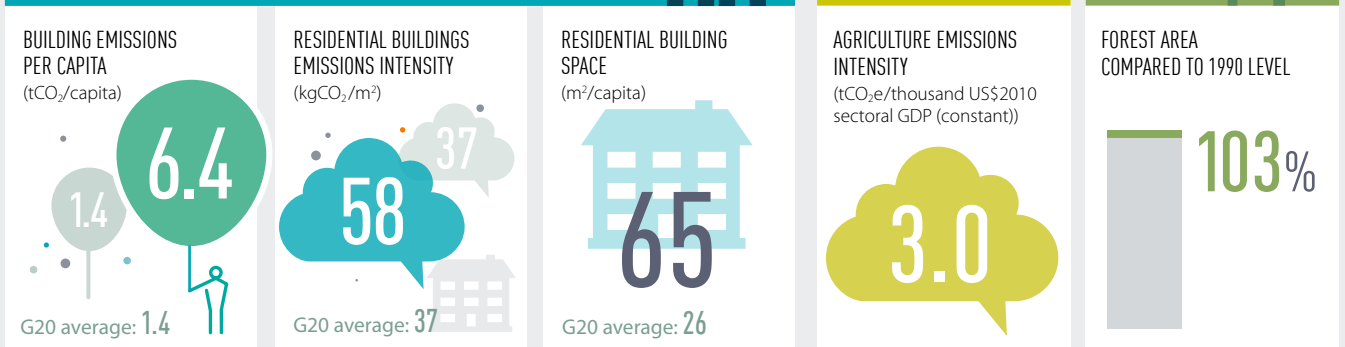
Data from 2014 Source: CAT, 2016 | Data from 2014 Source: CAT, 2016 | Data from 2014 Source: CAT, 2016 | Data from 2016 Source: IEA, 2016 | Data from 2014 Source: IEA, 2016

#### TRANSPORT SECTOR

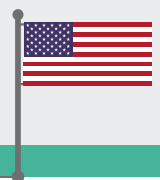


Data from 2014 Source: IEA, 2016 | Data from 2010 Source: CAT, 2016 | Data from 2010 Source: CAT, 2016 | Data from 2015 Source: IEA, 2016 | Data from 2014 Source: CAT, 2016

#### BUILDING SECTOR



Data from 2014 Source: CAT, 2016 | Data from 2010 Source: CAT, 2016 | Data from 2010 Source: CAT, 2016 | Data from 2014 Source: PRIMAP, 2017; WorldBank, 2017 | Data from 2015 Source: CAT, 2016

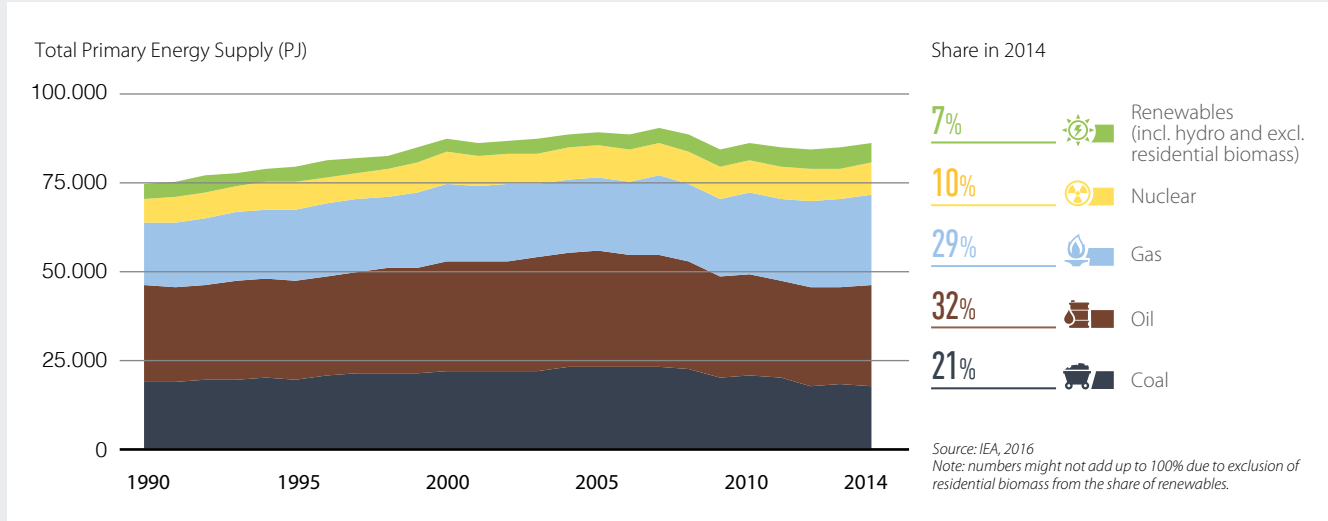


# UNITED STATES



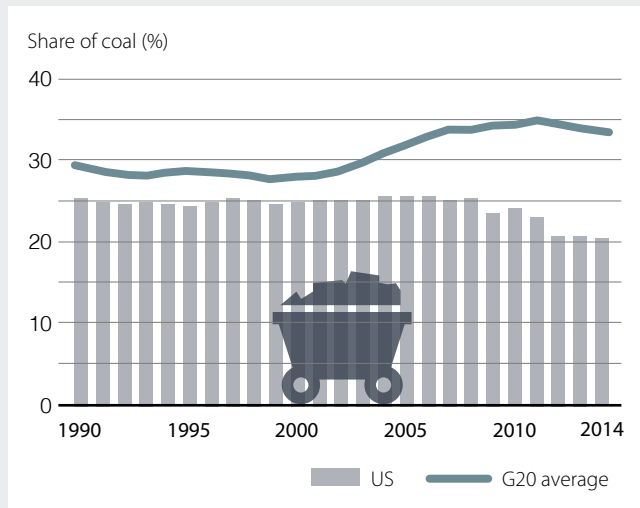
## DECARBONISATION

### ENERGY MIX<sup>21</sup>



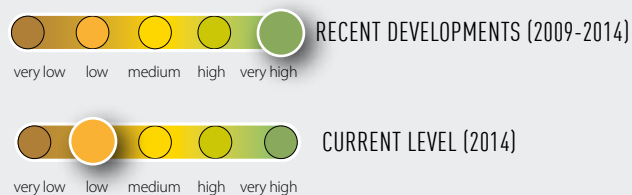
### SHARE OF COAL IN ENERGY SUPPLY<sup>22</sup>

The United States' coal consumption has decreased substantially in recent years but remains relatively high at close to 21% in 2014.



Source: IEA, 2016

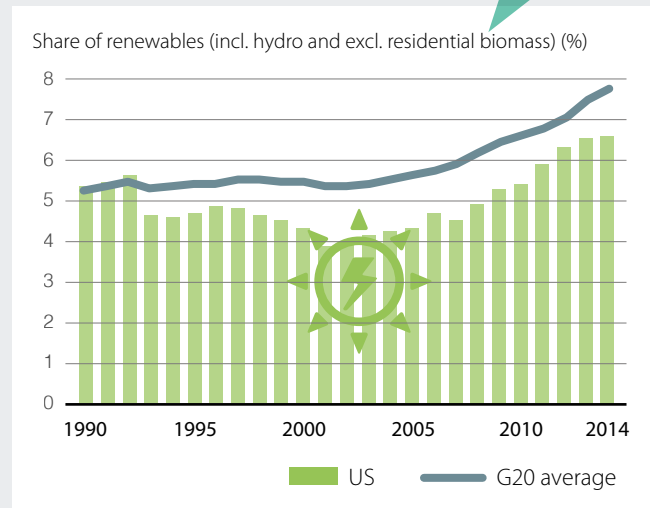
### PERFORMANCE RATING



Source: own evaluation

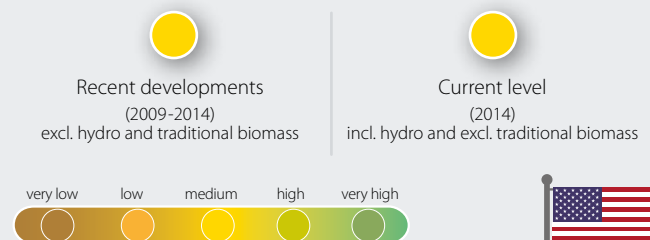
### SHARE OF RENEWABLES IN ENERGY SUPPLY<sup>23</sup>

The share of renewables in the US energy mix has developed in line with the G20 average in recent years. At less than 7% in 2014 it is however still below the G20 average (close to 8%).



Source: IEA, 2016

### CCPI PERFORMANCE RATING OF THE SHARE OF RENEWABLES<sup>7</sup>



Source: CCPI 2017 - G20 Edition



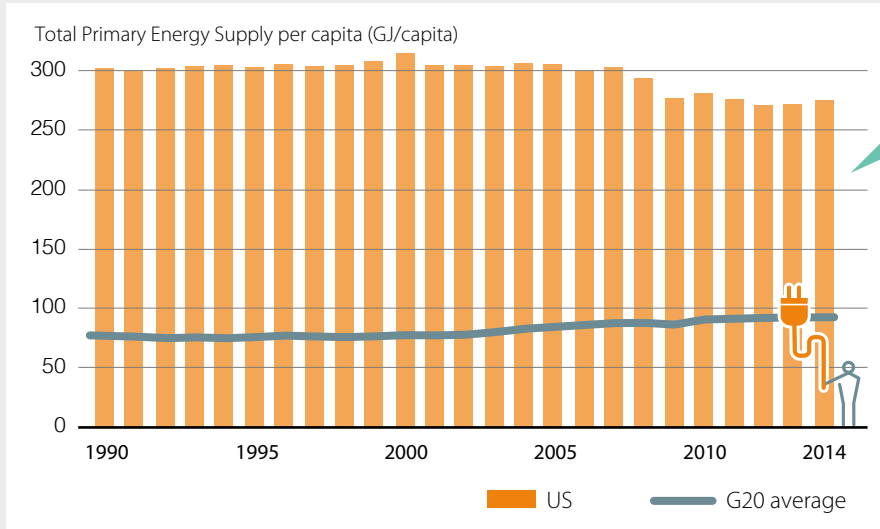


# UNITED STATES



## DECARBONISATION

### ENERGY USE PER CAPITA<sup>24</sup>



Since 2007 the high energy use per capita has declined, albeit marginally. At a level of 275 GJ/capita in 2014, the US has the G20's second highest per capita energy use.

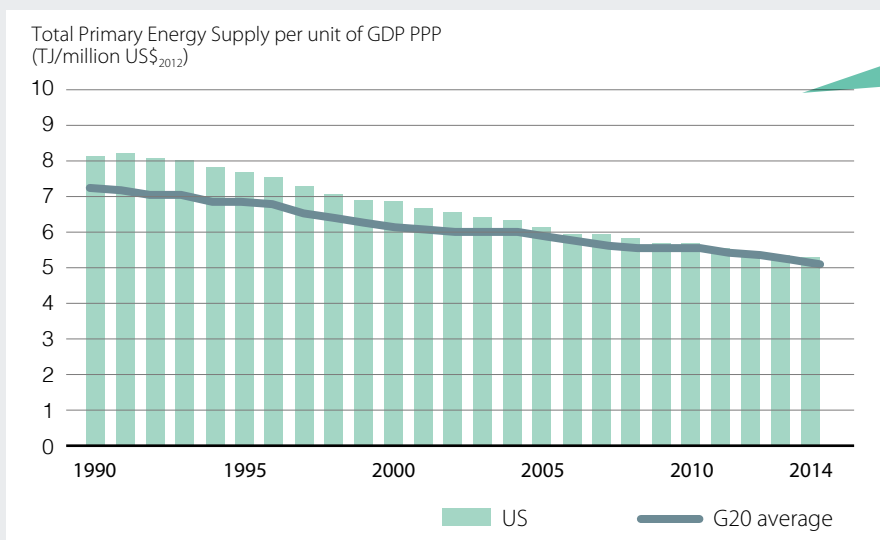
Source: IEA, 2016

### CCPI PERFORMANCE RATING OF ENERGY USE PER CAPITA<sup>7</sup>



Source: CCPI 2017 – G20 Edition

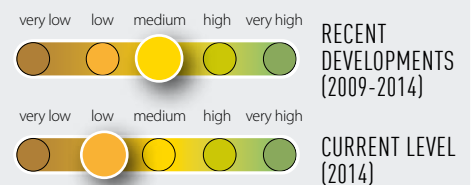
### ENERGY INTENSITY OF THE ECONOMY<sup>25</sup>



The energy intensity of the US economy has been declining since the 1990s and has recently drawn closer to the G20 average.

Source: IEA, 2016

### PERFORMANCE RATING



Source: own evaluation

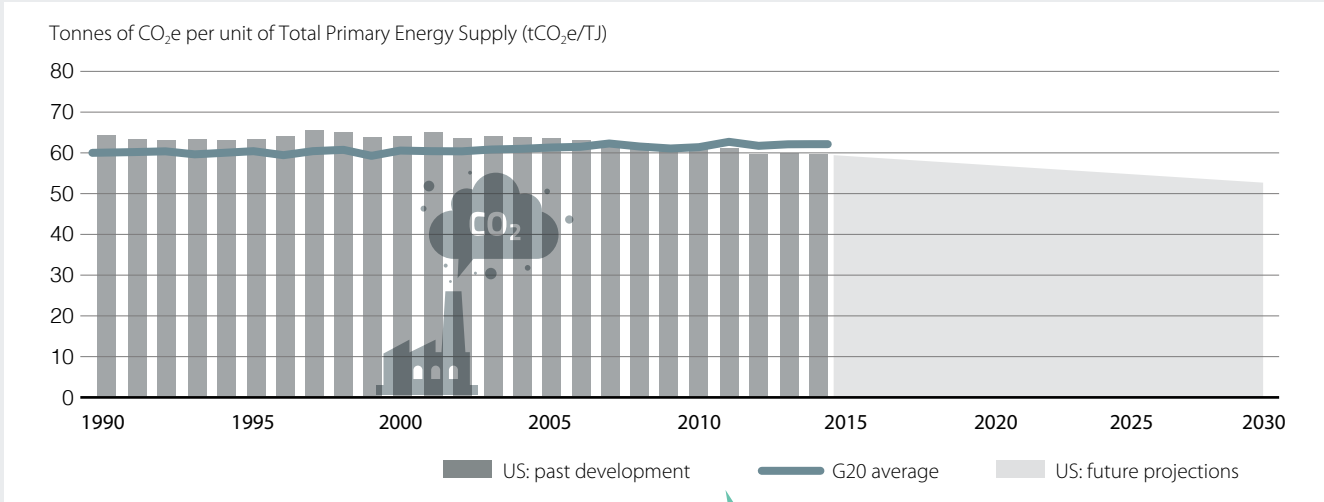


# UNITED STATES



## DECARBONISATION

### CARBON INTENSITY OF THE ENERGY SECTOR <sup>26</sup>



Source: IEA, 2016

### PERFORMANCE RATING

very low low medium high very high



RECENT DEVELOPMENTS (2009-2014)

very low low medium high very high

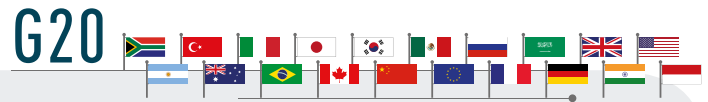


CURRENT LEVEL (2014)

Source: own evaluation

The carbon intensity of the energy sector has been on a downward trend since 2010 and is now slightly below the G20 average.

# ANNEX



## KEY INDICATORS

- 1) The Human Development Index (HDI) is a composite index published by the United Nations Development Programme (UNDP). It is a summary measure of average achievement in key dimensions of human development. A country scores higher when the lifespan is higher, the education level is higher, and GDP per capita is higher. Data for 2016.
- 2) Gross Domestic Product (GDP) per capita is calculated by dividing GDP with midyear population figures. GDP is the value of all final goods and services produced within a country in a given year. Here GDP figures at purchasing power parity (PPP) are used. Data for 2015.
- 3) PRIMAP-hist combines several published datasets to create a comprehensive set of greenhouse gas emissions pathways for every country and Kyoto gas covering the years 1850 to 2014 and all UNFCCC member states as well as most non-UNFCCC territories. The data resolves the main IPCC 1996 categories. Data for 2014.
- 4) The ND-GAIN index summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. It is composed of a vulnerability score and a readiness score. In this report, we display the vulnerability score, which measures a country's exposure and sensitivity to the negative impact of climate change in six life-supporting sectors – food, water, health, ecosystem service, human habitat and infrastructure. In this report, we only display the vulnerability score of the index. Data for 2015.
- 5) Average level of exposure of a nation's population to concentrations of suspended particles measuring less than 2.5 microns in aerodynamic diameter, which are capable of penetrating deep into the respiratory tract and causing severe health damage. Data for 2015.

## GREENHOUSE EMISSIONS (GHG)

- 6) This indicator gives an overview of the country's emissions profile and the direction the country's emissions are taking under current policy scenario.
- 7) The Climate Change Performance Index (CCPI) aims to enhance transparency in international climate politics. On the basis of standardised criteria, the index evaluates and compares the climate protection performance of countries in the categories GHG emissions, renewable energy and energy use. It assesses the recent developments, current levels, policy progress and the compatibility of the country's current performance and future targets with the international goal of limiting global temperature rise well below 2°C.

## CLIMATE POLICY PERFORMANCE:

- 8) The table below displays the criteria used to assess a country's policy performance. For the sector-specific policy criteria the 'high' rating is informed by the Climate Action Tracker (2016) report on the ten steps needed to limit warming to 1.5°C and the Paris Agreement.
- 9) The CCPI evaluates a country's performance in national climate policy, meaning the performance in establishing and implementing a sufficient policy framework, as well as international climate diplomacy through feedback from national climate and energy experts.
- 10) The Climate Action Tracker is an independent, science-based assessment that tracks government emissions reduction commitments and actions. It provides an up-to-date assessment of individual national pledges, targets and NDCs and currently implemented policies to reduce greenhouse gas emissions.

## FINANCING THE TRANSITION

- 11) The Allianz Climate and Energy Monitor ranks G20 member states on their relative fitness as potential investment destinations for building low-carbon electricity infrastructure. The investment attractiveness of a country is assessed through four categories: policy adequacy, policy reliability of sustained support, market absorption capacity and the national investment conditions.
- 12) The Renewable Energy Country Attractiveness Index (RECAI) produces scores and rankings for countries' attractiveness based on macro drivers, energy market drivers and technology-specific drivers which, together, compress a set of 5 drivers, 16 parameters and over 50 datasets. For comparability purposes with the Allianz Monitor index, we divided the G20 members included in the latest RECAI ranking (May 2017) in two categories and rate the top half as "high performance" and the lower half as "medium performance".
- 13) The green bonds country indicator shows which countries are active in the green bond market by showing green bonds per country as a percentage of the overall debt securities market for that country. Green bonds were created to fund projects that have positive environmental and/or climate benefits.
- 14) The data presented is from the OECD inventory: [www.oecd.org/site/tadffss/](http://www.oecd.org/site/tadffss/) except for Argentina and Saudi Arabia for which data from the IEA subsidies database is used. The IEA uses a different methodology for calculating subsidies than the OECD. It uses a 'price-gap' approach and covers a sub-set of consumer subsidies. The price-gap approach compares average end-user prices paid by consumers with reference prices that corresponds to the full cost of supply.

To endnote 8) Rating

	Criteria description		
	● Low	● Medium	● High
Long term low emissions development strategy	No long term low emissions strategy	Existing long term low emissions strategy	Long-term low emissions strategy submitted to the UNFCCC in accordance with Article 4, paragraph 19, of the Paris Agreement
GHG emissions target for 2050	No emissions reduction target for 2050 (or beyond)	Existing emissions reduction target for 2050 (or beyond)	Emissions reduction target to bring CO <sub>2</sub> emissions to at least net zero by 2050
Renewable energy in power sector	No policy or support scheme for renewable energy in place	Support scheme for renewables in the power sector in place	Support scheme and target for 100% renewables in the power sector by 2050 in place
Coal phase-out	No consideration or policy in place for phasing out coal	Significant action to reduce coal use implemented or coal phase-out under consideration	Coal phase-out in place
Efficient light duty vehicles	No policy or emissions performance standards for LDVs in place	Energy/emissions performance standards or support for LDVs	National target to phase out fossil fuel cars in place
Efficient residential buildings	No policy or low-emissions building codes and standards in place	Building codes, standards and fiscal/financial incentives for low-emissions options in place	National strategy for near-zero energy buildings (at least for all new buildings)
Energy efficiency in industry sector	No policy or support for energy efficiency in industrial production in place	Support for energy efficiency in industrial production (covering at least two of the country's subsectors (e.g. cement and steel production))	Target for new installations in emissions-intensive sectors to be low-carbon after 2020, maximising efficiency
Reducing deforestation	No policy or incentive to reduce deforestation in place	Incentives to reduce deforestation or support schemes for afforestation /reforestation in place	National target for reaching zero deforestation by 2020s

## ANNEX (continued)

G20



- 15) This footnote had to be deleted as the data for the corresponding indicator was not available at the time of publication of this report.
- 16) In addition to carbon pricing mechanisms, emissions trading schemes and various energy taxes also act as prices on carbon, although they are generally not developed with the aim of reducing emissions. The OECD report presents calculations on 'Effective Carbon Rates' as the sum of carbon taxes, specific taxes on energy use, and tradable emission permit prices. The calculations are based on 2012 energy policies and prices, as covered in OECD's Taxing Energy Use database. According to OECD estimates, to tackle climate change emissions should be priced at least EUR 30 (or US\$ 37) per tonne of CO<sub>2</sub> revealing a major 'carbon pricing gap' within the G20.
- 17) The effective carbon rate presented in this country profile does not factor in emissions from biomass, as many countries and the UNFCCC treat them as carbon-neutral. However, in many cases biomass emissions are found to be non-carbon neutral over their lifecycle, especially due to the land use changes they cause.
- 18) Finance delivered through multilateral climate funds comes from Climate Funds Update, a joint ODI/Heinrich Boell Foundation database that tracks spending through major multilateral climate funds. Figures include: Adaptation for Smallholder Agriculture Programme; Adaptation Fund; Clean Technology Fund; Forest Carbon Partnership Facility; Forest Investment Program; Global Environment Facility (5th and 6th Replenishment, Climate Focal Area only); Least Developed Countries Fund; Partnership for Market Readiness; Pilot Program for Climate Resilience; Scaling-up Renewable Energy Program; and the Special Climate Change Fund.
- 19) Bilateral finance commitments are sourced from Party reporting to the UNFCCC under the Common Tabular Format. Figures represent commitments of funds to projects or programmes, as opposed to actual disbursements.
- 20) Data for the MDB spending on climate action includes ADB, AfDB, EBRD, EIB, IDB, IFC and the World Bank. Data is self-reported annually by the MDBs, based on a shared methodology they developed. The reported data includes MDBs own resources and expenditure in EU13, not funding from external sources that are channelled through the MDBs (e.g through bilateral donors and dedicated climate funds that are captured elsewhere). Data reported corresponds to the financing of adaptation or mitigation projects or of those components, sub-components, or elements within projects that provide adaptation or mitigation benefits (rather than the entire project cost). It does not include public or private finance mobilised by MDBs.

## ■ DECARBONISATION

- 21) Total primary energy supply data displayed in this factsheet does not include non-energy use values.
- 22) The share of coal in total primary energy supply reveals the country's historical and current proportion of coal in the energy mix. As coal is one of the dirtiest of fossil fuels, reducing coal's share in its energy mix is a crucial step for a country's transition to a green economy.
- 23) The share of renewable energy in total primary energy supply shows a country's historical and current proportion of renewables in the energy mix. The numbers displayed in the graph do not include residential biomass and waste values. Replacing fossil fuels and promoting the expansion of renewable energy is an important step for reducing emissions.
- 24) TPES per capita displays the historical, current and projected energy supply in relation to a country's population. Alongside the intensity indicators (TPES/GDP and CO<sub>2</sub>/TPES), TPES per capita gives an indication on the energy efficiency of a country's economy. In line with a well-below 2°C limits, TPES/capita should not grow above current global average levels. This means that developing countries are still allowed to expand their energy use to the current global average, while developed countries have to simultaneously reduce it to that same number.
- 25) TPES per GDP describes the energy intensity of a country's economy. This indicator illustrates the efficiency of energy usage by calculating the energy needed to produce one unit of GDP. A decrease in this indicator can mean an increase in efficiency but also reflects structural economic changes.
- 26) This indicator describes the carbon intensity of a country's energy sector (expressed as the CO<sub>2</sub> emissions per unit of total primary energy supply) and gives an indication on the share of fossil fuels in the energy supply.

For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at:

<http://www.climate-transparency.org/g20-climate-performance/g20report2017>