



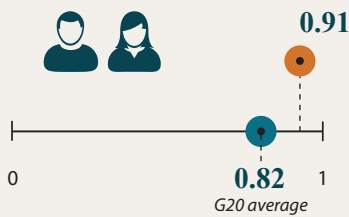
## BROWN TO GREEN: G20 TRANSITION TO A LOW CARBON ECONOMY

# USA

This country profile assesses the USA's past, present and indications of future performance towards a low-carbon economy by evaluating emissions, decarbonisation, climate policy performance and climate finance. The profile summarises the respective findings from, amongst others, the Climate Change Performance Index (CCPI, operated by Germanwatch and Climate Action Network Europe), the Climate Action Tracker (CAT, operated by Climate Analytics, NewClimate Institute, Ecofys and Potsdam Institute for Climate Impact Research), and analyses from the Overseas Development Institute (ODI).



### Human Development Index



Source: UNDP, data for 2015

### Share of global GHG emissions



Source: World Bank Indicators, data for 2012

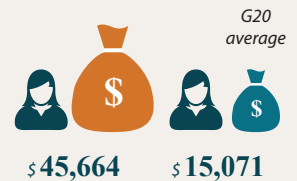
### GHG emissions per capita (tCO<sub>2</sub>e/cap)



### Share of global GDP

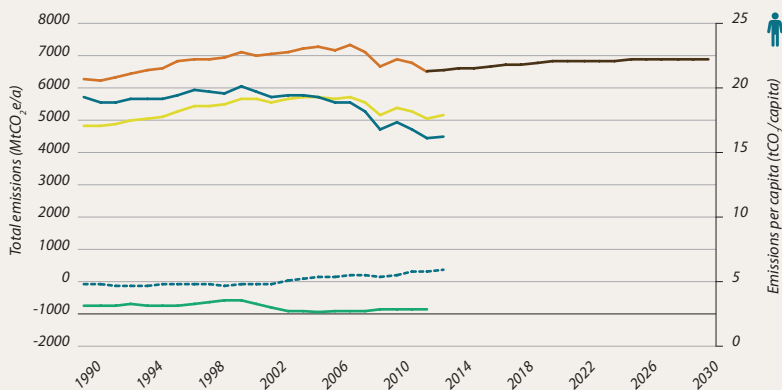


### GDP per capita



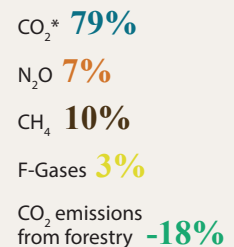
Source: IEA, data for 2013

## GREENHOUSE GAS (GHG) EMISSIONS



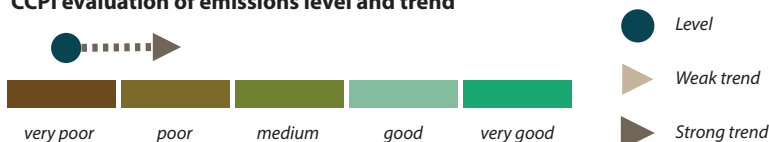
Greenhouse gas (GHG) emissions increased in the United States until 2007, have declined since, but are likely to increase again from 6,487 MtCO<sub>2</sub>e (2012) to ~6,900 MtCO<sub>2</sub>e in 2030. Land use, land-use change and forestry (LULUCF) emissions amount to -941.5 MtCO<sub>2</sub>e. Per capita emissions, at 16 tCO<sub>2</sub>e, are the second highest in the G20, nearly three times the G20 average, but have fallen slightly since 2005. In the CCPI, the US is a very poor performer on its emissions levels, but also shows a trend towards fewer emissions.

### Composition of GHG emissions



\*CO<sub>2</sub> emissions incl. LULUCF  
Source: Annex I countries: UNFCCC (2015);  
Non-Annex I countries: IEA (2014) and CAT (2015)

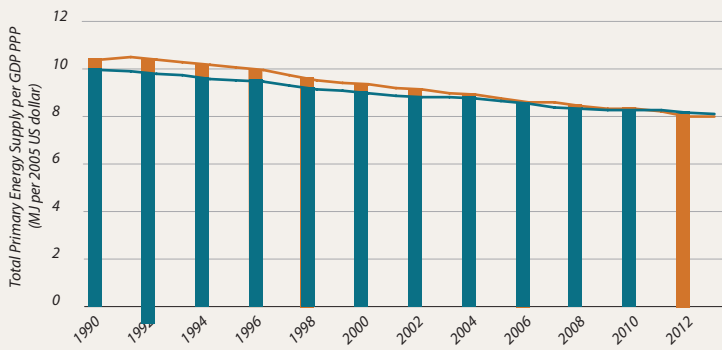
### CCPI evaluation of emissions level and trend



Sources: Past energy related emissions from the Climate Change Performance Index (CCPI); past non-energy and future emissions projections from the Climate Action Tracker (CAT). CCPI calculations are primary based on the most recent IEA data; CAT calculations are based on national policies and country communications.

# DECARBONISATION

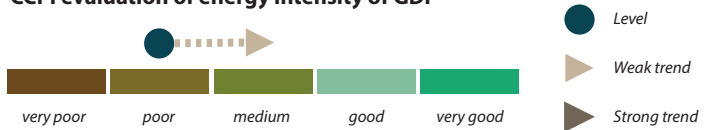
## Energy intensity of the economy



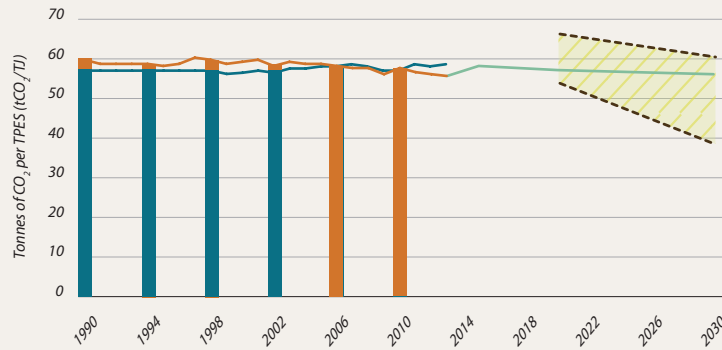
Energy intensity  
Average energy intensity in G20

Source: CCPI, 2016

### CCPI evaluation of energy intensity of GDP



## Carbon intensity of the energy sector



Carbon intensity (past trend)  
Average carbon intensity in G20  
Carbon intensity (current policy projection)  
Global benchmark for a 2°C pathway

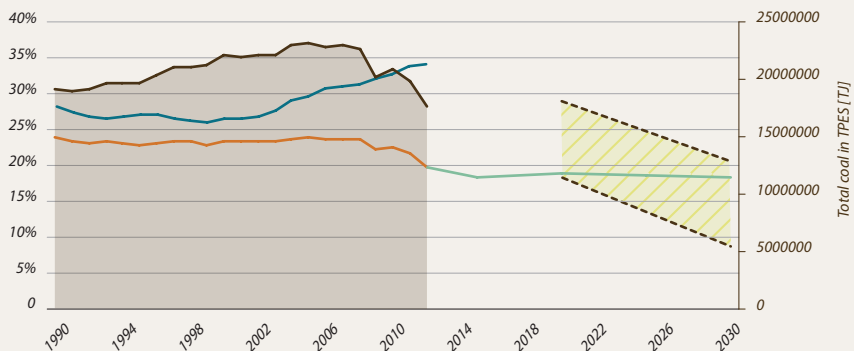
Sources: Past: CCPI; future projections: CAT

CO<sub>2</sub> emissions per primary energy supply (CO<sub>2</sub>/TPES) were slightly above the average G20 level until 2006 when they decreased to 56 tCO<sub>2</sub>/TJ. It is expected this will only be temporary, and carbon intensity will reach and remain on 2006 levels until 2030, exceeding the minimal value for the 2-degree benchmark corridor. The CCPI ranks the USA's carbon intensity level as relatively poor, but recognises an improving trend.

### CCPI evaluation of carbon intensity of energy sector



## Share of coal in Total Primary Energy Supply (TPES)

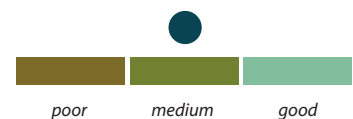


% of coal (past trend)  
Average % of coal in G20  
% of coal (current policy projections)  
Global benchmark for a 2°C pathway (min & max)  
Total coal consumption (TJ)

Source: CAT

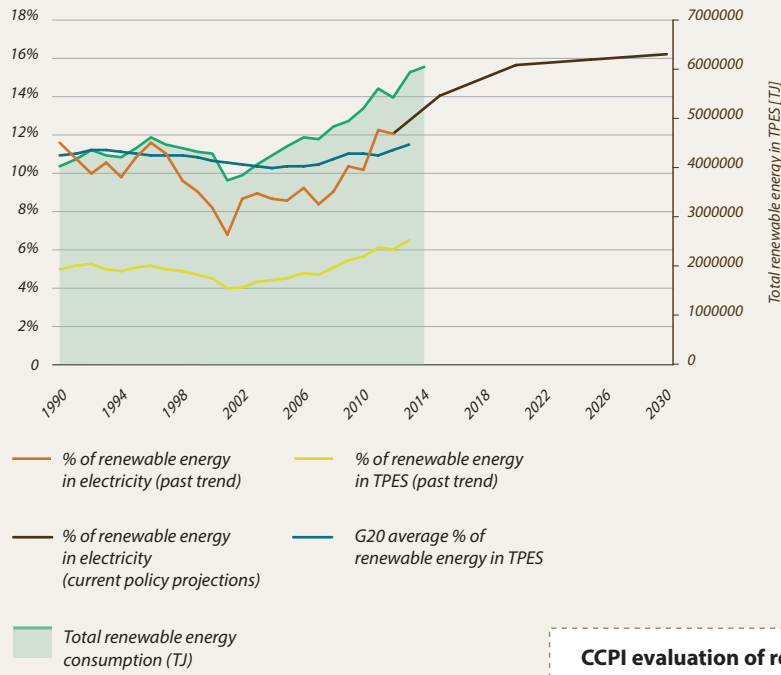
After being close to 25% until 2008, the share of coal in primary energy supply dropped to 20% in 2012. It is assumed the share will remain on this level until 2030, which would exceed the minimal value for the 2-degree benchmark corridor.

### Evaluation of coal share in TPES



Source: own evaluation

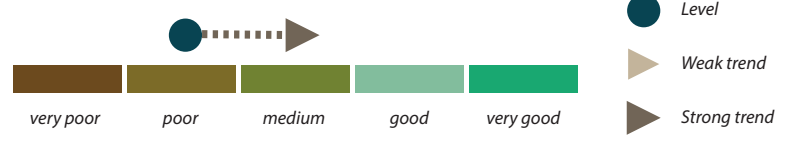
## Renewable energy in TPES and electricity sector



The share of renewable energy in electricity reached an all-time low in 2001, at 7%, but has since increased to 12% in 2012. Future projections show that a further increase - up to a level of 16% - can be expected. With only approximately 6% of renewable energy in the country's primary energy supply, the US is far below the G20 average and is accordingly ranked as relatively poor by the CCPI. However, a positive trend can be observed.

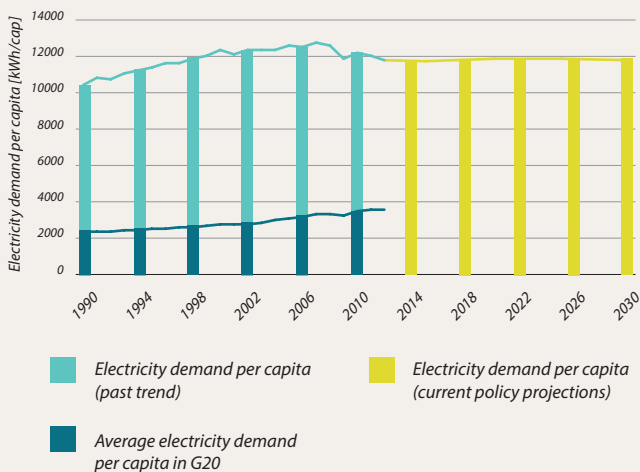
Sources: CCPI and CAT

### CCPI evaluation of renewable share in TPES



## Electricity demand per capita

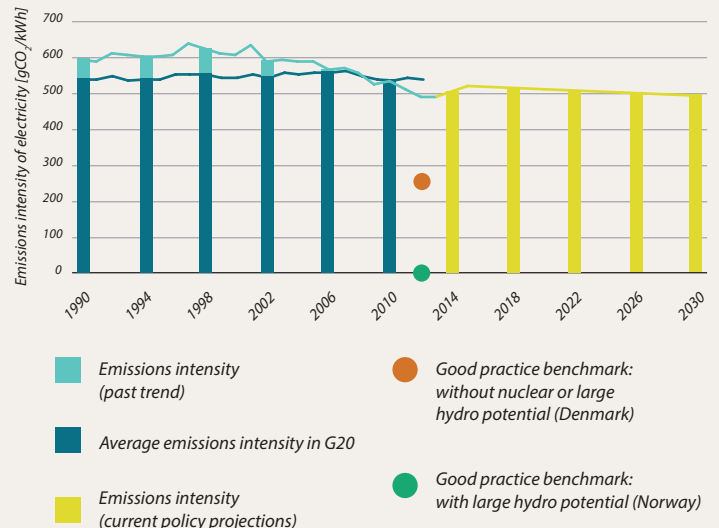
In the US, electricity demand per capita is very high, increasing from around 10,000 kWh per capita in 1990 to more than 12,000 kWh per capita in the 2000's. Future projections estimate this to stay relatively stable at slightly below the 12,000 kWh mark until 2030, which is still three times the current G20 average.



Source: CAT, 2015

## Emissions intensity of the electricity sector

The carbon intensity of the USA's electricity sector has been slightly below the G20 average since 2009, and projections see it only slightly decreasing in the future. Electricity emissions intensity is nearly twice that of Denmark, the country with the lowest value of all those countries globally, that neither have large hydro potential nor nuclear power.



Source: CAT, 2015

### Evaluation of the electricity emission intensity



Source: own evaluation

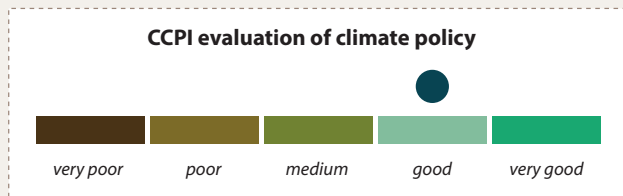
# CLIMATE POLICY PERFORMANCE

## Checklist of the climate policy framework

Low emissions development plan for 2050*	✓
2050 GHG emissions target	✓
Building codes, standards and incentives for low-emissions options	✓
Support scheme for renewables in the power sector	✓
Emissions performance standards for cars	✓
Emissions Trading Scheme (ETS)	✓
Carbon tax	✗

\* Understood as decarbonisation plans and not specifically as the plans called for in the Paris Agreement

Source: Climate Policy Database, 2016



## Climate policy evaluation by experts

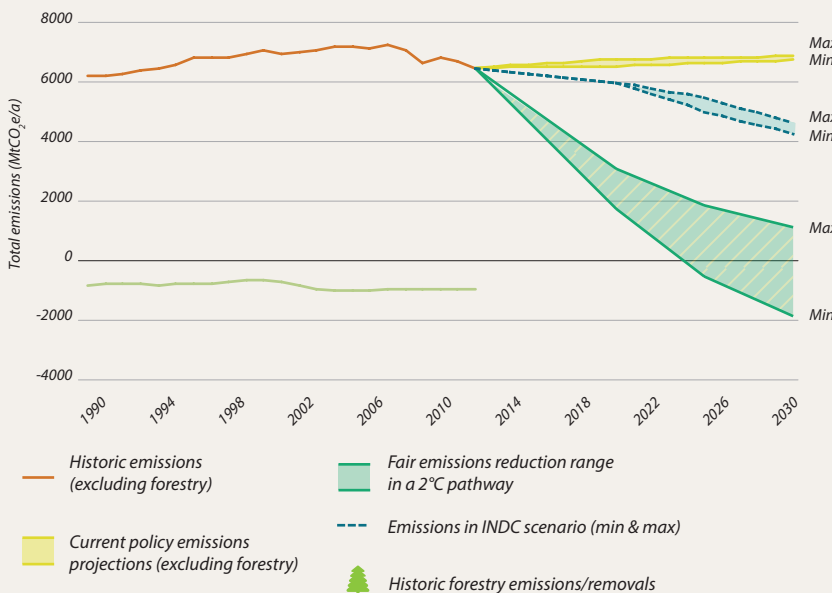
Since 2008, the US policy performance has improved, and the CCPI sees it reaching an average level for the first time. Experts emphasise recent positive developments such as the rejection of an oil-sands pipeline and efforts to push international climate negotiations. The USA has requested the UNFCCC not to publish its GHG emissions development data.

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



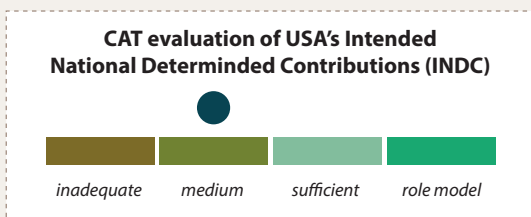
Source: CCPI, 2016

## Compatibility of national climate targets (INDCs) with a 2°C scenario



The USA submitted its Intended Nationally Determined Contribution (INDC) on 31 March 2015 where it 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, 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 that 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, if implemented, would be sufficient.



Source: CAT, 2015

## FINANCING THE TRANSITION

### Investment attractiveness



Allianz Energy and Climate Monitor

MEDIUM

RECAI\* (E&Y index) Category (own assessment)

HiGH

Trend\*\*



\*Adapted from RECAI and re-classified in 3 categories (low, medium, high) for comparison purposes with Allianz Monitor.

\*\*Taken from RECAI issue of May 2016

The indices rate the USA's investment attractiveness as medium to high<sup>(1)</sup>, due to the overall size of the economy and commercial and regional importance of the country. However, investment attractiveness and ambition for renewables significantly differs across states. Differences in party positions reduce long term policy predictability, particularly around the National Climate Action Plan.

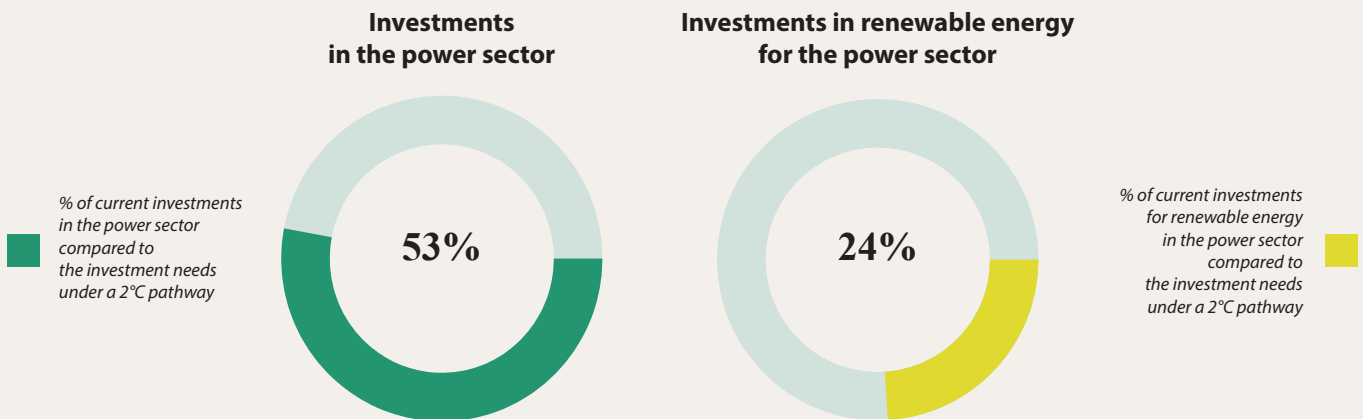
<sup>(1)</sup>RISE index developed by the World Bank gives a similar score for the USA

Sources: Allianz Energy and Climate Monitor and RECAI reports

The Allianz Energy & Climate 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. The Renewable Energy Country Attractiveness Index (RECAI) produces score 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.

### Historical investments in renewable energy and investment gap

This section shows the USA's current investments in the overall power sector (including distribution and transmission) as well as in renewable energy expressed as the share of the total annual investments needed to be in line with a 2°C compatible trajectory



Source: Adapted from WEIO, 2014<sup>(1)</sup>

<sup>(1)</sup>WEIO (2014) compares annual average investments from 2000 to 2013 with average annual investments needed from 2015 to 2030 under a 2°C scenario

### Carbon pricing mechanisms

#### Emissions Trading Schemes (ETS)

An ETS caps the total level of GHG emissions and allows industries to trade allowances based on their marginal abatement cost. By creating a supply and demand for allowances, an ETS establishes a market price for GHG emissions.

#### Carbon Tax

A Carbon tax directly sets a price on carbon by defining a tax rate on GHG emissions or – more commonly – on the carbon content of fossil fuels. Unlike an ETS, a carbon tax is a price-based instrument that pre-defines the carbon price, but not the emissions reduction outcome of a carbon tax.

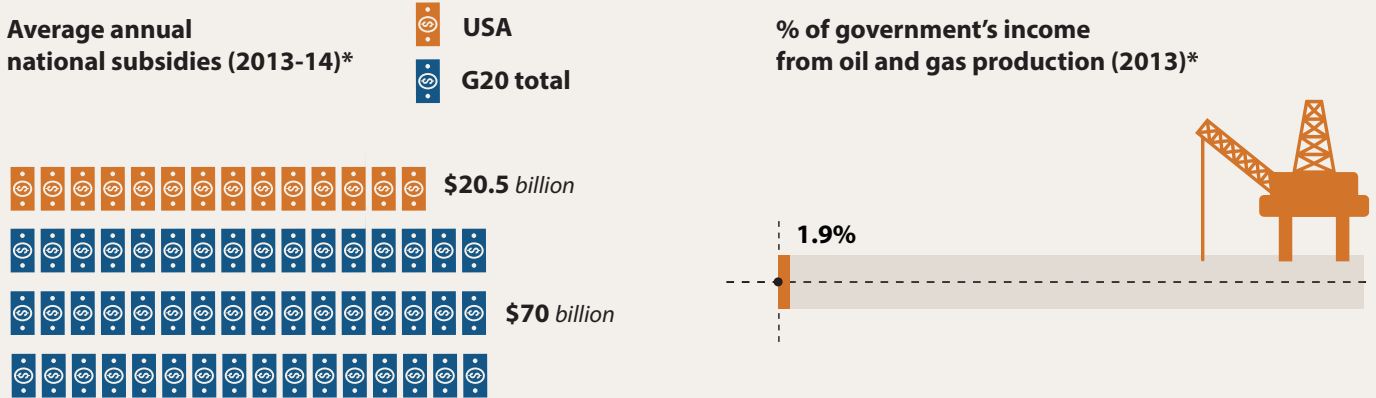
Although the US does not have a nationwide carbon pricing mechanism in place, at the state level the Regional Greenhouse Gas Initiative (RGGI) was introduced in 2005 and was the first mandatory cap-and-trade program to limit CO<sub>2</sub> from the power sector in the country. Additionally, in 2012, California launched its ETS covering 85% of the state's emissions and aiming to reduce GHG emissions from regulated entities by more than 16% between 2013 and 2020.



Sources: World Bank and Ecofys, 2016; other national sources

## Fossil fuel subsidies

Over the past few years, fossil fuel production has shown a sharp increase. Despite the decline in coal-fired power, government (Federal and State) continues to support coal mining, coal-fired power, and oil and gas production. ODI's assessment shows a 35% increase in federal subsidies to fossil fuel producers from 2009 levels, indicating an increase in oil and gas production. In its G20 progress report, the US provides a strategy for phasing out 11 federal fossil fuel production tax provisions, all permanent provisions in the tax code, estimated to cost US\$4.3 billion in annual revenue. The Obama Administration's Fiscal Year 2016 Budget is expected to eliminate preferential treatment of fossil fuels in the US tax code, provided the US Congress passes the legislation.

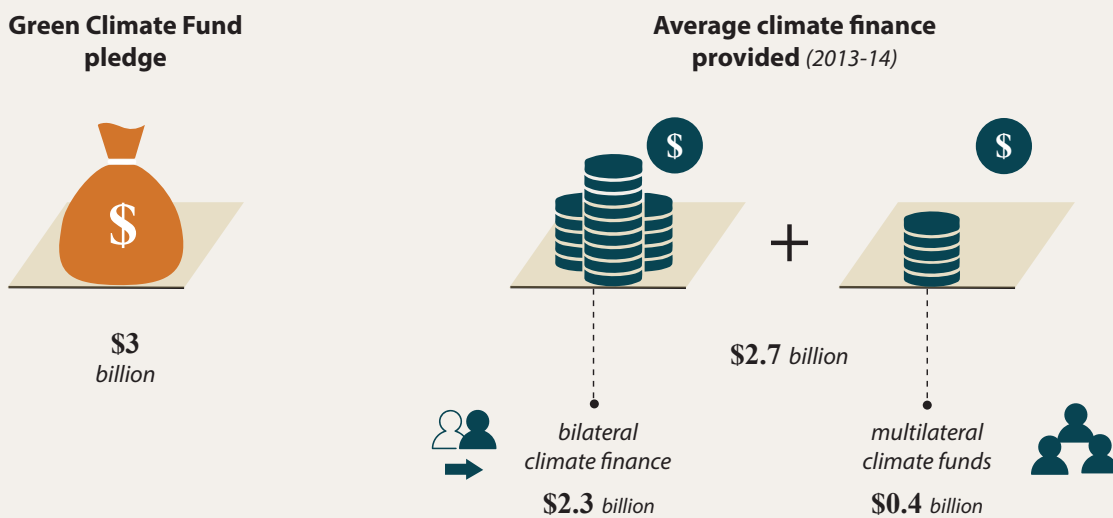


Source: ODI, 2015

\*The indicators above refer only to subsidies for fossil fuel production, and include direct spending (e.g. government budget expenditure on infrastructure that specifically benefits fossil fuels), tax expenditure (e.g. tax deductions for investment in drilling and mining equipment) and other support mechanisms (e.g. capacity mechanisms).

## Public climate finance

The USA has made the largest pledge to the GCF by volume. Relative to GDP, this commitment is the fifth largest of all the G20 donors. It also provided the fifth largest total climate finance commitments (not only to the GCF) relative to GDP. The USA notes that its climate finance is increasing in the context of growing foreign assistance net of climate finance. Its bilateral climate finance contribution includes export credits.



Source: ODI, 2016