

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)<sup>i</sup> and Climate Action Tracker (CAT)<sup>ii</sup>.



## 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 <sub>2</sub> 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 <sub>2</sub> /TPES [t CO <sub>2</sub> /TJ])	64.6	63.1
Carbon intensity of the economy (CO <sub>2</sub> /GDP [kg CO <sub>2</sub> /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

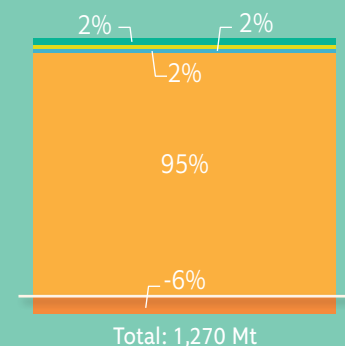
GHG = greenhouse gas emissions (net emissions including sinks from agriculture, forestry, and other land uses)

TPES = total primary energy supply

PPP = purchasing power parity in prices of 2005

## EMISSIONS AND EMISSIONS TRENDS

COMPOSITION OF GHG – JAPAN 2012



F-Gases

N<sub>2</sub>O\*\*

CH<sub>4</sub>\*\*

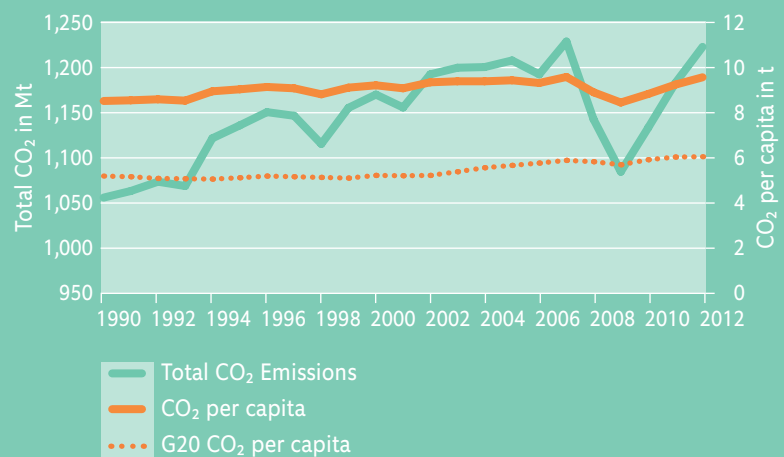
CO<sub>2</sub>\*\*

CO<sub>2</sub> from LULUCF\*

\* from Energy & Industry

\*\* including LULUCF

ENERGY-RELATED CO<sub>2</sub>-EMISSIONS – JAPAN



Source: UNFCCC 2015

Source: IEA 2014

Carbon dioxide (CO<sub>2</sub>) accounts for over 90% of Japan's greenhouse gas emissions. Total and per capita energy-related CO<sub>2</sub> 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

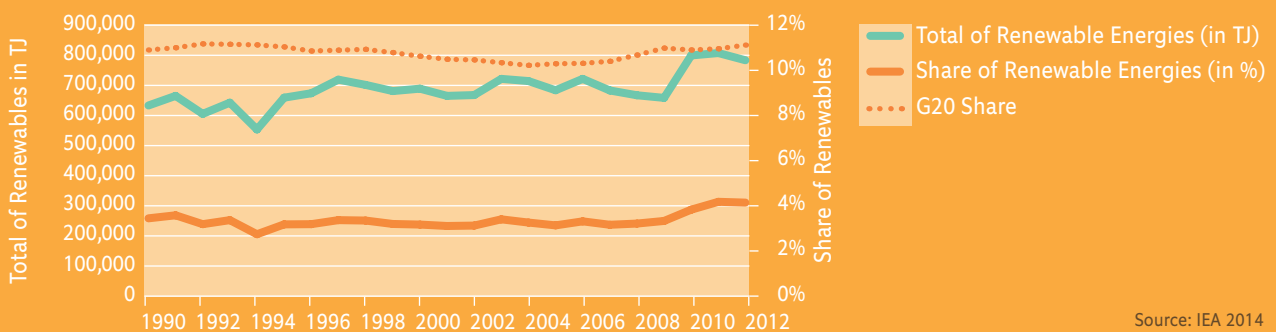
## DECARBONISATION

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 intensity<sup>iii</sup>.

## 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

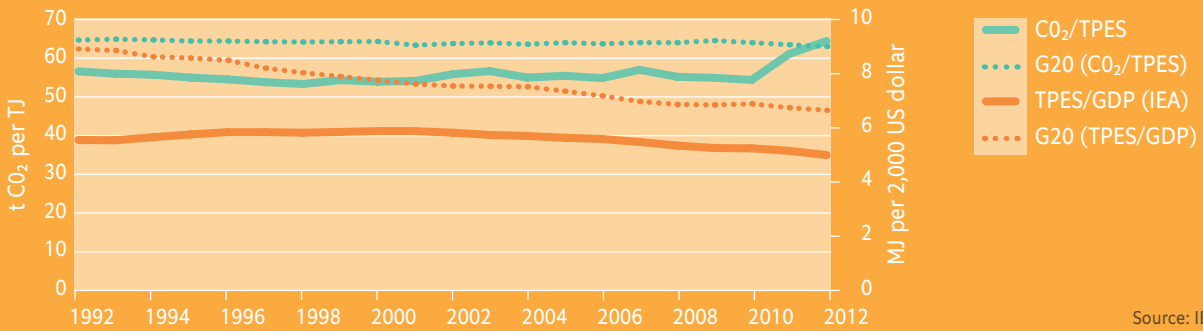
intensity. The latter are measured as CO<sub>2</sub> emissions per unit of Primary Energy Supply (CO<sub>2</sub>/TPES) and Primary Energy Supply per unit of GDP (TPES/GDP) respectively.

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](http://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](http://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 (CO<sub>2</sub>/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

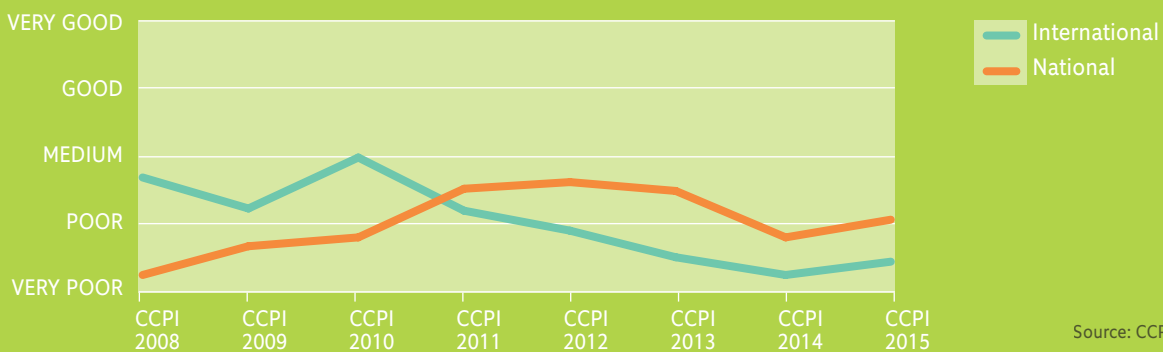
## CLIMATE POLICY PERFORMANCE

### 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

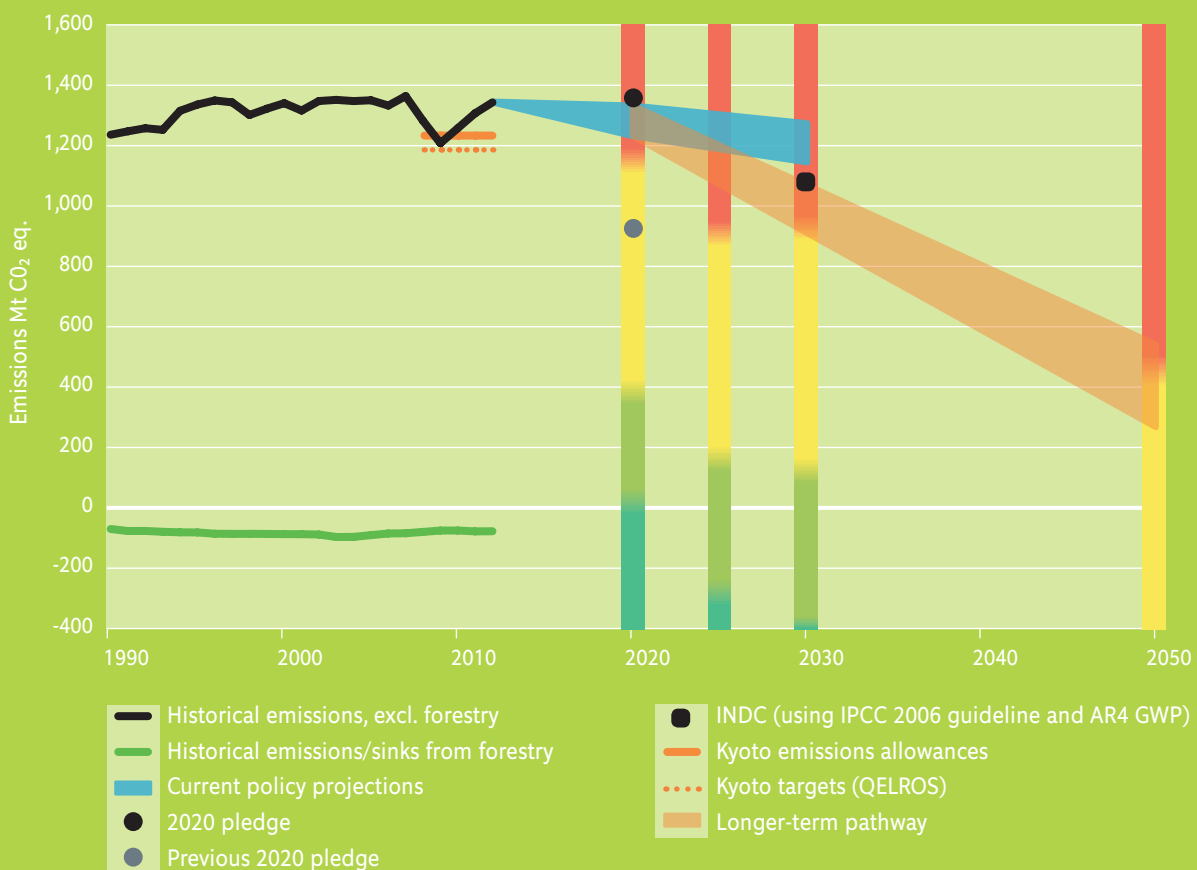
deteriorated. Overall, Japan's climate policy performance is now rated very poor. Experts criticise a lack of policy direction to limit carbon-intensive power generation.

### 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)

