ITALY

Climate Transparency

CLIMATE TRANSPARENCY REPORT: COMPARING G20 CLIMATE ACTION TOWARDS NET ZERO 2021

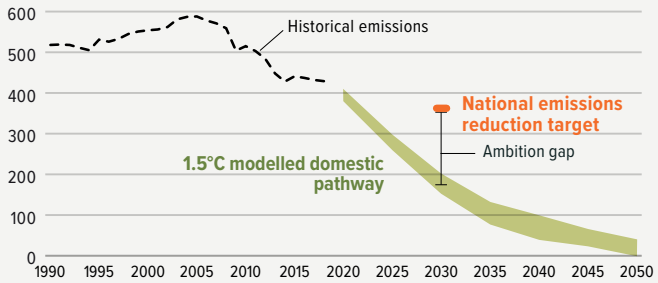
NOT ON TRACK FOR A 1.5°C WORLD

1.5°C

Italy's national target is to reduce emissions 38% below 2005 levels, or approximately 366 $MtCO_2e$, by 2030. To keep below the 1.5°C temperature limit, Italy's 2030 emissions would need to be around 165 $MtCO_2e$ (or 72% below 2005 levels), leaving an ambition gap of 201 $MtCO_2e$. All figures exclude land use emissions.

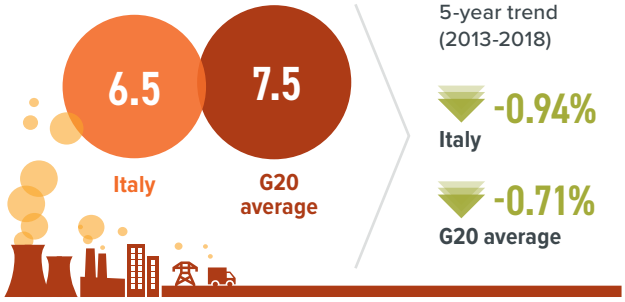
Gütschow et al., 2021; Climate Analytics, 2021

1.5°C compatible emissions pathway ($MtCO_2e$/year)[1]



PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS BELOW G20 AVERAGE

GHG emissions (incl. land use) per capita (tCO_2e/capita)[2] in 2018



Italy's per capita emissions are 0.87 times the G20 average. Total per capita emissions declined by just under 1% between 2013 and 2018.

Gütschow et al., 2021; United Nations, 2019

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

Develop a long term strategy that aligns with the EU's "climate-neutral" strategy.

Adopt a national, economy-wide target with supporting legislation and sectoral objectives, to deliver on emissions reduction targets.

The Ministry for Ecological Transition controls 30% of Italy's post-pandemic recovery spending. As Italy will receive the most aid from the European Commission, **there is significant scope to use these funds to ambitious support GHG reduction goals**.

RECENT DEVELOPMENTS

- The draft National Energy and Climate Plan set a **2030 goal to have 30% of Italy's total energy produced by renewables**.
- The draft NCEP, however, does **not outline how it would align with, and contribute to, the achievement of the EU's 2030 emissions reduction target**.
- The 5-year "Piano di Ripresa e Resilienza" – the Recovery and Resilience Plan – is **not in line with the EU 2030 climate objectives**.

CORONAVIRUS RESPONSE AND RECOVERY

Italy has been the EU member state hardest hit by COVID-19 and the ensuing economic recession. Once the first nationwide lockdown relaxed in May 2020, the manufacturing and construction sector reopened with new safety measures. The government's initial USD 30m (1.6% of GDP) emergency package was largely directed at healthcare, welfare and emergency support for businesses. Since then, several other economic packages have been announced to help the economy recover. So far 13% of it has been tagged for green recovery. The recently announced Italian Recovery and Resilience Plan (RRP) includes investments into measures relevant to the green transition.

Reuters, 2021; Green Recovery Tracker, 2021; IMF, 2021; Vivid Economics, 2021

CONTENTS

We unpack Italy's progress and highlight key opportunities to enhance climate action across:

LEGEND

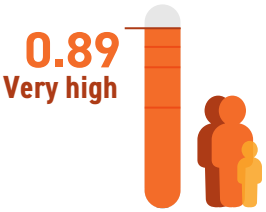
Trends show developments over the past five years for which data are available. The colour-coded arrows indicate assessment from a climate protection perspective: Orange is bad, green is good.

Decarbonisation Ratings[3] assess a country's performance compared to other G20 countries. A high score reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.

Policy Ratings[4] evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.

SOCIO-ECONOMIC CONTEXT

Human Development Index (HDI)

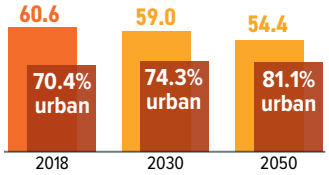


The HDI reflects life expectancy, level of education, and per capita income. Italy ranks very high.

Data for 2019. UNDP, 2020

Population and urbanisation projections

(in millions)

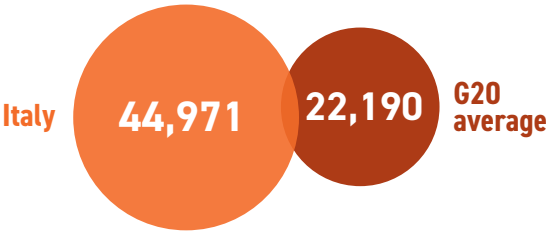


Italy's population is projected to decrease by 10% by 2050. It is already highly urbanised, and this trend is projected to continue while the population decreases. This creates an opportunity for climate action especially by facilitating the development of sustainable urban mobility.

United Nations, 2019; United Nations, 2018

Gross Domestic Product (GDP) per capita

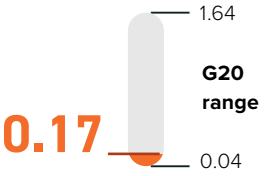
(PPP constant 2015 international $) in 2019



World Bank, 2021; United Nations, 2019

Death rate attributable to air pollution

Ambient air pollution attributable death rate per 1,000 population per year, age standardised in 2019



Nearly 28,000 people die in Italy every year as a result of outdoor air pollution due to stroke, heart disease, lung cancer and chronic respiratory diseases. Compared to total population, this is still one of the G20's lower levels.

Institute for Health Metrics and Evaluation, 2020

This source differs from the source used in last year's profiles and, therefore, the data are not comparable.

A JUST TRANSITION

Almost one million people have lost their jobs over the past year in Italy during the pandemic, making it crucial to create green jobs and manage a just transition away from the fossil fuel industry. The unemployment rate is expected to decrease from 2022 onward, but will remain at high levels, around 10%.

Italy has agreed to phase out coal by 2025, but as approximately 90% of its coal supply is imported, a coal phase-out would have less of an impact on upstream workers compared to in other G20 countries. The EU's Just Transition Mechanism aims to mobilise EUR 65-75bn over the period 2021-2027. Additional resources were committed in the framework of the COVID-19 recovery programmes adopted by the European Council in July 2020. The money will be spent based on just transition plans prepared by the EU Member States for the regions affected by a coal phase-out.

European Council, 2020; Bank of Italy, 2021; European Commission, 2021a; The Local, 2021

ADAPTATION | ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE

PARIS AGREEMENT **Increase the ability to adapt to the adverse effects of climate change and foster climate resilience and low-GHG development.**

Saltwater intrusion in groundwater along the coastline is already occurring in many areas and will be exacerbated by sea-level rise and a reduction in precipitation.

The expected **economic impacts of climate change** for the second part of the century will mean a loss of 8.5% of GDP in Italy.

Italy has experienced **severe heatwaves**. Each degree of increased average surface temperature results in an average 5% increase in excess deaths.

ADAPTATION NEEDS

Climate Risk Index

Impacts of extreme weather events in terms of fatalities and economic losses that occurred. All numbers are averages (1999-2018).

Annual weather-related fatalities

997 Deaths

1.69 PER 100,000 INHABITANTS

RANKING: 3rd in the G20

High — Death rate — Low

Based on Germanwatch, 2019

Annual average losses (US$ millions PPP)

1,649

0.08 PER UNIT GDP (%)

RANKING: 12th in the G20

High — Losses — Low

Based on Germanwatch, 2019

Exposure to future impacts at 1.5°C, 2°C and 3°C

Impact ranking scale: Very low | Low | Medium | High | Very high

			1.5°C	2°C	3°C
WATER		% of area with increase in water scarcity	High	High	Very high
		% of time in drought conditions	High	High	Very high
HEAT AND HEALTH		Heatwave frequency	High	High	Very high
		Days above 35°C	Medium	Medium	High
AGRICULTURE	Maize	Reduction in crop duration	Medium	High	Very high
		Hot spell frequency	Low	Medium	High
		Reduction in rainfall	Medium	Low	Very low
	Wheat	Reduction in crop duration	Low	High	Very high
		Hot spell frequency	Very low	Very low	Very low
		Reduction in rainfall	Very high	Very high	Very high

Water, Heat and Health: own research; Agriculture: Arnell et al., 2019

Note: These indicators are national scale results, weighted by area and based on global data sets. They are designed to allow comparison between regions and countries and, therefore, entail simplifications. They do not reflect local impacts within the country. Please see technical note for further information.

CORONAVIRUS RESPONSE AND RECOVERY

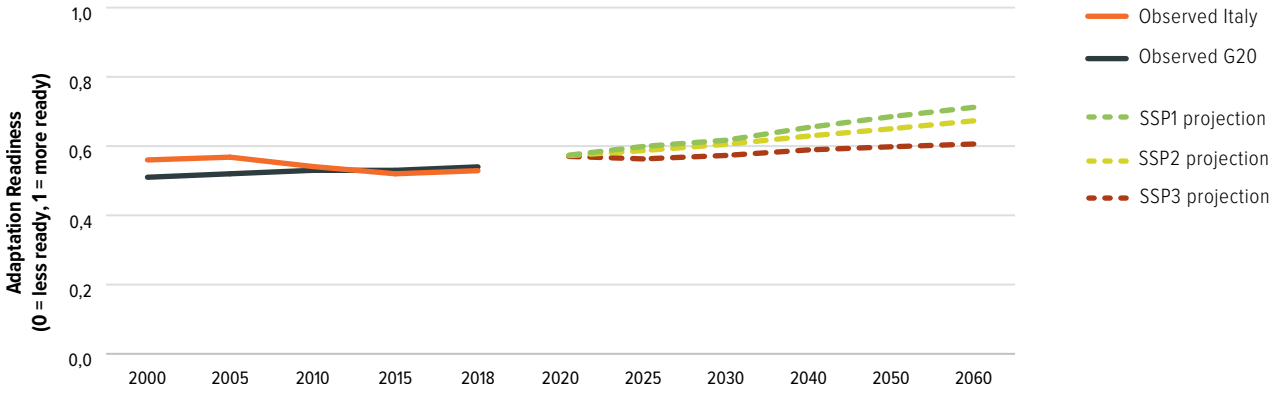
The COVID-19 economic recovery spending has not focused on increasing Italy's climate change resilience. Italy's initial package focused on support for healthcare and welfare, but further measures have included substantial support for businesses, and some targeted support for the agriculture sector.

IMF, 2021; Vivid Economics, 2021

Adaptation Readiness

The figure shows 2000-2018 observed data from the Notre Dame Global Adaptation Initiative (ND-GAIN) Index overlaid with projected Shared Socioeconomic Pathways (SSPs) from 2020 to 2060.

Notre Dame Global Adaptation Initiative (ND-Gain) Readiness Index



Italy scored just below the G20 average in 2018 in terms of adaptation readiness. While there are still adaptation challenges, Italy is well-positioned to adapt to the impacts of climate change. Socio-economic developments in line with SSP1 would produce faster improvements in readiness, whereas measures in line with SSP3 would produce very limited improvements over time.

The readiness component of the Index created by the ND-GAIN encompasses social (social inequality, information and communications technology infrastructure, education and innovation), economic, and governance indicators to assess a country's readiness to deploy private and public investments in aid of adaptation. The index ranges from 0 (low readiness) to 1 (high readiness).

The overlaid SSPs are qualitative and quantitative representations of a range of projections of future governance and, therefore, of possible adaptation readiness. The three scenarios shown here in dotted lines are described as a sustainable development-compatible scenario (SSP1), a middle-of-the-road (SSP2), and a 'Regional Rivalry' (SSP3) scenario.

Based on Andrijevic et al., 2020; ND-Gain Index, 2021

ADAPTATION POLICIES

National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)												Monitoring & evaluation process
		Agriculture	Biodiversity	Coastal areas and fishing	Education and research	Energy and industry	Finance and insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism	Water	
National Climate Change Adaptation Strategy	2015	●	●	●		●		●	●	●	●	●		●	5-year review of the contents to evaluate, through specific monitoring, the additional needs in terms of planning and allocation of the necessary economic and financial resources
National Climate Change Adaptation Plan	2017	●	●	●						●	●		●	●	Guidelines and indicators to monitor state of implementation and the effectiveness of adaptation actions

Nationally Determined Contribution (NDC): Adaptation

TARGETS

Not mentioned in the EU's NDC to which Italy contributes.

ACTIONS

Not mentioned

MITIGATION | REDUCING EMISSIONS TO LIMIT GLOBAL TEMPERATURE INCREASE

PARIS AGREEMENT **Hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit to 1.5°C, recognising that this would significantly reduce the risks and impacts of climate change.**

EMISSIONS OVERVIEW

Italy's GHG emissions excluding LULUCF have dropped by only 17.2% (1990-2018). **Current projections show Italy's emissions reaching 64% below 1990 levels by 2050**.

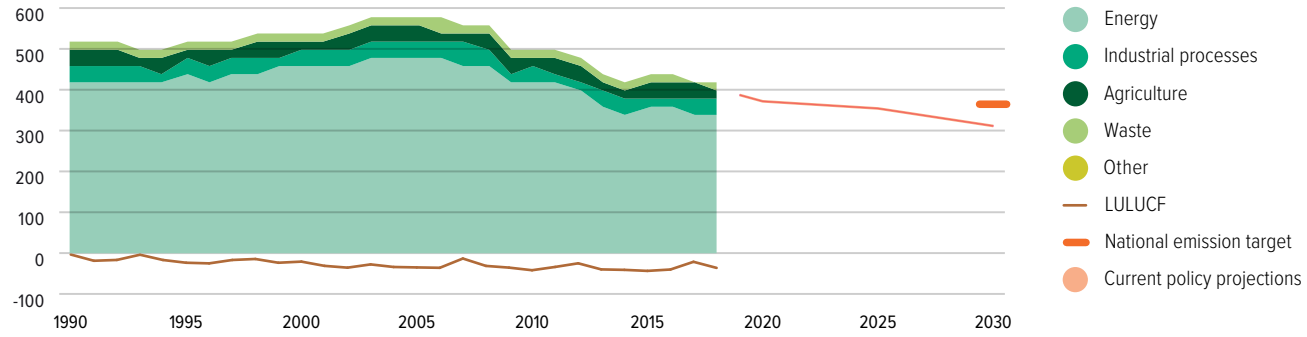
1.5°C COMPATIBILITY

In 2030, global CO_2 emissions need to be 45% below 2010 levels and reach net zero by 2050. Global energy-related CO_2 emissions must be cut by 40% below 2010 levels by 2030 and reach net zero by 2060.

Rogelj et al., 2018

GHG emissions across sectors and national emissions reduction target ($MtCO_2e$/year)[5]

Total GHG emissions across sectors ($MtCO_2e$/year)

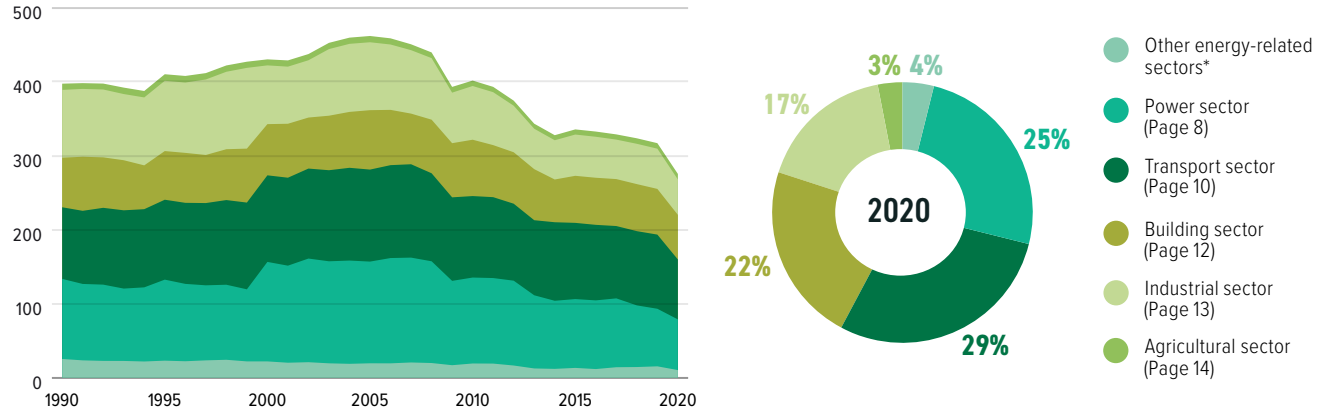


Italy's emissions (excl. land use) decreased by 17% between 1990 and 2018 to 429 $MtCO_2e$. Total GHG emissions peaked in 2005, and fluctuated for the next few years, before beginning to decrease more steadily from 2011 onwards. Current projections show Italy's emissions reaching 64% below 1990 levels by 2050.

Gutschow et al., 2021

Energy-related CO_2 emissions by sector

Annual CO_2 emissions from fuel combustion ($MtCO_2$/year)



The largest driver of overall GHG emissions are CO_2 emissions from fuel combustion. In Italy, emissions have been decreasing continuously since 2015 after peaking in 2005. The transport sector is the largest contributor at 29%, followed by emissions from the power, buildings and industry sectors at 25%, 22% and 17%, respectively.

Enerdata, 2021

Due to rounding, some graphs may sum to slightly above or below 100%.
**'Other energy-related sectors' covers energy-related CO_2 emissions from extracting and processing fossil fuels.*

ENERGY OVERVIEW

Italy's energy mix is still dominated by fossil fuels (77%). **The share of renewable energy (excluding residential biomass use) has constantly increased over recent years and, in 2020, it was at 18%** of total primary energy consumption. Despite the increase in renewable energy over the last two decades, the carbon intensity of the energy mix has barely changed.

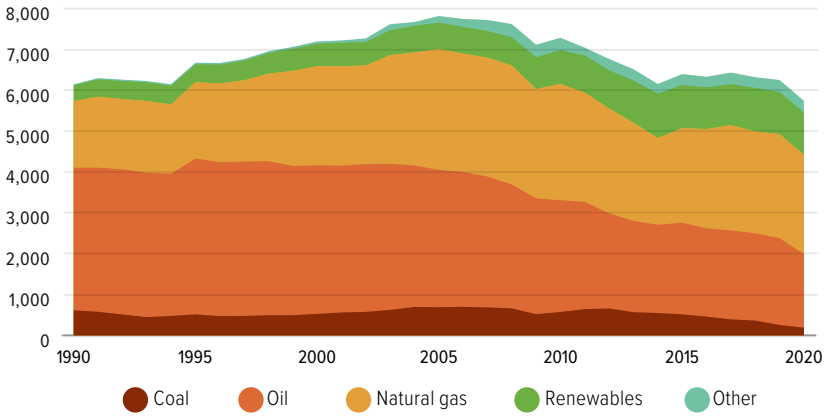
COMPATIBILITY

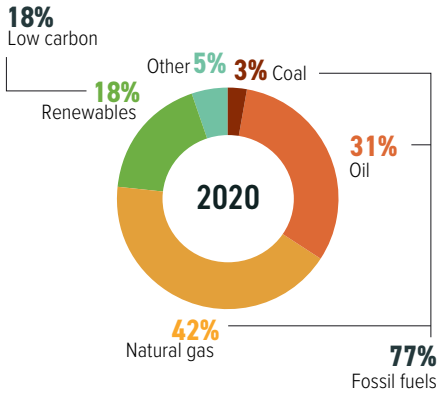
The share of fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050, and to substantially lower levels without carbon capture and storage (CCS).

Rogelj et al., 2018

Energy mix

Total primary energy supply (TPES) (PJ)



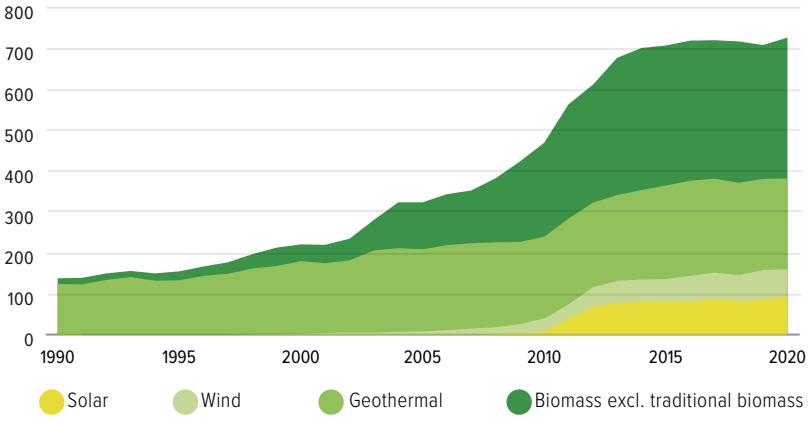


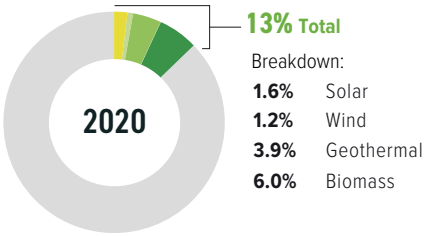
This graph shows the fuel mix for all energy supply, including energy used for electricity generation, heating, and cooking, and also for transport fuels. Fossil fuels (oil, coal, and gas) make up 77% of Italy's energy mix, which is slightly lower than the G20 average of 81% in 2020. Coal and oil use is shrinking, but the proportion of natural gas remains stable (42%) and an important source of emissions, whereas the share of renewable energy in the energy mix is only 18%. Italy is targeting a 30% share of gross final energy consumption from renewable sources by 2030.

Enerdata, 2021 *Due to rounding, some graphs may sum to slightly above or below 100%*

Solar, wind, geothermal, and biomass development

TPES from solar, wind, geothermal and biomass (PJ)



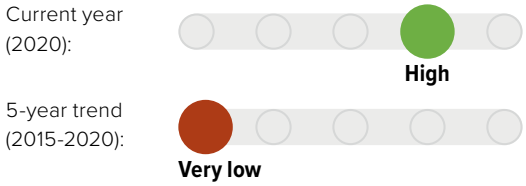


Solar, wind, geothermal and biomass account for just under 13% of Italy's energy supply – the G20 average is 7%. The share in total energy supply has increased by nearly 11% in the last 5 years in Italy (2015-2020); about a third of the average rate of increase in the G20 (32%). Biomass (for electricity and heat) makes up the largest share.

Enerdata, 2021 *Due to rounding, some graphs may sum to slightly above or below 100%*

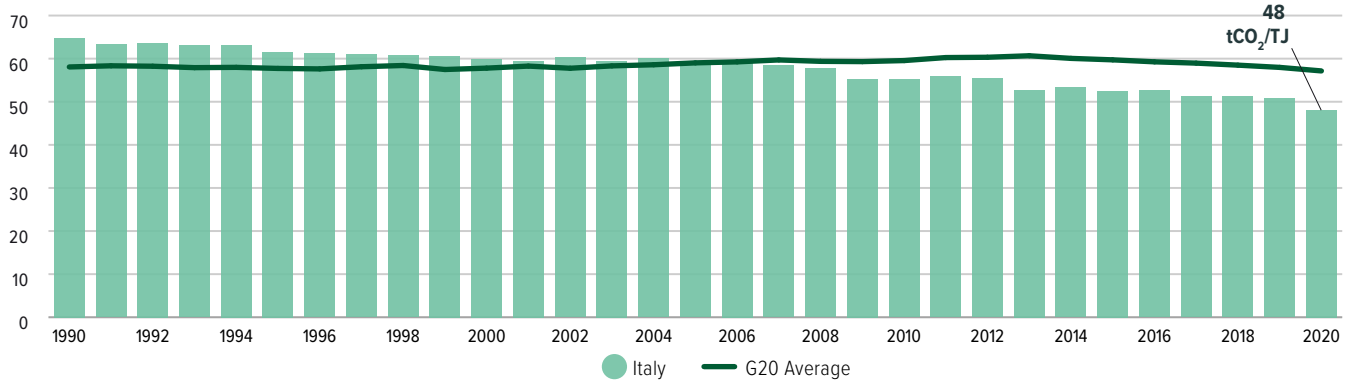
Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.

Decarbonisation rating: renewable energy share of TPES compared to other G20 countries



Carbon intensity of the energy sector

Tonnes of CO_2 per unit of TPES (tCO_2/TJ)



Carbon intensity is a measure of how much CO_2 is emitted per unit of energy supply.

In Italy, carbon intensity has slightly decreased over the last five years and remains, at 48 tCO_2/TJ, lower than the G20 average (57 tCO_2).

Enerdata, 2021

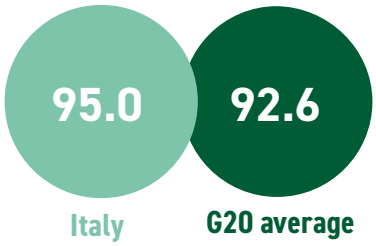
Decarbonisation rating: carbon intensity of the energy sector compared to other G20 countries

Current year (2020): **High**

5-year trend (2015-2020): **High**

Energy supply per capita

TPES per capita (GJ/capita) in 2020



TPES per capita (GJ/capita): 5-year trend (2015-2020)

-7.88%
Italy

-0.12%
G20 average

Decarbonisation rating: energy supply per capita compared to other G20 countries

Current year (2020): **Medium**

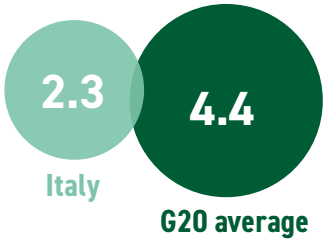
5-year trend (2015-2020): **High**

The level of energy use per capita is closely related to economic development, climatic conditions and the price of energy. Energy use per capita in Italy is, at 94.96 GJ/capita in 2020, slightly above the G20 average, but has been decreasing much faster at 7.88% between 2015 and 2020, compared with the decreasing G20 average of 0.12% over the same period.

Enerdata, 2021; United Nations, 2019

Energy intensity of the economy

(TJ/million US$2015 GDP) in 2019



Energy intensity of the economy: 5-year trend (2014-2019)

-4.60%
Italy

-10.56%
G20 average

Decarbonisation rating: energy intensity compared to other G20 countries

Current year (2019): **Very high**

5-year trend (2014-2019): **Low**

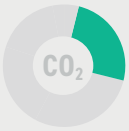
This indicator quantifies how much energy is used for each unit of GDP. This is closely related to the level of industrialisation, efficiency achievements, climatic conditions or geography. Italy's energy intensity is much lower than the G20 average and has been decreasing at a slower rate 4.60% (2014-2019) compared to the G20.

Enerdata, 2021; World Bank, 2021

POWER SECTOR

Emissions from energy used to make electricity and heat

Italy produced 57% of its electricity from fossil fuels in 2020, down from 60% in 2019, half of which is generated from natural gas. The coal power phase-out by 2025 is in line with a 1.5°C pathway. Renewables account for 43% of the power mix, but there is no long-term strategy for 100%.



25%

Share of energy-related CO_2 emissions from electricity and heat production in 2020.

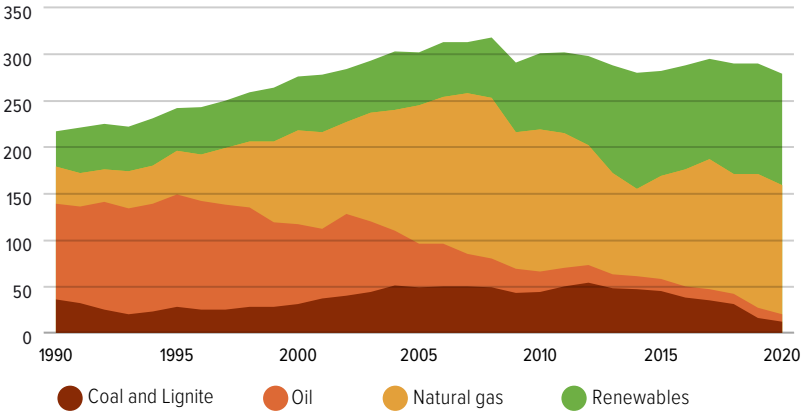
COMPATIBILITY

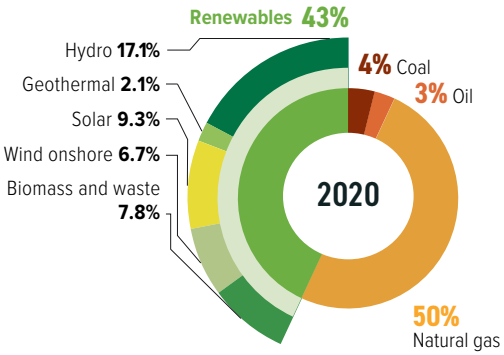
Worldwide, coal use for power generation needs to peak by 2020, and between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. By 2040, the share of renewable energy in electricity generation has to be increased to at least 75%, and the share of unabated coal reduced to zero.

Rogelj et al., 2018; Climate Action Tracker, 2020b

Electricity generation mix

Gross power generation (TWh)



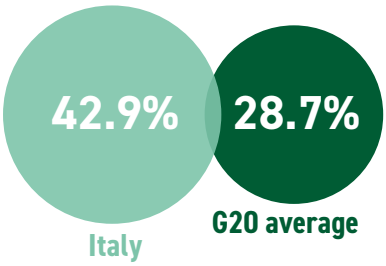


Italy **generated 57% of its electricity from fossil fuels** in 2020. The share of renewable energy in Italy's power sector accounted for approximately 43% in 2020. Power generation from oil and coal has been decreasing, accounting for just 7% combined; and natural gas contributes 50% of the power generation.

Enerdata, 2021 *Due to rounding, some graphs may sum to slightly above or below 100%*

Share of renewables in power generation

(incl. large hydro) in 2020

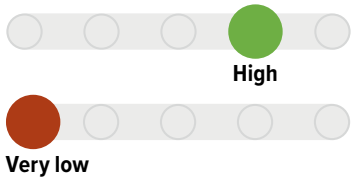


Share of renewables in power generation: 5-year trend (2015-2020)

+9.18%
Italy

+24.49%
G20 average

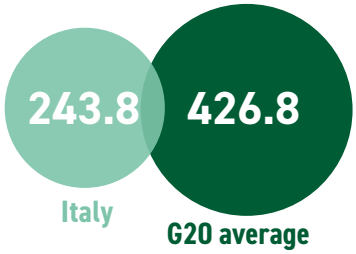
Decarbonisation rating: share of renewables compared to other G20 countries



Enerdata, 2021

Emissions intensity of the power sector

(gCO_2/kWh) in 2020

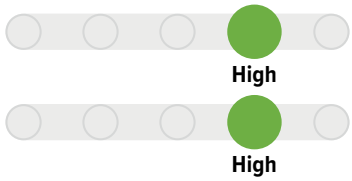


Emissions intensity of the power sector:
5-year trend (2015-2020)

-22.3%
Italy

-11.18%
G20 average

Decarbonisation rating: emissions intensity compared to other G20 countries



For each kilowatt hour of electricity, 243.8 g of CO_2 are emitted in Italy. Italy's power sector emissions intensity has only dropped marginally because **the use of coal and oil for power generation has shrunk**. However, with the largest share of total generation produced by natural gas, and fossil fuels still account for 56.8% of the power mix.

Enerdata, 2021

POLICY ASSESSMENT

Renewable energy in the power sector

According to its 2019 National Integrated Plan for Climate and Energy, Italy aims to gradually phase out coal for electricity generation by 2025 and have 55% renewables in the electricity mix by 2030, half of it coming from solar. However, Italy has no 2050 renewable energy target nor long-term strategy.

Government of Italy, 2019

Coal phase-out in the power sector

The share of electricity produced from coal has steadily decreased since 2015 and was at 4% in 2020, down from 7% in 2019.

In its 2017 National Energy Strategy, the Italian government announced that coal would be phased out of the power sector by 2025.

Ministry of Economic Development, 2017

CORONAVIRUS RESPONSE AND RECOVERY

In its stimulus package, Italy is supporting public transit and subsidies for efficient vehicles. Analysis by Vivid Economics reveals that Italy's Green Stimulus Index (GSI) score has improved significantly but still remains negative, mainly because of its baseline environmental performance. Italy's Recovery and Resilience Plan (RRP) includes investments into measures relevant to a green transition. Italy plans to cut its carbon emissions by around 60% by 2030 by using EUR 80bn (USD 96b) of EU funds for energy transition in the next five years.

IMF, 2021; Vivid Economics, 2021

TRANSPORT SECTOR

Emissions from energy used to transport goods and people

Transport emissions are still rising in Italy. In 2018, 91% of passenger transport and 85% of freight was transported by road and fossil fuels still dominated the transport energy mix. Electric vehicles (EVs) made up only 4.3% of car sales in 2020. To stay within a 1.5°C limit, passenger and freight transport need to be decarbonised.

1.12% Indirect emissions

29.36% Direct emissions

Share of transport in energy-related CO_2 emissions

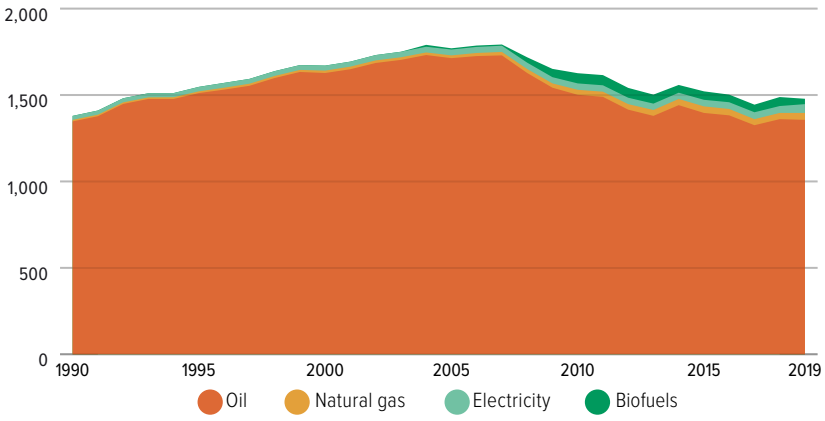
1.5°C COMPATIBILITY

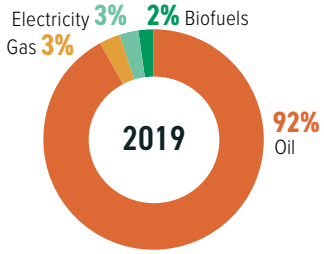
The share of low-carbon fuels in the transport fuel mix globally must increase to between 40% and 60% by 2040 and 70% to 95% by 2050.

Rogelj et al., 2018; Climate Action Tracker, 2020b

Transport energy mix

Final energy consumption of transport by source (PJ/year)



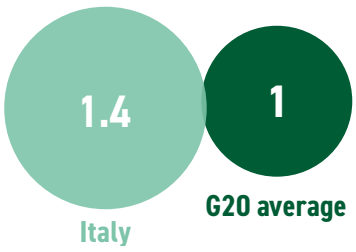


Electricity and biofuels make up only 5.5% of the energy mix in transport.

Enerdata, 2021 *Due to rounding, some graphs may sum to slightly above or below 100%*

Transport emissions per capita

excl. aviation (tCO_2/capita) in 2020

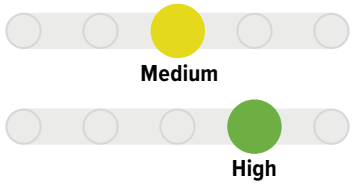


Transport emissions: 5-year trend (2015-2020)

-15.0% Italy

-4.3% G20 average

Decarbonisation rating: transport emissions compared to other G20 countries

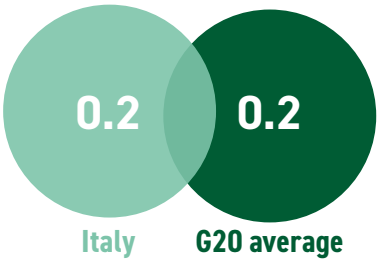


Reductions in transport emissions per capita in 2020, and concomitant changes in the 5-year trends and decarbonisation ratings, reflect widespread economic slowdowns and transport restrictions imposed in response to the COVID-19 pandemic. For a discussion of broader trends in the G20 and the rebound of transport emissions in 2021, please see the Highlights Report at www.climate-transparency.org

Enerdata, 2021; United Nations, 2019

Aviation emissions per capita[6]

(tCO_2/capita) in 2018



Aviation emissions: 5-year trend (2013-2018)

+23.90
Italy

+21.25%
G20 average

Decarbonisation rating: aviation emissions compared to other G20 countries

Current year (2018):

5-year trend (2013-2018):

Enerdata, 2021; International Energy Agency, 2020; United Nations, 2019

Motorisation rate

657 VEHICLES
per 1,000 inhabitants in 2019 in the Italy*

Enerdata, 2021

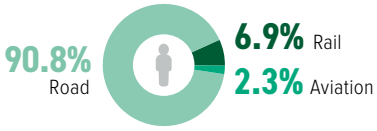
Market share of electric vehicles in new car sales (%)

Share of EV sales in 2020 was 4.3%

IEA, 2021

Passenger transport

(modal split in % of passenger-km) in 2018*



Enerdata, 2021

Freight transport

(modal split in % of tonne-km) in 2018*

Freight transport by air, pipelines and waterways are excluded due to lack of data.

Enerdata, 2021

**Owing to the variety of sources and data years available, these data are not comparable across G20 countries.*

POLICY ASSESSMENT

Phase out fossil fuel cars

Italy applies the EU CO_2 efficiency standards for cars, which have recently been tightened. The government aims to put one million EVs on the road by 2022 and six million (4 million EVs and 2 million hybrid) by 2030. It provided subsidies of EUR 60m in 2019, with EUR 70m planned for 2021-22, for the purchase of new electric and hybrid vehicles, but has no target for phasing out internal combustion cars. Italy has also set a target of 22% share of energy from renewable energy sources in the gross final consumption of energy in the transport sector.

Government of Italy, 2019; European Commission, 2019

Phase out fossil fuel heavy-duty vehicles

According to 2019 EU legislation, manufacturers of heavy-duty vehicles will be required to cut CO_2 emissions from new trucks on average by 15% from 2025 and by 30% from 2030, compared to 2019 levels. A toll differentiating between vehicle classes applies on most motorways.

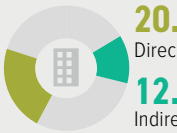
Modal shift in (ground) transport

Italy is striving towards a shift of about 10% of passenger transport demand by 2030 from private cars to public transport, carpooling, bicycles and walking. It supports the shift of freight from road to rail, e.g., through funding support schemes.

BUILDING SECTOR

Emissions from energy used to build, heat and cool buildings

Direct emissions and indirect emissions from the building sector in Italy account for 21% and 12% of total energy-related CO_2 emissions, respectively. Per capita emissions from the building sector are **1.15 times the G20 average**.



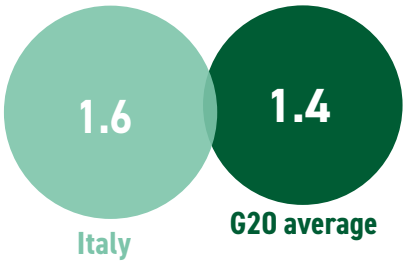
Share of buildings in energy-related CO_2 emissions. Building emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (grid-electricity for air conditioning, appliances, etc.)

By 2040, global emissions from buildings need to be reduced by 90% from 2015 levels, and be 95-100% below 2015 levels by 2050, mostly through increased efficiency, reduced energy demand, and electrification in conjunction with complete decarbonisation of the power sector.

Rogelj et al., 2018; Climate Action Tracker, 2020b

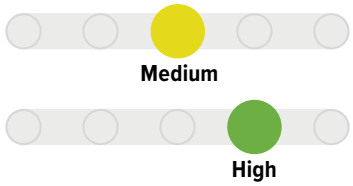
Building emissions per capita

(incl. indirect emissions) (tCO_2/capita) in 2020



Building emissions intensity: 5-year trend (2015-2020)

Decarbonisation rating: building emissions intensity compared to other G20 countries



Building-related emissions per capita were just slightly higher than the G20 average in 2020. This reflects the low fossil fuel share of the electricity mix. However, Italy has managed to decrease per capita emissions by roughly 15% (over 2015-2020), five times faster than the G20 average reduction of 3%.

Enerdata, 2021; United Nations, 2019

POLICY ASSESSMENT

Near zero energy new buildings

European legislation requires all new buildings within member states to be nearly zero energy buildings (NZEB). However, how NZEB is defined is left to the member states. Italy is obliged under EU law for all new buildings to reach near zero energy from 2020 onwards. A building code is in place.

The European Parliament and the Council of the European Union, 2018

Renovation of existing buildings

Over 60% of residential buildings are more than 45 years old and were built before the first energy saving law (373/1976). Mandatory national building energy codes apply for both commercial and residential buildings, applicable to any renovated areas of a building.

Italy has an objective of reducing emissions from buildings by 52 to 87 $MtCO_2e$ by 2030 and a strategy for energy-related renovations of the building stock by 2050.

Lombardini, 2021; Government of Italy, 2019

INDUSTRY SECTOR

Emissions from energy use in industry

Direct emissions and indirect emissions from industry in Italy make up 17% and 9% of energy-related CO_2 emissions, respectively. Italy **lacks effective policies** to increase the energy efficiency of the industry sector or any effective policies to reduce emissions and decarbonise the sector.

Share of industry in energy-related CO_2 emissions.

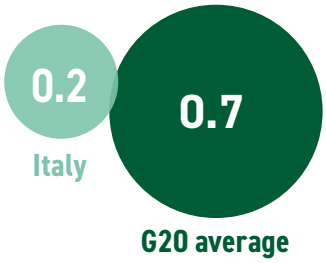
1.5°C COMPATIBILITY

Industrial emissions need to be reduced by 65-90% from 2010 levels by 2050.

Rogelj et al., 2018

Industry emissions intensity[7]

(tCO_2e/USD2015 GVA) in 2017

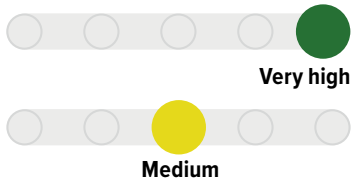


Industry emissions intensity: 5-year trend (2012-2017)

-15.88%
Italy

-16.45%
G20 average

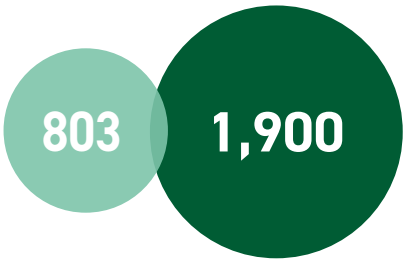
Decarbonisation rating: industry emissions intensity compared to other G20 countries



Enerdata, 2021; World Bank, 2021

Carbon intensity of steel production[8]

($kgCO_2$/tonne product) in 2016

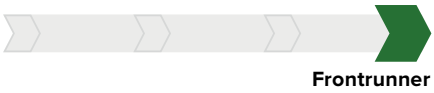


Steel production and steelmaking are significant GHG emissions sources, and challenging to decarbonise.

World Steel Association, 2018; Climate Action Tracker, 2020c

POLICY ASSESSMENT

Energy efficiency



Italy's objective, as part of its National Energy and Climate Plan, represents a contribution towards the EU emissions reduction goal under its first NDC target, but may need to be revised for the updated NDC. The European Commission estimates the planned policies should be monitored and can be stepped up and completed. **With its low industry energy intensity and implementation of comprehensive policies, Italy is considered a top-performing country.**

Under current policies, industry emissions are expected to fall just 7.6% between 2018 and 2030, while under planned policies they are expected to fall 11.2% over the same period.

European Commission, 2019

LAND USE SECTOR

Emissions from changes in the use of the land

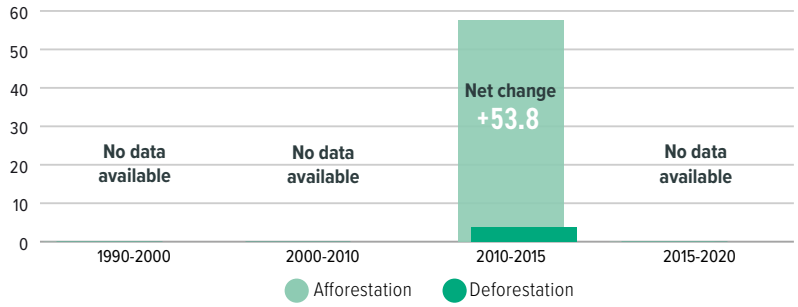
To stay within the 1.5°C limit, **Italy needs to make the land use and forest sector as a net sink of emissions**, e.g., by discontinuing the degradation of peatlands and use of moor soils, converting cropland into wetlands, and creating new forests.

Global deforestation needs to be halted and changed to net CO_2 removals by around 2030.

Rogelj et al., 2018

Annual forest expansion, deforestation and net change

Forest area change in 1,000 ha/year



Between 2010-2015, Italy increased its forested areas; however, data is not available for other periods.

Global Forest Resources Assessment, 2020

Note: There is a change of source and methodology for measuring this indicator from last year's profiles, which means the two years may not be directly comparable.

POLICY ASSESSMENT

Target for net zero deforestation

Low

Italy adopted a controversial legislative change to the National Forest Law in 2018. Critics have alleged that the decree endangers formerly protected areas, as it proposes to reclassify natural developing forests as abandoned land and allow legally logging. Based on the changes to the law, a committee nominated by the Italian Ministry of Agricultural, Food and Forestry Policies was tasked with developing Italy's first ever National Forest Strategy 2019-2039. This committee met for the first time in April 2019 to develop the 20-year strategic plan, but at the time of writing (August 2021) it is unclear whether the plan has been formulated.

Government of Italy, 2019; Pettenella, 2019

AGRICULTURE SECTOR

Emissions from agriculture

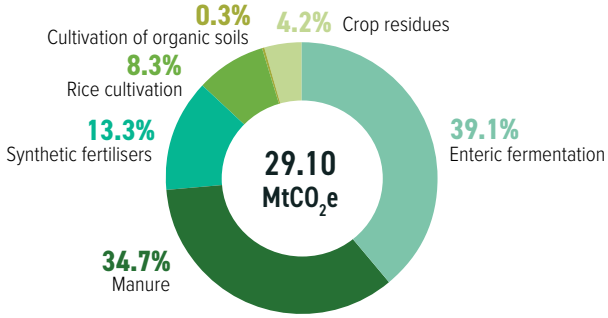
Italy's agricultural emissions are mainly from the digestive processes (mainly cattle) and livestock manure. **A 1.5°C compatible pathway requires behavioural and dietary shifts and less fertiliser use.**

Methane emissions (mainly enteric fermentation) need to decline by 10% by 2030 and by 35% by 2050 (from 2010 levels). Nitrous oxide emissions (mainly from fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

Rogelj et al., 2018

Emissions from agriculture (excluding energy)

Emissions from the agriculture sector in 2018



In Italy, the largest sources of GHG emissions in the agriculture sector are enteric fermentation (39%), manure (35%) and synthetic fertilisers (13%). Dietary changes and efficient use of fertilisers as well as reductions in food waste could help reduce emissions from this sector.

FAO, 2021

Due to rounding, some graphs may sum to slightly above or below 100%

MITIGATION: TARGETS AND AMBITION

The combined mitigation effect of Nationally Determined Contributions (NDCs) assessed by April 2021 is **not sufficient and will lead to a warming of 2.4°C by the end of the century.** This highlights the urgent need for all countries to submit more ambitious targets by COP26, as they agreed to do in 2015, and to **urgently strengthen their climate action to align to the Paris Agreement's temperature goal.**

Climate Action Tracker, 2021a

AMBITION: 2030 TARGETS

Nationally Determined Contribution (NDC): Mitigation

TARGETS

Italy contributes to the EU-wide target of reducing net GHG emissions by at least 55% by 2030 below 1990 levels.

ACTIONS

As an EU member state, Italy is committed to contributing to the EU's NDC.

Climate Action Tracker (CAT) evaluation of targets and actions

EU'S OVERALL RATING

- 1.5°C Paris Agreement compatible
- Almost sufficient
- **INSUFFICIENT**
- Highly insufficient
- Critically insufficient

This CAT evaluation is a **new, overall rating**, that combines the several, separately rated elements, of policies and actions, domestic and internationally supported targets, 'fair-share target' and the country's contribution to climate finance. As Italy is an EU member state, the EU's NDC has been rated by the CAT. The "Insufficient" rating indicates that the EU's climate policies and commitments need substantial improvements to be consistent with the Paris Agreement's 1.5°C temperature limit. The EU's 2030 emissions reduction target and its policies and actions are consistent with 2°C of warming when compared to modelled domestic pathways. However, the EU is also not meeting its 'fair-share' contributions to climate action.

To improve its rating, the EU should strengthen its emissions reduction target to at least 62% below 1990 levels, adopt policies necessary to reach this goal, and significantly increase its support for climate action in developing and least developed countries. For the full assessment of the country's target and actions, and the explication of the methodology see www.climateactiontracker.org

Climate Action Tracker, 2021

Note: 'fair-share' ratings for EU member states are not provided due to the intricacies and inter-linkages of the EU's internal burden sharing system.

TRANSPARENCY: FACILITATING AMBITION

Countries are expected to communicate their NDCs in a clear and transparent manner in order to ensure accountability and comparability. The NDC Transparency Check has been developed in response to Paris Agreement decision 1/CP.21 and the Annex to decision 4/CMA.1, which sets out the "information to facilitate clarity, transparency and understanding" as crucial elements of NDCs.

NDC Transparency Check recommendations

The EU submitted its first NDC to the UNFCCC in March 2015 and updated it on 29 December 2020. In comparison with its first NDC, the EU has added elements that further enhance clarity, transparency, and understanding. The additional information includes a comparison between its current 2020 target and its previous commitments from 1990 and 2015, and recognises that the business-as-usual scenario should include significantly higher emission reductions. There is still room for improvement to increase comparability, transparency, and understanding in the EU's successive NDC or NDC updates, including:

- Explicitly detailing the circumstances under which the EU will update the values of the reference indicators and the information on sources.
- Information on how the EU plans to implement and account for its NDC target(s).
- Present mitigation potential assessments to sustain the assertion that EU's NDC target is more ambitious than the previous and aligned with Paris Agreement's long-term goals.

For more visit www.climate-transparency.org/ndc-transparency-check

AMBITION: LONG-TERM STRATEGIES

The Paris Agreement invites countries to communicate mid-century, long-term, and low-GHG emissions development strategies by 2020. Long-term strategies are an essential component of the transition toward net zero emissions and climate-resilient economies.

Status	Not submitted
Interim steps	None
Sectoral targets	No
Net zero target	No
Net zero year	Agreed to EU's 2050 "climate neutrality" goal

FINANCE

MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS

PARIS AGREEMENT

Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.

In 2019, **Italy spent USD 9.641bn on fossil fuel subsidies for oil and gas**. Revenues from carbon pricing greatly increased since 2012 (USD 98m), then plateaued since 2018, reaching USD 1,540m in 2020.

1.5°C COMPATIBILITY

Investment in green energy and infrastructure needs to outweigh fossil fuel investments by 2025.

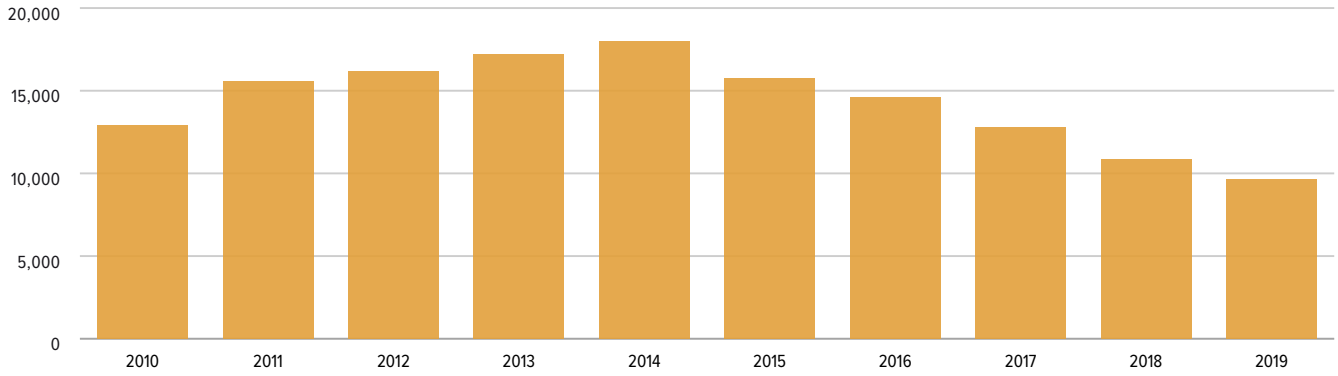
Rogelj et al., 2018

FISCAL POLICY LEVERS

Fiscal policy levers raise public revenues and direct public resources. Critically, they can shift investment decisions and consumer behaviour towards low-carbon, climate-resilient activities by reflecting externalities in the price.

Fossil fuel subsidies

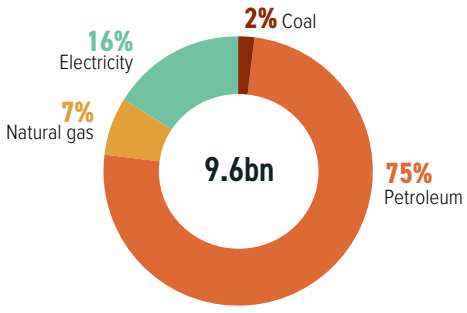
(USD billions)



OECD-IEA Fossil Fuel Support database, 2020

Fossil fuel subsidies by fuel type

USD in 2019



Over the past decade (2010-2019), Italy's fossil fuel subsidies increased until 2014, and thereafter slowly but steadily declined, reaching their minimum historical level of USD 9.6bn in 2019. Over this period, most of the subsidies were directed to supporting the production and consumption of petroleum. Comparable data is not available yet for 2020. However, according to the Energy Policy Tracker data, during 2020 Italy pledged at least USD 3.8bn to fossil fuel energy as part of its energy-related funding commitments and COVID-19 economic response. A large share of such commitments (USD 3.4bn) is represented by the nationalisation of the national airline Alitalia.

Energy Policy Tracker, 2021; OECD-IEA Fossil Fuel Support database, 2020

Due to rounding, some graphs may sum to slightly above or below 100%

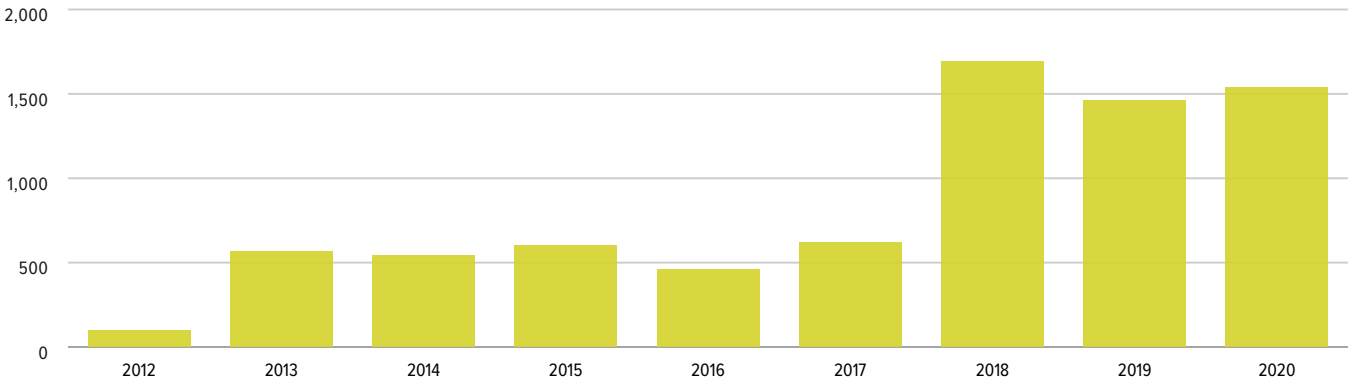
CORONAVIRUS RESPONSE AND RECOVERY

Italy's initial emergency package, worth USD 30mn (1.6% of GDP), was largely directed at healthcare, welfare and emergency support for businesses. The total fiscal stimulus package has crossed the USD 500bn mark, and most of that is directed to bailing out of the business sector. Alongside the fiscal package, some monetary measures were also announced, including a moratorium on loan repayments for some households and small and medium-sized enterprises, and incentives for financial and non-financial companies in the form of Deferred Tax Activities.

IMF, 2021

Carbon pricing and revenue

(USD millions)



Italy has no national carbon tax nor emissions trading scheme (ETS). However, the country is part of the EU ETS, which generated USD 1.5bn in 2020 in Italy alone. The scheme covers 39% of EU emissions (in the power, industry and aviation sectors), priced at USD 32/tCO_2e for 2020.

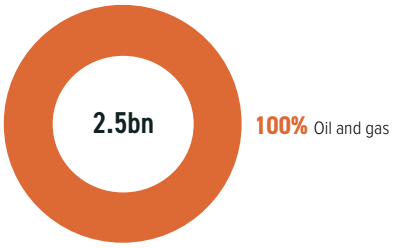
I4CE, 2021; Energy Policy Tracker, 2021

PUBLIC FINANCE

Governments steer investments through their public finance institutions, including via development banks both at home and overseas, and green investment banks. Developed G20 countries also have an obligation to provide finance to developing countries, and public sources are a key aspect of these obligations under the UNFCCC.

Public finance for fossil fuels

USD, per annum (2018-19 average)



Between 2018 and 2019, Italy provided average public finance support equal to USD 2.5bn per year to the oil and gas sector, and a much smaller USD 7m per year to the coal sector. This was predominantly provided through the Italian ECA Servizi Assicurativi del Commercio Estero (SACE). All in all, this represents an increase in the total public finance provided by the country to fossil fuels (USD 2.5bn) if compared to the previous period 2013-2015, when average yearly support of USD 1.7bn for the fossil fuels sector overall was recorded.

Oil Change International, 2020; UK Government, 2020 *Due to rounding, some graphs may sum to slightly above or below 100%*

Provision of international public support

USD millions, annual average 2017 and 2018

Italy's contributions to climate finance have slowly increased since the 2013-14 period. It reports most of its spending has been directed to actions supporting both mitigation and adaptation (cross-cutting). In 2017-18 it nearly doubled its bilateral climate finance, though amounts remain relatively small compared to other G20 members obliged to provide climate finance. It ranks seventh, ahead of Canada and Australia, for bilateral finance flows and fifth for contributions to the multilateral climate funds in 2017-18, in absolute values. At the recent Green Climate Fund replenishment meeting, Italy pledged USD 338m, only just exceeding its first contribution to the Fund and has made no major announcements on post-2020 climate finance targets.

FINANCIAL POLICY AND REGULATION

Financial policy and regulation

Through policy and regulation, governments can overcome challenges to mobilising green finance, including real and perceived risks, insufficient returns on investment, capacity and information gaps.

In February 2021, the Italian Ministry of Economy and Finance (Ministero dell'Economia e delle Finanze), with the support of the European Commission, **published the Sovereign Green Bonds (SGB) framework. The framework will align with the Green Bonds Principles and with the draft EU Green Bond Standard.** It will be used to finance public expenditure in a "green" way, i.e. identifying eligible green sectors in alignment with the EU Sustainable Finance Taxonomy as well as with the 2030 Sustainable Development Goals. Additionally, it will also inform investors on the investment gap for the climate neutrality target by the year 2050 and promote the mobilisation of private capital flows towards sustainable projects.

In March 2021, after the launch of the SGB framework, the Italian Ministry of Economy and Finance also issued an inaugural EUR 8.5bn 24-year sovereign green bond (Buoni del Tesoro Poliennali) to support public expenditures with positive environmental impact.

In May 2021, the Italian Central Bank (Banca d'Italia, BdI) launched the G20 TechSprint Initiative along with the Bank for International Settlements (BIS) Innovation Hub. The initiative aims to highlight the potential for new technologies to resolve some of the most pressing challenges in green and sustainable finance. The solutions will be geared towards: (1) data collection, verification and sharing, (2) analysis and assessment of transition and physical climate-related risks, and (3) better connecting projects and investors.

Bank of Italy, 2021; European Commission, 2021b; Green Finance Platform, 2021; Ministry of Economy and Finance, 2021

Nationally Determined Contribution (NDC): Finance

Conditionality	Not applicable As an EU member state, Italy is committed to contributing to the EU's NDC
Investment needs	
Actions	
International market mechanisms	

ENDNOTES

Where referenced, "Enerdata, 2021" refers to data provided in July 2021. For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2021

1 The '1.5°C compatible pathway' is derived from global cost-effective pathways assessed by the IPCC's SR15, selected based on sustainability criteria, and defined by the 5th-50th percentiles of the distributions of such pathways achieving the long-term temperature goal of the Paris Agreement. Negative emissions from the land sector and novel negative emissions technologies are not included in the assessed models, which consider one primary negative emission technology (BECCS). In addition to domestic 1.5°C compatible emissions pathways, the 'fair-share' emissions reduction range would almost always require a developed country to provide enough support through climate finance, or other means of implementation, to bring the total emissions reduction contribution of that country down to the required 'fair-share' level.

2 'Land use' emissions is used here to refer to land use, land use change and forestry (LULUCF). The Climate Action Tracker (CAT) derives historical LULUCF emissions from the UNFCCC Common Reporting Format (CRF) reporting tables data converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from LULUCF, which under the new IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

3 The Decarbonisation Ratings assess the current year and average of the most recent five years (where available) to take account of the different starting points of different G20 countries.

4 The selection of policies rated and the assessment of 1.5°C compatibility are primarily informed by the Paris Agreement and the IPCC's 2018 SR15. The table below displays the criteria used to assess a country's policy performance.

5 The 1.5°C 'fair-share' ranges for 2030 are drawn from the CAT, which compiles a wide range of perspectives on what is considered fair, including considerations such as responsibility, capability, and equality. Countries with 1.5°C 'fair-share' ranges reaching below zero, are expected to achieve such strong reductions by domestic emissions reductions, supplemented by contributions to global emissions reduction efforts via, for example, international finance. On a global scale, negative emissions technologies are expected to play a role from the 2030s onwards, compensating for remaining positive emissions. In order to maintain comparability across all countries, this report harmonises all data with PRIMAP, 2021 dataset to 2018. However, note that Common Reporting Format (CRF) data is available for countries which have recently updated GHG inventories. Where countries submitted updated NDC targets before August 2021, these have been analysed and included.

6 This indicator adds up emissions from domestic aviation and international aviation bunkers in the respective country. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.

7 This indicator includes only direct energy-related emissions and process emissions (Scope 1) but not indirect emissions from electricity.

8 This indicator includes emissions from electricity (Scope 2) as well as direct energy-related emissions and process emissions (Scope 1).

On endnote 4.	Low	Medium	High	Frontrunner
Renewable energy in power sector	No policies to increase the share of renewables	Some policies	Policies and longer-term strategy/ target to significantly increase the share of renewables	Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place
Coal phase-out in power sector	No targets and policies in place for reducing coal	Some policies	Policies + coal phase-out decided	Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)
Phase out fossil fuel cars	No policies for reducing emissions from light-duty vehicles	Some policies (e.g. energy/emissions performance standards or bonus/ malus support)	Policies + national target to phase out fossil fuel light-duty vehicles	Policies + ban on new fossil fuel-based light-duty vehicles by 2035 worldwide
Phase out fossil fuel heavy-duty vehicles	No policies	Some policies (e.g. energy/emissions performance standards or support)	Policies + strategy to reduce absolute emissions from freight transport	Policies + innovation strategy to phase out emissions from freight transport by 2050
Modal shift in (ground) transport	No policies	Some policies (e.g. support programmes to shift to rail or non-motorised transport)	Policies + longer-term strategy	Policies + longer-term strategy consistent with 1.5°C pathway
Near zero energy new buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + national strategy for near zero energy new buildings	Policies + national strategy for all new buildings to be near zero energy by 2020 (OECD countries) or 2025 (non-OECD countries)
Energy efficiency in industry	No policies	Mandatory energy efficiency policies cover more than 26-50% of industrial energy use	Mandatory energy efficiency policies cover 51–100% of industrial energy use	Policies + strategy to reduce industrial emissions by 75-90% from 2010 levels by 2050
Retrofitting existing buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + retrofitting strategy	Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020
Net zero deforestation	No policies or incentives to reduce deforestation in place	Some policies (e.g. incentives to reduce deforestation or support schemes for afforestation/ reforestation in place)	Policies + national target for reaching net zero deforestation	Policies + national target for reaching zero deforestation by 2020s or for increasing forest coverage

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