

# Greenhouse Gas Emissions and Carbon Footprint

**Extract from France's 2021 Environmental Performance  
Review**



# Greenhouse Gas Emissions and Carbon Footprint

**As a result of climate negotiations, parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed on the need to significantly reduce greenhouse gas (GHG) emissions. In 2014, the European Union set a target to reduce GHG emissions by 40% between 1990 and 2030. This target was revised to 55% under the 2021 European Green Deal. France has adopted a national low-carbon strategy and carbon budgets to plan the transition to a low-carbon economy.**

## GHG EMISSIONS IN FRANCE AND THE WORLD

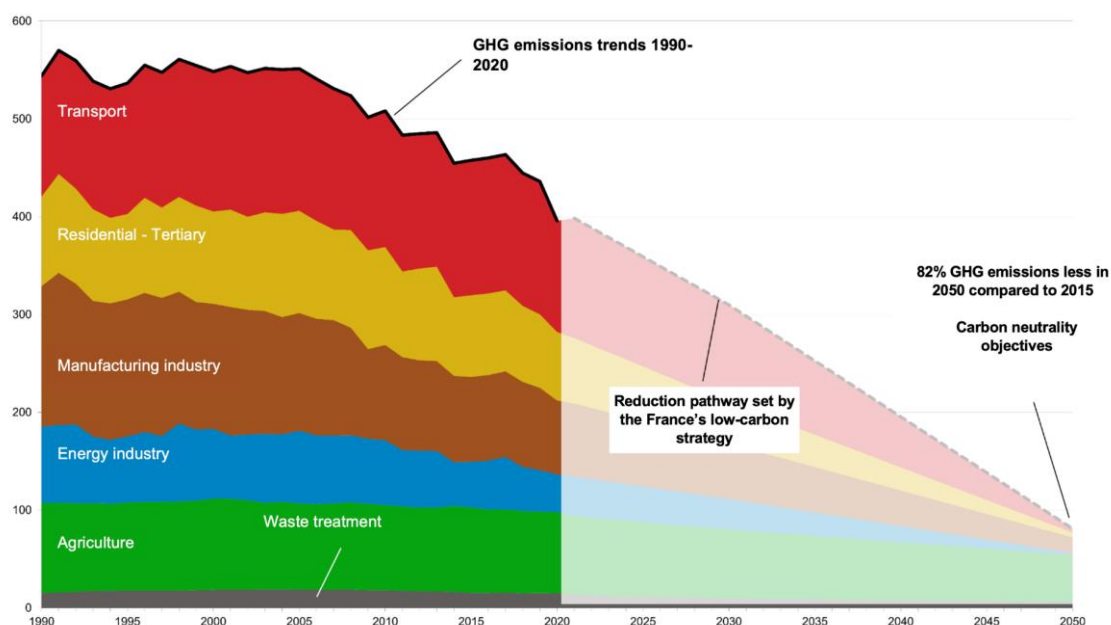
Despite the adoption of the Paris Agreement in 2015 to keep temperatures below 2°C by 2100, global GHG emissions grew to a record 52.4 billion tonnes of CO<sub>2</sub> equivalent in 2019. Taking into account land use and deforestation, global GHG emissions reached 59.1 tonnes. They have increased by an average of 1.4% per year since 2010, after increasing by an average of 1.1% per year between 1990 and 2010. The economic slowdown due to the pandemic is expected to lead to a 7% decrease in global CO<sub>2</sub> emissions in 2020. The increase in global average temperature at the end of the century depends on future emissions. Taking into account past emissions, regardless of future emission scenarios, the +1.5°C compared to the pre-industrial era will be reached by 2030. Even if all current government commitments made under the Paris Agreement were implemented, the global average temperature in 2100 is likely to be at least +2.7°C above pre-industrial levels (*Production Gap Report 2020*, UNEP DTU Partnership, 2020).

In 2020, France's total GHG emissions were estimated at 396 million tonnes of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub> eq) compared to 441 Mt CO<sub>2</sub> eq in 2019. This historic decrease in emissions - a drop of 10% compared to 2019 - is due to the pandemic which triggered sharp reductions in activity and travel. Transport accounts for half of this decrease (-22 Mt CO<sub>2</sub> eq), with lockdown periods corresponding to the biggest drops in emissions (-27% in April 2020). Transport remains the most important source of GHGs at 29% of total emissions excluding land use, land-use change, and forestry (LULUCF). The agricultural sector is responsible for 21% of total GHG emissions as the main emitter of methane (CH<sub>4</sub>) from livestock and nitrous oxide (N<sub>2</sub>O) from fertilizers. The manufacturing industry accounts for 19% of total GHG emissions, close to the residential/tertiary sector at 18%. The energy sector accounts for 10% and waste treatment sector 4%.

Between 1990 and 2020, France's non-LULUCF GHG emissions decreased by 27% (*Figure 1*). Excluding events triggered by the 2020 pandemic, this decrease is largely due to the reduction of industrial emissions. They have been halved since 1990: down 51% for the energy industry and down 47% for the manufacturing industry. The residential/tertiary sectors and agriculture also decreased their emissions over the same period: down 24% and 10% respectively. The drop in transport emissions - down 8% between 1990 and 2020 - is due exclusively to the pandemic. Transport emissions increased by 10% between 1990 and 2019. The overall decrease in emissions was accompanied by a reduction in the amount of CO<sub>2</sub> emitted per unit of added value, down 47% between 1990 and 2019.

## Fact Sheet: Greenhouse Gas Emissions and Carbon Footprint

**Figure 1: Trends in greenhouse gas emission in France and reduction targets**  
In million tonnes CO<sub>2</sub> equivalent



Scope: Kyoto protocol i.e. Metropolitan France and the overseas territories belonging to the EU.

Sources: Citepa, GHG inventories in Secten format, 2021; MTE, revised draft low-carbon national strategy, 2020

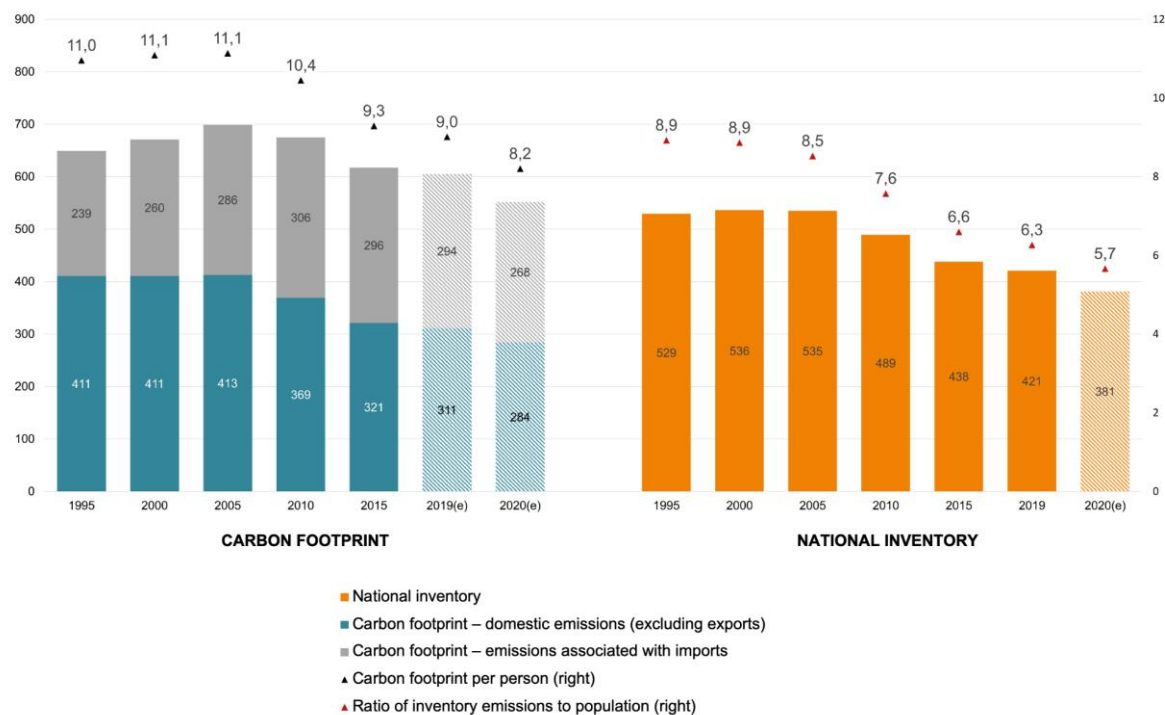
### FRANCE 'S CARBON FOOTPRINT

In a global economy, it is important to take into account emissions from all goods and services consumed, including those produced outside the country. By adding direct emissions from households (housing and cars), domestic production (excluding exports) and production associated with imported products, the carbon footprint can be used to include the carbon content of foreign trade in GHG-emissions. From 1995 to 2020 (provisional estimate), the carbon footprint (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O) decreased by 15%, dropping 7% between 1995 and 2019. Domestic emissions decreased significantly: dropping by 24% between 1995 and 2019 and by 31% between 1995 and 2020. While emissions associated with imports increased by 23% between 1995 and 2019 and by 12% between 1995 and 2020. In 2020, domestic emissions accounted for half of the carbon footprint (Figure 2).

## Fact Sheet: Greenhouse Gas Emissions and Carbon Footprint

**Figure 2: Comparison of carbon footprint and national inventory**

In millions of tonnes of CO<sub>2</sub> equivalent (left) – In tonnes of CO<sub>2</sub> equivalent per person (right)



(e) = provisional estimates.

Note: carbon footprint and national inventory cover the three main GHGs (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) excluding LULUCF.

Scope: Kyoto protocol i.e. Metropolitan France and Overseas France belonging to the EU.

Sources: Citepa; AIE; FAO; Customs; Eurostat; INSEE. Treatment: SDES, 2021

## POLICY FOR THE REDUCTION OF GHG EMISSIONS

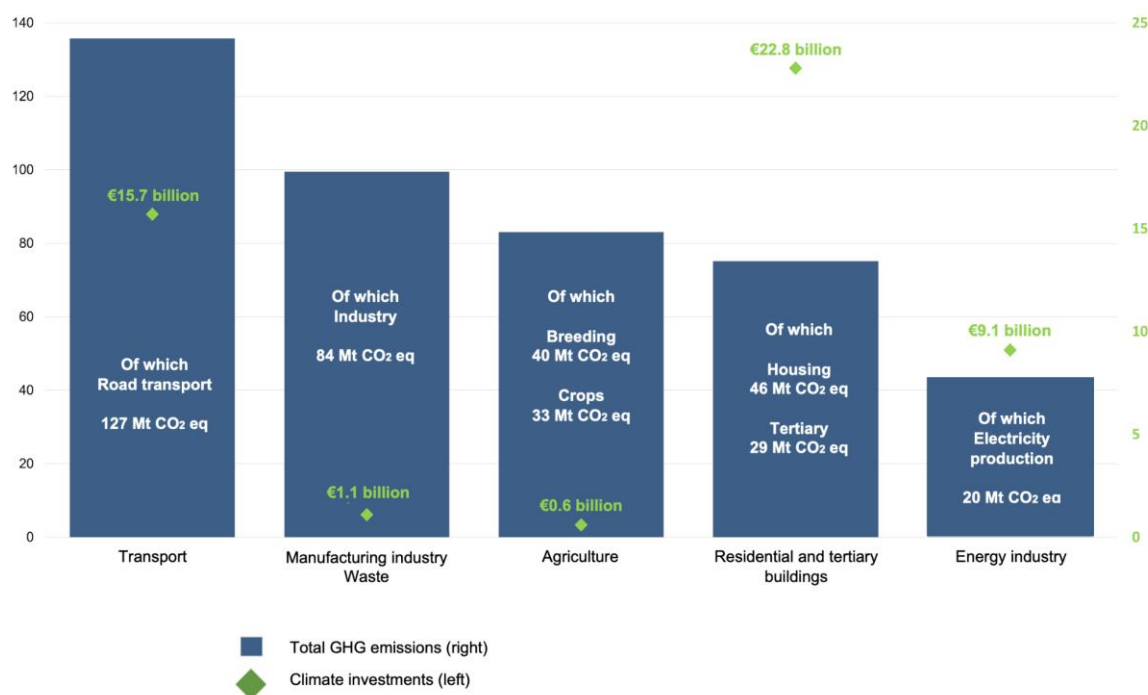
By adopting the Climate and Energy Act dated 8 November 2019, France set the objective to “reduce greenhouse gas emissions by 40% between 1990 and 2030 and achieve carbon neutrality by 2050 by dividing greenhouse gas emissions by over six between 1990 and 2050”. Emission mitigation pathways are set out in the national low-carbon strategy. The carbon neutrality objective aims to offset irreducible emissions (about 80 Mt CO<sub>2</sub> eq per year) with sinks such as agricultural land, forests, and new technological solutions such as carbon capture and storage. This ambition echoes the 2021 European Green Deal which aims for climate neutrality in the European Union by 2050, including actions to decarbonise the energy sector, renovate buildings, encourage business innovation in the green economy, and deploy cleaner transport modes.

In addition to more restrained individual consumption, reductions in GHG emissions require investments geared towards energy efficiency in all sectors of activity and a massive increase in renewable energy production. The Institute for Climate Economics (I4CE) evaluates climate investment in France. In 2020, climate investments by households, businesses and public administrations were estimated at €45 billion, including €14.7 billion in housing energy renovation and €10.6 billion in transport infrastructure. Investments were also made in low-carbon vehicles (€8.1 billion) using renewable electricity and, to a lesser extent, in biogas and renewable heat (Figure 3).

## Fact Sheet: Greenhouse Gas Emissions and Carbon Footprint

**Figure 3: GHG emissions and energy transition investments by sector in 2019**

In million tonnes of CO<sub>2</sub> equivalent (left) – In €billions (right)



Scope: Kyoto protocol i.e. Metropolitan France and Overseas France belonging to the EU.

Sources: I4CE, Landscape of climate finance in France; Citepa, inventory in Secten format, 2021

## FOR MORE INFORMATION

- *Chiffres clés du climat, France, Europe et Monde - Édition 2022*, SDES and I4CE, Datalab, October 2021, 92pp.
- *Estimation de l'empreinte carbone de 1995 à 2020*, web article, SDES.
- *Gaz à effet de serre et polluants atmosphériques - Bilan des émissions en France de 1990 à 2019 - Édition 2021*, Citepa, July 2021.
- *Production Gap Report 2020*, UNEP, UNEP DTU Partnership, December 2020.
- *2021 Landscape of climate finance* - I4CE