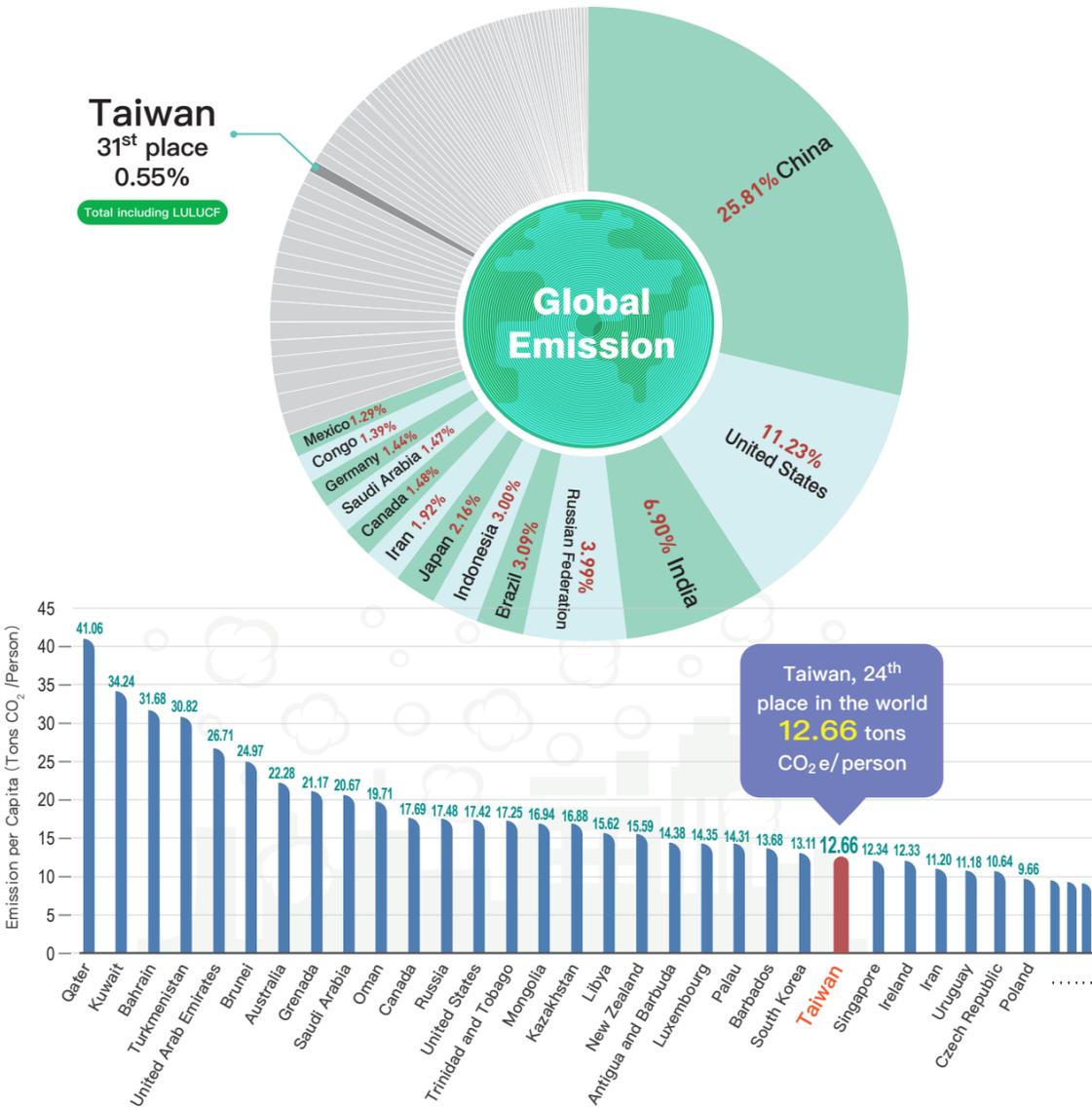


# Global Share of Taiwan's Greenhouse Gases Emission

Taiwan belongs to the island-type independent energy system. More than 96% of energy is imported. The economy is guided by export trade.

The industrial structure is mainly manufacturing, in which semiconductor industry output value accounts for 26.2% of the world, ranking the second in the world. The annual growth rate of output value reaches 18.6%, which is better than that of the world (The global annual growth rate was only 3.3%) in 2022.

But Taiwan's greenhouse gases emission only makes up 0.55% of the global amount. The major industries are continuing to reduce greenhouse gases emission in order to maintain their international competitiveness. However, as it subscribes to the non-nuclear homeland policy, Taiwan is facing greater difficulty as it endeavors to further reduce emissions.



Note: Calculated based on total GHG emissions (excluding LULUCF)  
Ref.: World Resources Institute (WRI) Climate Watch



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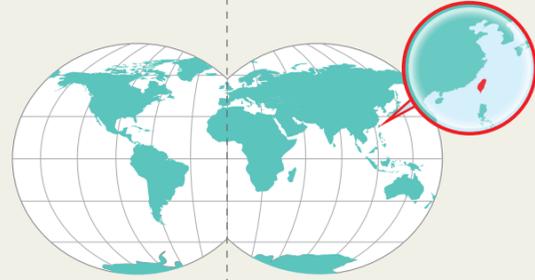
# 2024 TAIWAN Greenhouse Gases Inventory

- 1990 ~ 2022 -



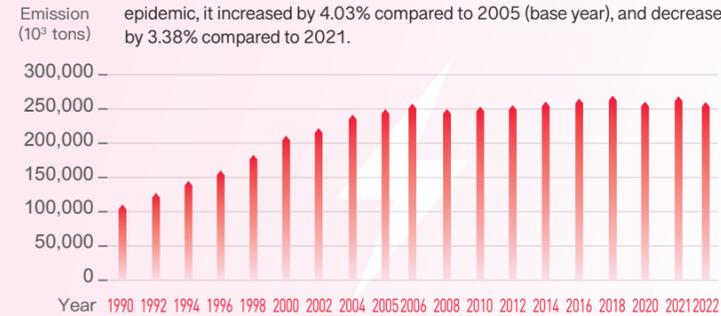
# Trends of Various Emission Sources

The emission sources in Taiwan come from five major sectors: energy, industrial processes and product use, agriculture, land use change and forestry and waste.



## Energy Sector

The emission of the energy sector is the largest of all sectors, accounting for more than 90% of the country. It had shown an upward trend over the years, and it has declined for the first time in 2008. In recent years, it has shown a slight decrease trend. In 2022, due to the economic recovery affected by the epidemic, it increased by 4.03% compared to 2005 (base year), and decreased by 3.38% compared to 2021.

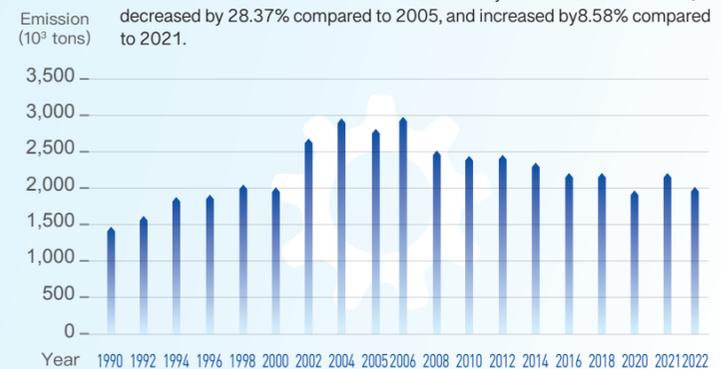


Energy industry 70.14%, Manufacturing and Construction Industries 12.47%, Transportation 13.64%, Service 1.45%, Residential 1.65%, Agriculture, fishery, and husbandry 0.53%, Fugitive emissions from fuels 0.13%.



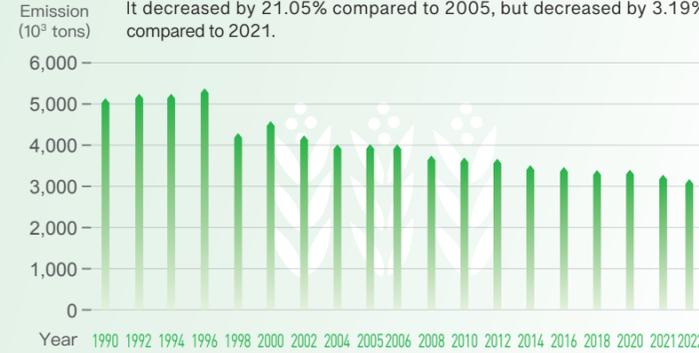
## Industrial Processes and Product Use Sector

The year with the highest emission for this sector was 2006, which made up 10.79% of national emission, and then the greenhouse gases emission has been a downward trend. The economic recovery from Covid-19 in 2022, it decreased by 28.37% compared to 2005, and increased by 8.58% compared to 2021.



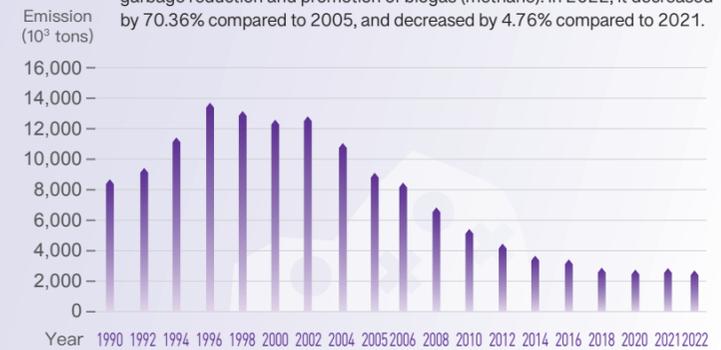
## Agriculture Sector

The emission of the agriculture sector has been decreasing yearly. In 2022, it decreased by 21.05% compared to 2005, but decreased by 3.19% compared to 2021.



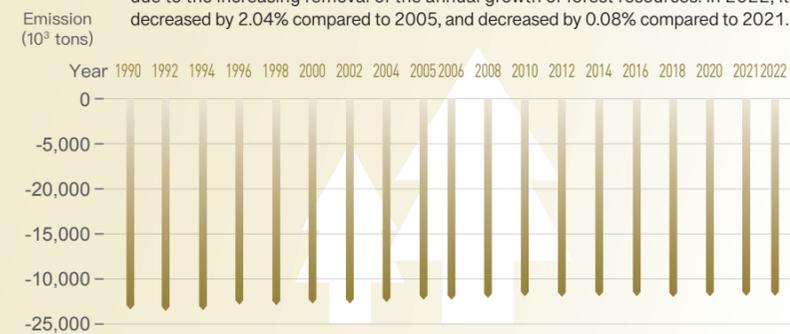
## Waste Sector

The emission of the waste sector decreased greatly after 2000, because of garbage reduction and promotion of biogas (methane). In 2022, it decreased by 70.36% compared to 2005, and decreased by 4.76% compared to 2021.



## Land Use Change and Forestry Sector

The carbon removal of the sector has been fluctuating slightly over the years, mainly due to the increasing removal of the annual growth of forest resources. In 2022, it decreased by 2.04% compared to 2005, and decreased by 0.08% compared to 2021.



## Emission Trends of Greenhouse Gases

# 2022

Emission share of each greenhouse gas

CO<sub>2</sub> 95.70%

50

CH<sub>4</sub> 1.60%

N<sub>2</sub>O 1.33%

1.37% Total fluoride gases

1st CO<sub>2</sub> 95.70%

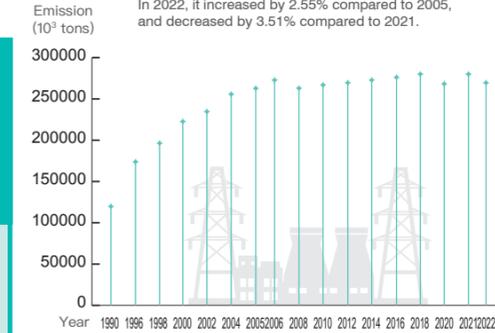
2nd CH<sub>4</sub> 1.60%

3rd Total fluoride gases 1.37%

4th N<sub>2</sub>O 1.33%

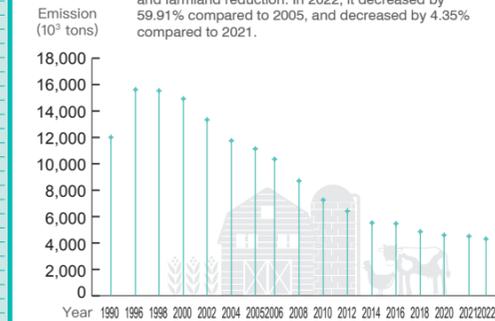
## CO<sub>2</sub> Carbon dioxide

The primary emission sources are Energy Sector and Industrial Processes and Product Use Sector. In 2022, it increased by 2.55% compared to 2005, and decreased by 3.51% compared to 2021.



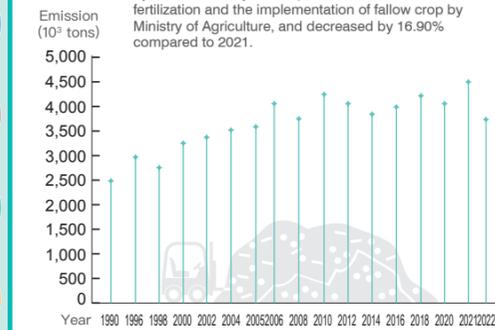
## CH<sub>4</sub> Methane

The primary emission sources are Agriculture Sector and Waste Sector. The annual emission of methane has been decreasing since 2000, mainly due to promotion of garbage reduction, zero landfill of waste, biogas recovery for power generation, rising connection rate of sewage, three-stage treatment of livestock excrements, and farmland reduction. In 2022, it decreased by 59.91% compared to 2005, and decreased by 4.35% compared to 2021.



## N<sub>2</sub>O Nitrous oxide

The primary emission sources are Industrial Processes and Product Use Sector, Agriculture Sector, and Energy Sector. Although it increased by 3.90% in 2022 compared to 2005, the emission of agriculture sector has decreased by 26.86%, mainly due to promotion of rational fertilization and the implementation of fallow crop by Ministry of Agriculture, and decreased by 16.90% compared to 2021.



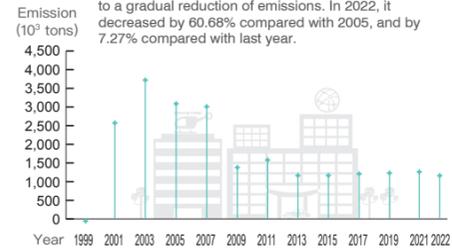
## HFCs Hydrofluorocarbons

After the closing of the only HFCs producing plant in 2004, the emission has been decreasing every year. In recent years, HFCs emissions by refrigeration and air conditioning have continued to increase, with a significant increase of 410.95% in 2022 compared with 2005 and an increase of 8.85% compared with 2021.



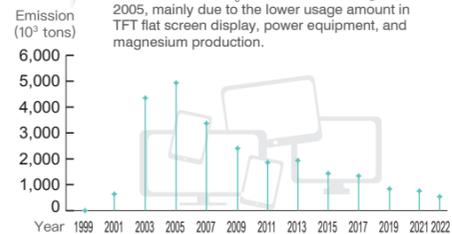
## PFCs Perfluorocarbons

Since 2004, Taiwan Semiconductor Industry Association has cooperated with the government to promote the voluntary reduction scheme, including the introduction of waste gas disposal and the improvement for the manufacturing process by semiconductor and optronic industries, which has led to a gradual reduction of emissions. In 2022, it decreased by 60.68% compared with 2005, and by 7.27% compared with last year.



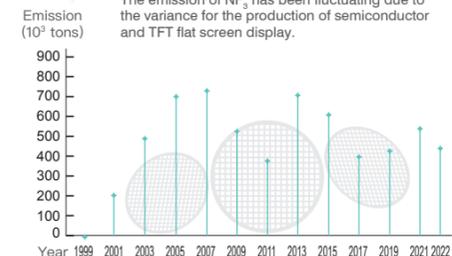
## SF<sub>6</sub> Sulfur hexafluoride

The emission of SF<sub>6</sub> has been decreasing since 2005, mainly due to the lower usage amount in TFT flat screen display, power equipment, and magnesium production.



## NF<sub>3</sub> Nitrogen trifluoride

The emission of NF<sub>3</sub> has been fluctuating due to the variance for the production of semiconductor and TFT flat screen display.



2022  
Share of each  
emission  
source

