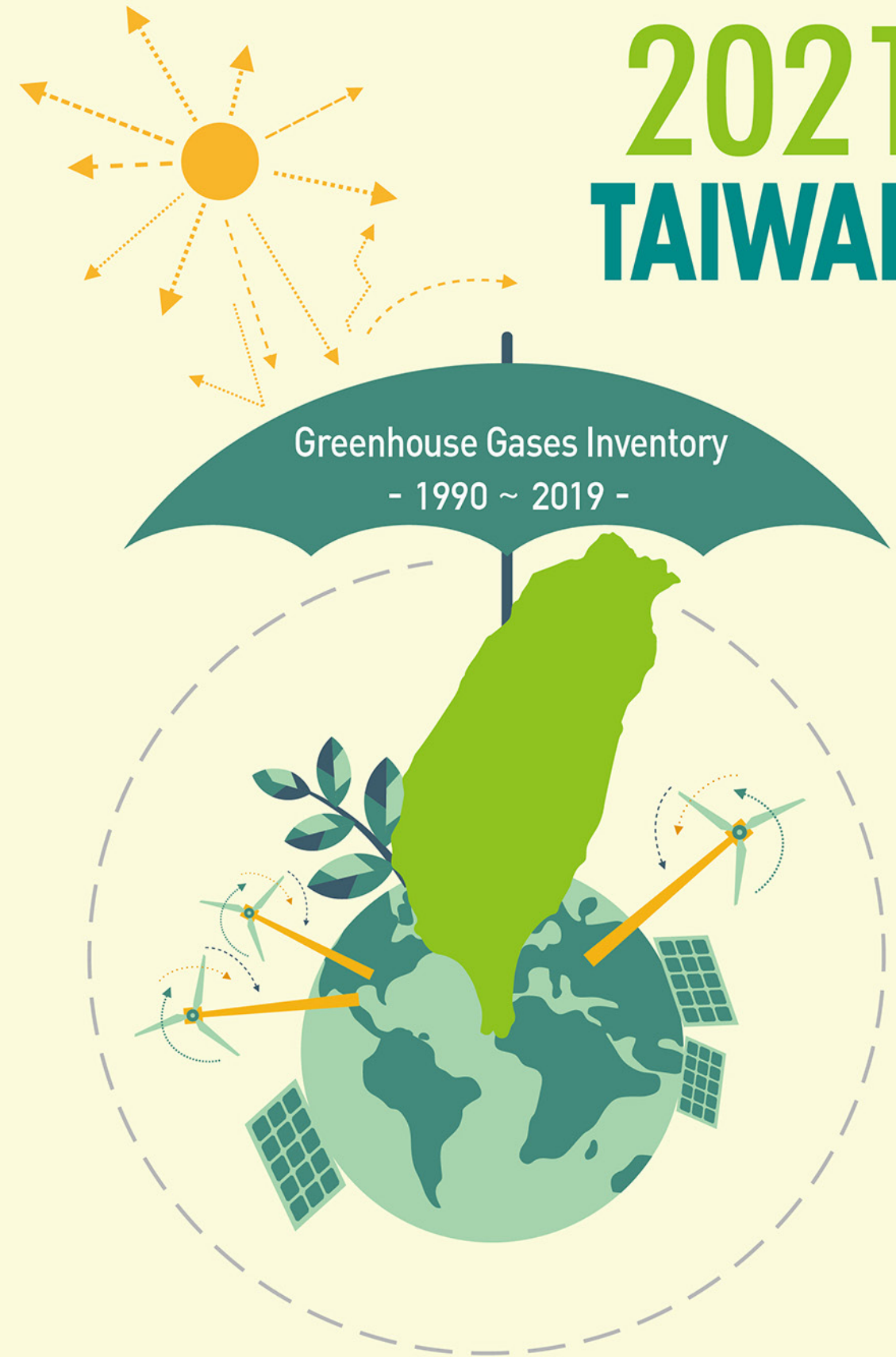


# 2021 TAIWAN



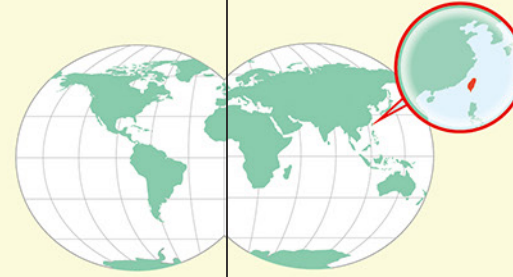
Taiwan Environmental Protection Administration  
<http://www.epa.gov.tw>

# 2021 TAIWAN



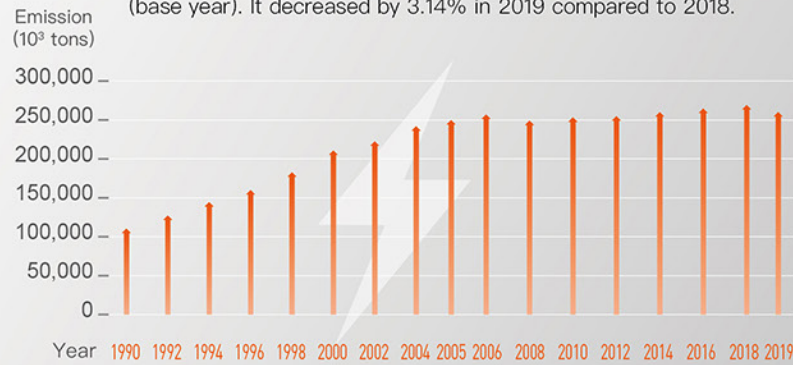
# Trends of Various Emission Sources

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

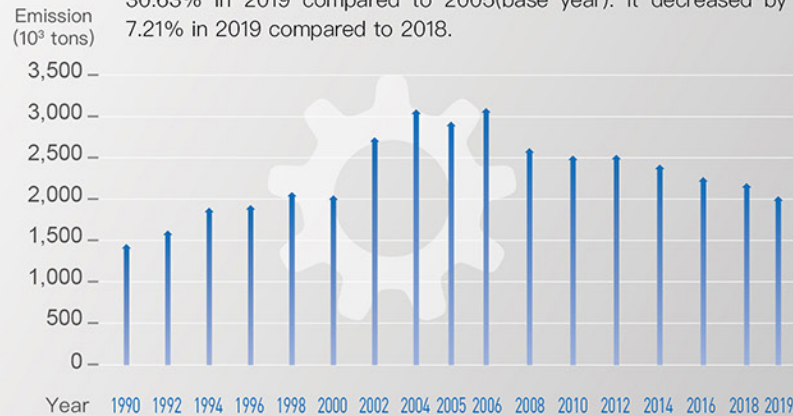
The emission of the energy sector is more than 90% at first place. It decreased in 2008 for the first time, and decreased again in 2009, 2012 and 2018. It increased by 4.44% in 2019 compared to 2005 (base year). It decreased by 3.14% in 2019 compared to 2018.



Energy Industry 69.83%, Manufacturing and Construction Industries 12.58%, Transportation 13.90%, Service 1.29%, Residential 1.72%, Agriculture, fishery, and husbandry 0.58%, Fugitive emissions from fuels 0.10%.

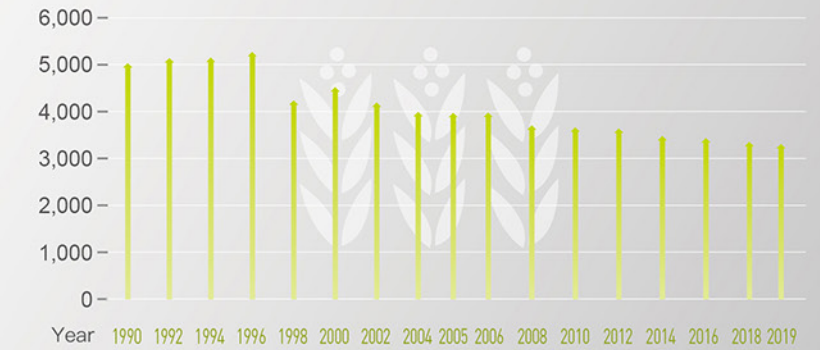
## Industrial Processes and Product Use Sector

The year with the highest emission for this sector was 2006, which made up 10.37% of national emission. The greenhouse gases emission has been on a downward trend since 2008. It decreased by 30.63% in 2019 compared to 2005 (base year). It decreased by 7.21% in 2019 compared to 2018.



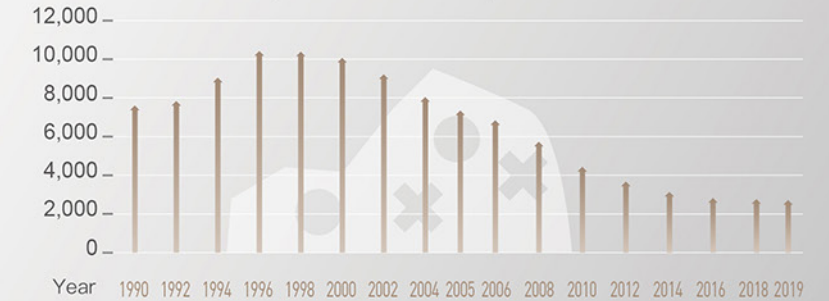
## Agriculture Sector

The emission of the agriculture sector has been decreasing yearly. It decreased by 16.85% in 2019 compared to 2005 (base year). It decreased by 1.38% in 2019 compared to 2018.



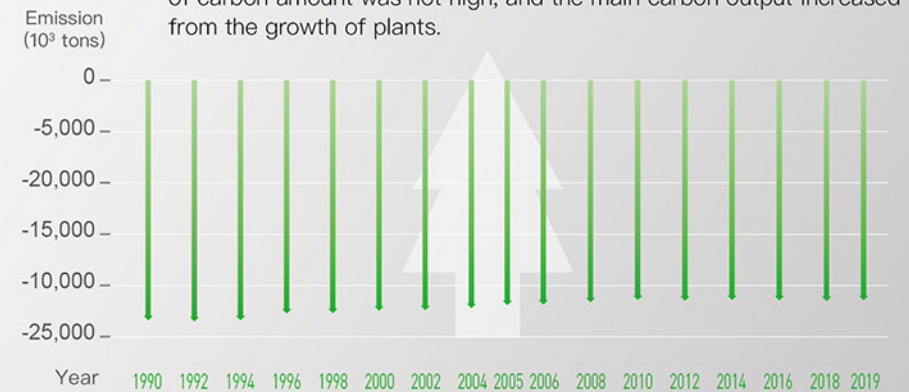
## Waste Sector

The emission of the waste sector decreased greatly after 2000 because of garbage reduction. The number of landfills was reduced greatly with biogas (methane) recovery measure. It decreased by 63.12% in 2019 compared to 2005 (base year). It decreased by 1.83% in 2019 compared to 2018.



## Land Use Change and Forestry Sector

The removal has been fluctuating slightly over the years. The variance of carbon amount was not high, and the main carbon output increased from the growth of plants.



2019  
Share of each  
emission  
source

2nd  
7.10%

1st  
90.80%

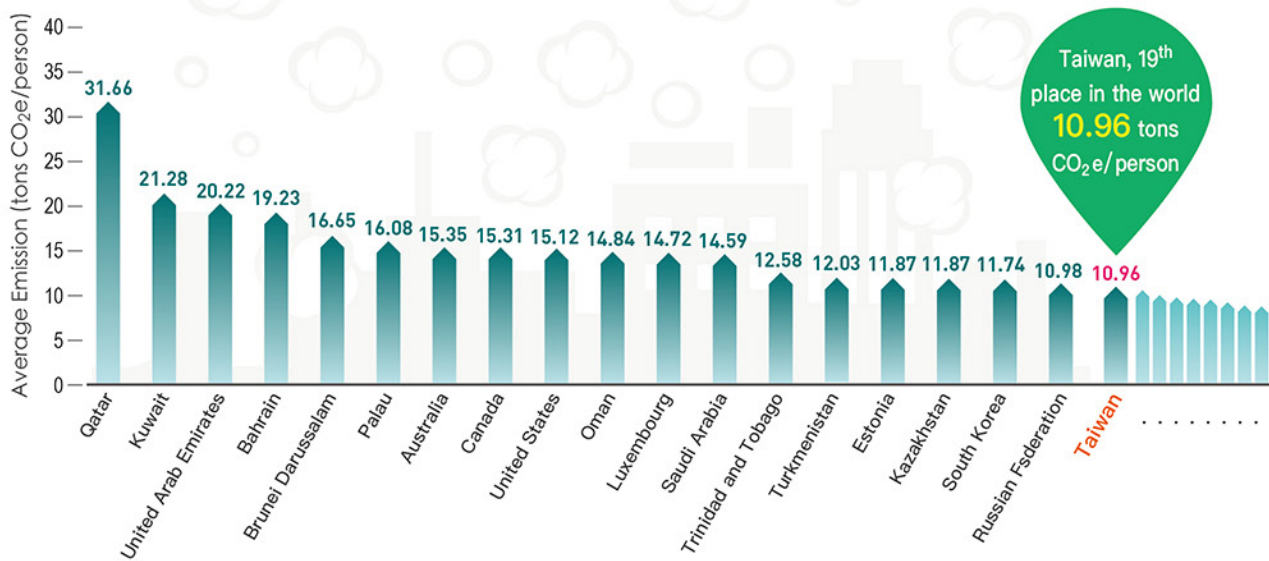
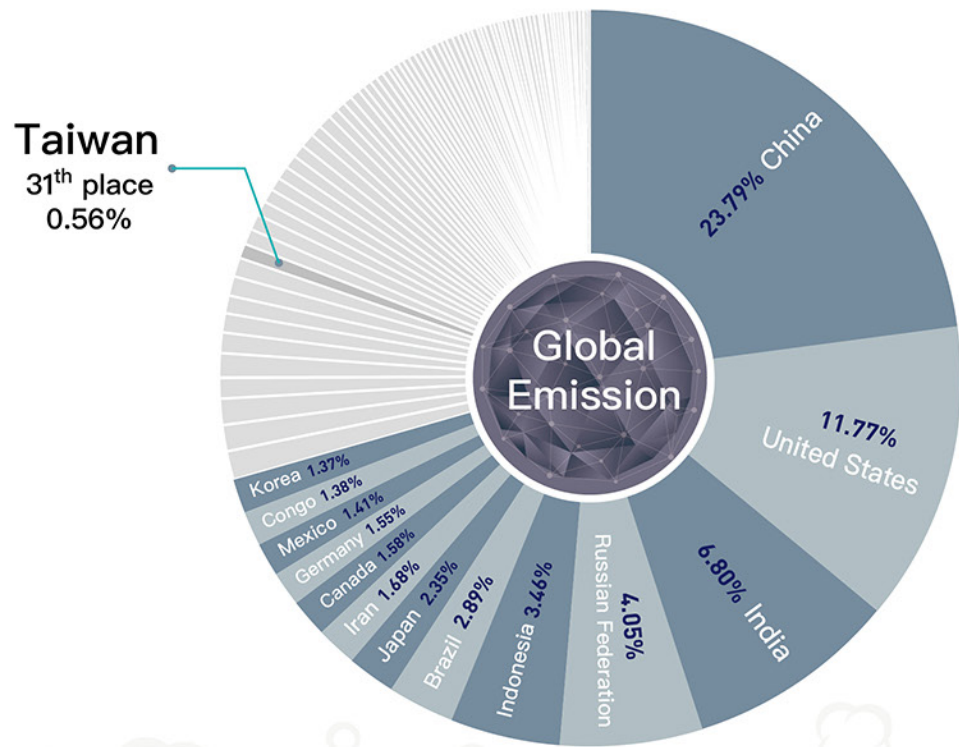
4th  
0.94%

3rd  
1.15%



# Global Share of Taiwan's Greenhouse Gases Emission

Taiwan belongs to the island-type independent energy system. More than 98% of energy is imported. The economy is guided by export trade. The industrial structure is mainly manufacturing, in which semiconductor and panels output value ranks the second in the world. 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.

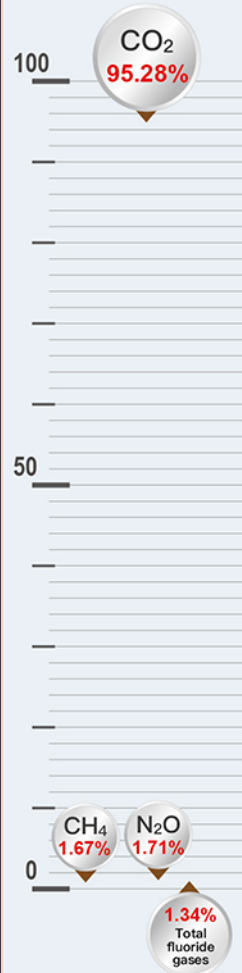


Taiwan, 19<sup>th</sup> place in the world 11.33 ton CO<sub>2</sub> e/person  
\* GHG emission (Excluding LUCF)

# Emission Trends of Greenhouse Gases

## 2019

Emission share of each greenhouse gas



1st CO<sub>2</sub> 95.28%

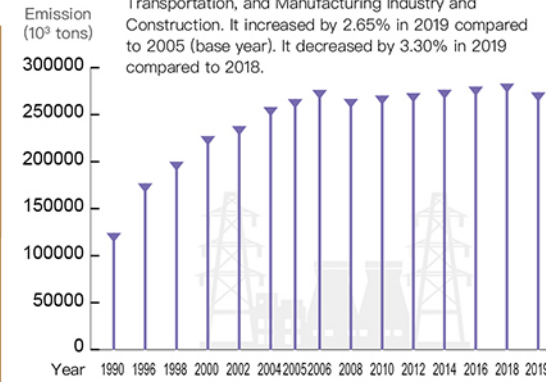
2nd CH<sub>4</sub> 1.67%

3rd N<sub>2</sub>O 1.71%

Total fluoride gases 1.34%

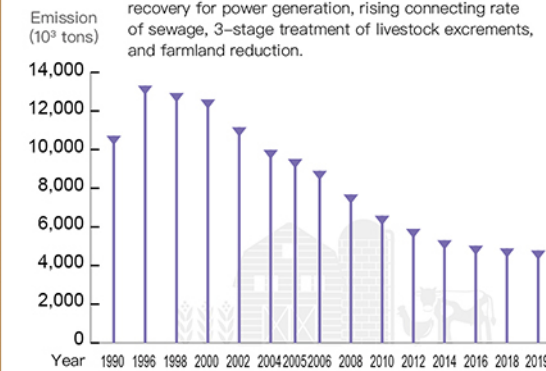
## CO<sub>2</sub> Carbon dioxide

The primary emission sources are the energy industry, Transportation, and Manufacturing Industry and Construction. It increased by 2.65% in 2019 compared to 2005 (base year). It decreased by 3.30% in 2019 compared to 2018.



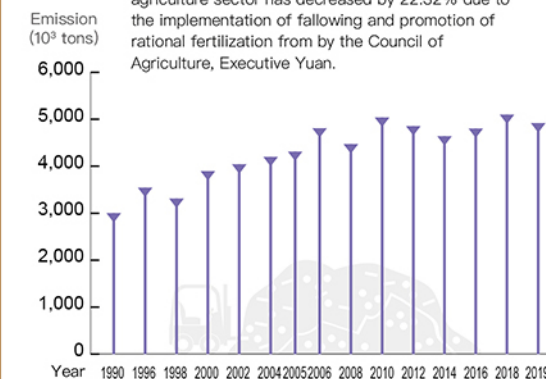
## CH<sub>4</sub> Methane

It decreased by 49.66% in 2019 compared to 2005 (base year). It decreased by 2.15% in 2019 compared to 2018. The annual emission of CH<sub>4</sub> has been decreasing since 2000 due to the promotion of garbage reduction, zero landfill of waste, biogas recovery for power generation, rising connecting rate of sewage, 3-stage treatment of livestock excrements, and farmland reduction.



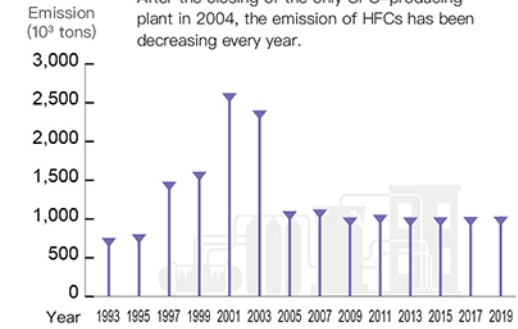
## N<sub>2</sub>O Nitrous oxide

The emission of N<sub>2</sub>O had increased by 14.04% in 2019 compared to 2005 (base year). The emission of agriculture sector has decreased by 22.32% due to the implementation of fallowing and promotion of rational fertilization from by the Council of Agriculture, Executive Yuan.



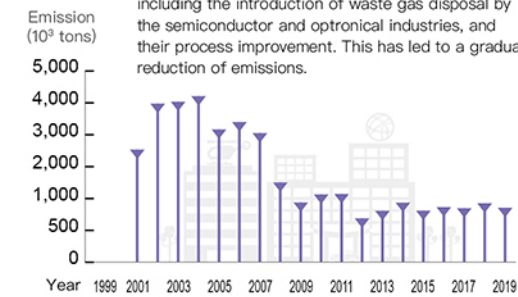
## HFCs Hydrofluorocarbons

After the closing of the only CFC-producing plant in 2004, the emission of HFCs has been decreasing every year.



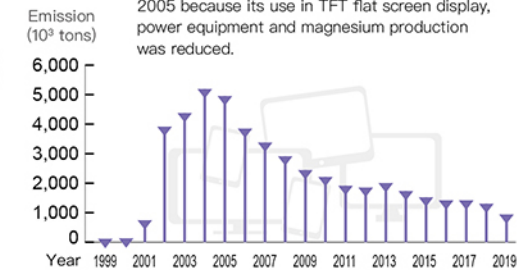
## PFCs Perfluorocarbons

Since 2004, the Taiwan Semiconductor Industry Association has started to cooperate with the government to promote voluntary reduction scheme, including the introduction of waste gas disposal by the semiconductor and optronical industries, and their process improvement. This has led to a gradual reduction of emissions.



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

The emission of SF<sub>6</sub> has been decreasing since 2005 because its use in TFT flat screen display, power equipment and magnesium production was reduced.



## 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.

