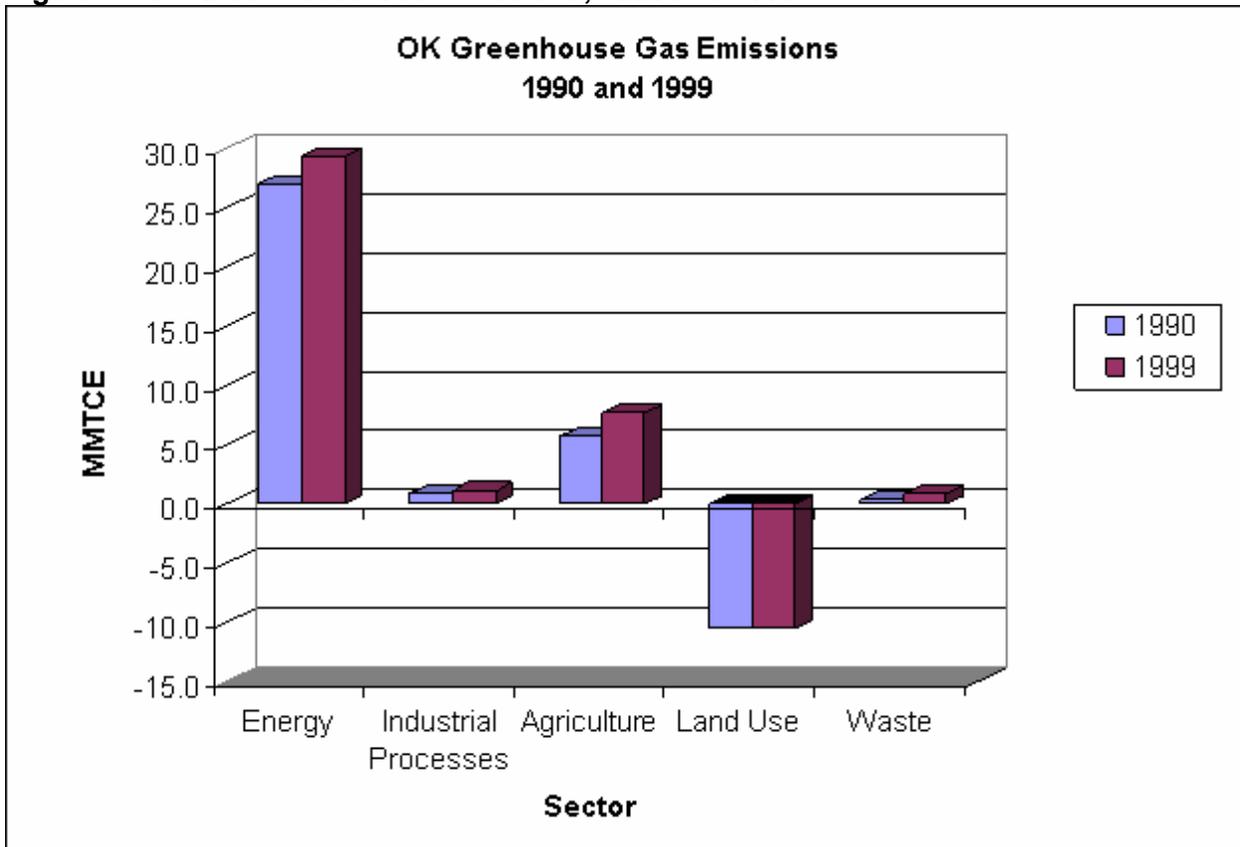


OKLAHOMA GREENHOUSE GAS EMISSIONS AND SINKS INVENTORY: SUMMARY

Figure 1. OK Greenhouse Gas Emissions, 1990 and 1999



The Oklahoma Department of Environmental Quality's (DEQ) report, *Inventory of Oklahoma Greenhouse Gas Emissions and Sinks: 1990 and 1999*, provides a detailed inventory of sources and sinks of greenhouse gases in Oklahoma.¹ In 1990 Oklahoma emitted greenhouse gases in the amount of 23.2 million metric tons of carbon equivalent (MMTCE). In 1999, emissions were 28.3 MMTCE, an overall increase of approximately 22 percent. Emissions from energy use increased slightly (9 percent), and emissions from industrial processes and agriculture both increased moderately (~36 percent). Emissions from waste increased 151 percent. This increase was due to an increase in total waste disposed (over 10 million tons) and different assumptions about the percent of waste in large versus small landfills in the two years.² Land use (including carbon sequestration in forests and landfills) accounted for a large sink in 1990 and 1999, which was estimated to be about 10.5 MMTCE in both years.³

¹ Emissions were estimated using methods from EPA's 1999 EIIP Document Series, *Volume VIII: Estimating Greenhouse Gas Emissions*.

² Oklahoma DEQ assumed zero large landfills in 1990 while in 1999 they assumed 81 percent of all waste was in large landfills. The EIIP methodology for calculating emissions from landfills assumes that the amount of methane gas generated per unit of waste is higher in large landfills than in small landfills. This difference in methodology resulted in an emissions increase of almost 0.4 MMTCE.

³ For forest carbon sequestration, Oklahoma DEQ estimated average annual carbon sequestration during the period 1986 through 1993 and used this estimate for both 1990 and 1999. Forest inventories of Oklahoma were performed by the Forest Service for 1986 and 1993.

Table 1. OK Greenhouse Gas Emissions by Gas and by Sector, 1990 and 1999

1990	CO ₂ (MMTCE)	CH ₄ (MMTCE)	N ₂ O (MMTCE)	HFCs, PFCs, and SF ₆ (MMTCE)	Total (MMTCE)
Energy	23.8	2.9	0.2	*	27.0
Industrial Processes	0.3	*	0.3	0.1	0.8
Agriculture	*	3.2	2.4	*	5.6
Land Use ⁴	-10.5	*	*	*	-10.5
Waste	*	0.3	*	*	0.3
Net Emissions	13.7	6.4	3.0	0.1	23.2

1999	CO ₂ (MMTCE)	CH ₄ (MMTCE)	N ₂ O (MMTCE)	HFCs, PFCs, and SF ₆ (MMTCE)	Total (MMTCE)
Energy	26.6	2.5	0.3	*	29.3
Industrial Processes	0.4	*	0.4	0.2	1.1
Agriculture	*	5.0	2.6	*	7.6
Land Use ⁴	-10.5	*	*	*	-10.5
Waste	*	0.8	*	*	0.8
Net Emissions	16.5	8.2	3.4	0.2	28.3

Note: Totals may differ from the sum of the sources due to independent rounding. An asterisk (*) indicates emissions of the gas from this sector were zero, insignificant, or not reported. All emissions are reported in million metric tons of carbon equivalent (MMTCE).

Carbon dioxide (CO₂) accounted for the majority of Oklahoma's emissions; these emissions were primarily due to burning of fossil fuels for the production of electricity and, to a lesser extent, combustion for the transportation and industrial energy sectors. Other sources made minor contributions to CO₂ emissions. Methane (CH₄) was the next largest contributor, resulting from natural gas and oil systems, enteric fermentation, and manure management. Nitrous oxide (N₂O), the third largest contributor, came chiefly from agricultural soil management. Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) from industrial processes each made up a small share of the total emissions as well. The increase in HFC/PFC/SF₆ emissions in 1999 was largely a result of the replacement of ozone-depleting substances (CFCs) with HFCs, which have high global warming potentials.

Per capita emissions were 7.4 MTCE in 1990 and 8.4 MTCE in 1999. In both years, Oklahoma's per capita emissions were above the national average, which was 6.5 MTCE per capita in 1990 and 1999.

⁴ Landfill carbon sequestration is included in this summary in the land use category; however, Oklahoma DEQ included it in the waste category.