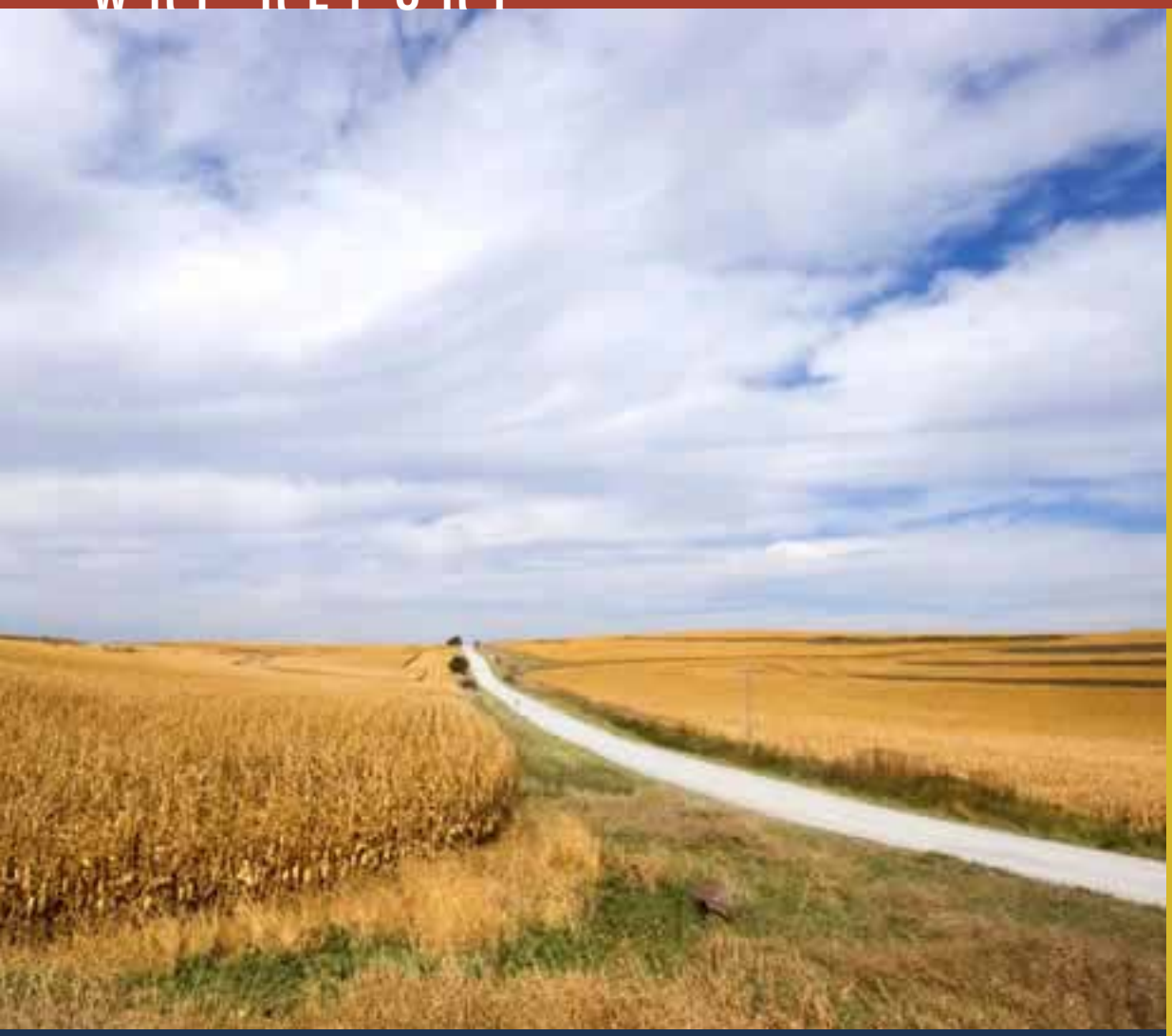
WORLD RESOURCES INSTITUTE

WRI REPORT



ILLINOIS

INDIANA

IOWA

MICHIGAN

MINNESOTA

MISSOURI

OHIO

WISCONSIN

CHARTING THE MIDWEST

An Inventory and Analysis of Greenhouse Gas Emissions in America's Heartland

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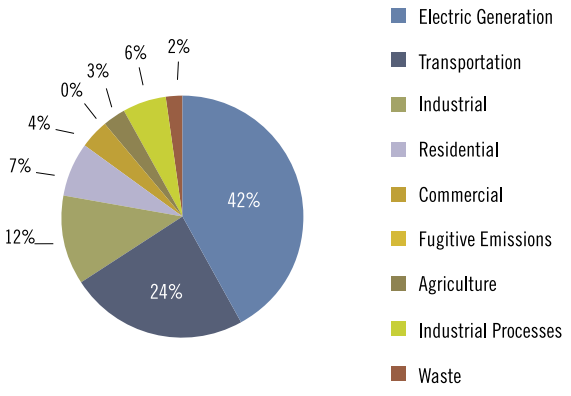
Note

WRI data utilized in this report uniquely provide a common methodological framework for readily comparing GHG emissions across U.S. states. However, it is not the intent of this report to serve as a substitute for emission estimates that might be available from state or local agencies, where complementary or higher-resolution data sets could provide additional information. The data contained in this report may differ from those reported by individual states, but is generally comparable. Disparities in estimates of emissions between WRI and state inventories are likely a result of one or more of the following: data availability, methodologies, and data values, which could include the activity data or emission factors used to calculate GHG emissions in a particular sector.

OHIO

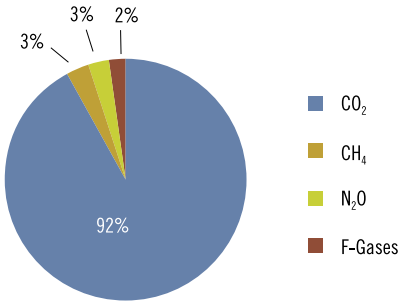
- **In 2003, Ohio GHG emissions totaled 299 $MtCO_2e$, representing 19 percent of Midwest emissions and 4 percent of U.S. emissions.**
- **Ohio's top-emitting sectors include electric generation, transportation, industrial energy use, and residential energy use.**
- **Between 1990 and 2003, industrial energy use emissions in the state declined by 15 $MtCO_2e$, or 29 percent, which was more than twice the Midwest regional average. GHG emissions from transportation increased by 13 $MtCO_2e$—the largest increase, in terms of absolute emissions, among Midwest states.**
- **Approximately 92 percent of Ohio's electricity is generated from coal. As a result, 42 percent of total emissions are produced by the electric generation sector—5 percent more than the Midwest average.**

Figure 4.19 | **Ohio GHG Emissions by Economic Sector: 2003**



Source: WRI, CAIT-US (2007).

Figure 4.20 | **Ohio GHG Emissions by Gas: 2003**



Source: WRI, CAIT-US (2007).

Ohio is the largest GHG emitter in the Midwest, and the fourth largest in the nation in terms of absolute emissions. The state's GHG emissions account for approximately 19 percent of the Midwest's emissions and 4 percent of U.S. emissions. Per capita emissions in Ohio are approximately equal to the Midwest regional per capita emissions rate of 26 metric tons of CO_2e.

Approximately 78 percent of Ohio's GHG emissions are produced by the major energy sectors: electric generation (42 percent), transportation (24 percent), and industrial energy use (12 percent). At just over 70 $MtCO_2e$, Ohio's transportation sector is the largest in the Midwest (Figure 4.19). Total emissions from transport in Ohio during 2003 were comparable to Utah's *total state* emissions. Ohio's electric generation sector also produces the most GHG emissions (126

Table 4.9 | **Ohio GHG Emissions and Trends by Economic Sector: 1990-2003**

SECTOR	1990 EMISSIONS ($MtCO_2e$)	2003 EMISSIONS ($MtCO_2e$)	1990-2003 EMISSION TRENDS		
			OHIO % CHANGE	MIDWEST % CHANGE	U.S. % CHANGE
Energy Sectors	*251*	*267*	*6*	*14*	*14*
Electric Generation	109	126	16	25	24
Transportation	58	71	22	20	19
Industrial	52	37	-29	-11	-3
Residential	21	22	5	8	12
Commercial	11	11	7	9	7
Fugitive Emissions	2	1	-48	-40	-35
Agriculture	9	8	-10	-8	0
Industrial Processes*	3	18	-14	-5	8
Waste	9	6	-31	-21	-9
Total*	***272***	***299***	***5***	***11***	***13***

Source: WRI, CAIT-US (2007).

Note: Totals exclude emissions from international bunker fuels and land-use change and forestry.

*Due to inconsistencies in industrial processes emissions data prior to 1997, the 1990 emission value for this economic sector has been replaced with the 1997 estimate. Trend calculations for industrial processes reflect the time period 1997 to 2003.

**While the 1990 total emissions value presented here includes industrial processes emissions for 1997 as noted above, calculations of total state, regional, and national emission trends do not include any industrial processes data in order to maintain consistency between 1990 and 2003.

$MtCO_2e$) among state electric utility sectors of the Midwest. This is partly due to Ohio's relatively large population and economy, and also to its use of coal as a fuel for about 92 percent of its electricity production. Consequently, CO_2 emissions comprise a larger portion of Ohio's GHG profile than the Midwest's overall profile (Figure 4.20).

Between 1990 and 2003, Ohio's GHG emissions grew by 5 percent—approximately half of the growth experienced by the Midwest and the nation. This slow growth trend was largely a result of slower-than-average growth in emissions from the electric generation sector, and a nearly 30 percent decline in emissions from industrial energy use (Table 4.9 and Ohio State Spotlight).

Since at least 1997, Ohio's GHG emissions appear to be largely driven by fluctuations in state GDP (data not shown). Most notably, both emissions and GDP declined between 2000 and 2001 (relative to 1997 levels), during a mild national recession. Previously, Ohio's total emissions had peaked in 2000 at 306 $MtCO_2e$. In 2001, they were 290 $MtCO_2e$ (WRI, CAIT-US, 2007). In more recent years, as the economy has recovered, pre-recession growth in GHG emissions has returned. Total state GHG emissions grew by 1–2 percent between 2001 and 2003.

OHIO STATE SPOTLIGHT: DECLINING EMISSIONS FROM INDUSTRIAL ENERGY USE

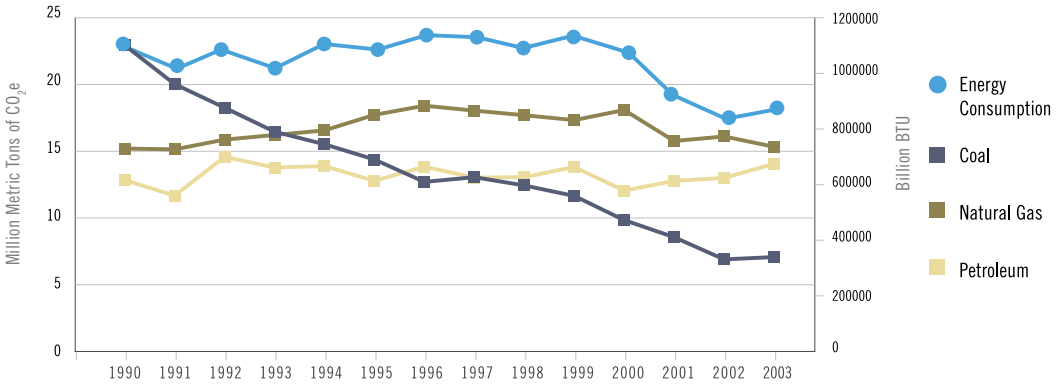
The industrial sector is the third largest GHG-emitting sector in the nation, the Midwest, and Ohio. Between 1990 and 2003, GHG emissions from energy use in Ohio's industrial sector declined by nearly 15 $MtCO_2e$, or 29 percent, the largest decrease in this sector of any Midwest state. This trend was primarily due to a reduction in coal consumption; the total amount of coal used by Ohio's industrial sector as an energy fuel source declined by nearly 70 percent between 1990 and 2003 (EIA, 2007).

Interestingly, total industrial energy consumption did not experience similar declines (or any significant declines) until 2000 (Figure 4.21). For most years throughout the 1990s, annual declines in coal were compensated for by increases in the consumption of natural gas, petroleum, and to a lesser extent, wood fuels (EIA, 2007). So despite approximately constant energy demand in this sector, GHG emissions were reduced by switching to less carbon-intensive fuels.

Between 2000 and 2002, coal use continued to decline, while petroleum use increased (EIA, 2007). The nationwide economic recession during these years appears to have been a driving factor in limiting the growth of both energy consumption and GHG emissions. Ohio was particularly hard hit in the Midwest region, experiencing essentially no growth in state GDP during this period (BEA, 2007). Consequently, both total industrial energy consumption and emissions declined. Additional drivers of this trend could also include increased efficiencies and decreases in manufacturing activities (see Chapter 3).

Notably, between 2002 and 2003, the latest year for which data are currently available, Ohio's industrial sector consumption of both coal and petroleum fuels increased and its consumption of natural gas decreased. Correspondingly, there was an increase in industrial energy use emissions, albeit less than 1 MtCO2e. More recent energy and emissions data will be required to validate whether this trend is indeed a new sectoral trajectory.

Figure 4.21 | **Ohio Industrial Sector Energy Consumption and GHG Emissions from Fossil Fuels: 1990–2003**



Sources: WRI, CAIT-US (2007); EIA (2007).