

# W R I R E P O R T



## CHARTING THE MIDWEST

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

ILLINOIS

INDIANA

IOWA

MICHIGAN

MINNESOTA

**MISSOURI**

OHIO

WISCONSIN

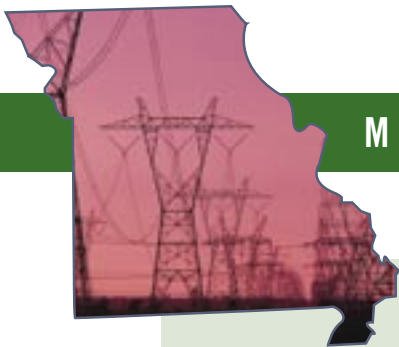
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**Note**

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.



## MISSOURI

- In 2003, Missouri GHG emissions totaled 163 MtCO<sub>2</sub>e, representing 10 percent of Midwest emissions and 2 percent of U.S. emissions.

- Missouri's top-emitting sectors include electric generation, transportation, agriculture, and industrial energy use.

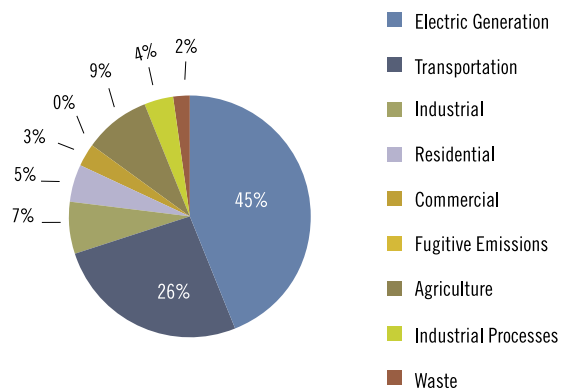
- Between 1990 and 2003, Missouri's GHG emissions increased by 32 MtCO<sub>2</sub>e, or 26 percent—the largest absolute and percentage growth of any Midwest state. Emissions growth outpaced state population growth by more than a factor of two.

- Between 1990 and 2003, emissions from electricity generation increased by 54 percent (or 26 MtCO<sub>2</sub>e)—more than twice the regional and national average values—and transportation emissions increased by 22 percent (or 8 MtCO<sub>2</sub>e). These two sectors accounted for nearly all emissions growth in the state between 1990 and 2003.

Missouri is the fifth largest GHG emitter in the Midwest, and the 15<sup>th</sup> largest in the nation in terms of absolute emissions. The state's GHG emissions account for approximately 10 percent of the Midwest's emissions and 2 percent of U.S. emissions. State per capita emissions are about 7 percent higher than the regional average and 20 percent higher than the national average. Similar to other Midwest states, Missouri's above-average GHG intensity is partly a result of its relatively high dependence on coal for electricity. In 2003, 85 percent of its electricity production was coal-based.

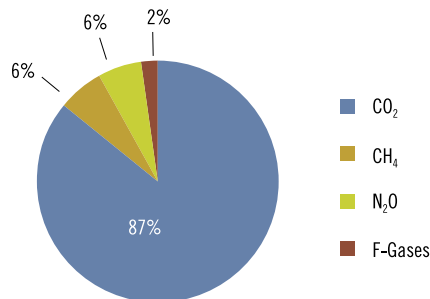
Approximately 77 percent of Missouri's GHG emissions were produced by the major energy sectors:

Figure 4.16 | Missouri GHG Emissions by Economic Sector: 2003



Source: WRI, CAIT-US (2007).

Figure 4.17 | Missouri GHG Emissions by Gas: 2003



Source: WRI, CAIT-US (2007).

electric generation (45 percent), transportation (26 percent), and industrial energy use (7 percent). Missouri's share of total emissions from electricity generation is higher than that of any other Midwest state (Figure 4.16). Again, this was due to its relatively large share (85 percent) of electricity generation from coal, compared to the average share for the Midwest

Table 4.8 | Missouri GHG Emissions and Trends by Economic Sector: 1990–2003

SECTOR	1990 EMISSIONS (MtCO <sub>2</sub> e)	2003 EMISSIONS (MtCO <sub>2</sub> e)	1990–2003 EMISSION TRENDS		
			MISSOURI % CHANGE	MIDWEST % CHANGE	U.S. % CHANGE
<b>Energy Sectors</b>	105	138	32	14	14
Electric Generation	47	73	54	25	24
Transportation	35	42	22	20	19
Industrial	11	11	-3	-11	-3
Residential	8	8	5	8	12
Commercial	4	5	3	9	7
Fugitive Emissions	0	0	-80	-40	-35
Agriculture	14	14	-1	-8	0
Industrial Processes*	4	7	10	-5	8
Waste	4	3	-23	-21	-9
<b>Total**</b>	<b>127</b>	<b>163</b>	<b>26</b>	<b>11</b>	<b>13</b>

Source: WRI, CAIT-US (2007).

Notes: 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 period 1997–2003.

\*\*While the 1990 total emission 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.

(73 percent). Missouri’s agricultural sector produces 75 percent of total state CH<sub>4</sub> and N<sub>2</sub>O emissions. In total, these gases account for approximately 12 percent of state emissions (Figure 4.17).

Between 1990 and 2003, Missouri’s GHG emissions grew by 32 MtCO<sub>2</sub>e, or 26 percent—the highest overall increase among Midwest states (see Missouri State Spotlight). The major contributor to this trend—emissions from electricity generation—grew by 54 percent (Table 4.8). It is worth noting that almost one-quarter of the absolute growth in electric generation emissions occurred between 2002 and 2003, despite slowing rates of population growth. Emissions growth in this sector is likely partly due to an increasing

dependence on coal as a fuel source for electricity generation—coal’s share increased from 82 to 85 percent between 1990 and 2003—as well as the state’s 47 percent increase in total electricity generation (in MWh) during this period, the largest of any Midwest state (EIA, 2007).

Missouri is one of the two states in the Midwest (with Iowa) where GHG emissions growth between 1990 and 2003 outpaced state population growth by more than a factor of two. As a result, per capita GHG emissions in Missouri increased by 15 percent—the highest increase in the Midwest and the sixth highest nationally.

## MISSOURI STATE SPOTLIGHT: HIGH EMISSIONS GROWTH RATE

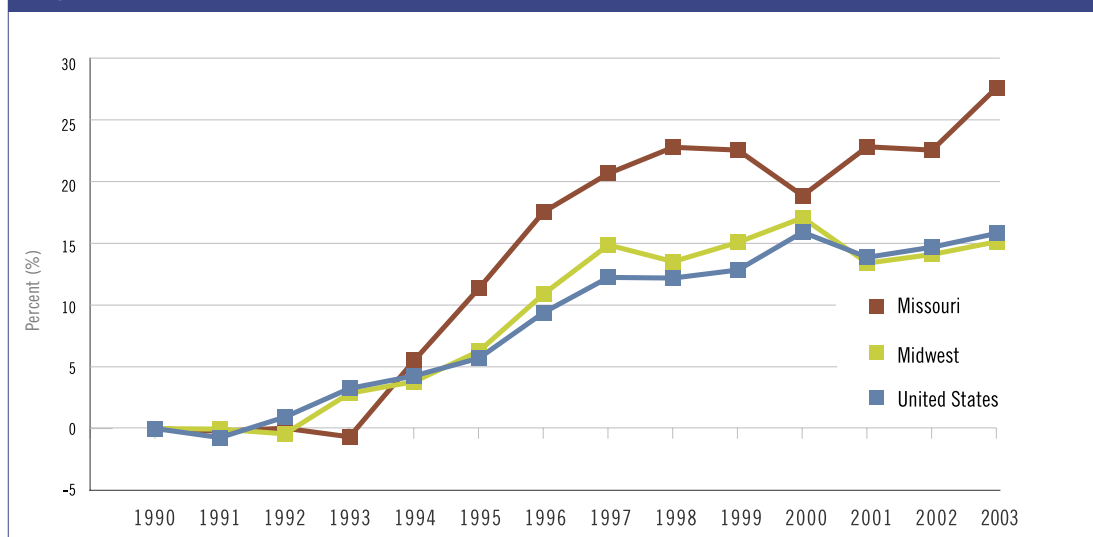


In terms of GHG emissions, Missouri is the fastest-growing state in the Midwest. Between 1990 and 2003, Missouri's GHG emissions grew from 123 to 155 MtCO<sub>2</sub>e (excluding emissions from industrial processes)—a 26 percent overall increase and almost a 2 percent average annual increase. During this period, state emissions rose at a significantly higher rate than overall regional emissions (11 percent) and U.S. emissions (13 percent) (Figure 4.18).

More than 90 percent of Missouri's absolute GHG emissions growth during this period came from its two largest emitting sectors:

- Electric generation emissions grew by nearly 26 MtCO<sub>2</sub>e, or 54 percent—more than double the Midwest's average growth rate in electricity emissions.
- Transportation emissions increased by about 8 MtCO<sub>2</sub>e, or 22 percent—slightly faster than the Midwest's average growth rate of 20 percent.

Figure 4.18 | Missouri GHG Emission Trends: 1990-2003



Source: WRI, CAIT-US (2007).

Note: Percentage changes for each year are relative to 1990 totals.