

Table K1. Industrial sector energy consumption by region and sector, High Zero-carbon Technology Cost case

quadrillion British thermal units

Region and sector	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas								
United States								
Energy-intensive manufacturing	17.5	17.4	18.2	18.7	19.2	19.7	20.3	0.5%
Non-energy-intensive manufacturing	2.9	2.8	3.0	3.1	3.2	3.4	3.6	0.8%
Nonmanufacturing	6.3	6.3	6.5	6.6	6.8	7.0	7.3	0.5%
Unclassified	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	--
Total	26.6	26.4	27.5	28.3	29.1	30.0	31.0	0.6%
Canada								
Energy-intensive manufacturing	2.1	2.2	2.6	3.0	3.3	3.8	4.1	2.5%
Non-energy-intensive manufacturing	1.5	1.6	1.7	1.8	2.0	2.1	2.3	1.5%
Nonmanufacturing	2.4	2.4	2.5	2.6	2.7	2.9	3.1	0.9%
Total	6.0	6.2	6.8	7.4	8.1	8.8	9.4	1.6%
Mexico								
Energy-intensive manufacturing	1.2	1.2	1.3	1.4	1.5	1.7	1.9	1.7%
Non-energy-intensive manufacturing	1.2	1.3	1.4	1.6	1.7	1.7	1.8	1.3%
Nonmanufacturing	0.6	0.7	0.9	0.9	0.9	0.9	0.9	1.4%
Total	3.1	3.2	3.6	3.9	4.1	4.4	4.6	1.5%
Brazil								
Energy-intensive manufacturing	3.6	3.6	3.9	4.1	4.2	4.3	4.3	0.7%
Non-energy-intensive manufacturing	1.7	1.8	2.0	2.2	2.4	2.5	2.6	1.5%
Nonmanufacturing	0.8	0.8	0.9	0.9	0.9	1.0	1.0	0.7%
Total	6.1	6.2	6.8	7.3	7.6	7.8	7.9	0.9%
Other Americas								
Energy-intensive manufacturing	2.3	2.3	2.5	2.7	3.0	3.2	3.5	1.5%
Non-energy-intensive manufacturing	2.2	2.4	2.7	3.1	3.5	3.9	4.4	2.4%
Nonmanufacturing	1.2	1.2	1.3	1.4	1.5	1.6	1.8	1.5%
Total	5.7	5.9	6.6	7.3	8.0	8.8	9.6	1.9%
Europe and Eurasia								
Western Europe								
Energy-intensive manufacturing	16.2	16.1	16.1	16.6	17.4	18.1	19.0	0.6%
Non-energy-intensive manufacturing	7.1	7.0	6.9	6.9	6.9	7.0	7.1	0.0%
Nonmanufacturing	2.9	2.9	3.0	3.0	3.0	3.1	3.1	0.2%
Total	26.3	26.0	26.0	26.5	27.3	28.1	29.1	0.4%
Russia								
Energy-intensive manufacturing	9.5	9.9	10.0	10.4	10.9	11.4	11.9	0.8%
Non-energy-intensive manufacturing	3.7	4.0	4.3	4.5	4.9	5.4	6.0	1.7%
Nonmanufacturing	2.5	1.9	2.0	2.0	2.1	2.1	2.1	-0.5%
Total	15.6	15.9	16.3	17.0	17.8	18.9	20.0	0.9%
Eastern Europe and Eurasia								
Energy-intensive manufacturing	2.1	2.3	2.7	2.9	3.3	3.7	4.2	2.5%
Non-energy-intensive manufacturing	0.8	0.8	0.7	0.7	0.8	0.8	0.9	0.8%
Nonmanufacturing	0.8	0.8	1.0	1.1	1.3	1.4	1.6	2.5%
Total	3.6	3.9	4.4	4.8	5.3	6.0	6.7	2.2%
Asia Pacific								
Japan								
Energy-intensive manufacturing	4.6	4.6	4.4	4.1	4.0	3.8	3.7	-0.8%
Non-energy-intensive manufacturing	1.4	1.5	1.4	1.3	1.3	1.2	1.2	-0.7%
Nonmanufacturing	0.4	0.3	0.3	0.3	0.3	0.3	0.3	-0.5%
Total	6.4	6.4	6.1	5.8	5.5	5.3	5.1	-0.8%
South Korea								
Energy-intensive manufacturing	4.4	4.4	4.6	4.6	4.6	4.6	4.5	0.1%

Non-energy-intensive manufacturing	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.0%
Nonmanufacturing	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-0.6%
Total	5.7	5.8	6.0	6.1	6.1	6.1	6.1	0.3%
Australia and New Zealand								
Energy-intensive manufacturing	1.1	1.2	1.3	1.3	1.3	1.4	1.4	0.8%
Non-energy-intensive manufacturing	0.5	0.5	0.6	0.6	0.7	0.7	0.7	1.1%
Nonmanufacturing	1.0	1.0	1.1	1.1	1.3	1.4	1.5	1.6%
Total	2.6	2.7	2.9	3.1	3.3	3.5	3.7	1.2%
China								
Energy-intensive manufacturing	56.5	58.0	56.4	54.0	51.2	48.8	46.0	-0.7%
Non-energy-intensive manufacturing	22.4	24.0	25.1	26.0	26.1	26.1	25.3	0.4%
Nonmanufacturing	5.8	5.8	5.9	5.9	5.9	6.0	6.0	0.1%
Total	84.8	87.8	87.4	86.0	83.2	80.8	77.4	-0.3%
India								
Energy-intensive manufacturing	8.6	9.3	11.9	14.8	17.8	21.2	24.6	3.8%
Non-energy-intensive manufacturing	8.2	9.0	11.8	14.8	17.7	20.4	23.1	3.8%
Nonmanufacturing	1.8	2.0	2.4	2.7	2.9	3.1	3.3	2.1%
Total	18.6	20.3	26.0	32.3	38.4	44.7	51.1	3.7%
Other Asia Pacific								
Energy-intensive manufacturing	7.2	7.9	9.3	10.2	11.1	12.0	13.0	2.1%
Non-energy-intensive manufacturing	8.6	9.5	11.3	13.0	14.5	15.8	16.9	2.4%
Nonmanufacturing	1.8	1.8	1.9	2.0	2.1	2.3	2.4	1.0%
Total	17.6	19.2	22.5	25.3	27.8	30.1	32.2	2.2%
Africa and Middle East								
Africa								
Energy-intensive manufacturing	3.2	3.4	3.8	4.3	4.8	5.5	6.3	2.4%
Non-energy-intensive manufacturing	5.7	6.2	7.4	8.7	10.2	11.7	13.1	3.0%
Nonmanufacturing	1.4	1.4	1.4	1.5	1.6	1.6	1.6	0.6%
Total	10.3	11.0	12.7	14.5	16.6	18.7	21.0	2.6%
Middle East								
Energy-intensive manufacturing	7.4	7.6	7.9	8.3	8.7	9.1	9.3	0.8%
Non-energy-intensive manufacturing	7.9	7.9	8.1	8.7	9.3	9.7	10.0	0.8%
Nonmanufacturing	2.7	3.2	3.5	3.7	4.2	4.7	5.3	2.4%
Total	18.0	18.6	19.5	20.7	22.2	23.5	24.6	1.1%
World								
Energy-intensive manufacturing	147.5	151.5	156.8	161.6	166.3	172.1	177.8	0.7%
Non-energy-intensive manufacturing	76.9	81.4	89.8	98.6	106.6	113.9	120.3	1.6%
Nonmanufacturing	32.6	32.8	34.7	36.1	37.7	39.7	41.5	0.9%
Unclassified	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	--
Total	257.0	265.6	281.2	296.1	310.5	325.6	339.5	1.0%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hz_230821.151430 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

Note: Totals may not equal sum of components due to independent rounding. Nonmanufacturing includes agriculture, construction, and mining; energy-intensive manufacturing includes food, pulp and paper, basic chemicals, refining, iron and steel, nonferrous metals, and nonmetallic minerals; non-energy-intensive manufacturing includes all other manufacturing industries.