International Energy Outlook 2023 Release date: October 2023

Table K3. Industrial sector energy intensity by region and sector, Low Economic Growth case

thousand British thermal units per 2015 dollar

							percentage change
2022	2025	2030	2035	2040	2045	2050	2022–205
7.3	7.3	7.1	7.0	6.7	6.4	6.1	-0.6%
0.8	0.8	0.7	0.7	0.6	0.6	0.5	-1.6%
2.6	2.4	2.3	2.2	2.0	1.8	1.7	-1.6%
3.2	3.0	2.9	2.7	2.6	2.4	2.2	-1.3%
8.0	8.2	8.7	8.8	9.1	9.4	9.5	0.6%
4.5	4.4	4.1	4.0	3.9	3.9	3.8	-0.7%
4.8	4.8	4.4	4.2	4.1	3.9	3.8	-0.8%
5.5	5.5	5.4	5.3	5.3	5.3	5.3	-0.2%
2.2	2.2	2.1	2.2	2.2	2.2	2.3	0.1%
1.3	1.2	1.3	1.3	1.2	1.1	1.0	-0.7%
1.4	1.4	1.4	1.4	1.6	1.7	1.7	0.8%
1.5	1.5	1.5	1.5	1.6	1.6	1.5	-0.1%
4.1	4.0	4.0	4.0	4.0	4.0	4.0	-0.1%
2.8	2.7	2.7	2.7	2.7	2.7	2.7	-0.1%
1.1	1.1	1.1	1.1	1.1	1.0	1.0	-0.4%
	2.7	2.7	2.7	2.7	2.6	2.6	-0.2%
2.5	2.5	2.4	2.3	2.3	2.2	2.2	-0.5%
2.4	2.5	2.6	2.6	2.6	2.7	2.7	0.4%
							-0.6%
							-0.1%
3.3	3.2	3.2	3.2	3.2	3.2	3.2	-0.1%
							-1.4%
							-0.7%
							-0.7%
		2.0	2.0				
10.6	10.0	97	95	94	93	93	-0.4%
							0.0%
							-0.7%
							-0.1%
5.0	5.0	5.5	5.4	5.5	5.0	5.0	
0 1	80	8.6	Q 1	77	73	7.0	-0.9%
							-2.7%
							-0.3%
							-0.8%
5.4	5.5	5.0	2.0	2.7	2.7	2.7	-0.87
4.0	4.0	4.0	4.6	4.5	4.4		-0.4%
							-0.47 -1.49
							-0.5%
1.5	1.4	1.3	1.2	1.1	1.1	1.1	-1.1%
	• •						
4.2	3.9	3.9	4.0	4.0	4.1	4.2	0.0%
	7.3 0.8 2.6 3.2 8.0 4.5 4.8 5.5 2.2 1.3 1.4 1.5 4.1 2.8	7.3 7.3 0.8 0.8 2.6 2.4 3.2 3.0 8.0 8.2 4.5 4.4 4.8 4.8 5.5 5.5 2.2 2.2 1.3 1.2 1.4 1.4 1.5 1.5 4.1 4.0 2.8 2.7 1.1 1.1 2.8 2.7 1.1 1.1 2.8 2.7 1.1 1.1 2.8 2.7 1.1 1.1 2.8 2.7 1.1 1.1 2.8 2.7 1.1 1.1 2.8 2.7 1.0 1.0 1.0 1.0 1.0 1.0 1.9 1.6 5.8 5.6 9.1 8.9 7.8 6.3 1.0 1.0 3.4 3.3 3.5 0	7.3 7.3 7.1 0.8 0.8 0.7 2.6 2.4 2.3 3.2 3.0 2.9 8.0 8.2 8.7 4.5 4.4 4.1 4.8 4.8 4.4 5.5 5.5 5.4 2.2 2.2 2.1 1.3 1.2 1.3 1.4 1.4 1.4 1.5 1.5 1.5 4.1 4.0 4.0 2.8 2.7 2.7 1.1 1.1 1.1 2.8 2.7 2.7 1.1 1.1 1.1 2.8 2.7 2.7 2.5 2.5 2.4 2.4 2.5 2.6 1.0 1.0 0.9 1.9 1.9 1.9 1.0 1.0 0.9 1.9 1.4 1.3 10.6 10.0 9.7 6.8 6.7 6.7 1.9 1.6 <td< td=""><td>7.3 7.3 7.1 7.0 0.8 0.8 0.7 0.7 2.6 2.4 2.3 2.2 3.2 3.0 2.9 2.7 8.0 8.2 8.7 8.8 4.5 4.4 4.1 4.0 4.8 4.8 4.4 4.2 5.5 5.5 5.4 5.3 2.2 2.2 2.1 2.2 1.3 1.2 1.3 1.3 1.4 1.4 1.4 1.4 1.5 1.5 1.5 1.5 4.1 4.0 4.0 4.0 2.8 2.7 2.7 2.7 1.1 1.1 1.1 1.1 2.8 2.7 2.7 2.7 2.4 2.5 2.6 2.6 1.0 1.0 0.9 0.9 1.9 1.9 1.8 1.3 3.3 3.2 3.2 3.2 0.8 0.8 0.7 0.7 0.7 0</td><td>7.3 7.3 7.1 7.0 6.7 0.8 0.8 0.7 0.7 0.6 2.6 2.4 2.3 2.2 2.0 3.2 3.0 2.9 2.7 2.6 8.0 8.2 8.7 8.8 9.1 4.5 4.4 4.1 4.0 3.9 4.8 4.8 4.4 4.2 4.1 5.5 5.4 5.3 5.3 5.3 7 2.2 2.2 2.1 2.2 2.2 1.3 1.2 1.3 1.3 1.2 1.4 1.4 1.4 1.4 1.4 1.6 1.5 1.4 1.4 0.4 4.0 4.0 4.0 2.8 2.7 2.7 2.7 2.7 2.5 2.5 2.4 2.3 2.3 2.4 2.5 2.6 2.6 2.6 1.0 1.0 0.9 0.9 <</td><td>7.3 7.3 7.1 7.0 6.7 6.4 0.8 0.8 0.7 0.7 0.6 0.6 2.6 2.4 2.3 2.2 0 1.8 3.2 3.0 2.9 2.7 2.6 2.4 8.0 8.2 8.7 8.8 9.1 9.4 4.5 4.4 4.1 4.0 3.9 3.9 4.5 5.5 5.4 5.3 5.3 5.3 5.5 5.5 5.4 5.3 5.3 5.3 7.1 1.3 1.2 1.3 1.2 1.1 1.4 1.4 1.4 1.6 1.7 1.5 1.5 1.5 1.6 1.6 7 2.7 2.7 2.7 2.7 2.7 1.1 1.1 1.1 1.1 1.0 1.0 2.5 2.5 2.4 2.3 2.3 2.2 2.4 2.5</td><td>7.3 7.3 7.1 7.0 6.7 6.4 6.1 0.8 0.8 0.7 0.7 0.6 0.6 0.5 2.6 2.4 2.3 2.2 2.0 1.8 1.7 3.2 3.0 2.9 2.7 2.6 2.4 2.2 8.0 8.2 8.7 8.8 9.1 9.4 9.5 4.5 4.4 4.1 4.0 3.9 3.9 3.8 4.5 4.4 4.1 4.0 3.9 3.9 3.8 5.5 5.5 5.4 5.3 5.3 5.3 5.3 2.2 2.2 2.1 2.2 2.2 2.2 2.3 1.3 1.2 1.3 1.3 1.2 1.1 1.0 1.4 1.4 1.4 1.4 1.6 1.7 1.7 1.5 1.5 1.5 1.5 1.6 1.6 1.5 4.1 4.0 4.0 4.0 4.0 4.0 4.0 2.8 2.7</td></td<>	7.3 7.3 7.1 7.0 0.8 0.8 0.7 0.7 2.6 2.4 2.3 2.2 3.2 3.0 2.9 2.7 8.0 8.2 8.7 8.8 4.5 4.4 4.1 4.0 4.8 4.8 4.4 4.2 5.5 5.5 5.4 5.3 2.2 2.2 2.1 2.2 1.3 1.2 1.3 1.3 1.4 1.4 1.4 1.4 1.5 1.5 1.5 1.5 4.1 4.0 4.0 4.0 2.8 2.7 2.7 2.7 1.1 1.1 1.1 1.1 2.8 2.7 2.7 2.7 2.4 2.5 2.6 2.6 1.0 1.0 0.9 0.9 1.9 1.9 1.8 1.3 3.3 3.2 3.2 3.2 0.8 0.8 0.7 0.7 0.7 0	7.3 7.3 7.1 7.0 6.7 0.8 0.8 0.7 0.7 0.6 2.6 2.4 2.3 2.2 2.0 3.2 3.0 2.9 2.7 2.6 8.0 8.2 8.7 8.8 9.1 4.5 4.4 4.1 4.0 3.9 4.8 4.8 4.4 4.2 4.1 5.5 5.4 5.3 5.3 5.3 7 2.2 2.2 2.1 2.2 2.2 1.3 1.2 1.3 1.3 1.2 1.4 1.4 1.4 1.4 1.4 1.6 1.5 1.4 1.4 0.4 4.0 4.0 4.0 2.8 2.7 2.7 2.7 2.7 2.5 2.5 2.4 2.3 2.3 2.4 2.5 2.6 2.6 2.6 1.0 1.0 0.9 0.9 <	7.3 7.3 7.1 7.0 6.7 6.4 0.8 0.8 0.7 0.7 0.6 0.6 2.6 2.4 2.3 2.2 0 1.8 3.2 3.0 2.9 2.7 2.6 2.4 8.0 8.2 8.7 8.8 9.1 9.4 4.5 4.4 4.1 4.0 3.9 3.9 4.5 5.5 5.4 5.3 5.3 5.3 5.5 5.5 5.4 5.3 5.3 5.3 7.1 1.3 1.2 1.3 1.2 1.1 1.4 1.4 1.4 1.6 1.7 1.5 1.5 1.5 1.6 1.6 7 2.7 2.7 2.7 2.7 2.7 1.1 1.1 1.1 1.1 1.0 1.0 2.5 2.5 2.4 2.3 2.3 2.2 2.4 2.5	7.3 7.3 7.1 7.0 6.7 6.4 6.1 0.8 0.8 0.7 0.7 0.6 0.6 0.5 2.6 2.4 2.3 2.2 2.0 1.8 1.7 3.2 3.0 2.9 2.7 2.6 2.4 2.2 8.0 8.2 8.7 8.8 9.1 9.4 9.5 4.5 4.4 4.1 4.0 3.9 3.9 3.8 4.5 4.4 4.1 4.0 3.9 3.9 3.8 5.5 5.5 5.4 5.3 5.3 5.3 5.3 2.2 2.2 2.1 2.2 2.2 2.2 2.3 1.3 1.2 1.3 1.3 1.2 1.1 1.0 1.4 1.4 1.4 1.4 1.6 1.7 1.7 1.5 1.5 1.5 1.5 1.6 1.6 1.5 4.1 4.0 4.0 4.0 4.0 4.0 4.0 2.8 2.7

Nonmanufacturing	0.5	0.5	0.5	0.5	0.4	0.4	0.4	-0.8%
Total	1.8	1.7	1.7	1.6	1.6	1.6	1.6	-0.5%
Australia and New Zealand								
Energy-intensive manufacturing	6.6	6.4	6.3	6.1	5.9	5.8	5.7	-0.5%
Non-energy-intensive manufacturing	3.9	4.0	4.0	4.0	3.9	3.9	3.8	-0.1%
Nonmanufacturing	1.7	1.5	1.4	1.4	1.4	1.4	1.4	-0.7%
Total	2.9	2.8	2.7	2.6	2.5	2.4	2.4	-0.8%
China								
Energy-intensive manufacturing	5.2	4.8	4.2	3.7	3.4	3.2	3.0	-2.0%
Non-energy-intensive manufacturing	0.9	0.8	0.7	0.6	0.6	0.6	0.5	-1.8%
Nonmanufacturing	0.5	0.4	0.4	0.3	0.3	0.3	0.3	-1.5%
Total	1.7	1.6	1.3	1.2	1.1	1.0	0.9	-2.1%
India								
Energy-intensive manufacturing	2.3	2.2	2.0	1.9	1.8	1.7	1.7	-1.2%
Non-energy-intensive manufacturing	2.7	2.6	2.5	2.3	2.2	2.1	2.0	-1.1%
Nonmanufacturing	0.4	0.4	0.4	0.4	0.3	0.3	0.3	-1.0%
Total	1.7	1.6	1.5	1.5	1.4	1.4	1.4	-0.7%
Other Asia Pacific								
Energy-intensive manufacturing	1.6	1.6	1.5	1.4	1.3	1.2	1.1	-1.4%
Non-energy-intensive manufacturing	1.0	1.0	0.9	0.9	0.9	0.9	0.8	-0.6%
Nonmanufacturing	0.3	0.3	0.3	0.3	0.2	0.2	0.2	-1.5%
Total	1.0	0.9	0.9	0.9	0.8	0.8	0.7	-0.9%
Africa and Middle East								
Africa								
Energy-intensive manufacturing	2.3	2.3	2.2	2.2	2.1	2.2	2.2	-0.3%
Non-energy-intensive manufacturing	6.4	6.4	6.6	6.8	7.0	7.2	7.3	0.4%
Nonmanufacturing	0.5	0.4	0.4	0.3	0.3	0.3	0.3	-1.9%
Total	2.0	1.9	1.9	1.9	2.0	2.0	2.1	0.3%
Middle East								
Energy-intensive manufacturing	4.8	4.7	4.5	4.4	4.3	4.2	4.1	-0.5%
Non-energy-intensive manufacturing	9.5	8.8	8.2	7.8	7.6	7.2	6.9	-1.1%
Nonmanufacturing	1.0	1.2	1.3	1.3	1.3	1.4	1.5	1.4%
Total	3.6	3.6	3.5	3.4	3.4	3.4	3.4	-0.2%
World								
Energy-intensive manufacturing	4.2	4.0	3.6	3.3	3.1	2.9	2.8	-1.4%
Non-energy-intensive manufacturing	1.3	1.2	1.2	1.1	1.1	1.1	1.1	-0.7%
Nonmanufacturing	0.8	0.7	0.7	0.7	0.6	0.6	0.6	-0.9%
Total	1.9	1.8	1.6	1.5	1.5	1.4	1.4	-1.1%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 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.