

**Table A1. World total primary energy consumption by region, Low Zero-carbon Technology Cost case**

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>152.6</b>	<b>152.3</b>	<b>156.1</b>	<b>160.7</b>	<b>165.3</b>	<b>171.1</b>	<b>179.2</b>	<b>0.6%</b>
United States	98.9	97.4	97.8	98.8	99.7	101.7	106.0	0.2%
Canada	14.7	14.8	15.5	16.4	17.6	18.8	19.8	1.1%
Mexico	7.7	7.8	8.4	8.8	9.3	9.9	10.5	1.1%
Brazil	14.9	15.6	16.5	17.4	17.9	18.3	18.7	0.8%
Other Americas	16.4	16.8	18.0	19.3	20.7	22.4	24.1	1.4%
<b>Europe and Eurasia</b>	<b>130.0</b>	<b>133.8</b>	<b>134.1</b>	<b>137.8</b>	<b>142.8</b>	<b>148.0</b>	<b>154.1</b>	<b>0.6%</b>
Western Europe	84.2	87.2	86.7	88.4	90.9	93.3	96.4	0.5%
Russia	33.5	33.8	34.0	35.2	36.4	37.8	39.2	0.6%
Eastern Europe and Eurasia	12.3	12.8	13.4	14.2	15.4	16.9	18.6	1.5%
<b>Asia Pacific</b>	<b>292.6</b>	<b>309.0</b>	<b>336.4</b>	<b>360.4</b>	<b>381.4</b>	<b>404.4</b>	<b>427.0</b>	<b>1.4%</b>
Japan	18.5	18.5	17.0	16.5	16.2	16.1	15.9	-0.5%
South Korea	13.0	13.4	13.8	14.1	14.2	14.3	14.4	0.4%
Australia and New Zealand	7.2	7.2	7.7	8.0	8.4	8.8	9.2	0.9%
China	172.4	179.8	186.9	191.1	192.6	195.4	197.6	0.5%
India	38.3	43.2	56.2	69.5	82.5	96.4	110.4	3.9%
Other Asia Pacific	43.2	46.9	54.7	61.3	67.4	73.5	79.6	2.2%
<b>Africa and Middle East</b>	<b>62.5</b>	<b>67.0</b>	<b>71.3</b>	<b>77.2</b>	<b>83.6</b>	<b>90.9</b>	<b>98.8</b>	<b>1.6%</b>
Africa	24.3	26.0	29.3	33.3	37.6	42.6	48.2	2.5%
Middle East	38.2	41.0	42.0	43.9	45.9	48.3	50.6	1.0%
<b>World</b>	<b>637.7</b>	<b>662.2</b>	<b>697.9</b>	<b>736.1</b>	<b>772.9</b>	<b>814.5</b>	<b>859.1</b>	<b>1.1%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding. We converted electricity generation from renewable sources such as hydroelectric, wind, or solar to British thermal units at a rate of 8,124 British thermal units per kilowatthour, which reflects the average projected conversion efficiency of the U.S. fossil-fueled generating fleet in the Annual Energy Outlook 2021 over the projection period (2022–2050).

**Table A2. World total primary energy consumption by region and fuel, Low Zero-carbon Technology Cost case**

quadrillion British thermal units

Region and fuel	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>								
Liquid fuels	57.6	57.7	56.8	56.5	57.3	58.8	60.8	0.2%
Natural gas	45.7	43.3	42.8	42.1	43.5	43.9	43.7	-0.2%
Coal	11.3	10.2	5.5	5.1	4.9	4.2	3.6	-4.0%
Nuclear	9.4	9.7	9.6	8.8	7.5	6.3	8.4	-0.4%
Other	28.6	31.4	41.3	48.2	52.1	57.9	62.9	2.8%
<b>Total</b>	<b>152.6</b>	<b>152.3</b>	<b>156.1</b>	<b>160.7</b>	<b>165.3</b>	<b>171.1</b>	<b>179.2</b>	<b>0.6%</b>
<b>Europe and Eurasia</b>								
Liquid fuels	38.0	38.4	37.4	36.6	36.7	37.3	38.2	0.0%
Natural gas	43.7	44.3	45.9	47.1	49.0	51.1	53.3	0.7%
Coal	16.5	16.1	14.6	14.8	14.9	15.6	16.4	0.0%
Nuclear	10.4	12.2	11.4	11.3	11.2	11.0	10.7	0.1%
Other	21.4	22.8	24.8	28.0	31.0	32.9	35.6	1.8%
<b>Total</b>	<b>130.0</b>	<b>133.8</b>	<b>134.1</b>	<b>137.8</b>	<b>142.8</b>	<b>148.0</b>	<b>154.1</b>	<b>0.6%</b>
<b>Asia Pacific</b>								
Liquid fuels	71.4	77.0	83.2	88.5	92.9	97.7	101.8	1.3%
Natural gas	35.2	37.5	40.3	42.5	45.3	47.9	50.7	1.3%
Coal	133.7	132.9	140.0	141.2	136.2	130.7	122.9	-0.3%
Nuclear	7.6	9.0	10.7	12.2	13.7	16.7	22.7	4.0%
Other	44.6	52.6	62.2	76.0	93.2	111.5	128.8	3.9%
<b>Total</b>	<b>292.6</b>	<b>309.0</b>	<b>336.4</b>	<b>360.4</b>	<b>381.4</b>	<b>404.4</b>	<b>427.0</b>	<b>1.4%</b>
<b>Africa and Middle East</b>								
Liquid fuels	23.3	24.7	24.7	25.6	27.2	29.1	31.1	1.0%
Natural gas	28.6	29.8	31.3	33.6	35.8	37.7	39.0	1.1%
Coal	4.6	4.5	4.9	5.6	6.6	6.9	7.4	1.7%
Nuclear	0.4	0.9	1.0	1.2	1.4	1.4	1.4	4.9%
Other	5.7	7.1	9.2	11.1	12.6	15.7	19.9	4.6%
<b>Total</b>	<b>62.5</b>	<b>67.0</b>	<b>71.3</b>	<b>77.2</b>	<b>83.6</b>	<b>90.9</b>	<b>98.8</b>	<b>1.6%</b>
<b>World</b>								
Liquid fuels	190.3	197.9	202.1	207.3	214.1	222.9	231.9	0.7%
Natural gas	153.2	155.0	160.3	165.4	173.6	180.6	186.7	0.7%
Coal	166.0	163.7	165.1	166.7	162.6	157.4	150.2	-0.4%
Nuclear	27.7	31.7	32.7	33.6	33.8	35.4	43.2	1.6%
Other	100.4	114.0	137.6	163.2	188.9	218.2	247.2	3.3%
<b>Total</b>	<b>637.7</b>	<b>662.2</b>	<b>697.9</b>	<b>736.1</b>	<b>772.9</b>	<b>814.5</b>	<b>859.1</b>	<b>1.1%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding. We converted electricity generation from renewable sources such as hydroelectric, wind, or solar to British thermal units at a rate of 8,124 British thermal units per kilowatthour, which reflects the average projected conversion efficiency of the U.S. fossil-fueled generating fleet in the Annual Energy Outlook 2021 over the projection period (2022–2050).

**Table A3. World GDP by region expressed in purchasing power parity, Low Zero-carbon Technology Cost case**

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>\$32,285</b>	<b>\$33,663</b>	<b>\$37,298</b>	<b>\$40,964</b>	<b>\$45,193</b>	<b>\$49,889</b>	<b>\$54,973</b>	<b>1.9%</b>
United States	\$20,671	\$21,348	\$23,455	\$25,644	\$28,396	\$31,529	\$34,963	1.9%
Canada	\$1,791	\$1,871	\$2,104	\$2,304	\$2,514	\$2,733	\$2,966	1.8%
Mexico	\$2,367	\$2,484	\$2,738	\$2,999	\$3,262	\$3,532	\$3,814	1.7%
Brazil	\$3,182	\$3,340	\$3,695	\$3,968	\$4,130	\$4,257	\$4,344	1.1%
Other Americas	\$4,273	\$4,620	\$5,306	\$6,050	\$6,892	\$7,839	\$8,887	2.6%
<b>Europe and Eurasia</b>	<b>\$31,730</b>	<b>\$33,224</b>	<b>\$35,929</b>	<b>\$38,541</b>	<b>\$41,435</b>	<b>\$44,502</b>	<b>\$47,821</b>	<b>1.5%</b>
Western Europe	\$26,269	\$27,336	\$29,337	\$31,204	\$33,219	\$35,277	\$37,451	1.3%
Russia	\$3,763	\$3,973	\$4,217	\$4,375	\$4,557	\$4,763	\$4,989	1.0%
Eastern Europe and Eurasia	\$1,698	\$1,914	\$2,376	\$2,962	\$3,659	\$4,461	\$5,381	4.2%
<b>Asia Pacific</b>	<b>\$58,793</b>	<b>\$67,171</b>	<b>\$83,287</b>	<b>\$99,532</b>	<b>\$115,474</b>	<b>\$132,173</b>	<b>\$148,126</b>	<b>3.4%</b>
Japan	\$5,292	\$5,479	\$5,661	\$5,678	\$5,701	\$5,717	\$5,755	0.3%
South Korea	\$2,292	\$2,431	\$2,633	\$2,777	\$2,856	\$2,929	\$2,991	1.0%
Australia and New Zealand	\$1,524	\$1,638	\$1,900	\$2,126	\$2,337	\$2,541	\$2,747	2.1%
China	\$26,404	\$30,398	\$37,480	\$44,337	\$50,291	\$56,310	\$61,139	3.0%
India	\$10,049	\$12,032	\$16,632	\$21,729	\$27,140	\$32,997	\$39,137	5.0%
Other Asia Pacific	\$13,232	\$15,193	\$18,980	\$22,885	\$27,149	\$31,679	\$36,356	3.7%
<b>Africa and Middle East</b>	<b>\$12,838</b>	<b>\$14,048</b>	<b>\$16,063</b>	<b>\$18,214</b>	<b>\$20,335</b>	<b>\$22,407</b>	<b>\$24,428</b>	<b>2.3%</b>
Africa	\$7,050	\$7,691	\$9,017	\$10,437	\$11,906	\$13,440	\$15,023	2.7%
Middle East	\$5,788	\$6,356	\$7,046	\$7,778	\$8,429	\$8,967	\$9,405	1.7%
<b>World</b>	<b>\$135,647</b>	<b>\$148,106</b>	<b>\$172,577</b>	<b>\$197,252</b>	<b>\$222,437</b>	<b>\$248,971</b>	<b>\$275,348</b>	<b>2.6%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo); Oxford Economics, Global Economic Model (February 2023), [www.oxfordeconomics.com](http://www.oxfordeconomics.com) (subscription site)

Note: Totals may not equal sum of components due to independent rounding.

**Table A4. World GDP by region expressed in market exchange rates, Low Zero-carbon Technology Cost case**

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>\$28,078</b>	<b>\$29,180</b>	<b>\$32,242</b>	<b>\$35,332</b>	<b>\$38,972</b>	<b>\$43,031</b>	<b>\$47,432</b>	<b>1.9%</b>
United States	\$20,671	\$21,348	\$23,455	\$25,644	\$28,396	\$31,529	\$34,963	1.9%
Canada	\$1,748	\$1,827	\$2,053	\$2,249	\$2,454	\$2,667	\$2,894	1.8%
Mexico	\$1,242	\$1,303	\$1,437	\$1,574	\$1,712	\$1,854	\$2,002	1.7%
Brazil	\$1,900	\$1,994	\$2,206	\$2,369	\$2,466	\$2,542	\$2,594	1.1%
Other Americas	\$2,516	\$2,708	\$3,090	\$3,496	\$3,945	\$4,439	\$4,979	2.5%
<b>Europe and Eurasia</b>	<b>\$22,949</b>	<b>\$23,898</b>	<b>\$25,663</b>	<b>\$27,295</b>	<b>\$29,106</b>	<b>\$31,027</b>	<b>\$33,089</b>	<b>1.3%</b>
Western Europe	\$20,883	\$21,672	\$23,168	\$24,510	\$25,979	\$27,505	\$29,114	1.2%
Russia	\$1,456	\$1,538	\$1,632	\$1,693	\$1,764	\$1,843	\$1,931	1.0%
Eastern Europe and Eurasia	\$610	\$688	\$864	\$1,091	\$1,363	\$1,679	\$2,044	4.4%
<b>Asia Pacific</b>	<b>\$32,233</b>	<b>\$36,392</b>	<b>\$44,060</b>	<b>\$51,526</b>	<b>\$58,579</b>	<b>\$65,860</b>	<b>\$72,534</b>	<b>2.9%</b>
Japan	\$4,521	\$4,681	\$4,837	\$4,851	\$4,871	\$4,884	\$4,917	0.3%
South Korea	\$1,738	\$1,843	\$1,996	\$2,105	\$2,166	\$2,221	\$2,268	1.0%
Australia and New Zealand	\$1,671	\$1,796	\$2,084	\$2,332	\$2,563	\$2,787	\$3,013	2.1%
China	\$16,177	\$18,624	\$22,963	\$27,164	\$30,812	\$34,500	\$37,459	3.0%
India	\$2,927	\$3,506	\$4,846	\$6,332	\$7,909	\$9,615	\$11,405	5.0%
Other Asia Pacific	\$5,199	\$5,942	\$7,333	\$8,741	\$10,259	\$11,853	\$13,472	3.5%
<b>Africa and Middle East</b>	<b>\$5,526</b>	<b>\$6,049</b>	<b>\$6,889</b>	<b>\$7,796</b>	<b>\$8,697</b>	<b>\$9,577</b>	<b>\$10,443</b>	<b>2.3%</b>
Africa	\$2,723	\$2,964	\$3,470	\$4,017	\$4,588	\$5,187	\$5,806	2.7%
Middle East	\$2,803	\$3,085	\$3,419	\$3,780	\$4,109	\$4,390	\$4,638	1.8%
<b>World</b>	<b>\$88,786</b>	<b>\$95,518</b>	<b>\$108,855</b>	<b>\$121,949</b>	<b>\$135,355</b>	<b>\$149,495</b>	<b>\$163,498</b>	<b>2.2%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo); Oxford Economics, Global Economic Model (February 2023), [www.oxfordeconomics.com](http://www.oxfordeconomics.com) (subscription site)

Note: Totals may not equal sum of components due to independent rounding.

**Table A5. World liquid fuels consumption by region, Low Zero-carbon Technology Cost case**

million barrels per day

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>30.6</b>	<b>30.8</b>	<b>30.6</b>	<b>30.5</b>	<b>31.0</b>	<b>31.8</b>	<b>32.9</b>	<b>0.3%</b>
United States	19.9	19.9	19.6	19.3	19.3	19.6	20.1	0.0%
Canada	2.3	2.3	2.3	2.4	2.5	2.7	2.7	0.6%
Mexico	1.9	1.9	1.9	1.9	1.9	2.0	2.1	0.4%
Brazil	3.0	3.1	3.1	3.2	3.2	3.3	3.4	0.5%
Other Americas	3.5	3.6	3.7	3.8	4.0	4.3	4.6	0.9%
<b>Europe and Eurasia</b>	<b>18.8</b>	<b>18.9</b>	<b>18.4</b>	<b>18.1</b>	<b>18.1</b>	<b>18.4</b>	<b>18.9</b>	<b>0.0%</b>
Western Europe	14.3	14.2	13.6	13.2	13.0	13.0	13.2	-0.3%
Russia	3.4	3.5	3.6	3.6	3.7	3.9	4.0	0.5%
Eastern Europe and Eurasia	1.1	1.2	1.2	1.3	1.4	1.6	1.7	1.7%
<b>Asia Pacific</b>	<b>36.1</b>	<b>39.0</b>	<b>42.1</b>	<b>44.8</b>	<b>47.1</b>	<b>49.6</b>	<b>51.8</b>	<b>1.3%</b>
Japan	3.4	3.2	3.0	2.8	2.7	2.6	2.5	-1.1%
South Korea	2.6	2.7	2.7	2.7	2.6	2.6	2.5	0.0%
Australia and New Zealand	1.2	1.3	1.3	1.3	1.3	1.4	1.4	0.4%
China	15.2	16.6	17.5	17.8	17.6	17.5	17.3	0.5%
India	5.1	5.8	7.3	9.1	10.8	12.6	14.3	3.8%
Other Asia Pacific	8.7	9.4	10.3	11.2	12.1	13.0	13.8	1.7%
<b>Africa and Middle East</b>	<b>13.5</b>	<b>14.4</b>	<b>14.5</b>	<b>15.0</b>	<b>15.8</b>	<b>16.8</b>	<b>17.8</b>	<b>1.0%</b>
Africa	4.4	4.7	5.1	5.6	6.2	6.9	7.7	2.0%
Middle East	9.1	9.6	9.3	9.4	9.6	9.8	10.1	0.4%
<b>World</b>	<b>99.0</b>	<b>103.1</b>	<b>105.6</b>	<b>108.4</b>	<b>112.0</b>	<b>116.7</b>	<b>121.4</b>	<b>0.7%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531; Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo); and Short-Term Energy Outlook (April 2023)

Note: Totals may not equal sum of components due to independent rounding. Liquid fuels include motor gasoline, distillate, residual, kerosene, jet fuel, liquid petroleum gases, sequestered petroleum, other petroleum, petroleum coke, crude oil (including lease and plant condensate), ethanol, and other biofuels across all demand sectors. EIA's Glossary includes descriptions of individual liquid fuel components.

**Table A6. World natural gas consumption by region, Low Zero-carbon Technology Cost case**

trillion cubic feet

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>45.0</b>	<b>42.9</b>	<b>42.4</b>	<b>42.0</b>	<b>43.4</b>	<b>43.9</b>	<b>43.8</b>	<b>-0.1%</b>
United States	32.3	29.7	27.8	26.7	27.4	27.3	26.5	-0.7%
Canada	4.3	4.4	4.9	5.3	5.6	5.9	6.2	1.4%
Mexico	2.7	2.8	3.1	3.3	3.6	3.8	3.9	1.3%
Brazil	1.3	1.5	1.7	1.6	1.5	1.4	1.4	0.2%
Other Americas	4.3	4.4	4.8	5.1	5.3	5.6	5.8	1.1%
<b>Europe and Eurasia</b>	<b>42.3</b>	<b>42.9</b>	<b>44.4</b>	<b>45.6</b>	<b>47.5</b>	<b>49.6</b>	<b>51.7</b>	<b>0.7%</b>
Western Europe	19.8	20.5	21.7	21.6	21.7	21.9	22.2	0.4%
Russia	17.0	16.8	17.1	18.2	19.2	20.3	21.3	0.8%
Eastern Europe and Eurasia	5.5	5.7	5.7	5.9	6.6	7.4	8.1	1.4%
<b>Asia Pacific</b>	<b>34.9</b>	<b>37.2</b>	<b>40.0</b>	<b>42.3</b>	<b>45.1</b>	<b>47.7</b>	<b>50.5</b>	<b>1.3%</b>
Japan	4.1	4.1	3.9	3.6	3.3	3.2	3.2	-0.8%
South Korea	2.5	2.5	2.4	2.3	2.2	2.1	2.2	-0.5%
Australia and New Zealand	2.0	2.1	2.3	2.3	2.4	2.4	2.6	0.9%
China	14.1	15.1	16.1	17.6	19.3	20.2	21.1	1.4%
India	2.5	2.8	3.8	4.9	6.0	7.1	8.2	4.4%
Other Asia Pacific	9.7	10.6	11.5	11.6	11.9	12.6	13.3	1.1%
<b>Africa and Middle East</b>	<b>28.4</b>	<b>29.6</b>	<b>31.0</b>	<b>33.3</b>	<b>35.3</b>	<b>37.1</b>	<b>38.4</b>	<b>1.1%</b>
Africa	6.2	6.4	6.8	7.3	8.1	8.7	9.3	1.4%
Middle East	22.1	23.2	24.3	25.9	27.2	28.5	29.1	1.0%
<b>World</b>	<b>150.5</b>	<b>152.5</b>	<b>157.9</b>	<b>163.2</b>	<b>171.3</b>	<b>178.3</b>	<b>184.4</b>	<b>0.7%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding. Natural gas consumption excludes nonhydrocarbon gases.

**Table A7. World coal consumption by region, Low Zero-carbon Technology Cost case**

million short tons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>574</b>	<b>513</b>	<b>269</b>	<b>239</b>	<b>228</b>	<b>192</b>	<b>158</b>	<b>-4.5%</b>
United States	499	446	195	148	126	90	55	-7.6%
Canada	25	15	5	6	6	6	6	-5.2%
Mexico	7	7	13	14	15	15	15	2.7%
Brazil	25	26	26	28	31	29	29	0.6%
Other Americas	17	19	29	43	51	53	54	4.1%
<b>Europe and Eurasia</b>	<b>1,018</b>	<b>989</b>	<b>851</b>	<b>856</b>	<b>848</b>	<b>905</b>	<b>958</b>	<b>-0.2%</b>
Western Europe	642	614	481	487	471	516	559	-0.5%
Russia	238	248	232	219	221	224	227	-0.2%
Eastern Europe and Eurasia	138	128	137	149	156	164	172	0.8%
<b>Asia Pacific</b>	<b>6,694</b>	<b>6,662</b>	<b>7,073</b>	<b>7,135</b>	<b>6,892</b>	<b>6,616</b>	<b>6,228</b>	<b>-0.3%</b>
Japan	193	191	134	133	128	123	119	-1.7%
South Korea	110	108	113	117	119	121	121	0.3%
Australia and New Zealand	100	93	103	107	112	106	109	0.3%
China	4,676	4,574	4,541	4,399	4,055	3,728	3,276	-1.3%
India	1,063	1,141	1,458	1,530	1,600	1,588	1,630	1.5%
Other Asia Pacific	551	555	724	848	878	949	972	2.0%
<b>Africa and Middle East</b>	<b>177</b>	<b>167</b>	<b>188</b>	<b>217</b>	<b>258</b>	<b>267</b>	<b>279</b>	<b>1.6%</b>
Africa	165	156	177	205	246	255	267	1.7%
Middle East	12	11	11	12	12	12	12	0.1%
<b>World</b>	<b>8,464</b>	<b>8,332</b>	<b>8,380</b>	<b>8,447</b>	<b>8,226</b>	<b>7,979</b>	<b>7,624</b>	<b>-0.4%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding.

**Table A8. World nuclear energy consumption by region (net nuclear electricity generation), Low Zero-carbon Technology Cost case**

billion kilowatthours

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>889</b>	<b>924</b>	<b>915</b>	<b>840</b>	<b>714</b>	<b>599</b>	<b>800</b>	<b>-0.4%</b>
United States	772	782	758	674	549	457	686	-0.4%
Canada	79	97	97	97	97	79	56	-1.2%
Mexico	11	17	20	28	23	19	17	1.5%
Brazil	14	14	23	23	23	23	18	0.9%
Other Americas	12	13	18	18	21	22	23	2.3%
<b>Europe and Eurasia</b>	<b>995</b>	<b>1,153</b>	<b>1,069</b>	<b>1,062</b>	<b>1,055</b>	<b>1,036</b>	<b>1,001</b>	<b>0.0%</b>
Western Europe	734	849	741	727	720	702	664	-0.4%
Russia	217	229	234	234	234	234	227	0.2%
Eastern Europe and Eurasia	44	75	94	101	101	101	111	3.4%
<b>Asia Pacific</b>	<b>746</b>	<b>859</b>	<b>1,011</b>	<b>1,160</b>	<b>1,300</b>	<b>1,588</b>	<b>2,174</b>	<b>3.9%</b>
Japan	78	115	139	139	139	139	139	2.1%
South Korea	201	228	228	228	228	218	214	0.2%
Australia and New Zealand	0	0	0	0	0	0	0	0.0%
China	383	416	538	674	810	1,108	1,698	5.5%
India	41	47	52	67	70	70	70	1.9%
Other Asia Pacific	43	53	53	53	53	53	53	0.8%
<b>Africa and Middle East</b>	<b>37</b>	<b>81</b>	<b>96</b>	<b>116</b>	<b>135</b>	<b>135</b>	<b>135</b>	<b>4.8%</b>
Africa	13	16	30	43	52	52	52	5.1%
Middle East	24	66	66	73	83	83	83	4.6%
<b>World</b>	<b>2,666</b>	<b>3,017</b>	<b>3,091</b>	<b>3,179</b>	<b>3,203</b>	<b>3,359</b>	<b>4,110</b>	<b>1.6%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding.



**Table A9. World consumption of renewable energy by region, Low Zero-carbon Technology Cost case**

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>28.6</b>	<b>31.4</b>	<b>41.3</b>	<b>48.2</b>	<b>52.1</b>	<b>57.9</b>	<b>62.9</b>	<b>2.8%</b>
United States	11.4	14.1	22.5	27.5	29.5	33.0	35.6	4.1%
Canada	4.3	4.4	4.6	4.9	5.6	6.4	7.2	1.8%
Mexico	1.0	0.8	1.1	1.2	1.4	1.7	2.0	2.6%
Brazil	7.4	7.6	8.1	8.9	9.4	9.8	10.2	1.1%
Other Americas	4.5	4.6	5.1	5.6	6.2	7.0	7.9	2.0%
<b>Europe and Eurasia</b>	<b>21.4</b>	<b>22.8</b>	<b>24.8</b>	<b>28.0</b>	<b>31.0</b>	<b>32.9</b>	<b>35.6</b>	<b>1.8%</b>
Western Europe	18.4	19.7	21.7	24.5	27.6	29.4	31.7	2.0%
Russia	2.2	2.1	2.1	2.4	2.2	2.2	2.2	0.1%
Eastern Europe and Eurasia	0.9	1.0	1.0	1.1	1.1	1.4	1.7	2.4%
<b>Asia Pacific</b>	<b>44.6</b>	<b>52.6</b>	<b>62.2</b>	<b>76.0</b>	<b>93.2</b>	<b>111.5</b>	<b>128.8</b>	<b>3.9%</b>
Japan	2.4	2.2	2.4	2.6	3.0	3.3	3.4	1.3%
South Korea	0.6	0.6	0.8	1.1	1.3	1.6	1.8	3.9%
Australia and New Zealand	1.4	1.5	1.7	1.9	2.2	2.6	2.9	2.7%
China	26.6	31.4	35.0	38.4	44.4	50.3	55.2	2.6%
India	7.4	9.3	13.0	20.1	27.0	36.1	44.6	6.6%
Other Asia Pacific	6.3	7.5	9.4	11.8	15.3	17.6	20.9	4.4%
<b>Africa and Middle East</b>	<b>5.7</b>	<b>7.1</b>	<b>9.2</b>	<b>11.1</b>	<b>12.6</b>	<b>15.7</b>	<b>19.9</b>	<b>4.6%</b>
Africa	5.3	6.3	7.9	9.6	10.9	13.5	16.5	4.1%
Middle East	0.4	0.8	1.3	1.5	1.7	2.2	3.5	8.1%
<b>World</b>	<b>100.4</b>	<b>114.0</b>	<b>137.6</b>	<b>163.2</b>	<b>188.9</b>	<b>218.2</b>	<b>247.2</b>	<b>3.3%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding. We converted electricity generation from renewable sources such as hydroelectric, wind, or solar to British thermal units at a rate of 8,124 British thermal units per kilowatthour, which reflects the average projected conversion efficiency of the U.S. fossil-fueled generating fleet in the Annual Energy Outlook 2021 over the projection period (2022–2050).

**Table A10. World carbon dioxide emissions by region, Low Zero-carbon Technology Cost case**

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>6,991</b>	<b>6,742</b>	<b>6,164</b>	<b>6,023</b>	<b>6,110</b>	<b>6,152</b>	<b>6,180</b>	<b>-0.4%</b>
United States	4,842	4,547	3,907	3,687	3,660	3,600	3,519	-1.1%
Canada	548	536	523	530	558	588	612	0.4%
Mexico	419	427	444	456	478	497	520	0.8%
Brazil	439	467	487	491	498	497	501	0.5%
Other Americas	744	765	804	859	917	970	1,027	1.2%
<b>Europe and Eurasia</b>	<b>6,362</b>	<b>6,377</b>	<b>6,244</b>	<b>6,259</b>	<b>6,351</b>	<b>6,563</b>	<b>6,791</b>	<b>0.2%</b>
Western Europe	3,804	3,811	3,653	3,581	3,534	3,593	3,672	-0.1%
Russia	1,815	1,829	1,824	1,862	1,930	2,005	2,075	0.5%
Eastern Europe and Eurasia	742	737	767	815	887	966	1,045	1.2%
<b>Asia Pacific</b>	<b>18,703</b>	<b>19,109</b>	<b>20,305</b>	<b>20,868</b>	<b>20,830</b>	<b>20,744</b>	<b>20,426</b>	<b>0.3%</b>
Japan	1,036	1,015	860	818	777	747	728	-1.3%
South Korea	639	647	651	647	640	634	628	-0.1%
Australia and New Zealand	404	395	419	424	433	429	441	0.3%
China	11,498	11,557	11,657	11,520	10,912	10,300	9,446	-0.7%
India	2,446	2,666	3,404	3,793	4,203	4,483	4,836	2.5%
Other Asia Pacific	2,680	2,829	3,315	3,666	3,865	4,152	4,346	1.7%
<b>Africa and Middle East</b>	<b>3,606</b>	<b>3,764</b>	<b>3,880</b>	<b>4,121</b>	<b>4,427</b>	<b>4,690</b>	<b>4,938</b>	<b>1.1%</b>
Africa	1,331	1,374	1,486	1,648	1,863	2,030	2,215	1.8%
Middle East	2,275	2,391	2,394	2,473	2,564	2,660	2,724	0.6%
<b>World</b>	<b>35,662</b>	<b>35,993</b>	<b>36,594</b>	<b>37,270</b>	<b>37,718</b>	<b>38,149</b>	<b>38,335</b>	<b>0.3%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding.

**Table A11. World carbon dioxide emissions from liquid fuels use by region, Low Zero-carbon Technology Cost case**

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>3,501</b>	<b>3,481</b>	<b>3,401</b>	<b>3,356</b>	<b>3,383</b>	<b>3,464</b>	<b>3,567</b>	<b>0.1%</b>
United States	2,189	2,141	2,066	1,996	1,972	1,985	2,018	-0.3%
Canada	271	270	271	278	288	300	308	0.5%
Mexico	253	254	242	241	246	256	271	0.2%
Brazil	310	326	331	337	344	351	357	0.5%
Other Americas	478	491	491	504	533	572	613	0.9%
<b>Europe and Eurasia</b>	<b>2,474</b>	<b>2,495</b>	<b>2,419</b>	<b>2,352</b>	<b>2,338</b>	<b>2,365</b>	<b>2,407</b>	<b>-0.1%</b>
Western Europe	1,905	1,907	1,821	1,749	1,714	1,715	1,731	-0.3%
Russia	435	445	445	441	447	455	462	0.2%
Eastern Europe and Eurasia	134	143	152	162	178	196	215	1.7%
<b>Asia Pacific</b>	<b>4,139</b>	<b>4,474</b>	<b>4,838</b>	<b>5,157</b>	<b>5,437</b>	<b>5,737</b>	<b>6,003</b>	<b>1.3%</b>
Japan	404	387	360	336	320	309	299	-1.1%
South Korea	262	276	274	268	259	251	244	-0.3%
Australia and New Zealand	168	169	176	177	179	184	190	0.4%
China	1,579	1,735	1,821	1,849	1,828	1,819	1,798	0.5%
India	610	702	875	1,077	1,284	1,489	1,681	3.7%
Other Asia Pacific	1,116	1,205	1,332	1,450	1,567	1,685	1,792	1.7%
<b>Africa and Middle East</b>	<b>1,660</b>	<b>1,764</b>	<b>1,751</b>	<b>1,805</b>	<b>1,908</b>	<b>2,036</b>	<b>2,174</b>	<b>1.0%</b>
Africa	597	641	687	753	840	941	1,053	2.0%
Middle East	1,062	1,123	1,064	1,052	1,068	1,094	1,121	0.2%
<b>World</b>	<b>11,773</b>	<b>12,214</b>	<b>12,408</b>	<b>12,670</b>	<b>13,067</b>	<b>13,602</b>	<b>14,151</b>	<b>0.7%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/ao](http://www.eia.gov/ao)

Note: Totals may not equal sum of components due to independent rounding.

**Table A12. World carbon dioxide emissions from natural gas use by region, Low Zero-carbon Technology Cost case**

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>2,405</b>	<b>2,283</b>	<b>2,234</b>	<b>2,187</b>	<b>2,263</b>	<b>2,286</b>	<b>2,271</b>	<b>-0.2%</b>
United States	1,724	1,574	1,476	1,411	1,447	1,437	1,386	-0.8%
Canada	231	237	239	239	256	274	291	0.8%
Mexico	147	154	171	181	197	206	213	1.3%
Brazil	72	81	95	89	83	77	76	0.2%
Other Americas	231	237	253	267	280	292	305	1.0%
<b>Europe and Eurasia</b>	<b>2,318</b>	<b>2,352</b>	<b>2,434</b>	<b>2,499</b>	<b>2,599</b>	<b>2,712</b>	<b>2,828</b>	<b>0.7%</b>
Western Europe	1,086	1,124	1,190	1,186	1,190	1,203	1,222	0.4%
Russia	931	919	935	994	1,050	1,109	1,166	0.8%
Eastern Europe and Eurasia	300	309	308	319	358	400	440	1.4%
<b>Asia Pacific</b>	<b>1,845</b>	<b>1,984</b>	<b>2,131</b>	<b>2,251</b>	<b>2,399</b>	<b>2,536</b>	<b>2,686</b>	<b>1.4%</b>
Japan	223	226	213	196	182	175	176	-0.8%
South Korea	137	136	131	124	121	117	119	-0.5%
Australia and New Zealand	91	91	93	92	91	90	92	0.0%
China	738	814	867	948	1,041	1,093	1,141	1.6%
India	137	152	211	272	332	392	452	4.4%
Other Asia Pacific	519	565	615	620	632	668	705	1.1%
<b>Africa and Middle East</b>	<b>1,517</b>	<b>1,581</b>	<b>1,663</b>	<b>1,785</b>	<b>1,899</b>	<b>2,000</b>	<b>2,071</b>	<b>1.1%</b>
Africa	331	339	359	390	430	462	496	1.5%
Middle East	1,186	1,242	1,304	1,395	1,469	1,538	1,575	1.0%
<b>World</b>	<b>8,085</b>	<b>8,200</b>	<b>8,461</b>	<b>8,722</b>	<b>9,159</b>	<b>9,533</b>	<b>9,856</b>	<b>0.7%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding.

**Table A13. World carbon dioxide emissions from coal use by region, Low Zero-carbon Technology Cost case**

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>1,085</b>	<b>978</b>	<b>530</b>	<b>480</b>	<b>464</b>	<b>402</b>	<b>342</b>	<b>-4.0%</b>
United States	929	833	365	281	241	178	114	-7.2%
Canada	45	29	13	14	14	14	14	-4.2%
Mexico	19	19	31	34	35	35	36	2.4%
Brazil	57	60	61	65	71	68	69	0.6%
Other Americas	35	38	59	87	104	107	110	4.1%
<b>Europe and Eurasia</b>	<b>1,570</b>	<b>1,530</b>	<b>1,391</b>	<b>1,407</b>	<b>1,414</b>	<b>1,486</b>	<b>1,556</b>	<b>0.0%</b>
Western Europe	813	780	641	646	630	676	719	-0.4%
Russia	449	465	444	427	433	441	448	0.0%
Eastern Europe and Eurasia	308	285	307	334	351	369	390	0.8%
<b>Asia Pacific</b>	<b>12,719</b>	<b>12,651</b>	<b>13,337</b>	<b>13,460</b>	<b>12,993</b>	<b>12,471</b>	<b>11,736</b>	<b>-0.3%</b>
Japan	409	402	287	285	274	263	253	-1.7%
South Korea	240	236	245	255	261	265	265	0.4%
Australia and New Zealand	145	135	150	156	163	154	159	0.3%
China	9,181	9,008	8,969	8,722	8,043	7,388	6,507	-1.2%
India	1,699	1,812	2,317	2,445	2,587	2,601	2,703	1.7%
Other Asia Pacific	1,045	1,058	1,368	1,596	1,666	1,800	1,849	2.1%
<b>Africa and Middle East</b>	<b>429</b>	<b>419</b>	<b>466</b>	<b>531</b>	<b>620</b>	<b>655</b>	<b>693</b>	<b>1.7%</b>
Africa	403	394	441	505	593	627	666	1.8%
Middle East	26	26	25	26	27	27	27	0.1%
<b>World</b>	<b>15,804</b>	<b>15,579</b>	<b>15,724</b>	<b>15,878</b>	<b>15,492</b>	<b>15,014</b>	<b>14,328</b>	<b>-0.3%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding.

**Table A14. World carbon dioxide emissions from power generation by region and fossil fuel type, Low Zero-carbon Technology Cost case**

million metric tons of carbon dioxide

Region and fuel	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>								
Liquid fuels	92	109	55	23	10	3	3	-11.3%
Natural gas	852	740	605	502	520	486	411	-2.6%
Coal	907	800	346	296	278	215	152	-6.2%
<b>Total</b>	<b>1,851</b>	<b>1,649</b>	<b>1,006</b>	<b>821</b>	<b>808</b>	<b>704</b>	<b>566</b>	<b>-4.1%</b>
United States								
Liquid fuels	8	8	5	5	4	3	3	-4.0%
Natural gas	646	521	383	297	313	281	207	-4.0%
Coal	842	748	281	203	167	108	45	-9.9%
<b>Total</b>	<b>1,496</b>	<b>1,277</b>	<b>670</b>	<b>504</b>	<b>485</b>	<b>392</b>	<b>255</b>	<b>-6.1%</b>
Canada								
Liquid fuels	2	2	0	0	0	0	0	-10.3%
Natural gas	27	29	16	3	2	3	3	-8.0%
Coal	33	16	0	0	0	0	0	-100.0%
<b>Total</b>	<b>61</b>	<b>48</b>	<b>16</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>-10.5%</b>
Mexico								
Liquid fuels	28	36	19	9	3	0	0	-18.4%
Natural gas	70	73	76	79	89	91	92	1.0%
Coal	7	8	19	21	21	21	21	4.1%
<b>Total</b>	<b>105</b>	<b>117</b>	<b>114</b>	<b>110</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>0.3%</b>
Brazil								
Liquid fuels	10	14	6	1	0	0	0	-15.0%
Natural gas	28	36	46	37	29	25	23	-0.8%
Coal	9	10	8	9	13	9	9	0.1%
<b>Total</b>	<b>47</b>	<b>60</b>	<b>60</b>	<b>46</b>	<b>43</b>	<b>34</b>	<b>32</b>	<b>-1.4%</b>
Other Americas								
Liquid fuels	44	50	25	8	3	0	0	-17.4%
Natural gas	81	80	84	86	86	86	86	0.2%
Coal	17	19	38	63	77	77	77	5.5%
<b>Total</b>	<b>142</b>	<b>149</b>	<b>147</b>	<b>158</b>	<b>165</b>	<b>163</b>	<b>163</b>	<b>0.5%</b>
<b>Europe and Eurasia</b>								
Liquid fuels	58	80	81	56	43	41	40	-1.3%
Natural gas	701	702	750	771	816	861	902	0.9%
Coal	848	802	655	650	630	674	715	-0.6%
<b>Total</b>	<b>1,607</b>	<b>1,583</b>	<b>1,486</b>	<b>1,477</b>	<b>1,489</b>	<b>1,576</b>	<b>1,656</b>	<b>0.1%</b>
Western Europe								
Liquid fuels	40	57	62	47	35	35	35	-0.5%
Natural gas	263	297	365	353	346	341	338	0.9%
Coal	481	453	323	326	308	352	392	-0.7%
<b>Total</b>	<b>784</b>	<b>807</b>	<b>749</b>	<b>726</b>	<b>689</b>	<b>728</b>	<b>765</b>	<b>-0.1%</b>
Russia								
Liquid fuels	13	19	16	5	4	3	2	-6.8%
Natural gas	315	295	290	323	349	372	391	0.8%
Coal	179	192	166	143	142	142	142	-0.8%
<b>Total</b>	<b>508</b>	<b>507</b>	<b>472</b>	<b>471</b>	<b>495</b>	<b>516</b>	<b>534</b>	<b>0.2%</b>
Eastern Europe and Eurasia								
Liquid fuels	4	4	3	3	3	3	3	-0.8%
Natural gas	123	109	95	95	121	148	173	1.2%
Coal	187	157	167	181	181	181	181	-0.1%
<b>Total</b>	<b>315</b>	<b>269</b>	<b>265</b>	<b>279</b>	<b>305</b>	<b>333</b>	<b>357</b>	<b>0.5%</b>
<b>Asia Pacific</b>								

Liquid fuels	49	55	33	18	10	7	5	-7.6%
Natural gas	618	656	646	623	637	632	643	0.1%
Coal	7,386	7,344	8,056	8,224	7,810	7,292	6,565	-0.4%
<b>Total</b>	<b>8,052</b>	<b>8,055</b>	<b>8,734</b>	<b>8,865</b>	<b>8,456</b>	<b>7,931</b>	<b>7,213</b>	<b>-0.4%</b>
<b>Japan</b>								
Liquid fuels	9	13	9	5	3	3	3	-4.1%
Natural gas	145	145	134	117	103	95	95	-1.5%
Coal	251	249	147	158	158	158	158	-1.6%
<b>Total</b>	<b>406</b>	<b>406</b>	<b>290</b>	<b>280</b>	<b>264</b>	<b>256</b>	<b>256</b>	<b>-1.6%</b>
<b>South Korea</b>								
Liquid fuels	2	3	4	3	2	2	2	0.1%
Natural gas	69	65	60	53	49	44	44	-1.6%
Coal	130	128	134	143	147	151	151	0.5%
<b>Total</b>	<b>202</b>	<b>196</b>	<b>198</b>	<b>199</b>	<b>198</b>	<b>197</b>	<b>197</b>	<b>-0.1%</b>
<b>Australia and New Zealand</b>								
Liquid fuels	1	1	0	0	0	0	0	-7.3%
Natural gas	22	21	23	18	14	11	11	-2.5%
Coal	123	111	125	129	135	125	129	0.2%
<b>Total</b>	<b>145</b>	<b>133</b>	<b>147</b>	<b>147</b>	<b>149</b>	<b>136</b>	<b>140</b>	<b>-0.1%</b>
<b>China</b>								
Liquid fuels	2	2	1	0	0	0	0	-11.2%
Natural gas	121	147	155	190	247	257	268	2.9%
Coal	5,206	5,136	5,344	5,380	4,988	4,574	3,930	-1.0%
<b>Total</b>	<b>5,328</b>	<b>5,286</b>	<b>5,499</b>	<b>5,570</b>	<b>5,234</b>	<b>4,831</b>	<b>4,198</b>	<b>-0.8%</b>
<b>India</b>								
Liquid fuels	3	2	1	0	0	0	0	-14.5%
Natural gas	24	24	26	26	26	26	26	0.2%
Coal	1,077	1,148	1,489	1,434	1,397	1,223	1,135	0.2%
<b>Total</b>	<b>1,104</b>	<b>1,174</b>	<b>1,515</b>	<b>1,460</b>	<b>1,423</b>	<b>1,248</b>	<b>1,161</b>	<b>0.2%</b>
<b>Other Asia Pacific</b>								
Liquid fuels	33	34	18	10	5	2	0	-14.5%
Natural gas	237	254	249	219	198	199	199	-0.6%
Coal	598	573	817	980	985	1,062	1,062	2.1%
<b>Total</b>	<b>867</b>	<b>860</b>	<b>1,084</b>	<b>1,209</b>	<b>1,188</b>	<b>1,262</b>	<b>1,261</b>	<b>1.3%</b>
<b>Africa and Middle East</b>								
Liquid fuels	205	230	119	50	21	8	2	-15.2%
Natural gas	587	612	628	687	719	735	720	0.7%
Coal	212	181	196	221	262	241	218	0.1%
<b>Total</b>	<b>1,004</b>	<b>1,024</b>	<b>943</b>	<b>958</b>	<b>1,002</b>	<b>985</b>	<b>939</b>	<b>-0.2%</b>
<b>Africa</b>								
Liquid fuels	31	31	12	2	0	0	0	-16.5%
Natural gas	166	167	170	181	195	203	212	0.9%
Coal	212	181	196	221	262	241	217	0.1%
<b>Total</b>	<b>409</b>	<b>378</b>	<b>377</b>	<b>404</b>	<b>458</b>	<b>444</b>	<b>430</b>	<b>0.2%</b>
<b>Middle East</b>								
Liquid fuels	174	200	107	48	21	8	2	-15.0%
Natural gas	421	445	459	506	524	533	507	0.7%
Coal	0	0	0	0	0	0	0	-6.1%
<b>Total</b>	<b>595</b>	<b>645</b>	<b>566</b>	<b>554</b>	<b>545</b>	<b>541</b>	<b>509</b>	<b>-0.6%</b>
<b>World</b>								
Liquid fuels	404	475	288	146	84	59	50	-7.2%
Natural gas	2,757	2,710	2,630	2,584	2,691	2,715	2,675	-0.1%
Coal	9,352	9,127	9,252	9,390	8,981	8,422	7,649	-0.7%
<b>Total</b>	<b>12,514</b>	<b>12,312</b>	<b>12,170</b>	<b>12,121</b>	<b>11,755</b>	<b>11,196</b>	<b>10,374</b>	<b>-0.7%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo)

Note: Totals may not equal sum of components due to independent rounding.

**Table A15. World population by region, Low Zero-carbon Technology Cost case**

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>1,036</b>	<b>1,057</b>	<b>1,091</b>	<b>1,120</b>	<b>1,143</b>	<b>1,161</b>	<b>1,175</b>	<b>0.4%</b>
United States	333	338	346	354	361	367	372	0.4%
Canada	39	40	43	45	47	48	50	0.9%
Mexico	128	130	135	138	141	143	144	0.4%
Brazil	216	219	224	228	230	231	231	0.2%
Other Americas	320	330	343	355	364	372	378	0.6%
<b>Europe and Eurasia</b>	<b>920</b>	<b>923</b>	<b>928</b>	<b>932</b>	<b>934</b>	<b>935</b>	<b>933</b>	<b>0.1%</b>
Western Europe	633	636	639	641	641	641	638	0.0%
Russia	144	143	141	138	136	134	132	-0.3%
Eastern Europe and Eurasia	142	144	149	152	156	160	162	0.5%
<b>Asia Pacific</b>	<b>4,287</b>	<b>4,358</b>	<b>4,474</b>	<b>4,568</b>	<b>4,640</b>	<b>4,690</b>	<b>4,712</b>	<b>0.3%</b>
Japan	126	124	121	117	114	110	106	-0.6%
South Korea	52	52	51	51	49	48	46	-0.4%
Australia and New Zealand	31	33	35	37	39	40	42	1.1%
China	1,427	1,424	1,415	1,399	1,377	1,349	1,312	-0.3%
India	1,422	1,456	1,516	1,569	1,613	1,647	1,671	0.6%
Other Asia Pacific	1,229	1,270	1,335	1,396	1,449	1,496	1,535	0.8%
<b>Africa and Middle East</b>	<b>1,658</b>	<b>1,772</b>	<b>1,968</b>	<b>2,170</b>	<b>2,375</b>	<b>2,581</b>	<b>2,784</b>	<b>1.9%</b>
Africa	1,386	1,486	1,661	1,843	2,031	2,221	2,410	2.0%
Middle East	273	287	308	326	344	360	374	1.1%
<b>World</b>	<b>7,901</b>	<b>8,111</b>	<b>8,462</b>	<b>8,789</b>	<b>9,093</b>	<b>9,366</b>	<b>9,603</b>	<b>0.7%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo); Oxford Economics, Global Economic Model (February 2023), [www.oxfordeconomics.com](http://www.oxfordeconomics.com) (subscription site)

Note: Totals may not equal sum of components due to independent rounding.



**Table A16. World gross output by region and sector, Low Zero-carbon Technology Cost case**

billion 2015 dollars

Region and sector	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>								
Energy-intensive manufacturing	\$4,946	\$5,115	\$5,631	\$6,051	\$6,513	\$7,043	\$7,611	1.6%
Non-energy-intensive manufacturing	\$6,357	\$6,788	\$7,659	\$8,490	\$9,464	\$10,558	\$11,782	2.2%
Nonmanufacturing	\$5,265	\$5,622	\$6,111	\$6,655	\$7,270	\$7,939	\$8,649	1.8%
Services	\$40,510	\$43,123	\$47,676	\$52,173	\$57,323	\$62,965	\$69,005	1.9%
<b>Total</b>	<b>\$57,077</b>	<b>\$60,648</b>	<b>\$67,077</b>	<b>\$73,369</b>	<b>\$80,570</b>	<b>\$88,505</b>	<b>\$97,047</b>	<b>1.9%</b>
<b>United States</b>								
Energy-intensive manufacturing	\$2,388	\$2,426	\$2,624	\$2,775	\$2,989	\$3,255	\$3,544	1.4%
Non-energy-intensive manufacturing	\$3,493	\$3,786	\$4,282	\$4,756	\$5,371	\$6,079	\$6,872	2.4%
Nonmanufacturing	\$2,394	\$2,630	\$2,834	\$3,099	\$3,454	\$3,864	\$4,313	2.1%
Services	\$28,881	\$30,827	\$33,817	\$36,855	\$40,624	\$44,891	\$49,547	1.9%
<b>Total</b>	<b>\$37,155</b>	<b>\$39,668</b>	<b>\$43,558</b>	<b>\$47,485</b>	<b>\$52,438</b>	<b>\$58,089</b>	<b>\$64,276</b>	<b>2.0%</b>
<b>Canada</b>								
Energy-intensive manufacturing	\$256	\$266	\$307	\$341	\$377	\$415	\$452	2.1%
Non-energy-intensive manufacturing	\$332	\$359	\$413	\$458	\$504	\$549	\$596	2.1%
Nonmanufacturing	\$498	\$500	\$540	\$583	\$626	\$666	\$705	1.3%
Services	\$1,724	\$1,829	\$2,074	\$2,271	\$2,483	\$2,708	\$2,953	1.9%
<b>Total</b>	<b>\$2,810</b>	<b>\$2,954</b>	<b>\$3,334</b>	<b>\$3,653</b>	<b>\$3,989</b>	<b>\$4,339</b>	<b>\$4,707</b>	<b>1.9%</b>
<b>Mexico</b>								
Energy-intensive manufacturing	\$535	\$557	\$619	\$670	\$723	\$788	\$870	1.8%
Non-energy-intensive manufacturing	\$983	\$1,048	\$1,143	\$1,248	\$1,373	\$1,530	\$1,727	2.0%
Nonmanufacturing	\$466	\$490	\$537	\$577	\$609	\$640	\$670	1.3%
Services	\$1,999	\$2,095	\$2,327	\$2,565	\$2,807	\$3,049	\$3,294	1.8%
<b>Total</b>	<b>\$3,982</b>	<b>\$4,190</b>	<b>\$4,626</b>	<b>\$5,060</b>	<b>\$5,513</b>	<b>\$6,008</b>	<b>\$6,562</b>	<b>1.8%</b>
<b>Brazil</b>								
Energy-intensive manufacturing	\$868	\$910	\$997	\$1,054	\$1,079	\$1,097	\$1,104	0.9%
Non-energy-intensive manufacturing	\$612	\$660	\$752	\$827	\$878	\$923	\$960	1.6%
Nonmanufacturing	\$710	\$748	\$817	\$873	\$915	\$956	\$994	1.2%
Services	\$3,392	\$3,568	\$3,940	\$4,220	\$4,377	\$4,483	\$4,537	1.0%
<b>Total</b>	<b>\$5,583</b>	<b>\$5,886</b>	<b>\$6,506</b>	<b>\$6,974</b>	<b>\$7,248</b>	<b>\$7,459</b>	<b>\$7,596</b>	<b>1.1%</b>
<b>Other Americas</b>								
Energy-intensive manufacturing	\$899	\$956	\$1,084	\$1,210	\$1,344	\$1,488	\$1,640	2.2%
Non-energy-intensive manufacturing	\$937	\$935	\$1,068	\$1,201	\$1,338	\$1,478	\$1,626	2.0%
Nonmanufacturing	\$1,197	\$1,254	\$1,384	\$1,523	\$1,666	\$1,812	\$1,966	1.8%
Services	\$4,514	\$4,804	\$5,519	\$6,263	\$7,033	\$7,833	\$8,674	2.4%
<b>Total</b>	<b>\$7,546</b>	<b>\$7,949</b>	<b>\$9,054</b>	<b>\$10,197</b>	<b>\$11,382</b>	<b>\$12,610</b>	<b>\$13,905</b>	<b>2.2%</b>
<b>Europe and Eurasia</b>								
Energy-intensive manufacturing	\$6,107	\$6,281	\$6,475	\$6,801	\$7,191	\$7,607	\$8,058	1.0%
Non-energy-intensive manufacturing	\$9,080	\$9,661	\$10,292	\$11,057	\$11,897	\$12,768	\$13,690	1.5%
Nonmanufacturing	\$6,410	\$6,609	\$7,169	\$7,597	\$8,037	\$8,436	\$8,837	1.2%
Services	\$36,030	\$37,800	\$40,911	\$43,842	\$47,105	\$50,633	\$54,522	1.5%
<b>Total</b>	<b>\$57,627</b>	<b>\$60,351</b>	<b>\$64,846</b>	<b>\$69,297</b>	<b>\$74,229</b>	<b>\$79,445</b>	<b>\$85,107</b>	<b>1.4%</b>
<b>Western Europe</b>								
Energy-intensive manufacturing	\$4,982	\$5,027	\$5,106	\$5,290	\$5,520	\$5,757	\$6,030	0.7%
Non-energy-intensive manufacturing	\$8,440	\$8,935	\$9,511	\$10,208	\$10,961	\$11,729	\$12,545	1.4%
Nonmanufacturing	\$4,377	\$4,532	\$4,829	\$5,077	\$5,328	\$5,547	\$5,771	1.0%
Services	\$31,098	\$32,470	\$35,050	\$37,349	\$39,815	\$42,374	\$45,089	1.3%
<b>Total</b>	<b>\$48,897</b>	<b>\$50,964</b>	<b>\$54,496</b>	<b>\$57,924</b>	<b>\$61,624</b>	<b>\$65,407</b>	<b>\$69,434</b>	<b>1.3%</b>
<b>Russia</b>								
Energy-intensive manufacturing	\$895	\$988	\$1,054	\$1,135	\$1,220	\$1,312	\$1,393	1.6%
Non-energy-intensive manufacturing	\$544	\$607	\$637	\$684	\$745	\$814	\$884	1.7%

Nonmanufacturing	\$1,282	\$1,252	\$1,312	\$1,333	\$1,346	\$1,363	\$1,376	0.3%
Services	\$3,823	\$4,069	\$4,254	\$4,389	\$4,571	\$4,801	\$5,085	1.0%
<b>Total</b>	<b>\$6,544</b>	<b>\$6,916</b>	<b>\$7,257</b>	<b>\$7,541</b>	<b>\$7,882</b>	<b>\$8,291</b>	<b>\$8,739</b>	<b>1.0%</b>
<b>Eastern Europe and Eurasia</b>								
Energy-intensive manufacturing	\$230	\$266	\$314	\$376	\$450	\$538	\$635	3.7%
Non-energy-intensive manufacturing	\$96	\$119	\$143	\$165	\$192	\$225	\$261	3.6%
Nonmanufacturing	\$750	\$825	\$1,028	\$1,187	\$1,363	\$1,527	\$1,689	2.9%
Services	\$1,109	\$1,261	\$1,607	\$2,104	\$2,718	\$3,458	\$4,349	5.0%
<b>Total</b>	<b>\$2,185</b>	<b>\$2,472</b>	<b>\$3,093</b>	<b>\$3,832</b>	<b>\$4,724</b>	<b>\$5,748</b>	<b>\$6,934</b>	<b>4.2%</b>
<b>Asia Pacific</b>								
Energy-intensive manufacturing	\$21,179	\$23,849	\$28,158	\$32,536	\$36,772	\$41,234	\$45,541	2.8%
Non-energy-intensive manufacturing	\$42,102	\$47,920	\$57,378	\$65,985	\$73,247	\$79,920	\$85,158	2.5%
Nonmanufacturing	\$24,048	\$26,247	\$30,794	\$34,696	\$38,166	\$41,648	\$44,627	2.2%
Services	\$58,764	\$67,672	\$85,862	\$104,570	\$123,290	\$142,934	\$161,762	3.7%
<b>Total</b>	<b>\$146,093</b>	<b>\$165,688</b>	<b>\$202,193</b>	<b>\$237,786</b>	<b>\$271,475</b>	<b>\$305,737</b>	<b>\$337,090</b>	<b>3.0%</b>
<b>Japan</b>								
Energy-intensive manufacturing	\$941	\$965	\$939	\$906	\$885	\$864	\$847	-0.4%
Non-energy-intensive manufacturing	\$2,737	\$3,005	\$3,155	\$3,214	\$3,244	\$3,263	\$3,289	0.7%
Nonmanufacturing	\$670	\$682	\$700	\$697	\$693	\$687	\$684	0.1%
Services	\$5,761	\$5,988	\$6,190	\$6,200	\$6,220	\$6,237	\$6,282	0.3%
<b>Total</b>	<b>\$10,110</b>	<b>\$10,640</b>	<b>\$10,984</b>	<b>\$11,016</b>	<b>\$11,042</b>	<b>\$11,051</b>	<b>\$11,102</b>	<b>0.3%</b>
<b>South Korea</b>								
Energy-intensive manufacturing	\$1,067	\$1,123	\$1,152	\$1,160	\$1,143	\$1,119	\$1,089	0.1%
Non-energy-intensive manufacturing	\$1,692	\$1,796	\$2,032	\$2,169	\$2,259	\$2,346	\$2,427	1.3%
Nonmanufacturing	\$362	\$376	\$384	\$395	\$400	\$405	\$407	0.4%
Services	\$2,565	\$2,715	\$2,930	\$3,091	\$3,179	\$3,262	\$3,330	0.9%
<b>Total</b>	<b>\$5,686</b>	<b>\$6,010</b>	<b>\$6,498</b>	<b>\$6,815</b>	<b>\$6,982</b>	<b>\$7,131</b>	<b>\$7,253</b>	<b>0.9%</b>
<b>Australia and New Zealand</b>								
Energy-intensive manufacturing	\$173	\$187	\$204	\$218	\$233	\$247	\$260	1.5%
Non-energy-intensive manufacturing	\$130	\$137	\$148	\$158	\$168	\$176	\$183	1.2%
Nonmanufacturing	\$590	\$626	\$728	\$805	\$875	\$941	\$1,003	1.9%
Services	\$1,958	\$2,123	\$2,454	\$2,751	\$3,025	\$3,288	\$3,552	2.1%
<b>Total</b>	<b>\$2,852</b>	<b>\$3,073</b>	<b>\$3,534</b>	<b>\$3,932</b>	<b>\$4,301</b>	<b>\$4,652</b>	<b>\$4,998</b>	<b>2.0%</b>
<b>China</b>								
Energy-intensive manufacturing	\$10,799	\$12,196	\$13,640	\$14,680	\$15,315	\$15,839	\$16,048	1.4%
Non-energy-intensive manufacturing	\$25,771	\$29,890	\$35,517	\$40,345	\$43,724	\$46,431	\$47,679	2.2%
Nonmanufacturing	\$12,744	\$13,871	\$15,867	\$17,313	\$18,356	\$19,410	\$20,058	1.6%
Services	\$25,046	\$29,137	\$37,759	\$46,704	\$55,057	\$63,697	\$71,173	3.8%
<b>Total</b>	<b>\$74,360</b>	<b>\$85,093</b>	<b>\$102,783</b>	<b>\$119,041</b>	<b>\$132,452</b>	<b>\$145,377</b>	<b>\$154,958</b>	<b>2.7%</b>
<b>India</b>								
Energy-intensive manufacturing	\$3,724	\$4,307	\$6,027	\$8,080	\$10,238	\$12,613	\$15,084	5.1%
Non-energy-intensive manufacturing	\$3,007	\$3,411	\$4,772	\$6,342	\$8,039	\$9,891	\$11,862	5.0%
Nonmanufacturing	\$4,474	\$5,019	\$6,313	\$7,613	\$8,814	\$10,032	\$11,189	3.3%
Services	\$7,664	\$9,685	\$13,874	\$18,558	\$23,632	\$29,120	\$34,882	5.6%
<b>Total</b>	<b>\$18,869</b>	<b>\$22,421</b>	<b>\$30,985</b>	<b>\$40,593</b>	<b>\$50,724</b>	<b>\$61,656</b>	<b>\$73,017</b>	<b>5.0%</b>
<b>Other Asia Pacific</b>								
Energy-intensive manufacturing	\$4,475	\$5,072	\$6,198	\$7,492	\$8,958	\$10,552	\$12,213	3.7%
Non-energy-intensive manufacturing	\$8,764	\$9,681	\$11,754	\$13,758	\$15,813	\$17,814	\$19,719	2.9%
Nonmanufacturing	\$5,207	\$5,674	\$6,802	\$7,874	\$9,028	\$10,174	\$11,285	2.8%
Services	\$15,770	\$18,024	\$22,656	\$27,265	\$32,176	\$37,331	\$42,543	3.6%
<b>Total</b>	<b>\$34,217</b>	<b>\$38,451</b>	<b>\$47,411</b>	<b>\$56,389</b>	<b>\$65,975</b>	<b>\$75,871</b>	<b>\$85,762</b>	<b>3.3%</b>
<b>Africa and Middle East</b>								
Energy-intensive manufacturing	\$2,921	\$3,129	\$3,511	\$3,959	\$4,397	\$4,836	\$5,281	2.1%
Non-energy-intensive manufacturing	\$1,721	\$1,867	\$2,124	\$2,429	\$2,743	\$3,050	\$3,356	2.4%
Nonmanufacturing	\$5,582	\$6,016	\$6,561	\$7,102	\$7,642	\$8,168	\$8,660	1.6%
Services	\$12,133	\$13,191	\$15,222	\$17,354	\$19,371	\$21,248	\$23,016	2.3%
<b>Total</b>	<b>\$22,357</b>	<b>\$24,203</b>	<b>\$27,418</b>	<b>\$30,844</b>	<b>\$34,152</b>	<b>\$37,302</b>	<b>\$40,312</b>	<b>2.1%</b>
<b>Africa</b>								

Energy-intensive manufacturing	\$1,364	\$1,503	\$1,761	\$2,052	\$2,362	\$2,697	\$3,054	2.9%
Non-energy-intensive manufacturing	\$885	\$975	\$1,136	\$1,314	\$1,502	\$1,701	\$1,902	2.8%
Nonmanufacturing	\$3,002	\$3,248	\$3,607	\$3,980	\$4,353	\$4,721	\$5,079	1.9%
Services	\$6,408	\$6,816	\$8,003	\$9,212	\$10,436	\$11,688	\$12,950	2.5%
<b>Total</b>	<b>\$11,659</b>	<b>\$12,543</b>	<b>\$14,508</b>	<b>\$16,557</b>	<b>\$18,653</b>	<b>\$20,807</b>	<b>\$22,984</b>	<b>2.5%</b>
<b>Middle East</b>								
Energy-intensive manufacturing	\$1,557	\$1,626	\$1,750	\$1,908	\$2,035	\$2,139	\$2,227	1.3%
Non-energy-intensive manufacturing	\$836	\$892	\$988	\$1,115	\$1,241	\$1,349	\$1,454	2.0%
Nonmanufacturing	\$2,580	\$2,768	\$2,954	\$3,122	\$3,289	\$3,447	\$3,581	1.2%
Services	\$5,725	\$6,375	\$7,219	\$8,142	\$8,934	\$9,560	\$10,066	2.0%
<b>Total</b>	<b>\$10,697</b>	<b>\$11,660</b>	<b>\$12,910</b>	<b>\$14,287</b>	<b>\$15,499</b>	<b>\$16,495</b>	<b>\$17,328</b>	<b>1.7%</b>
<b>World</b>								
Energy-intensive manufacturing	\$35,153	\$38,375	\$43,775	\$49,347	\$54,872	\$60,721	\$66,491	2.3%
Non-energy-intensive manufacturing	\$59,259	\$66,236	\$77,453	\$87,961	\$97,351	\$106,296	\$113,986	2.4%
Nonmanufacturing	\$41,304	\$44,494	\$50,635	\$56,050	\$61,115	\$66,192	\$70,773	1.9%
Services	\$147,437	\$161,786	\$189,671	\$217,939	\$247,088	\$277,780	\$308,306	2.7%
<b>Total</b>	<b>\$283,153</b>	<b>\$310,890</b>	<b>\$361,534</b>	<b>\$411,296</b>	<b>\$460,426</b>	<b>\$510,989</b>	<b>\$559,555</b>	<b>2.5%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo); Oxford Economics, Global Industry Model (March 2023), [www.oxfordeconomics.com](http://www.oxfordeconomics.com) (subscription site)

Note: Totals may not equal sum of components due to independent rounding. Gross output is sales or revenue, including final and intermediate goods and services, measured in purchasing power parity. 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; services includes all other non-industrial output.

**Table A17. World employment by region, Low Zero-carbon Technology Cost case**

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>467</b>	<b>487</b>	<b>504</b>	<b>519</b>	<b>531</b>	<b>541</b>	<b>547</b>	<b>0.6%</b>
United States	158	162	165	169	174	178	182	0.5%
Canada	20	20	21	23	23	24	25	0.9%
Mexico	57	59	62	64	66	67	68	0.6%
Brazil	98	102	105	106	106	104	102	0.1%
Other Americas	134	144	151	157	162	167	171	0.9%
<b>Europe and Eurasia</b>	<b>415</b>	<b>418</b>	<b>421</b>	<b>420</b>	<b>416</b>	<b>410</b>	<b>403</b>	<b>-0.1%</b>
Western Europe	289	291	293	291	288	285	282	-0.1%
Russia	72	71	70	69	67	64	60	-0.6%
Eastern Europe and Eurasia	54	55	58	59	60	61	60	0.4%
<b>Asia Pacific</b>	<b>1,855</b>	<b>1,920</b>	<b>1,983</b>	<b>2,027</b>	<b>2,044</b>	<b>2,058</b>	<b>2,052</b>	<b>0.4%</b>
Japan	67	68	65	62	57	53	50	-1.0%
South Korea	28	28	28	26	25	23	21	-1.0%
Australia and New Zealand	16	17	19	20	21	22	23	1.2%
China	750	758	754	741	706	675	633	-0.6%
India	481	508	548	584	620	654	683	1.3%
Other Asia Pacific	512	541	570	594	615	630	641	0.8%
<b>Africa and Middle East</b>	<b>547</b>	<b>593</b>	<b>671</b>	<b>756</b>	<b>842</b>	<b>930</b>	<b>1,016</b>	<b>2.2%</b>
Africa	470	511	584	663	745	830	915	2.4%
Middle East	77	82	87	93	97	100	101	1.0%
<b>World</b>	<b>3,283</b>	<b>3,417</b>	<b>3,579</b>	<b>3,721</b>	<b>3,833</b>	<b>3,938</b>	<b>4,018</b>	<b>0.7%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo); Oxford Economics, Global Economic Model (February 2023), [www.oxfordeconomics.com](http://www.oxfordeconomics.com) (subscription site)

Note: Totals may not equal sum of components due to independent rounding.

**Table A18. World disposable income per capita by region, Low Zero-carbon Technology Cost case**

2015 dollars per person (PPP)

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
<b>Americas</b>	<b>\$21,783</b>	<b>\$22,270</b>	<b>\$23,245</b>	<b>\$24,490</b>	<b>\$25,867</b>	<b>\$27,376</b>	<b>\$28,953</b>	<b>1.0%</b>
United States	\$46,720	\$49,189	\$51,565	\$54,317	\$57,619	\$61,228	\$64,820	1.2%
Canada	\$27,994	\$28,073	\$29,558	\$31,281	\$33,000	\$34,739	\$36,547	1.0%
Mexico	\$16,588	\$15,608	\$16,543	\$17,609	\$18,712	\$19,949	\$21,384	0.9%
Brazil	\$11,919	\$11,582	\$11,790	\$12,436	\$12,813	\$13,139	\$13,434	0.4%
Other Americas	\$3,825	\$3,709	\$4,001	\$4,281	\$4,534	\$4,770	\$5,014	1.0%
<b>Europe and Eurasia</b>	<b>\$20,359</b>	<b>\$20,756</b>	<b>\$21,974</b>	<b>\$23,345</b>	<b>\$24,890</b>	<b>\$26,573</b>	<b>\$28,489</b>	<b>1.2%</b>
Western Europe	\$24,026	\$24,233	\$25,371	\$26,688	\$28,207	\$29,829	\$31,655	1.0%
Russia	\$15,436	\$16,287	\$17,937	\$19,154	\$20,250	\$21,430	\$22,723	1.4%
Eastern Europe and Eurasia	\$9,016	\$9,839	\$11,193	\$13,090	\$15,314	\$17,835	\$20,752	3.0%
<b>Asia Pacific</b>	<b>\$8,187</b>	<b>\$9,145</b>	<b>\$11,153</b>	<b>\$13,275</b>	<b>\$15,412</b>	<b>\$17,703</b>	<b>\$19,997</b>	<b>3.2%</b>
Japan	\$22,970	\$24,037	\$25,238	\$25,952	\$26,818	\$27,725	\$28,785	0.8%
South Korea	\$22,258	\$22,966	\$24,503	\$26,294	\$27,741	\$29,331	\$31,176	1.2%
Australia and New Zealand	\$32,814	\$32,361	\$35,479	\$37,649	\$39,328	\$40,764	\$42,191	0.9%
China	\$10,529	\$12,236	\$15,486	\$19,156	\$22,902	\$27,095	\$31,376	4.0%
India	\$5,497	\$6,310	\$8,266	\$10,434	\$12,670	\$15,066	\$17,552	4.2%
Other Asia Pacific	\$5,851	\$6,319	\$7,421	\$8,397	\$9,398	\$10,406	\$11,388	2.4%
<b>Africa and Middle East</b>	<b>\$2,228</b>	<b>\$2,282</b>	<b>\$2,401</b>	<b>\$2,520</b>	<b>\$2,656</b>	<b>\$2,794</b>	<b>\$2,935</b>	<b>1.0%</b>
Africa	\$1,652	\$1,703	\$1,823	\$1,953	\$2,093	\$2,233	\$2,379	1.3%
Middle East	\$5,155	\$5,289	\$5,523	\$5,728	\$5,983	\$6,256	\$6,519	0.8%
<b>World</b>	<b>\$10,136</b>	<b>\$10,678</b>	<b>\$11,863</b>	<b>\$13,116</b>	<b>\$14,368</b>	<b>\$15,679</b>	<b>\$16,972</b>	<b>1.9%</b>

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz\_230821.151531 and Annual Energy Outlook 2023 (March 2023), [www.eia.gov/aeo](http://www.eia.gov/aeo); Oxford Economics, Global Economic Model (February 2023), [www.oxfordeconomics.com](http://www.oxfordeconomics.com) (subscription site)

Note: Totals may not equal sum of components due to independent rounding. PPP=purchasing power parity.