

Table A1. World total primary energy consumption by region, High Oil Price case

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	152.6	152.8	156.7	161.2	166.0	172.0	179.1	0.6%
United States	98.9	98.4	98.7	99.7	101.0	103.2	106.2	0.3%
Canada	14.7	14.6	15.5	16.4	17.5	18.8	20.1	1.1%
Mexico	7.7	7.8	8.4	8.7	9.1	9.6	10.2	1.0%
Brazil	15.0	15.5	16.2	17.2	17.7	18.2	18.6	0.8%
Other Americas	16.4	16.6	17.9	19.2	20.6	22.2	24.0	1.4%
Europe and Eurasia	130.0	131.7	133.1	136.9	141.9	147.4	153.2	0.6%
Western Europe	84.2	85.3	86.1	87.8	90.4	92.9	95.6	0.5%
Russia	33.5	33.6	33.7	34.8	36.0	37.4	38.8	0.5%
Eastern Europe and Eurasia	12.3	12.7	13.3	14.2	15.5	17.0	18.8	1.5%
Asia Pacific	292.6	306.2	331.7	355.0	375.3	397.3	417.6	1.3%
Japan	18.5	18.3	16.9	16.4	16.1	15.8	15.7	-0.6%
South Korea	13.0	13.3	13.7	13.9	14.1	14.1	14.2	0.3%
Australia and New Zealand	7.2	7.2	7.6	8.0	8.3	8.7	9.2	0.9%
China	172.4	178.6	185.1	189.5	191.4	193.4	194.6	0.4%
India	38.3	42.7	55.2	68.0	80.6	94.3	107.6	3.8%
Other Asia Pacific	43.2	46.1	53.2	59.3	64.9	70.9	76.3	2.1%
Africa and Middle East	62.5	67.0	71.1	76.8	82.7	89.3	96.6	1.6%
Africa	24.3	26.1	29.5	33.5	37.7	42.3	47.7	2.4%
Middle East	38.2	40.9	41.6	43.3	45.0	47.0	48.9	0.9%
World	637.8	657.7	692.6	729.9	766.0	805.9	846.5	1.0%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

quadrillion British thermal units

Region and fuel	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas								
Liquid fuels	57.6	57.2	55.8	54.6	54.6	55.4	56.9	0.0%
Natural gas	45.7	45.1	48.4	49.3	50.5	51.3	53.1	0.5%
Coal	11.3	9.6	4.8	5.9	6.3	6.4	6.0	-2.2%
Nuclear	9.4	9.3	9.5	8.7	7.6	7.2	7.0	-1.0%
Other	28.7	31.6	38.3	42.6	47.1	51.7	56.1	2.4%
Total	152.6	152.8	156.7	161.2	166.0	172.0	179.1	0.6%
Europe and Eurasia								
Liquid fuels	38.0	37.7	36.4	35.4	35.4	35.7	36.3	-0.2%
Natural gas	43.7	44.3	45.9	47.2	49.4	51.8	54.6	0.8%
Coal	16.5	16.2	14.7	14.8	14.9	16.1	16.4	0.0%
Nuclear	10.4	10.6	11.1	11.3	11.2	11.0	11.1	0.2%
Other	21.4	22.9	25.0	28.2	31.1	32.8	34.9	1.8%
Total	130.0	131.7	133.1	136.9	141.9	147.4	153.2	0.6%
Asia Pacific								
Liquid fuels	71.4	75.8	80.5	84.6	87.8	91.4	94.1	1.0%
Natural gas	35.2	37.2	40.0	42.6	45.8	50.8	54.8	1.6%
Coal	133.7	131.7	138.8	142.6	142.5	140.7	141.0	0.2%
Nuclear	7.6	8.7	10.5	12.0	13.2	14.0	14.9	2.4%
Other	44.7	52.7	61.9	73.2	86.1	100.5	112.7	3.4%
Total	292.6	306.2	331.7	355.0	375.3	397.3	417.6	1.3%
Africa and Middle East								
Liquid fuels	23.3	24.7	24.2	24.9	26.1	27.7	29.3	0.8%
Natural gas	28.6	29.9	31.5	33.9	36.0	38.5	40.9	1.3%
Coal	4.6	4.5	5.1	5.9	6.6	7.1	8.0	2.0%
Nuclear	0.4	0.6	0.9	1.2	1.4	1.4	1.4	4.9%
Other	5.7	7.2	9.4	11.0	12.5	14.7	17.0	4.0%
Total	62.5	67.0	71.1	76.8	82.7	89.3	96.6	1.6%
World								
Liquid fuels	190.3	195.4	196.9	199.5	203.9	210.2	216.5	0.5%
Natural gas	153.3	156.6	165.7	172.9	181.7	192.3	203.4	1.0%
Coal	166.0	162.1	163.4	169.1	170.2	170.2	171.3	0.1%
Nuclear	27.7	29.3	32.0	33.3	33.4	33.6	34.4	0.8%
Other	100.5	114.4	134.6	155.0	176.8	199.7	220.8	2.9%
Total	637.8	657.7	692.6	729.9	766.0	805.9	846.5	1.0%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$32,285	\$33,956	\$38,362	\$42,333	\$46,791	\$51,615	\$56,947	2.0%
United States	\$20,671	\$21,632	\$24,483	\$26,938	\$29,864	\$33,090	\$36,703	2.1%
Canada	\$1,791	\$1,874	\$2,109	\$2,311	\$2,525	\$2,747	\$2,985	1.8%
Mexico	\$2,367	\$2,483	\$2,720	\$2,972	\$3,241	\$3,519	\$3,808	1.7%
Brazil	\$3,182	\$3,343	\$3,655	\$3,939	\$4,128	\$4,267	\$4,371	1.1%
Other Americas	\$4,273	\$4,623	\$5,394	\$6,172	\$7,033	\$7,992	\$9,080	2.7%
Europe and Eurasia	\$31,730	\$33,075	\$35,770	\$38,377	\$41,279	\$44,348	\$47,667	1.5%
Western Europe	\$26,269	\$27,166	\$29,173	\$31,045	\$33,076	\$35,148	\$37,336	1.3%
Russia	\$3,763	\$4,003	\$4,237	\$4,392	\$4,571	\$4,775	\$4,999	1.0%
Eastern Europe and Eurasia	\$1,698	\$1,906	\$2,360	\$2,940	\$3,631	\$4,425	\$5,332	4.2%
Asia Pacific	\$58,793	\$66,525	\$82,169	\$98,195	\$114,058	\$130,757	\$146,785	3.3%
Japan	\$5,292	\$5,435	\$5,616	\$5,638	\$5,665	\$5,684	\$5,728	0.3%
South Korea	\$2,292	\$2,405	\$2,604	\$2,752	\$2,832	\$2,907	\$2,971	0.9%
Australia and New Zealand	\$1,524	\$1,627	\$1,889	\$2,116	\$2,327	\$2,532	\$2,740	2.1%
China	\$26,404	\$30,121	\$36,980	\$43,758	\$49,699	\$55,748	\$60,643	3.0%
India	\$10,049	\$11,902	\$16,365	\$21,389	\$26,772	\$32,638	\$38,813	4.9%
Other Asia Pacific	\$13,232	\$15,034	\$18,715	\$22,543	\$26,764	\$31,247	\$35,890	3.6%
Africa and Middle East	\$12,838	\$14,389	\$16,347	\$18,587	\$20,752	\$22,814	\$24,826	2.4%
Africa	\$7,050	\$7,737	\$9,021	\$10,451	\$11,926	\$13,446	\$15,022	2.7%
Middle East	\$5,788	\$6,652	\$7,327	\$8,136	\$8,826	\$9,368	\$9,804	1.9%
World	\$135,647	\$147,944	\$172,649	\$197,493	\$222,880	\$249,534	\$276,226	2.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; Oxford Economics, Global Economic Model (February 2023), 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, High Oil Price case

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$28,078	\$29,465	\$33,285	\$36,663	\$40,509	\$44,680	\$49,298	2.0%
United States	\$20,671	\$21,632	\$24,483	\$26,938	\$29,864	\$33,090	\$36,703	2.1%
Canada	\$1,748	\$1,829	\$2,058	\$2,256	\$2,464	\$2,681	\$2,913	1.8%
Mexico	\$1,242	\$1,303	\$1,428	\$1,560	\$1,701	\$1,847	\$1,999	1.7%
Brazil	\$1,900	\$1,996	\$2,183	\$2,352	\$2,465	\$2,548	\$2,610	1.1%
Other Americas	\$2,516	\$2,705	\$3,134	\$3,557	\$4,015	\$4,514	\$5,073	2.5%
Europe and Eurasia	\$22,949	\$23,777	\$25,548	\$27,182	\$29,002	\$30,926	\$32,990	1.3%
Western Europe	\$20,883	\$21,542	\$23,049	\$24,398	\$25,880	\$27,415	\$29,036	1.2%
Russia	\$1,456	\$1,549	\$1,640	\$1,700	\$1,769	\$1,848	\$1,935	1.0%
Eastern Europe and Eurasia	\$610	\$686	\$860	\$1,084	\$1,352	\$1,663	\$2,020	4.4%
Asia Pacific	\$32,233	\$36,053	\$43,498	\$50,874	\$57,899	\$65,191	\$71,912	2.9%
Japan	\$4,521	\$4,644	\$4,798	\$4,817	\$4,840	\$4,856	\$4,893	0.3%
South Korea	\$1,738	\$1,823	\$1,975	\$2,086	\$2,148	\$2,204	\$2,253	0.9%
Australia and New Zealand	\$1,671	\$1,784	\$2,071	\$2,321	\$2,552	\$2,778	\$3,005	2.1%
China	\$16,177	\$18,454	\$22,657	\$26,809	\$30,449	\$34,156	\$37,155	3.0%
India	\$2,927	\$3,468	\$4,769	\$6,232	\$7,801	\$9,511	\$11,310	4.9%
Other Asia Pacific	\$5,199	\$5,879	\$7,229	\$8,608	\$10,109	\$11,687	\$13,296	3.4%
Africa and Middle East	\$5,526	\$6,187	\$7,000	\$7,940	\$8,858	\$9,732	\$10,593	2.4%
Africa	\$2,723	\$2,974	\$3,467	\$4,014	\$4,586	\$5,179	\$5,794	2.7%
Middle East	\$2,803	\$3,213	\$3,534	\$3,926	\$4,272	\$4,553	\$4,800	1.9%
World	\$88,786	\$95,482	\$109,332	\$122,659	\$136,268	\$150,528	\$164,793	2.2%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; Oxford Economics, Global Economic Model (February 2023), 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, High Oil Price case

million barrels per day

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	30.6	30.6	30.1	29.7	29.9	30.4	31.2	0.1%
United States	19.9	19.9	19.5	19.0	18.9	19.0	19.3	-0.1%
Canada	2.3	2.3	2.3	2.3	2.4	2.5	2.6	0.5%
Mexico	1.9	1.9	1.8	1.8	1.8	1.8	1.9	-0.1%
Brazil	3.0	3.0	3.0	3.0	3.1	3.1	3.1	0.2%
Other Americas	3.5	3.6	3.5	3.6	3.8	4.0	4.3	0.7%
Europe and Eurasia	18.8	18.6	17.9	17.5	17.5	17.6	17.9	-0.2%
Western Europe	14.3	14.0	13.3	12.8	12.6	12.6	12.6	-0.4%
Russia	3.4	3.5	3.4	3.4	3.5	3.6	3.8	0.3%
Eastern Europe and Eurasia	1.1	1.1	1.2	1.2	1.3	1.4	1.6	1.3%
Asia Pacific	36.1	38.3	40.7	42.9	44.5	46.4	47.8	1.0%
Japan	3.4	3.2	2.9	2.7	2.6	2.4	2.3	-1.3%
South Korea	2.6	2.6	2.7	2.6	2.6	2.5	2.5	-0.1%
Australia and New Zealand	1.2	1.2	1.2	1.2	1.3	1.3	1.3	0.2%
China	15.2	16.4	17.0	17.2	16.9	16.7	16.5	0.3%
India	5.1	5.7	7.1	8.6	10.2	11.7	13.2	3.5%
Other Asia Pacific	8.7	9.2	9.8	10.5	11.1	11.7	12.0	1.2%
Africa and Middle East	13.5	14.4	14.2	14.5	15.2	16.0	16.8	0.8%
Africa	4.4	4.7	5.0	5.4	5.9	6.6	7.3	1.8%
Middle East	9.1	9.7	9.2	9.2	9.2	9.4	9.5	0.1%
World	99.0	101.9	102.9	104.6	107.0	110.4	113.7	0.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357; Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

trillion cubic feet

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	45.0	44.5	47.8	49.0	50.4	51.4	53.1	0.6%
United States	32.3	31.3	32.8	32.9	33.3	33.5	34.3	0.2%
Canada	4.3	4.4	5.2	5.7	6.1	6.5	6.9	1.7%
Mexico	2.7	2.9	3.2	3.4	3.8	4.0	4.2	1.6%
Brazil	1.3	1.5	1.7	1.7	1.6	1.6	1.6	0.6%
Other Americas	4.3	4.5	4.9	5.2	5.5	5.9	6.2	1.3%
Europe and Eurasia	42.3	42.9	44.4	45.7	47.9	50.2	52.9	0.8%
Western Europe	19.8	20.4	21.6	21.6	21.7	21.9	22.4	0.4%
Russia	17.0	16.8	17.1	18.1	19.2	20.3	21.4	0.8%
Eastern Europe and Eurasia	5.5	5.7	5.7	6.0	7.0	8.0	9.1	1.8%
Asia Pacific	34.9	36.9	39.7	42.3	45.6	50.5	54.5	1.6%
Japan	4.1	4.1	3.9	3.6	3.4	3.5	3.5	-0.6%
South Korea	2.5	2.5	2.4	2.3	2.2	2.3	2.3	-0.3%
Australia and New Zealand	2.0	2.1	2.3	2.4	2.5	2.6	2.8	1.2%
China	14.1	15.0	16.0	17.7	19.7	22.4	24.3	2.0%
India	2.5	2.7	3.9	5.0	6.1	7.2	8.4	4.4%
Other Asia Pacific	9.7	10.5	11.2	11.4	11.7	12.5	13.2	1.1%
Africa and Middle East	28.4	29.7	31.2	33.5	35.6	37.9	40.3	1.3%
Africa	6.2	6.4	7.0	7.7	8.5	9.2	10.1	1.7%
Middle East	22.1	23.3	24.3	25.8	27.1	28.7	30.2	1.1%
World	150.6	154.0	163.2	170.6	179.3	189.9	200.8	1.0%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

million short tons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	574	486	229	282	297	299	278	-2.6%
United States	499	418	154	187	177	168	144	-4.3%
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	48	68	81	84	5.8%
Europe and Eurasia	1,019	993	852	855	848	946	959	-0.2%
Western Europe	642	612	480	486	471	558	560	-0.5%
Russia	238	248	232	219	221	224	227	-0.2%
Eastern Europe and Eurasia	138	133	140	149	156	164	172	0.8%
Asia Pacific	6,694	6,601	7,014	7,218	7,251	7,190	7,219	0.3%
Japan	193	189	134	136	130	125	121	-1.7%
South Korea	110	105	111	116	119	120	120	0.3%
Australia and New Zealand	100	91	105	114	115	115	115	0.5%
China	4,676	4,532	4,483	4,399	4,170	3,903	3,810	-0.7%
India	1,063	1,130	1,453	1,586	1,720	1,795	1,825	1.9%
Other Asia Pacific	551	553	728	867	995	1,132	1,229	2.9%
Africa and Middle East	177	172	196	229	259	274	310	2.0%
Africa	165	161	184	217	247	262	297	2.1%
Middle East	12	12	11	12	12	12	12	0.2%
World	8,464	8,251	8,290	8,583	8,654	8,709	8,766	0.1%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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), High Oil Price case

billion kilowatthours

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	889	891	903	835	726	684	670	-1.0%
United States	772	782	766	696	613	594	592	-0.9%
Canada	79	71	77	72	51	39	28	-3.7%
Mexico	11	11	20	28	23	17	17	1.4%
Brazil	14	14	23	23	23	18	18	0.9%
Other Americas	12	12	18	15	15	15	15	0.8%
Europe and Eurasia	995	1,003	1,044	1,062	1,055	1,036	1,039	0.2%
Western Europe	734	723	733	727	720	702	702	-0.2%
Russia	217	229	234	234	234	234	227	0.2%
Eastern Europe and Eurasia	44	52	77	101	101	101	111	3.4%
Asia Pacific	746	837	993	1,143	1,253	1,329	1,420	2.3%
Japan	78	115	139	139	121	102	102	0.9%
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	799	903	998	3.5%
India	41	42	52	67	70	70	70	1.9%
Other Asia Pacific	43	36	36	36	36	36	36	-0.6%
Africa and Middle East	37	54	87	116	135	135	135	4.8%
Africa	13	13	30	43	52	52	52	5.1%
Middle East	24	41	58	73	83	83	83	4.6%
World	2,666	2,786	3,028	3,157	3,168	3,184	3,264	0.7%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	28.7	31.6	38.3	42.6	47.1	51.7	56.1	2.4%
United States	11.4	14.1	19.4	21.9	24.7	27.3	29.4	3.4%
Canada	4.3	4.4	4.6	5.0	5.7	6.5	7.3	1.9%
Mexico	1.0	0.9	1.1	1.2	1.3	1.6	1.8	2.4%
Brazil	7.4	7.6	8.0	8.9	9.5	9.9	10.3	1.2%
Other Americas	4.5	4.6	5.2	5.6	5.9	6.5	7.3	1.7%
Europe and Eurasia	21.4	22.9	25.0	28.2	31.1	32.8	34.9	1.8%
Western Europe	18.4	19.8	21.8	24.7	27.8	29.4	31.5	1.9%
Russia	2.2	2.1	2.2	2.4	2.2	2.2	2.2	0.1%
Eastern Europe and Eurasia	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2%
Asia Pacific	44.7	52.7	61.9	73.2	86.1	100.5	112.7	3.4%
Japan	2.4	2.2	2.5	2.6	3.1	3.3	3.5	1.4%
South Korea	0.6	0.6	0.8	1.0	1.3	1.5	1.7	3.6%
Australia and New Zealand	1.4	1.5	1.7	1.9	2.2	2.4	2.7	2.5%
China	26.6	31.6	35.3	37.8	42.1	46.4	47.4	2.1%
India	7.4	9.2	12.4	18.5	24.4	32.4	40.8	6.3%
Other Asia Pacific	6.3	7.5	9.2	11.3	13.0	14.4	16.6	3.5%
Africa and Middle East	5.7	7.2	9.4	11.0	12.5	14.7	17.0	4.0%
Africa	5.3	6.4	8.0	9.5	11.0	13.1	15.3	3.8%
Middle East	0.4	0.8	1.3	1.4	1.5	1.6	1.7	5.3%
World	100.5	114.4	134.6	155.0	176.8	199.7	220.8	2.9%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	6,992	6,728	6,276	6,302	6,365	6,453	6,584	-0.2%
United States	4,842	4,551	4,058	3,996	3,928	3,893	3,915	-0.8%
Canada	548	536	509	526	552	585	615	0.4%
Mexico	419	425	442	449	467	483	501	0.6%
Brazil	439	460	474	478	484	486	489	0.4%
Other Americas	744	757	793	855	934	1,007	1,063	1.3%
Europe and Eurasia	6,363	6,339	6,180	6,180	6,281	6,531	6,730	0.2%
Western Europe	3,805	3,770	3,608	3,531	3,487	3,575	3,603	-0.2%
Russia	1,815	1,817	1,800	1,834	1,903	1,977	2,050	0.4%
Eastern Europe and Eurasia	742	752	772	815	892	979	1,077	1.3%
Asia Pacific	18,704	18,905	20,017	20,768	21,139	21,468	21,888	0.6%
Japan	1,036	1,005	851	811	773	753	730	-1.2%
South Korea	639	638	645	643	636	630	624	-0.1%
Australia and New Zealand	404	391	417	429	433	442	451	0.4%
China	11,499	11,441	11,493	11,463	11,065	10,649	10,517	-0.3%
India	2,446	2,637	3,370	3,834	4,313	4,696	5,005	2.6%
Other Asia Pacific	2,680	2,793	3,241	3,588	3,921	4,297	4,560	1.9%
Africa and Middle East	3,606	3,778	3,863	4,097	4,362	4,638	4,963	1.1%
Africa	1,331	1,380	1,493	1,662	1,852	2,027	2,257	1.9%
Middle East	2,275	2,398	2,371	2,435	2,510	2,611	2,706	0.6%
World	35,664	35,750	36,336	37,347	38,147	39,091	40,164	0.4%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	3,501	3,438	3,320	3,205	3,156	3,178	3,257	-0.3%
United States	2,189	2,117	2,031	1,911	1,829	1,802	1,826	-0.6%
Canada	271	270	264	266	272	283	293	0.3%
Mexico	253	250	234	227	226	229	238	-0.2%
Brazil	310	318	317	321	326	331	334	0.3%
Other Americas	478	482	475	482	503	533	566	0.6%
Europe and Eurasia	2,474	2,448	2,351	2,271	2,250	2,258	2,278	-0.3%
Western Europe	1,905	1,873	1,781	1,702	1,665	1,653	1,656	-0.5%
Russia	435	433	424	415	420	426	430	0.0%
Eastern Europe and Eurasia	134	141	147	153	165	178	192	1.3%
Asia Pacific	4,138	4,401	4,677	4,921	5,121	5,345	5,514	1.0%
Japan	404	378	349	324	307	295	283	-1.3%
South Korea	262	271	270	262	252	244	236	-0.4%
Australia and New Zealand	168	168	170	169	171	174	178	0.2%
China	1,579	1,714	1,774	1,788	1,755	1,736	1,709	0.3%
India	610	690	845	1,021	1,204	1,385	1,549	3.4%
Other Asia Pacific	1,116	1,179	1,269	1,357	1,434	1,511	1,558	1.2%
Africa and Middle East	1,660	1,760	1,711	1,745	1,826	1,930	2,040	0.7%
Africa	597	636	668	726	805	896	995	1.8%
Middle East	1,062	1,125	1,042	1,019	1,021	1,035	1,045	-0.1%
World	11,773	12,047	12,058	12,141	12,353	12,711	13,089	0.4%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A12. World carbon dioxide emissions from natural gas use by region, High Oil Price case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	2,405	2,371	2,506	2,545	2,621	2,672	2,761	0.5%
United States	1,724	1,660	1,743	1,743	1,768	1,771	1,813	0.2%
Canada	231	236	232	247	267	289	308	1.0%
Mexico	147	156	177	188	207	218	227	1.6%
Brazil	72	81	96	92	87	86	85	0.6%
Other Americas	231	237	258	276	292	309	328	1.3%
Europe and Eurasia	2,319	2,351	2,433	2,504	2,620	2,746	2,895	0.8%
Western Europe	1,087	1,119	1,188	1,184	1,192	1,205	1,228	0.4%
Russia	931	918	933	993	1,051	1,110	1,171	0.8%
Eastern Europe and Eurasia	300	314	312	328	377	432	496	1.8%
Asia Pacific	1,846	1,971	2,115	2,252	2,425	2,689	2,904	1.6%
Japan	223	226	215	197	187	191	189	-0.6%
South Korea	137	135	130	126	123	124	126	-0.3%
Australia and New Zealand	91	91	96	95	96	101	106	0.5%
China	739	808	863	955	1,063	1,214	1,318	2.1%
India	137	151	213	275	335	397	464	4.4%
Other Asia Pacific	519	560	598	605	620	662	701	1.1%
Africa and Middle East	1,517	1,589	1,672	1,799	1,912	2,041	2,172	1.3%
Africa	331	342	370	410	451	492	539	1.8%
Middle East	1,186	1,247	1,303	1,390	1,461	1,549	1,634	1.1%
World	8,087	8,282	8,726	9,101	9,577	10,148	10,733	1.0%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	1,086	919	450	552	589	603	565	-2.3%
United States	929	773	284	342	330	320	277	-4.2%
Canada	45	29	13	14	14	14	14	-4.1%
Mexico	19	19	32	34	35	35	36	2.4%
Brazil	57	60	62	65	72	69	69	0.7%
Other Americas	35	38	60	97	139	165	169	5.8%
Europe and Eurasia	1,570	1,540	1,396	1,405	1,412	1,527	1,557	0.0%
Western Europe	813	778	639	645	630	717	719	-0.4%
Russia	449	466	443	426	433	441	449	0.0%
Eastern Europe and Eurasia	308	297	314	333	350	369	389	0.8%
Asia Pacific	12,719	12,534	13,225	13,595	13,593	13,435	13,470	0.2%
Japan	409	401	286	289	278	267	257	-1.6%
South Korea	240	231	245	255	260	262	262	0.3%
Australia and New Zealand	145	133	152	165	166	168	168	0.5%
China	9,181	8,919	8,855	8,720	8,247	7,700	7,491	-0.7%
India	1,699	1,796	2,312	2,538	2,774	2,914	2,991	2.0%
Other Asia Pacific	1,045	1,054	1,375	1,627	1,867	2,124	2,302	2.9%
Africa and Middle East	429	429	480	553	624	667	750	2.0%
Africa	403	402	455	526	596	639	723	2.1%
Middle East	26	26	26	27	27	27	27	0.2%
World	15,804	15,422	15,551	16,105	16,218	16,231	16,343	0.1%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), 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, High Oil Price case

million metric tons of carbon dioxide

Region and fuel	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas								
Liquid fuels	92	109	55	23	11	4	4	-10.7%
Natural gas	852	772	784	736	726	705	711	-0.6%
Coal	907	740	267	368	405	419	381	-3.1%
Total	1,851	1,622	1,106	1,128	1,141	1,128	1,095	-1.9%
United States								
Liquid fuels	8	8	5	5	5	3	3	-3.2%
Natural gas	646	554	570	527	512	490	494	-0.9%
Coal	842	688	202	266	259	254	214	-4.8%
Total	1,496	1,250	777	798	776	747	712	-2.6%
Canada								
Liquid fuels	2	2	0	0	0	0	0	-10.3%
Natural gas	27	28	5	2	2	2	2	-8.4%
Coal	33	16	0	0	0	0	0	-100.0%
Total	61	47	5	2	2	2	2	-10.9%
Mexico								
Liquid fuels	28	36	19	9	3	0	0	-18.4%
Natural gas	70	73	79	84	96	100	102	1.4%
Coal	7	8	19	21	21	21	21	4.1%
Total	105	117	117	114	120	121	124	0.6%
Brazil								
Liquid fuels	10	14	6	1	0	0	0	-14.9%
Natural gas	28	36	46	37	29	27	25	-0.4%
Coal	9	10	8	9	13	9	9	0.1%
Total	47	60	60	46	42	36	34	-1.2%
Other Americas								
Liquid fuels	44	50	25	8	3	0	0	-17.5%
Natural gas	81	80	84	86	86	86	86	0.3%
Coal	17	19	38	73	111	135	136	7.7%
Total	142	149	147	167	200	222	223	1.6%
Europe and Eurasia								
Liquid fuels	58	80	81	56	43	41	40	-1.3%
Natural gas	701	707	751	772	821	870	932	1.0%
Coal	848	813	661	649	629	715	713	-0.6%
Total	1,607	1,600	1,493	1,477	1,493	1,626	1,685	0.2%
Western Europe								
Liquid fuels	40	57	62	47	35	35	34	-0.5%
Natural gas	263	297	365	352	345	340	341	0.9%
Coal	481	452	321	326	307	393	392	-0.7%
Total	784	806	748	725	688	769	767	-0.1%
Russia								
Liquid fuels	13	19	16	5	4	3	2	-6.8%
Natural gas	315	297	291	324	351	374	398	0.8%
Coal	179	193	166	143	142	142	142	-0.8%
Total	508	508	473	473	497	519	541	0.2%
Eastern Europe and Eurasia								
Liquid fuels	4	4	3	3	3	3	3	-0.8%
Natural gas	123	113	95	96	125	155	194	1.6%
Coal	187	168	174	180	180	180	180	-0.1%
Total	315	285	273	279	308	338	377	0.6%
Asia Pacific								

Liquid fuels	49	55	32	18	10	7	6	-7.5%
Natural gas	618	656	645	630	657	756	813	1.0%
Coal	7,386	7,259	7,981	8,385	8,428	8,266	8,299	0.4%
Total	8,052	7,969	8,658	9,033	9,096	9,029	9,118	0.4%
Japan								
Liquid fuels	9	13	9	5	3	3	3	-4.1%
Natural gas	145	145	134	117	107	110	107	-1.1%
Coal	251	249	147	162	162	162	162	-1.6%
Total	406	406	290	284	272	275	272	-1.4%
South Korea								
Liquid fuels	2	3	4	3	2	2	2	0.5%
Natural gas	69	65	60	55	51	50	50	-1.1%
Coal	130	124	135	143	147	147	147	0.4%
Total	202	192	198	200	200	200	200	0.0%
Australia and New Zealand								
Liquid fuels	1	1	0	0	0	0	0	-7.3%
Natural gas	22	21	23	18	14	15	15	-1.4%
Coal	123	109	127	138	138	138	137	0.4%
Total	145	131	150	157	153	153	152	0.2%
China								
Liquid fuels	2	2	1	0	0	0	0	-11.1%
Natural gas	121	147	152	192	256	352	411	4.5%
Coal	5,206	5,065	5,251	5,388	5,197	4,887	4,913	-0.2%
Total	5,328	5,214	5,404	5,580	5,453	5,240	5,324	0.0%
India								
Liquid fuels	3	2	1	0	0	0	0	-14.5%
Natural gas	24	24	27	29	29	29	29	0.7%
Coal	1,077	1,138	1,492	1,536	1,590	1,538	1,419	1.0%
Total	1,104	1,164	1,520	1,565	1,619	1,568	1,448	1.0%
Other Asia Pacific								
Liquid fuels	33	34	18	10	5	2	0	-14.5%
Natural gas	237	254	249	219	200	200	201	-0.6%
Coal	598	574	830	1,018	1,194	1,392	1,521	3.4%
Total	867	862	1,097	1,247	1,399	1,594	1,722	2.5%
Africa and Middle East								
Liquid fuels	205	230	119	50	21	8	2	-15.2%
Natural gas	587	612	650	711	755	798	841	1.3%
Coal	212	189	209	241	263	251	270	0.9%
Total	1,004	1,031	978	1,002	1,039	1,056	1,113	0.4%
Africa								
Liquid fuels	31	31	12	2	0	0	0	-16.5%
Natural gas	166	167	172	188	206	221	241	1.3%
Coal	212	189	209	241	263	250	269	0.9%
Total	409	386	392	432	469	472	511	0.8%
Middle East								
Liquid fuels	174	200	107	48	21	8	2	-15.1%
Natural gas	421	445	478	523	549	576	600	1.3%
Coal	0	0	0	0	0	0	0	-5.9%
Total	595	645	586	571	570	584	602	0.0%
World								
Liquid fuels	404	475	288	147	84	60	51	-7.1%
Natural gas	2,757	2,747	2,829	2,850	2,959	3,130	3,297	0.6%
Coal	9,353	9,001	9,118	9,644	9,725	9,650	9,663	0.1%
Total	12,514	12,222	12,235	12,640	12,768	12,840	13,010	0.1%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A15. World population by region, High Oil Price case

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	1,036	1,057	1,091	1,120	1,143	1,161	1,175	0.4%
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%
Europe and Eurasia	920	923	928	932	934	935	933	0.1%
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%
Asia Pacific	4,287	4,358	4,474	4,568	4,640	4,690	4,712	0.3%
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%
Africa and Middle East	1,658	1,774	1,970	2,172	2,378	2,584	2,786	1.9%
Africa	1,386	1,486	1,661	1,843	2,031	2,221	2,410	2.0%
Middle East	273	288	309	329	347	363	376	1.2%
World	7,901	8,112	8,464	8,792	9,095	9,369	9,606	0.7%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; Oxford Economics, Global Economic Model (February 2023), 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, High Oil Price case

billion 2015 dollars

Region and sector	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas								
Energy-intensive manufacturing	\$4,946	\$5,124	\$5,772	\$6,229	\$6,693	\$7,204	\$7,766	1.6%
Non-energy-intensive manufacturing	\$6,357	\$6,872	\$7,940	\$8,822	\$9,824	\$10,927	\$12,207	2.4%
Nonmanufacturing	\$5,265	\$5,690	\$6,256	\$6,825	\$7,480	\$8,201	\$9,003	1.9%
Services	\$40,510	\$43,461	\$49,024	\$53,911	\$59,320	\$65,064	\$71,321	2.0%
Total	\$57,077	\$61,148	\$68,992	\$75,787	\$83,317	\$91,396	\$100,297	2.0%
United States								
Energy-intensive manufacturing	\$2,388	\$2,461	\$2,779	\$2,962	\$3,178	\$3,434	\$3,721	1.6%
Non-energy-intensive manufacturing	\$3,493	\$3,876	\$4,560	\$5,084	\$5,726	\$6,446	\$7,283	2.7%
Nonmanufacturing	\$2,394	\$2,688	\$2,982	\$3,274	\$3,662	\$4,117	\$4,649	2.4%
Services	\$28,881	\$31,184	\$35,209	\$38,627	\$42,634	\$47,003	\$51,855	2.1%
Total	\$37,155	\$40,208	\$45,529	\$49,947	\$55,201	\$61,000	\$67,509	2.2%
Canada								
Energy-intensive manufacturing	\$256	\$267	\$312	\$347	\$382	\$419	\$456	2.1%
Non-energy-intensive manufacturing	\$332	\$360	\$418	\$463	\$508	\$553	\$601	2.1%
Nonmanufacturing	\$498	\$504	\$541	\$584	\$629	\$674	\$718	1.3%
Services	\$1,724	\$1,828	\$2,077	\$2,277	\$2,490	\$2,717	\$2,964	2.0%
Total	\$2,810	\$2,958	\$3,347	\$3,670	\$4,009	\$4,362	\$4,739	1.9%
Mexico								
Energy-intensive manufacturing	\$535	\$553	\$622	\$673	\$725	\$787	\$867	1.7%
Non-energy-intensive manufacturing	\$983	\$1,042	\$1,139	\$1,244	\$1,374	\$1,532	\$1,734	2.0%
Nonmanufacturing	\$466	\$494	\$538	\$577	\$611	\$644	\$674	1.3%
Services	\$1,999	\$2,091	\$2,305	\$2,534	\$2,779	\$3,027	\$3,275	1.8%
Total	\$3,982	\$4,180	\$4,604	\$5,029	\$5,489	\$5,989	\$6,551	1.8%
Brazil								
Energy-intensive manufacturing	\$868	\$897	\$977	\$1,040	\$1,068	\$1,083	\$1,089	0.8%
Non-energy-intensive manufacturing	\$612	\$659	\$746	\$825	\$879	\$923	\$962	1.6%
Nonmanufacturing	\$710	\$754	\$814	\$872	\$920	\$964	\$1,005	1.2%
Services	\$3,392	\$3,562	\$3,885	\$4,174	\$4,357	\$4,478	\$4,552	1.1%
Total	\$5,583	\$5,873	\$6,422	\$6,911	\$7,224	\$7,449	\$7,608	1.1%
Other Americas								
Energy-intensive manufacturing	\$899	\$947	\$1,082	\$1,207	\$1,339	\$1,481	\$1,632	2.2%
Non-energy-intensive manufacturing	\$937	\$935	\$1,078	\$1,207	\$1,337	\$1,473	\$1,627	2.0%
Nonmanufacturing	\$1,197	\$1,250	\$1,382	\$1,518	\$1,658	\$1,802	\$1,956	1.8%
Services	\$4,514	\$4,796	\$5,547	\$6,298	\$7,060	\$7,840	\$8,676	2.4%
Total	\$7,546	\$7,929	\$9,090	\$10,230	\$11,394	\$12,595	\$13,891	2.2%
Europe and Eurasia								
Energy-intensive manufacturing	\$6,107	\$6,242	\$6,427	\$6,754	\$7,150	\$7,570	\$8,026	1.0%
Non-energy-intensive manufacturing	\$9,080	\$9,612	\$10,247	\$11,025	\$11,884	\$12,769	\$13,702	1.5%
Nonmanufacturing	\$6,410	\$6,596	\$7,166	\$7,602	\$8,046	\$8,449	\$8,855	1.2%
Services	\$36,030	\$37,616	\$40,725	\$43,654	\$46,937	\$50,483	\$54,396	1.5%
Total	\$57,627	\$60,066	\$64,565	\$69,034	\$74,017	\$79,271	\$84,979	1.4%
Western Europe								
Energy-intensive manufacturing	\$4,982	\$4,980	\$5,061	\$5,250	\$5,487	\$5,729	\$6,005	0.7%
Non-energy-intensive manufacturing	\$8,440	\$8,889	\$9,477	\$10,189	\$10,962	\$11,746	\$12,574	1.4%
Nonmanufacturing	\$4,377	\$4,488	\$4,800	\$5,056	\$5,311	\$5,531	\$5,758	1.0%
Services	\$31,098	\$32,271	\$34,855	\$37,147	\$39,626	\$42,197	\$44,930	1.3%
Total	\$48,897	\$50,628	\$54,193	\$57,641	\$61,387	\$65,203	\$69,267	1.3%
Russia								
Energy-intensive manufacturing	\$895	\$996	\$1,053	\$1,131	\$1,215	\$1,306	\$1,388	1.6%
Non-energy-intensive manufacturing	\$544	\$603	\$629	\$673	\$733	\$801	\$868	1.7%

Nonmanufacturing	\$1,282	\$1,269	\$1,322	\$1,340	\$1,352	\$1,367	\$1,380	0.3%
Services	\$3,823	\$4,083	\$4,264	\$4,402	\$4,586	\$4,817	\$5,100	1.0%
Total	\$6,544	\$6,951	\$7,268	\$7,546	\$7,886	\$8,291	\$8,736	1.0%
Eastern Europe and Eurasia								
Energy-intensive manufacturing	\$230	\$266	\$313	\$373	\$448	\$536	\$633	3.7%
Non-energy-intensive manufacturing	\$96	\$119	\$142	\$163	\$189	\$222	\$259	3.6%
Nonmanufacturing	\$750	\$839	\$1,044	\$1,206	\$1,383	\$1,551	\$1,718	3.0%
Services	\$1,109	\$1,262	\$1,606	\$2,105	\$2,724	\$3,469	\$4,366	5.0%
Total	\$2,185	\$2,487	\$3,104	\$3,847	\$4,744	\$5,778	\$6,976	4.2%
Asia Pacific								
Energy-intensive manufacturing	\$21,179	\$23,538	\$27,701	\$32,000	\$36,227	\$40,719	\$45,109	2.7%
Non-energy-intensive manufacturing	\$42,102	\$47,519	\$56,852	\$65,554	\$72,876	\$79,624	\$84,868	2.5%
Nonmanufacturing	\$24,048	\$26,032	\$30,396	\$34,276	\$37,775	\$41,287	\$44,313	2.2%
Services	\$58,764	\$66,991	\$84,693	\$103,086	\$121,641	\$141,216	\$160,085	3.6%
Total	\$146,093	\$164,081	\$199,642	\$234,917	\$268,519	\$302,846	\$334,375	3.0%
Japan								
Energy-intensive manufacturing	\$941	\$951	\$926	\$895	\$876	\$856	\$841	-0.4%
Non-energy-intensive manufacturing	\$2,737	\$2,989	\$3,144	\$3,210	\$3,242	\$3,263	\$3,289	0.7%
Nonmanufacturing	\$670	\$673	\$694	\$693	\$690	\$685	\$682	0.1%
Services	\$5,761	\$5,945	\$6,141	\$6,154	\$6,176	\$6,197	\$6,246	0.3%
Total	\$10,110	\$10,558	\$10,904	\$10,952	\$10,983	\$11,000	\$11,058	0.3%
South Korea								
Energy-intensive manufacturing	\$1,067	\$1,096	\$1,124	\$1,135	\$1,119	\$1,097	\$1,068	0.0%
Non-energy-intensive manufacturing	\$1,692	\$1,783	\$2,023	\$2,169	\$2,264	\$2,353	\$2,438	1.3%
Nonmanufacturing	\$362	\$369	\$377	\$390	\$397	\$401	\$404	0.4%
Services	\$2,565	\$2,687	\$2,893	\$3,054	\$3,142	\$3,226	\$3,297	0.9%
Total	\$5,686	\$5,935	\$6,418	\$6,748	\$6,922	\$7,077	\$7,207	0.9%
Australia and New Zealand								
Energy-intensive manufacturing	\$173	\$186	\$202	\$216	\$231	\$245	\$259	1.5%
Non-energy-intensive manufacturing	\$130	\$135	\$146	\$157	\$167	\$176	\$183	1.2%
Nonmanufacturing	\$590	\$623	\$722	\$799	\$867	\$932	\$993	1.9%
Services	\$1,958	\$2,110	\$2,432	\$2,722	\$2,988	\$3,245	\$3,503	2.1%
Total	\$2,852	\$3,054	\$3,503	\$3,894	\$4,253	\$4,597	\$4,938	2.0%
China								
Energy-intensive manufacturing	\$10,799	\$12,119	\$13,495	\$14,519	\$15,163	\$15,708	\$15,937	1.4%
Non-energy-intensive manufacturing	\$25,771	\$29,693	\$35,243	\$40,168	\$43,608	\$46,390	\$47,654	2.2%
Nonmanufacturing	\$12,744	\$13,764	\$15,654	\$17,107	\$18,180	\$19,260	\$19,945	1.6%
Services	\$25,046	\$28,736	\$37,061	\$45,820	\$54,087	\$62,723	\$70,263	3.8%
Total	\$74,360	\$84,312	\$101,453	\$117,613	\$131,038	\$144,081	\$153,799	2.6%
India								
Energy-intensive manufacturing	\$3,724	\$4,228	\$5,917	\$7,948	\$10,108	\$12,498	\$15,010	5.1%
Non-energy-intensive manufacturing	\$3,007	\$3,355	\$4,703	\$6,275	\$7,976	\$9,839	\$11,825	5.0%
Nonmanufacturing	\$4,474	\$4,973	\$6,204	\$7,486	\$8,691	\$9,921	\$11,090	3.3%
Services	\$7,664	\$9,675	\$13,830	\$18,499	\$23,567	\$29,058	\$34,830	5.6%
Total	\$18,869	\$22,231	\$30,654	\$40,209	\$50,342	\$61,316	\$72,755	4.9%
Other Asia Pacific								
Energy-intensive manufacturing	\$4,475	\$4,958	\$6,038	\$7,286	\$8,731	\$10,315	\$11,995	3.6%
Non-energy-intensive manufacturing	\$8,764	\$9,564	\$11,592	\$13,575	\$15,619	\$17,604	\$19,479	2.9%
Nonmanufacturing	\$5,207	\$5,631	\$6,745	\$7,801	\$8,950	\$10,088	\$11,199	2.8%
Services	\$15,770	\$17,838	\$22,336	\$26,837	\$31,680	\$36,768	\$41,945	3.6%
Total	\$34,217	\$37,991	\$46,711	\$55,500	\$64,980	\$74,775	\$84,618	3.3%
Africa and Middle East								
Energy-intensive manufacturing	\$2,921	\$3,175	\$3,553	\$4,035	\$4,498	\$4,944	\$5,402	2.2%
Non-energy-intensive manufacturing	\$1,721	\$1,881	\$2,127	\$2,439	\$2,752	\$3,050	\$3,351	2.4%
Nonmanufacturing	\$5,582	\$6,130	\$6,634	\$7,201	\$7,748	\$8,277	\$8,764	1.6%
Services	\$12,133	\$13,570	\$15,575	\$17,803	\$19,866	\$21,732	\$23,492	2.4%
Total	\$22,357	\$24,756	\$27,890	\$31,479	\$34,865	\$38,002	\$41,009	2.2%
Africa								

Energy-intensive manufacturing	\$1,364	\$1,494	\$1,747	\$2,045	\$2,366	\$2,709	\$3,080	3.0%
Non-energy-intensive manufacturing	\$885	\$978	\$1,142	\$1,321	\$1,509	\$1,704	\$1,901	2.8%
Nonmanufacturing	\$3,002	\$3,252	\$3,597	\$3,971	\$4,346	\$4,713	\$5,071	1.9%
Services	\$6,408	\$6,850	\$8,005	\$9,215	\$10,443	\$11,686	\$12,939	2.5%
Total	\$11,659	\$12,575	\$14,491	\$16,553	\$18,664	\$20,813	\$22,990	2.5%
Middle East								
Energy-intensive manufacturing	\$1,557	\$1,680	\$1,806	\$1,990	\$2,133	\$2,235	\$2,322	1.4%
Non-energy-intensive manufacturing	\$836	\$903	\$986	\$1,117	\$1,243	\$1,345	\$1,451	2.0%
Nonmanufacturing	\$2,580	\$2,878	\$3,037	\$3,230	\$3,402	\$3,564	\$3,694	1.3%
Services	\$5,725	\$6,719	\$7,570	\$8,589	\$9,423	\$10,045	\$10,553	2.2%
Total	\$10,697	\$12,181	\$13,398	\$14,926	\$16,201	\$17,189	\$18,019	1.9%
World								
Energy-intensive manufacturing	\$35,153	\$38,079	\$43,453	\$49,018	\$54,569	\$60,437	\$66,303	2.3%
Non-energy-intensive manufacturing	\$59,259	\$65,885	\$77,167	\$87,839	\$97,336	\$106,370	\$114,127	2.4%
Nonmanufacturing	\$41,304	\$44,449	\$50,452	\$55,904	\$61,049	\$66,214	\$70,936	2.0%
Services	\$147,437	\$161,638	\$190,016	\$218,454	\$247,764	\$278,494	\$309,294	2.7%
Total	\$283,153	\$310,050	\$361,089	\$411,216	\$460,718	\$511,515	\$560,659	2.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; Oxford Economics, Global Industry Model (March 2023), 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, High Oil Price case

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	467	488	507	523	535	545	551	0.6%
United States	158	163	166	170	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	105	102	0.1%
Other Americas	134	144	154	160	166	171	175	1.0%
Europe and Eurasia	415	417	420	419	415	409	402	-0.1%
Western Europe	289	290	292	290	288	285	282	-0.1%
Russia	72	71	70	69	67	64	60	-0.6%
Eastern Europe and Eurasia	54	55	57	59	60	60	60	0.4%
Asia Pacific	1,855	1,913	1,976	2,021	2,039	2,053	2,048	0.4%
Japan	67	67	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	756	753	740	706	675	633	-0.6%
India	481	507	547	583	620	655	684	1.3%
Other Asia Pacific	512	538	565	589	610	626	636	0.8%
Africa and Middle East	547	595	671	757	844	931	1,017	2.2%
Africa	470	510	581	660	742	826	911	2.4%
Middle East	77	85	90	97	102	104	106	1.1%
World	3,283	3,413	3,575	3,719	3,833	3,938	4,018	0.7%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; Oxford Economics, Global Economic Model (February 2023), 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, High Oil Price case

2015 dollars per person (PPP)

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$21,783	\$22,014	\$23,084	\$24,390	\$25,786	\$27,286	\$28,884	1.0%
United States	\$46,720	\$48,543	\$51,358	\$54,308	\$57,622	\$61,178	\$64,818	1.2%
Canada	\$27,994	\$27,935	\$29,516	\$31,303	\$33,026	\$34,753	\$36,564	1.0%
Mexico	\$16,588	\$15,660	\$16,359	\$17,328	\$18,439	\$19,694	\$21,111	0.9%
Brazil	\$11,919	\$11,491	\$11,605	\$12,305	\$12,768	\$13,146	\$13,504	0.4%
Other Americas	\$3,825	\$3,606	\$3,895	\$4,165	\$4,407	\$4,630	\$4,862	0.9%
Europe and Eurasia	\$20,359	\$20,509	\$21,713	\$23,068	\$24,611	\$26,289	\$28,178	1.2%
Western Europe	\$24,026	\$23,863	\$24,947	\$26,233	\$27,745	\$29,365	\$31,164	0.9%
Russia	\$15,436	\$16,386	\$18,185	\$19,448	\$20,573	\$21,760	\$23,054	1.4%
Eastern Europe and Eurasia	\$9,016	\$9,790	\$11,153	\$13,043	\$15,259	\$17,755	\$20,622	3.0%
Asia Pacific	\$8,187	\$8,927	\$10,790	\$12,816	\$14,906	\$17,162	\$19,418	3.1%
Japan	\$22,970	\$23,591	\$24,756	\$25,502	\$26,402	\$27,362	\$28,452	0.8%
South Korea	\$22,258	\$22,292	\$23,772	\$25,554	\$26,990	\$28,537	\$30,335	1.1%
Australia and New Zealand	\$32,814	\$31,874	\$34,905	\$37,062	\$38,752	\$40,248	\$41,714	0.9%
China	\$10,529	\$11,940	\$14,985	\$18,525	\$22,241	\$26,431	\$30,704	3.9%
India	\$5,497	\$6,142	\$7,938	\$9,974	\$12,101	\$14,392	\$16,772	4.1%
Other Asia Pacific	\$5,851	\$6,176	\$7,196	\$8,123	\$9,112	\$10,117	\$11,093	2.3%
Africa and Middle East	\$2,228	\$2,346	\$2,487	\$2,618	\$2,759	\$2,893	\$3,033	1.1%
Africa	\$1,652	\$1,721	\$1,840	\$1,978	\$2,119	\$2,258	\$2,407	1.4%
Middle East	\$5,155	\$5,569	\$5,961	\$6,208	\$6,508	\$6,780	\$7,038	1.1%
World	\$10,136	\$10,511	\$11,640	\$12,857	\$14,094	\$15,392	\$16,674	1.8%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; Oxford Economics, Global Economic Model (February 2023), www.oxfordeconomics.com (subscription site)

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