

Table A1. World total primary energy consumption by region, High Economic Growth case

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	152.6	154.6	161.4	168.6	177.2	186.7	197.3	0.9%
United States	98.9	99.2	100.7	102.5	105.0	108.4	112.6	0.5%
Canada	14.7	14.6	15.9	17.1	18.6	20.0	21.5	1.4%
Mexico	7.7	7.9	8.8	9.5	10.3	11.2	12.3	1.7%
Brazil	15.0	15.7	17.3	18.8	20.1	21.3	22.4	1.4%
Other Americas	16.4	17.0	18.7	20.7	23.2	25.7	28.5	2.0%
Europe and Eurasia	130.0	133.4	138.7	146.4	155.3	166.2	178.6	1.1%
Western Europe	84.2	86.3	89.3	93.4	97.7	102.8	109.3	0.9%
Russia	33.5	34.2	35.5	37.7	40.5	43.9	47.1	1.2%
Eastern Europe and Eurasia	12.3	12.9	13.9	15.3	17.1	19.5	22.2	2.1%
Asia Pacific	292.6	313.2	353.9	392.0	429.8	470.9	510.8	2.0%
Japan	18.5	18.6	17.5	17.2	17.1	17.0	17.1	-0.3%
South Korea	13.0	13.6	14.2	14.7	15.1	15.4	15.7	0.7%
Australia and New Zealand	7.2	7.3	7.9	8.4	8.9	9.4	9.9	1.2%
China	172.4	182.8	198.3	209.7	219.8	230.7	238.9	1.2%
India	38.3	43.7	58.8	75.7	93.2	112.6	133.1	4.5%
Other Asia Pacific	43.2	47.3	57.2	66.3	75.8	85.8	96.1	2.9%
Africa and Middle East	62.6	67.3	73.2	80.8	89.6	100.4	112.7	2.1%
Africa	24.3	26.4	30.8	36.0	42.0	49.3	57.6	3.1%
Middle East	38.3	40.9	42.4	44.8	47.5	51.0	55.1	1.3%
World	637.8	668.4	727.2	787.8	851.9	924.1	999.4	1.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 kilowatt-hour, 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 Economic Growth 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	58.9	59.0	59.7	61.7	64.4	67.7	0.6%
Natural gas	45.7	43.9	45.7	46.8	49.3	51.6	54.0	0.6%
Coal	11.3	10.5	7.0	7.4	7.7	7.7	7.4	-1.5%
Nuclear	9.4	9.3	9.3	8.8	7.9	7.7	7.5	-0.8%
Other	28.7	31.9	40.3	45.9	50.5	55.3	60.7	2.7%
Total	152.6	154.6	161.4	168.6	177.2	186.7	197.3	0.9%
Europe and Eurasia								
Liquid fuels	38.0	38.7	38.7	38.9	40.0	42.1	44.6	0.6%
Natural gas	43.7	44.7	47.4	50.4	54.1	58.3	63.2	1.3%
Coal	16.5	16.4	15.2	15.4	17.1	18.3	18.8	0.5%
Nuclear	10.4	10.6	11.1	11.3	11.2	11.2	11.2	0.3%
Other	21.4	22.9	26.3	30.4	32.8	36.4	40.9	2.3%
Total	130.0	133.4	138.7	146.4	155.3	166.2	178.6	1.1%
Asia Pacific								
Liquid fuels	71.4	77.8	86.7	95.4	104.0	113.4	122.6	2.0%
Natural gas	35.2	37.9	42.7	47.5	54.6	64.2	75.7	2.8%
Coal	133.7	135.7	149.9	156.2	158.2	160.5	162.4	0.7%
Nuclear	7.6	8.7	10.5	12.0	13.2	14.0	14.9	2.4%
Other	44.6	53.0	64.2	80.9	99.9	118.8	135.1	4.0%
Total	292.6	313.2	353.9	392.0	429.8	470.9	510.8	2.0%
Africa and Middle East								
Liquid fuels	23.3	25.0	25.4	26.9	29.2	31.9	35.0	1.5%
Natural gas	28.6	29.9	32.0	34.9	38.1	42.5	47.8	1.8%
Coal	4.6	4.5	5.3	6.1	7.0	7.7	8.6	2.3%
Nuclear	0.4	0.6	0.9	1.2	1.4	1.4	1.4	4.9%
Other	5.7	7.3	9.6	11.7	14.0	16.8	19.9	4.5%
Total	62.6	67.3	73.2	80.8	89.6	100.4	112.7	2.1%
World								
Liquid fuels	190.4	200.4	209.8	220.9	234.8	251.8	269.9	1.3%
Natural gas	153.2	156.5	167.8	179.6	196.1	216.6	240.7	1.6%
Coal	166.0	167.1	177.4	185.1	190.0	194.1	197.2	0.6%
Nuclear	27.7	29.3	31.9	33.4	33.8	34.2	35.0	0.8%
Other	100.5	115.1	140.4	168.9	197.2	227.4	256.6	3.4%
Total	637.8	668.4	727.2	787.8	851.9	924.1	999.4	1.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$32,532	\$34,766	\$39,451	\$44,387	\$50,206	\$56,723	\$63,947	2.4%
United States	\$20,917	\$22,220	\$24,768	\$27,456	\$30,861	\$34,729	\$39,045	2.3%
Canada	\$1,791	\$1,887	\$2,168	\$2,433	\$2,721	\$3,032	\$3,372	2.3%
Mexico	\$2,367	\$2,521	\$2,915	\$3,359	\$3,838	\$4,362	\$4,944	2.7%
Brazil	\$3,182	\$3,397	\$3,946	\$4,443	\$4,864	\$5,257	\$5,618	2.1%
Other Americas	\$4,274	\$4,741	\$5,654	\$6,695	\$7,923	\$9,343	\$10,968	3.4%
Europe and Eurasia	\$31,731	\$33,669	\$37,792	\$42,131	\$47,062	\$52,630	\$58,913	2.2%
Western Europe	\$26,270	\$27,663	\$30,695	\$33,794	\$37,210	\$40,947	\$45,048	1.9%
Russia	\$3,763	\$4,054	\$4,547	\$4,990	\$5,499	\$6,093	\$6,759	2.1%
Eastern Europe and Eurasia	\$1,698	\$1,952	\$2,550	\$3,347	\$4,353	\$5,589	\$7,106	5.2%
Asia Pacific	\$58,708	\$68,199	\$88,665	\$111,338	\$135,732	\$163,221	\$192,052	4.3%
Japan	\$5,292	\$5,529	\$5,854	\$6,022	\$6,198	\$6,368	\$6,572	0.8%
South Korea	\$2,292	\$2,454	\$2,722	\$2,945	\$3,105	\$3,261	\$3,407	1.4%
Australia and New Zealand	\$1,524	\$1,653	\$1,963	\$2,251	\$2,534	\$2,821	\$3,123	2.6%
China	\$26,318	\$30,881	\$40,127	\$50,092	\$59,971	\$70,873	\$81,168	4.1%
India	\$10,049	\$12,235	\$17,775	\$24,426	\$32,058	\$40,916	\$50,923	6.0%
Other Asia Pacific	\$13,234	\$15,447	\$20,225	\$25,601	\$31,866	\$38,982	\$46,859	4.6%
Africa and Middle East	\$12,837	\$14,330	\$17,016	\$20,048	\$23,268	\$26,633	\$30,140	3.1%
Africa	\$7,052	\$7,891	\$9,671	\$11,692	\$13,934	\$16,404	\$19,129	3.6%
Middle East	\$5,784	\$6,439	\$7,345	\$8,356	\$9,333	\$10,229	\$11,011	2.3%
World	\$135,807	\$150,963	\$182,924	\$217,903	\$256,268	\$299,207	\$345,052	3.4%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$28,324	\$30,190	\$34,062	\$38,118	\$42,977	\$48,422	\$54,454	2.4%
United States	\$20,917	\$22,220	\$24,768	\$27,456	\$30,861	\$34,729	\$39,045	2.3%
Canada	\$1,748	\$1,842	\$2,116	\$2,375	\$2,656	\$2,959	\$3,291	2.3%
Mexico	\$1,242	\$1,323	\$1,530	\$1,763	\$2,014	\$2,289	\$2,595	2.7%
Brazil	\$1,900	\$2,028	\$2,356	\$2,653	\$2,904	\$3,139	\$3,354	2.1%
Other Americas	\$2,516	\$2,777	\$3,293	\$3,872	\$4,542	\$5,305	\$6,170	3.3%
Europe and Eurasia	\$22,950	\$24,184	\$26,828	\$29,512	\$32,534	\$35,929	\$39,707	2.0%
Western Europe	\$20,884	\$21,914	\$24,141	\$26,345	\$28,777	\$31,453	\$34,370	1.8%
Russia	\$1,456	\$1,569	\$1,760	\$1,931	\$2,128	\$2,358	\$2,616	2.1%
Eastern Europe and Eurasia	\$610	\$702	\$928	\$1,236	\$1,629	\$2,118	\$2,721	5.5%
Asia Pacific	\$32,180	\$36,919	\$46,779	\$57,402	\$68,507	\$80,875	\$93,484	3.9%
Japan	\$4,521	\$4,723	\$5,001	\$5,145	\$5,295	\$5,440	\$5,615	0.8%
South Korea	\$1,738	\$1,861	\$2,064	\$2,233	\$2,354	\$2,472	\$2,583	1.4%
Australia and New Zealand	\$1,671	\$1,812	\$2,152	\$2,470	\$2,779	\$3,094	\$3,426	2.6%
China	\$16,124	\$18,920	\$24,585	\$30,690	\$36,743	\$43,423	\$49,730	4.1%
India	\$2,927	\$3,565	\$5,179	\$7,117	\$9,341	\$11,922	\$14,838	6.0%
Other Asia Pacific	\$5,200	\$6,038	\$7,797	\$9,747	\$11,995	\$14,524	\$17,292	4.4%
Africa and Middle East	\$5,524	\$6,152	\$7,264	\$8,530	\$9,883	\$11,296	\$12,771	3.0%
Africa	\$2,723	\$3,026	\$3,704	\$4,481	\$5,351	\$6,314	\$7,376	3.6%
Middle East	\$2,801	\$3,126	\$3,559	\$4,050	\$4,532	\$4,982	\$5,396	2.4%
World	\$88,979	\$97,445	\$114,933	\$133,563	\$153,901	\$176,522	\$200,416	2.9%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

million barrels per day

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	30.6	31.5	31.8	32.2	33.3	34.8	36.6	0.6%
United States	19.9	20.5	20.5	20.4	20.6	21.1	21.8	0.3%
Canada	2.3	2.3	2.4	2.5	2.6	2.8	3.0	0.9%
Mexico	1.9	1.9	1.9	2.0	2.1	2.2	2.4	0.8%
Brazil	3.0	3.1	3.2	3.4	3.6	3.8	4.0	1.1%
Other Americas	3.5	3.7	3.8	4.0	4.4	4.9	5.4	1.5%
Europe and Eurasia	18.8	19.1	19.0	19.2	19.8	20.8	22.0	0.6%
Western Europe	14.3	14.3	14.0	13.8	13.9	14.4	15.0	0.2%
Russia	3.4	3.6	3.8	3.9	4.2	4.6	5.0	1.3%
Eastern Europe and Eurasia	1.1	1.2	1.3	1.4	1.6	1.8	2.0	2.3%
Asia Pacific	36.1	39.3	43.8	48.3	52.6	57.4	62.1	2.0%
Japan	3.4	3.3	3.1	2.9	2.8	2.8	2.7	-0.8%
South Korea	2.6	2.7	2.8	2.8	2.9	2.9	2.9	0.4%
Australia and New Zealand	1.2	1.3	1.3	1.3	1.4	1.4	1.5	0.6%
China	15.2	16.8	18.3	19.4	20.0	20.8	21.5	1.3%
India	5.1	5.9	7.6	9.8	12.2	14.5	16.9	4.4%
Other Asia Pacific	8.7	9.4	10.7	12.0	13.4	15.0	16.6	2.3%
Africa and Middle East	13.6	14.5	14.8	15.7	16.9	18.3	19.9	1.4%
Africa	4.4	4.8	5.3	6.0	6.9	7.9	9.1	2.6%
Middle East	9.1	9.7	9.5	9.7	10.0	10.4	10.8	0.6%
World	99.0	104.4	109.4	115.3	122.5	131.3	140.6	1.3%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836; 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 Economic Growth case

trillion cubic feet

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	45.0	43.4	45.2	46.5	49.0	51.3	53.6	0.6%
United States	32.3	30.1	29.6	29.5	30.4	31.6	32.6	0.0%
Canada	4.3	4.4	5.3	6.0	6.7	7.1	7.5	2.0%
Mexico	2.7	2.9	3.4	3.7	4.2	4.5	4.9	2.2%
Brazil	1.3	1.5	1.8	1.7	1.7	1.7	1.7	0.9%
Other Americas	4.3	4.5	5.1	5.6	6.1	6.5	6.9	1.7%
Europe and Eurasia	42.3	43.3	45.9	48.8	52.4	56.5	61.2	1.3%
Western Europe	19.8	20.6	22.0	22.4	22.8	23.5	24.2	0.7%
Russia	17.0	17.0	17.9	19.7	21.6	23.4	25.7	1.5%
Eastern Europe and Eurasia	5.5	5.8	6.0	6.8	8.0	9.5	11.3	2.6%
Asia Pacific	34.9	37.6	42.4	47.2	54.1	63.5	74.7	2.8%
Japan	4.1	4.2	4.0	3.6	3.5	3.2	3.2	-0.8%
South Korea	2.5	2.5	2.5	2.3	2.3	2.3	2.4	-0.1%
Australia and New Zealand	2.0	2.1	2.3	2.5	2.7	2.8	2.9	1.3%
China	14.1	15.4	17.4	20.5	24.9	31.6	39.4	3.7%
India	2.5	2.8	4.4	5.7	7.2	8.7	10.3	5.2%
Other Asia Pacific	9.7	10.7	11.8	12.5	13.7	15.0	16.4	1.9%
Africa and Middle East	28.4	29.7	31.7	34.5	37.5	41.8	46.9	1.8%
Africa	6.2	6.5	7.2	8.1	9.2	10.9	12.9	2.6%
Middle East	22.2	23.2	24.5	26.4	28.3	30.9	34.0	1.5%
World	150.5	154.0	165.1	177.0	193.1	213.2	236.5	1.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

million short tons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	574	530	345	356	370	361	347	-1.8%
United States	499	462	266	247	222	206	181	-3.6%
Canada	25	15	5	6	6	6	6	-4.9%
Mexico	7	8	14	15	15	16	16	3.0%
Brazil	25	26	30	32	44	35	36	1.4%
Other Americas	17	19	30	57	82	98	106	6.7%
Europe and Eurasia	1,019	1,001	879	886	1,014	1,075	1,086	0.2%
Western Europe	642	617	496	507	603	617	606	-0.2%
Russia	238	249	238	230	252	288	295	0.8%
Eastern Europe and Eurasia	138	136	145	149	159	171	185	1.0%
Asia Pacific	6,694	6,799	7,567	7,904	8,049	8,183	8,290	0.8%
Japan	193	192	136	142	139	151	151	-0.9%
South Korea	110	110	113	120	123	124	124	0.4%
Australia and New Zealand	100	93	106	114	117	117	119	0.6%
China	4,676	4,686	4,918	4,852	4,658	4,503	4,343	-0.3%
India	1,063	1,142	1,489	1,692	1,881	1,947	2,028	2.3%
Other Asia Pacific	551	577	804	984	1,132	1,341	1,526	3.7%
Africa and Middle East	177	171	204	242	276	305	338	2.3%
Africa	165	160	193	230	263	292	326	2.4%
Middle East	12	12	11	12	12	13	13	0.3%
World	8,463	8,502	8,996	9,387	9,709	9,924	10,061	0.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

billion kilowatthours

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	889	891	890	843	757	733	717	-0.8%
United States	772	782	753	704	644	644	639	-0.7%
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	1,048	1,051	0.2%
Western Europe	734	723	733	727	720	714	714	-0.1%
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	3,015	3,164	3,199	3,245	3,323	0.8%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	28.7	31.9	40.3	45.9	50.5	55.3	60.7	2.7%
United States	11.4	14.1	20.7	24.1	26.4	28.3	30.6	3.6%
Canada	4.3	4.4	4.7	5.0	5.7	6.6	7.4	2.0%
Mexico	1.0	0.9	1.1	1.3	1.4	1.8	2.1	2.9%
Brazil	7.4	7.7	8.5	9.8	10.5	11.4	12.1	1.7%
Other Americas	4.5	4.7	5.3	5.8	6.4	7.3	8.4	2.3%
Europe and Eurasia	21.4	22.9	26.3	30.4	32.8	36.4	40.9	2.3%
Western Europe	18.4	19.8	23.0	26.9	29.5	33.0	37.4	2.6%
Russia	2.2	2.2	2.3	2.4	2.2	2.3	2.3	0.3%
Eastern Europe and Eurasia	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.1%
Asia Pacific	44.6	53.0	64.2	80.9	99.9	118.8	135.1	4.0%
Japan	2.4	2.2	2.6	2.8	3.3	3.6	3.8	1.6%
South Korea	0.6	0.6	0.9	1.2	1.6	1.9	2.1	4.5%
Australia and New Zealand	1.4	1.5	1.7	2.0	2.3	2.6	2.9	2.7%
China	26.6	31.4	35.6	41.4	48.9	53.6	54.8	2.6%
India	7.4	9.6	13.8	21.3	29.2	40.7	52.8	7.3%
Other Asia Pacific	6.3	7.6	9.6	12.1	14.6	16.5	18.8	4.0%
Africa and Middle East	5.7	7.3	9.6	11.7	14.0	16.8	19.9	4.5%
Africa	5.4	6.4	8.3	10.2	12.5	15.2	18.3	4.5%
Middle East	0.4	0.8	1.3	1.4	1.5	1.6	1.6	5.3%
World	100.5	115.1	140.4	168.9	197.2	227.4	256.6	3.4%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	6,991	6,880	6,580	6,658	6,911	7,165	7,454	0.2%
United States	4,842	4,663	4,242	4,134	4,134	4,193	4,269	-0.4%
Canada	548	540	525	559	600	635	672	0.7%
Mexico	419	432	464	490	531	572	616	1.4%
Brazil	439	471	509	529	572	580	603	1.1%
Other Americas	744	775	839	946	1,075	1,186	1,293	2.0%
Europe and Eurasia	6,361	6,447	6,452	6,622	7,033	7,474	7,917	0.8%
Western Europe	3,803	3,837	3,744	3,744	3,875	3,983	4,100	0.3%
Russia	1,815	1,848	1,899	2,001	2,170	2,364	2,533	1.2%
Eastern Europe and Eurasia	742	762	809	876	988	1,127	1,285	2.0%
Asia Pacific	18,703	19,438	21,568	22,951	24,054	25,367	26,736	1.3%
Japan	1,036	1,021	879	852	827	829	825	-0.8%
South Korea	639	653	665	670	673	677	681	0.2%
Australia and New Zealand	404	398	430	447	461	471	485	0.7%
China	11,498	11,809	12,553	12,731	12,622	12,751	12,930	0.4%
India	2,446	2,676	3,520	4,186	4,866	5,376	5,928	3.2%
Other Asia Pacific	2,680	2,881	3,521	4,066	4,604	5,263	5,887	2.9%
Africa and Middle East	3,610	3,794	3,993	4,322	4,722	5,218	5,791	1.7%
Africa	1,333	1,394	1,568	1,792	2,051	2,360	2,716	2.6%
Middle East	2,277	2,399	2,425	2,529	2,671	2,858	3,076	1.1%
World	35,665	36,559	38,593	40,552	42,721	45,223	47,898	1.1%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/ao

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 Economic Growth case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	3,501	3,560	3,544	3,548	3,645	3,790	3,981	0.5%
United States	2,189	2,208	2,168	2,111	2,110	2,137	2,199	0.0%
Canada	271	272	275	285	300	315	331	0.7%
Mexico	253	255	248	253	266	284	307	0.7%
Brazil	310	329	344	362	384	407	427	1.2%
Other Americas	478	497	509	536	585	647	716	1.5%
Europe and Eurasia	2,474	2,517	2,494	2,487	2,536	2,646	2,781	0.4%
Western Europe	1,905	1,923	1,872	1,837	1,840	1,894	1,969	0.1%
Russia	435	450	464	476	500	530	559	0.9%
Eastern Europe and Eurasia	134	144	158	173	195	222	252	2.3%
Asia Pacific	4,139	4,515	5,032	5,545	6,066	6,641	7,203	2.0%
Japan	404	390	369	349	338	332	329	-0.7%
South Korea	262	278	282	280	278	277	275	0.2%
Australia and New Zealand	168	170	178	180	185	191	199	0.6%
China	1,579	1,755	1,910	2,015	2,080	2,172	2,247	1.3%
India	610	708	916	1,171	1,443	1,721	1,998	4.3%
Other Asia Pacific	1,116	1,215	1,377	1,550	1,742	1,948	2,156	2.4%
Africa and Middle East	1,663	1,779	1,797	1,891	2,045	2,234	2,449	1.4%
Africa	599	651	717	809	932	1,078	1,247	2.7%
Middle East	1,063	1,128	1,080	1,082	1,114	1,157	1,202	0.4%
World	11,776	12,371	12,867	13,472	14,293	15,311	16,414	1.2%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	2,405	2,313	2,357	2,406	2,535	2,654	2,774	0.5%
United States	1,724	1,595	1,570	1,558	1,606	1,668	1,725	0.0%
Canada	231	239	237	259	286	305	326	1.2%
Mexico	147	158	184	201	228	249	269	2.2%
Brazil	72	82	97	93	92	91	92	0.9%
Other Americas	231	240	269	295	323	341	361	1.6%
Europe and Eurasia	2,317	2,374	2,516	2,674	2,869	3,091	3,351	1.3%
Western Europe	1,085	1,129	1,210	1,227	1,253	1,288	1,332	0.7%
Russia	931	930	980	1,078	1,182	1,284	1,407	1.5%
Eastern Europe and Eurasia	300	315	326	369	435	518	612	2.6%
Asia Pacific	1,845	2,006	2,259	2,516	2,893	3,403	4,013	2.8%
Japan	223	227	216	199	193	174	176	-0.8%
South Korea	137	136	135	128	126	128	134	-0.1%
Australia and New Zealand	91	92	98	101	106	109	112	0.7%
China	738	828	937	1,107	1,346	1,715	2,147	3.9%
India	137	154	241	315	394	477	569	5.2%
Other Asia Pacific	519	569	632	666	729	799	876	1.9%
Africa and Middle East	1,518	1,589	1,698	1,852	2,020	2,255	2,534	1.8%
Africa	331	343	380	432	491	582	689	2.7%
Middle East	1,187	1,246	1,318	1,420	1,529	1,673	1,845	1.6%
World	8,086	8,282	8,829	9,447	10,317	11,403	12,672	1.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	1,085	1,007	679	704	732	721	699	-1.6%
United States	929	860	505	465	418	388	345	-3.5%
Canada	45	29	13	14	14	15	15	-3.9%
Mexico	19	19	32	35	37	39	40	2.8%
Brazil	57	60	68	74	96	82	84	1.4%
Other Americas	35	38	61	115	167	198	215	6.7%
Europe and Eurasia	1,570	1,556	1,443	1,461	1,628	1,737	1,786	0.5%
Western Europe	813	785	663	679	782	801	799	-0.1%
Russia	449	468	455	447	488	550	566	0.8%
Eastern Europe and Eurasia	308	303	325	335	358	386	421	1.1%
Asia Pacific	12,719	12,916	14,278	14,890	15,095	15,324	15,519	0.7%
Japan	409	404	293	304	296	322	320	-0.9%
South Korea	240	239	248	261	269	272	272	0.4%
Australia and New Zealand	145	136	154	166	170	171	174	0.7%
China	9,181	9,226	9,706	9,608	9,196	8,864	8,536	-0.3%
India	1,699	1,814	2,363	2,700	3,030	3,178	3,361	2.5%
Other Asia Pacific	1,045	1,098	1,513	1,850	2,133	2,515	2,855	3.7%
Africa and Middle East	429	426	497	578	657	728	808	2.3%
Africa	403	401	472	551	629	700	779	2.4%
Middle East	26	26	26	27	28	28	29	0.3%
World	15,804	15,905	16,897	17,634	18,111	18,510	18,812	0.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth 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	110	56	24	11	4	4	-10.3%
Natural gas	852	746	672	624	655	686	708	-0.7%
Coal	907	825	485	505	529	510	482	-2.2%
Total	1,851	1,681	1,213	1,153	1,195	1,200	1,194	-1.6%
United States								
Liquid fuels	8	8	6	5	5	4	4	-3.0%
Natural gas	646	527	449	402	423	448	465	-1.2%
Coal	842	773	416	382	340	312	272	-3.9%
Total	1,496	1,308	870	790	768	764	741	-2.5%
Canada								
Liquid fuels	2	2	0	0	0	0	0	-9.8%
Natural gas	27	29	5	2	3	2	3	-7.7%
Coal	33	16	0	0	0	0	0	-100.0%
Total	61	48	5	2	3	2	3	-10.3%
Mexico								
Liquid fuels	28	36	19	9	3	0	0	-18.3%
Natural gas	70	73	83	89	104	113	119	1.9%
Coal	7	8	19	21	21	21	21	4.1%
Total	105	117	121	120	129	134	141	1.1%
Brazil								
Liquid fuels	10	14	6	1	0	0	0	-10.7%
Natural gas	28	36	46	37	31	29	27	-0.2%
Coal	9	10	12	14	32	14	14	1.8%
Total	47	60	65	52	63	44	42	-0.4%
Other Americas								
Liquid fuels	44	50	25	8	3	0	0	-17.4%
Natural gas	81	80	90	93	93	93	93	0.5%
Coal	17	19	38	88	136	162	175	8.6%
Total	142	149	153	190	232	256	268	2.3%
Europe and Eurasia								
Liquid fuels	58	80	82	57	44	43	41	-1.2%
Natural gas	701	710	770	832	911	990	1,099	1.6%
Coal	848	821	681	656	769	817	799	-0.2%
Total	1,607	1,611	1,533	1,545	1,724	1,850	1,939	0.7%
Western Europe								
Liquid fuels	40	57	63	48	37	36	36	-0.4%
Natural gas	263	297	365	358	354	352	355	1.1%
Coal	481	455	330	334	422	427	405	-0.6%
Total	784	809	758	740	813	815	796	0.1%
Russia								
Liquid fuels	13	19	16	6	5	3	2	-6.3%
Natural gas	315	299	305	351	391	418	465	1.4%
Coal	179	193	171	150	175	219	219	0.7%
Total	508	511	491	507	571	641	686	1.1%
Eastern Europe and Eurasia								
Liquid fuels	4	4	3	3	3	3	3	-0.8%
Natural gas	123	113	100	124	166	220	280	3.0%
Coal	187	173	181	172	171	172	175	-0.2%
Total	315	290	284	298	340	395	458	1.3%
Asia Pacific								

Liquid fuels	49	55	33	18	10	8	6	-7.1%
Natural gas	618	659	694	722	867	1,123	1,465	3.1%
Coal	7,386	7,515	8,666	9,094	9,119	9,112	9,060	0.7%
Total	8,052	8,230	9,393	9,834	9,996	10,242	10,531	1.0%
Japan								
Liquid fuels	9	13	9	5	3	3	3	-4.0%
Natural gas	145	145	134	117	111	92	92	-1.6%
Coal	251	249	147	168	168	202	208	-0.7%
Total	406	406	290	290	281	297	303	-1.0%
South Korea								
Liquid fuels	2	3	4	3	3	3	3	1.3%
Natural gas	69	65	62	56	51	51	53	-0.9%
Coal	130	130	133	142	147	147	144	0.4%
Total	202	198	199	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	15	15	15	-1.4%
Coal	123	112	128	137	139	137	138	0.4%
Total	145	134	150	155	153	152	153	0.2%
China								
Liquid fuels	2	2	1	0	0	0	0	-10.7%
Natural gas	121	151	180	266	425	700	1,039	8.0%
Coal	5,206	5,279	5,835	5,879	5,634	5,438	5,261	0.0%
Total	5,328	5,432	6,016	6,146	6,059	6,138	6,301	0.6%
India								
Liquid fuels	3	2	1	0	0	0	0	-14.5%
Natural gas	24	24	46	46	46	46	46	2.4%
Coal	1,077	1,141	1,492	1,595	1,678	1,554	1,434	1.0%
Total	1,104	1,167	1,538	1,641	1,724	1,600	1,480	1.1%
Other Asia Pacific								
Liquid fuels	33	34	18	10	5	2	0	-14.5%
Natural gas	237	254	249	219	219	220	220	-0.3%
Coal	598	606	931	1,173	1,354	1,634	1,875	4.2%
Total	867	893	1,199	1,402	1,578	1,855	2,095	3.2%
Africa and Middle East								
Liquid fuels	205	230	119	50	21	8	2	-15.2%
Natural gas	587	612	640	708	757	824	893	1.5%
Coal	212	186	219	251	269	270	267	0.8%
Total	1,004	1,028	978	1,009	1,048	1,101	1,162	0.5%
Africa								
Liquid fuels	31	31	12	2	0	0	0	-16.4%
Natural gas	166	167	172	193	215	253	299	2.1%
Coal	212	185	219	251	269	269	267	0.8%
Total	409	383	402	446	485	523	565	1.2%
Middle East								
Liquid fuels	174	200	107	48	21	8	2	-15.0%
Natural gas	421	445	468	516	542	571	594	1.2%
Coal	0	0	0	0	0	0	0	-5.9%
Total	595	645	576	564	563	579	596	0.0%
World								
Liquid fuels	404	475	290	148	87	63	54	-7.0%
Natural gas	2,757	2,727	2,775	2,887	3,190	3,622	4,165	1.5%
Coal	9,353	9,347	10,051	10,506	10,686	10,708	10,608	0.5%
Total	12,514	12,550	13,117	13,541	13,963	14,393	14,827	0.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	1,036	1,059	1,097	1,130	1,157	1,180	1,198	0.5%
United States	333	340	352	364	375	385	396	0.6%
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	929	932	934	935	933	0.1%
Western Europe	633	636	639	641	642	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	1,773	1,969	2,171	2,378	2,584	2,788	1.9%
Africa	1,386	1,486	1,661	1,843	2,031	2,221	2,410	2.0%
Middle East	273	287	308	328	346	363	378	1.2%
World	7,902	8,113	8,468	8,801	9,109	9,389	9,632	0.7%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth 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	\$5,273	\$5,969	\$6,597	\$7,309	\$8,121	\$8,994	2.2%
Non-energy-intensive manufacturing	\$6,357	\$7,037	\$8,151	\$9,299	\$10,673	\$12,228	\$13,993	2.9%
Nonmanufacturing	\$5,265	\$5,770	\$6,391	\$7,095	\$7,920	\$8,838	\$9,851	2.3%
Services	\$40,511	\$44,554	\$50,435	\$56,521	\$63,641	\$71,513	\$80,138	2.5%
Total	\$57,079	\$62,633	\$70,946	\$79,512	\$89,543	\$100,701	\$112,976	2.5%
United States								
Energy-intensive manufacturing	\$2,388	\$2,533	\$2,775	\$2,970	\$3,243	\$3,574	\$3,927	1.8%
Non-energy-intensive manufacturing	\$3,493	\$3,980	\$4,556	\$5,137	\$5,897	\$6,768	\$7,749	2.9%
Nonmanufacturing	\$2,394	\$2,746	\$2,984	\$3,282	\$3,697	\$4,184	\$4,746	2.5%
Services	\$28,881	\$32,055	\$35,684	\$39,445	\$44,137	\$49,428	\$55,296	2.3%
Total	\$37,155	\$41,314	\$45,999	\$50,835	\$56,974	\$63,954	\$71,719	2.4%
Canada								
Energy-intensive manufacturing	\$256	\$269	\$316	\$359	\$406	\$458	\$510	2.5%
Non-energy-intensive manufacturing	\$332	\$363	\$427	\$485	\$546	\$611	\$678	2.6%
Nonmanufacturing	\$498	\$506	\$557	\$615	\$674	\$734	\$797	1.7%
Services	\$1,724	\$1,843	\$2,137	\$2,399	\$2,689	\$3,008	\$3,359	2.4%
Total	\$2,810	\$2,981	\$3,437	\$3,858	\$4,315	\$4,810	\$5,344	2.3%
Mexico								
Energy-intensive manufacturing	\$535	\$570	\$662	\$751	\$849	\$968	\$1,115	2.7%
Non-energy-intensive manufacturing	\$983	\$1,068	\$1,222	\$1,404	\$1,625	\$1,901	\$2,251	3.0%
Nonmanufacturing	\$466	\$495	\$563	\$631	\$693	\$758	\$826	2.1%
Services	\$1,999	\$2,125	\$2,479	\$2,876	\$3,308	\$3,774	\$4,279	2.8%
Total	\$3,982	\$4,258	\$4,926	\$5,662	\$6,475	\$7,401	\$8,471	2.7%
Brazil								
Energy-intensive manufacturing	\$868	\$925	\$1,061	\$1,168	\$1,250	\$1,325	\$1,388	1.7%
Non-energy-intensive manufacturing	\$612	\$672	\$804	\$927	\$1,035	\$1,138	\$1,238	2.5%
Nonmanufacturing	\$710	\$756	\$850	\$940	\$1,024	\$1,111	\$1,199	1.9%
Services	\$3,392	\$3,629	\$4,211	\$4,732	\$5,161	\$5,543	\$5,877	2.0%
Total	\$5,583	\$5,981	\$6,926	\$7,767	\$8,469	\$9,118	\$9,703	2.0%
Other Americas								
Energy-intensive manufacturing	\$899	\$976	\$1,156	\$1,348	\$1,561	\$1,796	\$2,054	3.0%
Non-energy-intensive manufacturing	\$937	\$954	\$1,142	\$1,346	\$1,570	\$1,810	\$2,076	2.9%
Nonmanufacturing	\$1,197	\$1,268	\$1,437	\$1,627	\$1,832	\$2,051	\$2,282	2.3%
Services	\$4,515	\$4,902	\$5,923	\$7,068	\$8,346	\$9,761	\$11,326	3.3%
Total	\$7,548	\$8,099	\$9,659	\$11,391	\$13,310	\$15,418	\$17,738	3.1%
Europe and Eurasia								
Energy-intensive manufacturing	\$6,107	\$6,369	\$6,817	\$7,451	\$8,184	\$9,023	\$9,961	1.8%
Non-energy-intensive manufacturing	\$9,079	\$9,800	\$10,823	\$12,063	\$13,430	\$14,958	\$16,634	2.2%
Nonmanufacturing	\$6,409	\$6,696	\$7,516	\$8,268	\$9,088	\$9,947	\$10,872	1.9%
Services	\$36,028	\$38,263	\$42,890	\$47,655	\$53,107	\$59,335	\$66,435	2.2%
Total	\$57,624	\$61,128	\$68,047	\$75,437	\$83,809	\$93,263	\$103,901	2.1%
Western Europe								
Energy-intensive manufacturing	\$4,982	\$5,091	\$5,341	\$5,727	\$6,167	\$6,662	\$7,234	1.3%
Non-energy-intensive manufacturing	\$8,439	\$9,057	\$9,973	\$11,078	\$12,276	\$13,598	\$15,049	2.1%
Nonmanufacturing	\$4,377	\$4,591	\$5,054	\$5,504	\$5,985	\$6,478	\$7,006	1.7%
Services	\$31,097	\$32,822	\$36,553	\$40,218	\$44,257	\$48,690	\$53,546	2.0%
Total	\$48,895	\$51,560	\$56,921	\$62,527	\$68,684	\$75,428	\$82,835	1.9%
Russia								
Energy-intensive manufacturing	\$895	\$1,007	\$1,137	\$1,296	\$1,474	\$1,678	\$1,882	2.7%
Non-energy-intensive manufacturing	\$544	\$621	\$695	\$795	\$923	\$1,075	\$1,237	3.0%

Nonmanufacturing	\$1,282	\$1,267	\$1,373	\$1,448	\$1,521	\$1,606	\$1,692	1.0%
Services	\$3,823	\$4,153	\$4,596	\$5,019	\$5,537	\$6,170	\$6,920	2.1%
Total	\$6,544	\$7,048	\$7,801	\$8,558	\$9,455	\$10,529	\$11,731	2.1%
Eastern Europe and Eurasia								
Energy-intensive manufacturing	\$230	\$271	\$340	\$429	\$543	\$683	\$845	4.8%
Non-energy-intensive manufacturing	\$96	\$122	\$155	\$189	\$232	\$286	\$348	4.7%
Nonmanufacturing	\$750	\$838	\$1,089	\$1,317	\$1,581	\$1,863	\$2,174	3.9%
Services	\$1,109	\$1,288	\$1,741	\$2,417	\$3,314	\$4,476	\$5,968	6.2%
Total	\$2,185	\$2,520	\$3,324	\$4,352	\$5,670	\$7,307	\$9,336	5.3%
Asia Pacific								
Energy-intensive manufacturing	\$21,178	\$24,250	\$30,011	\$36,343	\$42,995	\$50,365	\$58,173	3.7%
Non-energy-intensive manufacturing	\$42,101	\$48,862	\$61,417	\$74,102	\$86,212	\$98,512	\$109,811	3.5%
Nonmanufacturing	\$24,048	\$26,544	\$32,364	\$38,133	\$43,931	\$50,295	\$56,596	3.1%
Services	\$58,791	\$68,681	\$90,796	\$115,358	\$141,865	\$171,540	\$202,266	4.5%
Total	\$146,118	\$168,336	\$214,589	\$263,936	\$315,004	\$370,711	\$426,845	3.9%
Japan								
Energy-intensive manufacturing	\$941	\$976	\$975	\$965	\$966	\$966	\$971	0.1%
Non-energy-intensive manufacturing	\$2,737	\$3,029	\$3,250	\$3,392	\$3,506	\$3,611	\$3,729	1.1%
Nonmanufacturing	\$670	\$688	\$724	\$739	\$753	\$764	\$779	0.5%
Services	\$5,789	\$6,039	\$6,397	\$6,570	\$6,753	\$6,937	\$7,159	0.8%
Total	\$10,138	\$10,733	\$11,346	\$11,665	\$11,977	\$12,278	\$12,639	0.8%
South Korea								
Energy-intensive manufacturing	\$1,067	\$1,133	\$1,194	\$1,236	\$1,246	\$1,245	\$1,236	0.5%
Non-energy-intensive manufacturing	\$1,692	\$1,814	\$2,098	\$2,293	\$2,447	\$2,596	\$2,743	1.7%
Nonmanufacturing	\$362	\$380	\$398	\$419	\$435	\$450	\$463	0.9%
Services	\$2,565	\$2,740	\$3,022	\$3,268	\$3,443	\$3,618	\$3,781	1.4%
Total	\$5,686	\$6,067	\$6,711	\$7,217	\$7,572	\$7,909	\$8,224	1.3%
Australia and New Zealand								
Energy-intensive manufacturing	\$171	\$190	\$214	\$238	\$264	\$289	\$314	2.2%
Non-energy-intensive manufacturing	\$131	\$139	\$156	\$173	\$191	\$207	\$223	1.9%
Nonmanufacturing	\$590	\$630	\$744	\$836	\$919	\$999	\$1,073	2.2%
Services	\$1,958	\$2,139	\$2,522	\$2,885	\$3,225	\$3,552	\$3,875	2.5%
Total	\$2,850	\$3,098	\$3,637	\$4,133	\$4,599	\$5,046	\$5,484	2.4%
China								
Energy-intensive manufacturing	\$10,799	\$12,425	\$14,638	\$16,581	\$18,226	\$19,848	\$21,143	2.4%
Non-energy-intensive manufacturing	\$25,771	\$30,556	\$38,364	\$45,937	\$52,458	\$58,676	\$63,311	3.3%
Nonmanufacturing	\$12,744	\$14,029	\$16,685	\$19,068	\$21,239	\$23,677	\$25,866	2.6%
Services	\$25,046	\$29,742	\$40,742	\$53,269	\$66,334	\$81,023	\$95,486	4.9%
Total	\$74,360	\$86,753	\$110,429	\$134,855	\$158,257	\$183,223	\$205,806	3.7%
India								
Energy-intensive manufacturing	\$3,724	\$4,376	\$6,422	\$9,024	\$11,948	\$15,333	\$19,223	6.0%
Non-energy-intensive manufacturing	\$3,007	\$3,489	\$5,147	\$7,194	\$9,552	\$12,282	\$15,467	6.0%
Nonmanufacturing	\$4,474	\$5,079	\$6,690	\$8,483	\$10,319	\$12,331	\$14,409	4.3%
Services	\$7,664	\$9,731	\$14,151	\$19,254	\$24,980	\$31,393	\$38,389	5.9%
Total	\$18,869	\$22,675	\$32,411	\$43,955	\$56,798	\$71,338	\$87,488	5.6%
Other Asia Pacific								
Energy-intensive manufacturing	\$4,475	\$5,148	\$6,568	\$8,299	\$10,345	\$12,684	\$15,285	4.5%
Non-energy-intensive manufacturing	\$8,764	\$9,834	\$12,401	\$15,113	\$18,059	\$21,140	\$24,338	3.7%
Nonmanufacturing	\$5,207	\$5,737	\$7,123	\$8,589	\$10,267	\$12,075	\$14,005	3.6%
Services	\$15,769	\$18,290	\$23,962	\$30,112	\$37,130	\$45,019	\$53,577	4.5%
Total	\$34,215	\$39,010	\$50,055	\$62,113	\$75,801	\$90,918	\$107,205	4.2%
Africa and Middle East								
Energy-intensive manufacturing	\$2,927	\$3,175	\$3,670	\$4,271	\$4,892	\$5,546	\$6,236	2.7%
Non-energy-intensive manufacturing	\$1,722	\$1,899	\$2,227	\$2,630	\$3,072	\$3,525	\$4,007	3.1%
Nonmanufacturing	\$5,587	\$6,087	\$6,793	\$7,534	\$8,314	\$9,118	\$9,922	2.1%
Services	\$12,156	\$13,439	\$16,070	\$19,047	\$22,168	\$25,389	\$28,754	3.1%
Total	\$22,392	\$24,600	\$28,760	\$33,482	\$38,446	\$43,578	\$48,919	2.8%
Africa								

Energy-intensive manufacturing	\$1,364	\$1,536	\$1,874	\$2,265	\$2,702	\$3,185	\$3,719	3.6%
Non-energy-intensive manufacturing	\$885	\$998	\$1,215	\$1,468	\$1,755	\$2,069	\$2,413	3.6%
Nonmanufacturing	\$3,003	\$3,298	\$3,770	\$4,283	\$4,832	\$5,406	\$6,007	2.5%
Services	\$6,408	\$6,967	\$8,607	\$10,440	\$12,493	\$14,753	\$17,255	3.6%
Total	\$11,660	\$12,800	\$15,467	\$18,457	\$21,782	\$25,414	\$29,394	3.4%
Middle East								
Energy-intensive manufacturing	\$1,563	\$1,639	\$1,797	\$2,007	\$2,190	\$2,361	\$2,517	1.7%
Non-energy-intensive manufacturing	\$837	\$900	\$1,012	\$1,161	\$1,316	\$1,455	\$1,595	2.3%
Nonmanufacturing	\$2,584	\$2,789	\$3,022	\$3,251	\$3,483	\$3,712	\$3,915	1.5%
Services	\$5,748	\$6,472	\$7,463	\$8,607	\$9,675	\$10,636	\$11,499	2.5%
Total	\$10,732	\$11,800	\$13,294	\$15,025	\$16,664	\$18,164	\$19,525	2.2%
World								
Energy-intensive manufacturing	\$35,158	\$39,067	\$46,468	\$54,663	\$63,380	\$73,056	\$83,364	3.1%
Non-energy-intensive manufacturing	\$59,259	\$67,598	\$82,618	\$98,093	\$113,387	\$129,222	\$144,444	3.2%
Nonmanufacturing	\$41,308	\$45,097	\$53,064	\$61,031	\$69,253	\$78,198	\$87,240	2.7%
Services	\$147,487	\$164,937	\$200,191	\$238,581	\$280,781	\$327,778	\$377,593	3.4%
Total	\$283,213	\$316,698	\$382,341	\$452,368	\$526,801	\$608,253	\$692,641	3.2%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	467	491	511	528	543	555	564	0.7%
United States	158	164	165	170	174	178	182	0.5%
Canada	20	20	22	23	24	25	26	0.9%
Mexico	57	59	63	66	68	69	70	0.7%
Brazil	98	103	107	108	108	107	104	0.2%
Other Americas	134	146	155	162	169	176	182	1.1%
Europe and Eurasia	415	420	429	433	434	432	430	0.1%
Western Europe	289	292	296	296	295	292	289	0.0%
Russia	72	72	71	70	68	65	61	-0.6%
Eastern Europe and Eurasia	54	56	62	67	71	75	79	1.4%
Asia Pacific	1,855	1,928	2,011	2,068	2,095	2,117	2,118	0.5%
Japan	67	68	66	62	58	54	51	-1.0%
South Korea	28	28	28	26	25	23	22	-0.9%
Australia and New Zealand	16	17	19	21	22	22	23	1.2%
China	750	761	764	755	722	691	649	-0.5%
India	481	510	554	591	629	664	693	1.3%
Other Asia Pacific	512	543	580	612	640	663	681	1.0%
Africa and Middle East	546	597	689	791	898	1,010	1,125	2.6%
Africa	469	515	600	695	797	904	1,016	2.8%
Middle East	77	82	89	96	102	106	109	1.3%
World	3,283	3,437	3,641	3,820	3,970	4,115	4,237	0.9%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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 Economic Growth case

2015 dollars per person (PPP)

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$21,781	\$22,475	\$23,820	\$25,471	\$27,301	\$29,300	\$31,400	1.3%
United States	\$46,706	\$49,534	\$52,166	\$55,107	\$58,581	\$62,333	\$66,025	1.2%
Canada	\$27,994	\$28,177	\$30,219	\$32,588	\$35,050	\$37,648	\$40,404	1.3%
Mexico	\$16,588	\$15,704	\$17,295	\$19,205	\$21,276	\$23,654	\$26,422	1.7%
Brazil	\$11,919	\$11,654	\$12,144	\$13,114	\$13,857	\$14,531	\$15,169	0.9%
Other Americas	\$3,825	\$3,742	\$4,141	\$4,554	\$4,956	\$5,354	\$5,771	1.5%
Europe and Eurasia	\$20,353	\$20,911	\$22,761	\$24,938	\$27,438	\$30,340	\$33,722	1.8%
Western Europe	\$24,018	\$24,405	\$26,246	\$28,436	\$30,907	\$33,720	\$36,935	1.5%
Russia	\$15,436	\$16,387	\$18,560	\$20,431	\$22,445	\$24,714	\$27,188	2.0%
Eastern Europe and Eurasia	\$9,016	\$9,971	\$11,755	\$14,318	\$17,542	\$21,510	\$26,420	3.9%
Asia Pacific	\$8,186	\$9,231	\$11,805	\$14,774	\$18,007	\$21,677	\$25,625	4.2%
Japan	\$22,970	\$24,179	\$26,157	\$27,571	\$29,076	\$30,613	\$32,383	1.2%
South Korea	\$22,258	\$23,170	\$25,515	\$28,108	\$30,214	\$32,404	\$34,874	1.6%
Australia and New Zealand	\$32,814	\$32,529	\$36,394	\$39,382	\$41,844	\$44,139	\$46,552	1.3%
China	\$10,529	\$12,352	\$16,469	\$21,450	\$26,964	\$33,475	\$40,565	4.9%
India	\$5,497	\$6,380	\$8,787	\$11,653	\$14,822	\$18,413	\$22,388	5.1%
Other Asia Pacific	\$5,849	\$6,374	\$7,826	\$9,388	\$11,124	\$13,028	\$15,067	3.4%
Africa and Middle East	\$2,246	\$2,323	\$2,496	\$2,678	\$2,884	\$3,101	\$3,333	1.4%
Africa	\$1,673	\$1,748	\$1,922	\$2,113	\$2,323	\$2,541	\$2,779	1.8%
Middle East	\$5,155	\$5,300	\$5,588	\$5,852	\$6,171	\$6,526	\$6,861	1.0%
World	\$10,139	\$10,779	\$12,397	\$14,239	\$16,207	\$18,385	\$20,675	2.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hm_230821.151836 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.