

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

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	152.6	149.9	150.5	152.4	154.5	157.9	162.4	0.2%
United States	98.9	95.6	94.5	94.6	94.7	96.0	98.4	0.0%
Canada	14.7	14.5	15.1	15.8	16.6	17.4	18.1	0.8%
Mexico	7.7	7.7	7.9	8.1	8.4	8.7	8.9	0.5%
Brazil	14.9	15.5	15.7	16.0	16.2	16.4	16.6	0.4%
Other Americas	16.4	16.6	17.2	17.9	18.6	19.5	20.4	0.8%
Europe and Eurasia	130.0	131.4	129.7	130.2	131.8	133.9	135.5	0.1%
Western Europe	84.2	85.4	84.3	84.2	84.8	85.7	86.0	0.1%
Russia	33.5	33.4	32.6	32.6	33.0	33.4	33.8	0.0%
Eastern Europe and Eurasia	12.3	12.6	12.8	13.4	14.0	14.8	15.7	0.9%
Asia Pacific	292.6	304.9	319.2	330.2	337.1	345.8	351.2	0.7%
Japan	18.5	18.4	16.6	15.8	15.2	14.7	14.4	-0.9%
South Korea	13.0	13.3	13.5	13.4	13.3	13.1	13.0	0.0%
Australia and New Zealand	7.2	7.2	7.5	7.7	8.0	8.2	8.5	0.6%
China	172.4	177.1	176.3	173.3	168.3	164.1	159.4	-0.3%
India	38.3	42.7	53.4	63.4	72.5	82.4	89.8	3.1%
Other Asia Pacific	43.2	46.2	51.9	56.6	59.9	63.3	66.1	1.5%
Africa and Middle East	62.6	66.7	70.4	74.6	79.7	84.3	89.5	1.3%
Africa	24.3	25.9	28.8	31.5	35.1	38.3	42.2	2.0%
Middle East	38.3	40.7	41.6	43.1	44.5	46.0	47.2	0.8%
World	637.8	652.8	669.8	687.3	703.0	721.9	738.6	0.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

Note: Totals may not equal sum of components due to independent rounding. 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 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	56.6	54.8	53.7	53.3	53.7	54.8	-0.2%
Natural gas	45.7	42.6	41.8	40.9	42.0	42.6	43.8	-0.2%
Coal	11.3	9.9	5.3	5.3	5.3	5.3	5.5	-2.6%
Nuclear	9.4	9.3	9.4	8.6	7.4	7.2	6.9	-1.1%
Other	28.6	31.3	39.2	43.8	46.4	49.2	51.5	2.1%
Total	152.6	149.9	150.5	152.4	154.5	157.9	162.4	0.2%
Europe and Eurasia								
Liquid fuels	38.0	38.0	36.2	34.6	33.8	33.5	33.3	-0.5%
Natural gas	43.7	44.1	44.4	44.4	44.6	45.3	46.0	0.2%
Coal	16.5	16.0	14.2	14.2	14.2	14.1	15.0	-0.3%
Nuclear	10.4	10.6	11.1	11.3	11.2	11.0	10.2	-0.1%
Other	21.4	22.6	23.7	25.6	27.9	30.0	31.0	1.3%
Total	130.0	131.4	129.7	130.2	131.8	133.9	135.5	0.1%
Asia Pacific								
Liquid fuels	71.4	76.2	79.8	82.0	83.2	84.5	85.1	0.6%
Natural gas	35.2	37.1	38.6	39.1	39.7	41.2	42.3	0.7%
Coal	133.7	130.8	130.8	129.9	125.6	121.5	117.0	-0.5%
Nuclear	7.6	8.7	10.5	12.0	13.2	14.0	14.9	2.4%
Other	44.6	52.0	59.5	67.1	75.4	84.7	91.8	2.6%
Total	292.6	304.9	319.2	330.2	337.1	345.8	351.2	0.7%
Africa and Middle East								
Liquid fuels	23.3	24.7	24.5	24.9	26.0	27.4	28.8	0.8%
Natural gas	28.6	29.8	31.1	32.7	34.2	35.9	37.4	1.0%
Coal	4.6	4.5	5.1	5.4	6.3	6.6	7.4	1.8%
Nuclear	0.4	0.6	0.9	1.2	1.4	1.4	1.4	4.9%
Other	5.7	7.1	8.8	10.3	11.6	12.9	14.4	3.3%
Total	62.6	66.7	70.4	74.6	79.7	84.3	89.5	1.3%
World								
Liquid fuels	190.4	195.6	195.3	195.3	196.3	199.1	202.0	0.2%
Natural gas	153.2	153.6	155.9	157.2	160.6	165.0	169.5	0.4%
Coal	166.0	161.3	155.4	154.8	151.5	147.5	144.9	-0.5%
Nuclear	27.7	29.3	31.9	33.2	33.2	33.6	33.4	0.7%
Other	100.4	113.0	131.3	146.9	161.4	176.8	188.7	2.3%
Total	637.8	652.8	669.8	687.3	703.0	721.9	738.6	0.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$32,088	\$32,520	\$34,952	\$37,351	\$40,127	\$43,308	\$46,895	1.4%
United States	\$20,474	\$20,445	\$21,924	\$23,519	\$25,498	\$27,832	\$30,536	1.4%
Canada	\$1,791	\$1,854	\$2,039	\$2,178	\$2,318	\$2,460	\$2,607	1.3%
Mexico	\$2,367	\$2,443	\$2,571	\$2,673	\$2,766	\$2,850	\$2,930	0.8%
Brazil	\$3,182	\$3,283	\$3,459	\$3,543	\$3,585	\$3,619	\$3,622	0.5%
Other Americas	\$4,274	\$4,495	\$4,959	\$5,439	\$5,961	\$6,548	\$7,200	1.9%
Europe and Eurasia	\$31,731	\$32,742	\$34,141	\$35,320	\$36,622	\$37,937	\$39,172	0.8%
Western Europe	\$26,270	\$26,974	\$28,020	\$28,866	\$29,780	\$30,664	\$31,451	0.6%
Russia	\$3,763	\$3,892	\$3,907	\$3,831	\$3,770	\$3,723	\$3,681	-0.1%
Eastern Europe and Eurasia	\$1,698	\$1,876	\$2,214	\$2,624	\$3,072	\$3,550	\$4,040	3.1%
Asia Pacific	\$58,708	\$65,952	\$78,124	\$89,014	\$98,458	\$107,450	\$114,561	2.4%
Japan	\$5,292	\$5,428	\$5,473	\$5,351	\$5,239	\$5,122	\$5,028	-0.2%
South Korea	\$2,292	\$2,406	\$2,546	\$2,616	\$2,625	\$2,627	\$2,616	0.5%
Australia and New Zealand	\$1,524	\$1,624	\$1,840	\$2,010	\$2,156	\$2,288	\$2,416	1.7%
China	\$26,318	\$29,711	\$34,728	\$38,888	\$41,750	\$44,268	\$45,497	2.0%
India	\$10,049	\$11,832	\$15,547	\$19,315	\$22,956	\$26,562	\$29,785	4.0%
Other Asia Pacific	\$13,234	\$14,951	\$17,991	\$20,834	\$23,731	\$26,583	\$29,218	2.9%
Africa and Middle East	\$12,837	\$13,938	\$15,492	\$16,967	\$18,328	\$19,616	\$20,848	1.7%
Africa	\$7,052	\$7,667	\$8,681	\$9,658	\$10,602	\$11,525	\$12,419	2.0%
Middle East	\$5,784	\$6,271	\$6,810	\$7,309	\$7,726	\$8,092	\$8,429	1.4%
World	\$135,363	\$145,153	\$162,709	\$178,653	\$193,536	\$208,312	\$221,476	1.8%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; 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, Low Economic Growth case

billion 2015 dollars

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$27,881	\$28,133	\$30,218	\$32,305	\$34,761	\$37,590	\$40,800	1.4%
United States	\$20,474	\$20,445	\$21,924	\$23,519	\$25,498	\$27,832	\$30,536	1.4%
Canada	\$1,748	\$1,810	\$1,990	\$2,125	\$2,263	\$2,401	\$2,544	1.3%
Mexico	\$1,242	\$1,282	\$1,349	\$1,403	\$1,451	\$1,496	\$1,538	0.8%
Brazil	\$1,900	\$1,960	\$2,066	\$2,115	\$2,140	\$2,161	\$2,162	0.5%
Other Americas	\$2,516	\$2,636	\$2,889	\$3,143	\$3,409	\$3,700	\$4,019	1.7%
Europe and Eurasia	\$22,950	\$23,594	\$24,539	\$25,291	\$26,143	\$27,020	\$27,835	0.7%
Western Europe	\$20,884	\$21,414	\$22,223	\$22,846	\$23,545	\$24,252	\$24,889	0.6%
Russia	\$1,456	\$1,506	\$1,512	\$1,482	\$1,459	\$1,441	\$1,425	-0.1%
Eastern Europe and Eurasia	\$610	\$674	\$804	\$963	\$1,139	\$1,327	\$1,521	3.3%
Asia Pacific	\$32,180	\$35,744	\$41,398	\$46,203	\$50,116	\$53,751	\$56,392	2.0%
Japan	\$4,521	\$4,638	\$4,675	\$4,572	\$4,476	\$4,376	\$4,296	-0.2%
South Korea	\$1,738	\$1,825	\$1,930	\$1,984	\$1,991	\$1,992	\$1,984	0.5%
Australia and New Zealand	\$1,671	\$1,780	\$2,018	\$2,205	\$2,365	\$2,510	\$2,650	1.7%
China	\$16,124	\$18,203	\$21,277	\$23,826	\$25,580	\$27,122	\$27,875	2.0%
India	\$2,927	\$3,448	\$4,530	\$5,629	\$6,690	\$7,741	\$8,680	4.0%
Other Asia Pacific	\$5,200	\$5,850	\$6,967	\$7,989	\$9,015	\$10,010	\$10,908	2.7%
Africa and Middle East	\$5,524	\$5,984	\$6,628	\$7,255	\$7,843	\$8,401	\$8,941	1.7%
Africa	\$2,723	\$2,940	\$3,324	\$3,699	\$4,071	\$4,438	\$4,796	2.0%
Middle East	\$2,801	\$3,044	\$3,305	\$3,555	\$3,772	\$3,963	\$4,145	1.4%
World	\$88,536	\$93,455	\$102,783	\$111,054	\$118,863	\$126,761	\$133,967	1.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; 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, Low Economic Growth case

million barrels per day

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	30.6	30.2	29.5	29.0	28.9	29.2	29.9	-0.1%
United States	19.9	19.4	18.9	18.4	18.2	18.2	18.6	-0.2%
Canada	2.3	2.3	2.3	2.4	2.4	2.5	2.6	0.4%
Mexico	1.9	1.9	1.8	1.8	1.8	1.8	1.8	-0.1%
Brazil	3.0	3.1	3.0	3.0	2.9	3.0	3.0	0.0%
Other Americas	3.5	3.6	3.5	3.5	3.6	3.7	3.9	0.3%
Europe and Eurasia	18.8	18.7	17.8	17.1	16.7	16.6	16.5	-0.5%
Western Europe	14.3	14.1	13.2	12.6	12.1	11.9	11.8	-0.7%
Russia	3.4	3.5	3.4	3.3	3.3	3.3	3.2	-0.2%
Eastern Europe and Eurasia	1.1	1.1	1.2	1.2	1.3	1.4	1.5	1.2%
Asia Pacific	36.1	38.6	40.5	41.7	42.3	43.1	43.5	0.7%
Japan	3.4	3.2	2.9	2.7	2.5	2.4	2.3	-1.4%
South Korea	2.6	2.6	2.6	2.6	2.5	2.4	2.3	-0.5%
Australia and New Zealand	1.2	1.2	1.3	1.3	1.3	1.3	1.3	0.3%
China	15.2	16.4	16.7	16.4	15.5	14.8	14.1	-0.3%
India	5.1	5.8	7.0	8.3	9.6	10.9	11.9	3.1%
Other Asia Pacific	8.7	9.3	9.9	10.4	10.9	11.3	11.6	1.1%
Africa and Middle East	13.6	14.3	14.3	14.6	15.2	15.8	16.6	0.7%
Africa	4.4	4.8	5.0	5.4	5.9	6.4	7.0	1.7%
Middle East	9.1	9.6	9.3	9.2	9.3	9.4	9.5	0.2%
World	99.0	101.8	102.1	102.4	103.1	104.8	106.5	0.3%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939; 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, Low Economic Growth case

trillion cubic feet

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	45.0	42.2	41.4	40.9	41.9	42.6	43.9	-0.1%
United States	32.3	29.2	27.5	26.6	27.3	27.7	28.6	-0.4%
Canada	4.3	4.3	4.8	5.0	5.2	5.4	5.8	1.1%
Mexico	2.7	2.8	2.9	2.9	3.1	3.2	3.2	0.6%
Brazil	1.3	1.5	1.7	1.5	1.4	1.3	1.2	-0.2%
Other Americas	4.3	4.4	4.5	4.8	4.9	5.0	5.1	0.6%
Europe and Eurasia	42.3	42.7	43.1	43.0	43.3	43.9	44.6	0.2%
Western Europe	19.8	20.4	21.3	20.9	20.7	20.6	20.5	0.1%
Russia	17.0	16.6	16.3	16.7	16.9	17.2	17.5	0.1%
Eastern Europe and Eurasia	5.5	5.7	5.5	5.4	5.6	6.1	6.6	0.7%
Asia Pacific	34.9	36.8	38.4	39.0	39.7	41.1	42.3	0.7%
Japan	4.1	4.1	3.9	3.5	3.3	3.2	3.1	-1.0%
South Korea	2.5	2.5	2.3	2.2	2.2	2.1	2.1	-0.6%
Australia and New Zealand	2.0	2.1	2.2	2.2	2.2	2.3	2.4	0.6%
China	14.1	14.9	15.2	15.6	15.8	16.4	16.8	0.6%
India	2.5	2.7	3.7	4.5	5.2	5.8	6.3	3.3%
Other Asia Pacific	9.7	10.5	11.1	10.9	11.0	11.4	11.7	0.7%
Africa and Middle East	28.4	29.5	30.8	32.3	33.8	35.4	36.8	0.9%
Africa	6.2	6.4	6.6	6.9	7.2	7.8	8.3	1.0%
Middle East	22.2	23.2	24.2	25.5	26.5	27.6	28.5	0.9%
World	150.5	151.2	153.6	155.2	158.7	163.1	167.7	0.4%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A7. World coal consumption by region, Low Economic Growth case

million short tons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	574	502	258	258	254	248	257	-2.8%
United States	499	435	196	186	164	145	137	-4.5%
Canada	25	15	5	5	5	5	5	-5.4%
Mexico	7	7	8	10	14	14	14	2.4%
Brazil	25	26	25	26	27	27	34	1.2%
Other Americas	17	18	24	31	45	57	67	4.9%
Europe and Eurasia	1,018	986	827	827	815	797	882	-0.5%
Western Europe	642	610	468	471	448	423	499	-0.9%
Russia	238	246	230	214	215	217	220	-0.3%
Eastern Europe and Eurasia	138	130	130	142	152	157	162	0.6%
Asia Pacific	6,695	6,560	6,619	6,601	6,402	6,212	5,988	-0.4%
Japan	193	190	131	114	108	102	97	-2.4%
South Korea	110	106	111	114	115	116	115	0.2%
Australia and New Zealand	100	91	103	112	114	113	113	0.4%
China	4,676	4,475	4,163	3,895	3,588	3,312	3,063	-1.5%
India	1,063	1,148	1,435	1,547	1,631	1,713	1,684	1.7%
Other Asia Pacific	551	550	676	819	846	855	916	1.8%
Africa and Middle East	177	170	198	205	246	253	285	1.7%
Africa	165	159	186	193	235	242	273	1.8%
Middle East	12	11	11	11	12	12	12	-0.1%
World	8,464	8,218	7,902	7,892	7,718	7,510	7,411	-0.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A8. World nuclear energy consumption by region (net nuclear electricity generation), Low Economic Growth case

billion kilowatthours

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	889	891	896	820	707	684	661	-1.1%
United States	772	782	758	681	594	594	583	-1.0%
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	954	-0.2%
Western Europe	734	723	733	727	720	702	616	-0.6%
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	3,020	3,142	3,150	3,184	3,169	0.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A9. World consumption of renewable energy by region, Low Economic Growth case

quadrillion British thermal units

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	28.6	31.3	39.2	43.8	46.4	49.2	51.5	2.1%
United States	11.4	14.0	20.9	24.2	25.5	27.0	28.4	3.3%
Canada	4.3	4.4	4.6	5.0	5.6	6.3	6.6	1.5%
Mexico	0.9	0.9	1.1	1.2	1.3	1.5	1.6	2.0%
Brazil	7.4	7.6	7.6	8.1	8.5	8.8	8.9	0.6%
Other Americas	4.5	4.5	5.0	5.3	5.5	5.7	6.0	1.0%
Europe and Eurasia	21.4	22.6	23.7	25.6	27.9	30.0	31.0	1.3%
Western Europe	18.4	19.7	20.7	22.6	24.7	26.6	27.5	1.4%
Russia	2.2	2.0	2.0	2.0	2.2	2.3	2.4	0.3%
Eastern Europe and Eurasia	0.9	1.0	1.0	1.1	1.1	1.1	1.1	0.9%
Asia Pacific	44.6	52.0	59.5	67.1	75.4	84.7	91.8	2.6%
Japan	2.4	2.2	2.2	2.6	3.0	3.3	3.3	1.2%
South Korea	0.6	0.6	0.7	0.8	0.9	1.1	1.2	2.3%
Australia and New Zealand	1.4	1.5	1.6	1.8	2.0	2.2	2.4	2.1%
China	26.6	31.4	34.8	36.0	37.6	39.0	39.8	1.4%
India	7.4	8.8	11.3	15.8	20.0	25.2	30.4	5.2%
Other Asia Pacific	6.3	7.4	8.9	10.1	11.8	13.8	14.6	3.1%
Africa and Middle East	5.7	7.1	8.8	10.3	11.6	12.9	14.4	3.3%
Africa	5.4	6.3	7.5	8.9	10.1	11.4	12.8	3.2%
Middle East	0.4	0.8	1.3	1.4	1.5	1.6	1.6	5.3%
World	100.4	113.0	131.3	146.9	161.4	176.8	188.7	2.3%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

million metric tons of carbon dioxide

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	6,992	6,620	5,970	5,823	5,833	5,866	5,987	-0.6%
United States	4,842	4,446	3,815	3,656	3,599	3,561	3,601	-1.1%
Canada	548	533	512	511	527	548	565	0.1%
Mexico	419	422	416	413	429	438	443	0.2%
Brazil	439	463	469	458	451	446	456	0.1%
Other Americas	744	756	759	783	827	874	921	0.8%
Europe and Eurasia	6,361	6,338	6,053	5,940	5,886	5,880	5,994	-0.2%
Western Europe	3,803	3,784	3,564	3,438	3,331	3,259	3,304	-0.5%
Russia	1,815	1,812	1,754	1,738	1,746	1,761	1,780	-0.1%
Eastern Europe and Eurasia	742	743	735	765	808	860	911	0.7%
Asia Pacific	18,703	18,844	19,153	19,248	18,973	18,764	18,454	0.0%
Japan	1,036	1,010	845	762	715	680	654	-1.6%
South Korea	639	639	637	628	614	602	589	-0.3%
Australia and New Zealand	404	391	413	420	421	423	427	0.2%
China	11,498	11,332	10,785	10,268	9,590	8,994	8,438	-1.1%
India	2,446	2,669	3,319	3,700	4,041	4,376	4,495	2.2%
Other Asia Pacific	2,680	2,802	3,154	3,469	3,592	3,689	3,851	1.3%
Africa and Middle East	3,610	3,768	3,865	4,000	4,241	4,449	4,702	0.9%
Africa	1,333	1,379	1,488	1,572	1,751	1,885	2,073	1.6%
Middle East	2,277	2,389	2,377	2,428	2,491	2,565	2,629	0.5%
World	35,666	35,569	35,042	35,011	34,933	34,959	35,138	-0.1%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A11. World carbon dioxide emissions from liquid fuels use by region, Low 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	3,417	3,276	3,179	3,137	3,144	3,195	-0.3%
United States	2,189	2,088	1,983	1,896	1,840	1,818	1,836	-0.6%
Canada	271	269	268	272	279	287	292	0.3%
Mexico	253	252	237	229	227	229	235	-0.3%
Brazil	310	323	318	313	312	313	314	0.0%
Other Americas	478	485	472	468	479	497	517	0.3%
Europe and Eurasia	2,474	2,474	2,347	2,233	2,169	2,142	2,124	-0.5%
Western Europe	1,905	1,893	1,775	1,672	1,605	1,571	1,548	-0.7%
Russia	435	440	426	408	401	395	388	-0.4%
Eastern Europe and Eurasia	134	142	146	153	163	176	189	1.2%
Asia Pacific	4,139	4,431	4,650	4,792	4,882	4,982	5,035	0.7%
Japan	404	384	353	325	305	290	278	-1.3%
South Korea	262	273	268	256	243	232	220	-0.6%
Australia and New Zealand	168	169	173	173	174	178	183	0.3%
China	1,579	1,716	1,738	1,699	1,609	1,534	1,454	-0.3%
India	610	695	837	989	1,137	1,280	1,393	3.0%
Other Asia Pacific	1,116	1,193	1,281	1,351	1,413	1,468	1,507	1.1%
Africa and Middle East	1,663	1,762	1,732	1,757	1,828	1,918	2,017	0.7%
Africa	599	643	678	727	795	871	957	1.7%
Middle East	1,063	1,120	1,054	1,031	1,034	1,046	1,061	0.0%
World	11,777	12,084	12,005	11,961	12,016	12,185	12,372	0.2%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A12. World carbon dioxide emissions from natural gas use by region, Low 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	2,246	2,179	2,127	2,184	2,218	2,272	-0.2%
United States	1,724	1,546	1,458	1,404	1,444	1,462	1,501	-0.5%
Canada	231	235	231	226	235	248	260	0.4%
Mexico	147	151	159	159	169	176	176	0.6%
Brazil	72	81	92	84	77	70	68	-0.2%
Other Americas	231	234	239	253	258	262	268	0.5%
Europe and Eurasia	2,317	2,340	2,358	2,355	2,368	2,402	2,441	0.2%
Western Europe	1,085	1,117	1,168	1,147	1,136	1,129	1,125	0.1%
Russia	931	911	891	915	927	941	959	0.1%
Eastern Europe and Eurasia	300	311	299	293	305	332	357	0.6%
Asia Pacific	1,845	1,965	2,042	2,070	2,103	2,180	2,241	0.7%
Japan	223	226	212	194	179	172	170	-1.0%
South Korea	137	135	129	122	119	116	117	-0.6%
Australia and New Zealand	91	90	90	86	82	82	82	-0.4%
China	738	804	816	838	854	889	907	0.7%
India	137	150	202	249	284	318	344	3.3%
Other Asia Pacific	519	560	594	581	585	603	621	0.6%
Africa and Middle East	1,518	1,581	1,650	1,736	1,815	1,906	1,984	1.0%
Africa	331	337	352	364	385	413	442	1.0%
Middle East	1,187	1,244	1,298	1,372	1,431	1,493	1,543	0.9%
World	8,085	8,131	8,228	8,288	8,470	8,705	8,938	0.4%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A13. World carbon dioxide emissions from coal use by region, Low 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	956	516	517	512	504	521	-2.6%
United States	929	812	374	355	314	281	264	-4.4%
Canada	45	29	13	13	13	13	13	-4.4%
Mexico	19	19	20	25	33	33	33	2.1%
Brazil	57	59	59	61	62	63	75	1.0%
Other Americas	35	37	48	62	90	115	136	4.9%
Europe and Eurasia	1,570	1,525	1,348	1,352	1,349	1,336	1,429	-0.3%
Western Europe	813	774	621	618	591	560	632	-0.9%
Russia	449	461	437	415	419	425	433	-0.1%
Eastern Europe and Eurasia	308	290	290	319	340	352	365	0.6%
Asia Pacific	12,719	12,448	12,461	12,385	11,988	11,603	11,178	-0.5%
Japan	409	400	281	244	231	218	206	-2.4%
South Korea	240	231	241	249	252	254	252	0.2%
Australia and New Zealand	145	133	149	162	165	164	163	0.4%
China	9,181	8,813	8,231	7,731	7,127	6,571	6,076	-1.5%
India	1,699	1,824	2,280	2,462	2,620	2,778	2,757	1.7%
Other Asia Pacific	1,045	1,048	1,279	1,537	1,594	1,619	1,723	1.8%
Africa and Middle East	429	425	484	507	598	626	701	1.8%
Africa	403	399	459	482	572	600	675	1.9%
Middle East	26	26	25	26	26	26	26	-0.1%
World	15,804	15,355	14,808	14,761	14,447	14,070	13,829	-0.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A14. World carbon dioxide emissions from power generation by region and fossil fuel type, Low 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	109	55	23	10	4	4	-10.9%
Natural gas	852	727	609	527	549	546	560	-1.5%
Coal	907	781	338	344	342	335	352	-3.3%
Total	1,851	1,617	1,003	893	901	885	915	-2.5%
United States								
Liquid fuels	8	8	5	5	4	3	3	-3.5%
Natural gas	646	509	394	327	355	357	374	-1.9%
Coal	842	728	293	281	245	215	200	-5.0%
Total	1,496	1,245	692	613	604	575	577	-3.3%
Canada								
Liquid fuels	2	2	0	0	0	0	0	-10.8%
Natural gas	27	29	15	3	2	2	3	-8.1%
Coal	33	16	0	0	0	0	0	-100.0%
Total	61	47	15	3	2	2	3	-10.7%
Mexico								
Liquid fuels	28	36	19	9	3	0	0	-18.4%
Natural gas	70	73	76	74	77	78	76	0.3%
Coal	7	8	9	13	21	21	21	4.1%
Total	105	117	104	96	101	99	97	-0.3%
Brazil								
Liquid fuels	10	14	6	1	0	0	0	-15.3%
Natural gas	28	36	46	37	29	24	22	-0.9%
Coal	9	10	8	9	9	9	21	3.2%
Total	47	60	60	46	38	33	42	-0.4%
Other Americas								
Liquid fuels	44	50	25	8	3	0	0	-17.4%
Natural gas	81	80	78	86	86	86	86	0.2%
Coal	17	19	28	41	67	90	110	6.9%
Total	142	149	131	135	156	176	196	1.2%
Europe and Eurasia								
Liquid fuels	58	80	80	54	41	40	38	-1.5%
Natural gas	701	706	734	728	730	747	765	0.3%
Coal	848	804	636	637	626	603	682	-0.8%
Total	1,607	1,589	1,450	1,420	1,397	1,389	1,485	-0.3%
Western Europe								
Liquid fuels	40	57	61	46	34	34	33	-0.7%
Natural gas	263	297	365	348	339	332	326	0.8%
Coal	481	452	316	321	301	277	357	-1.1%
Total	784	806	742	715	674	643	716	-0.3%
Russia								
Liquid fuels	13	19	16	5	4	3	2	-7.2%
Natural gas	315	295	275	295	299	303	308	-0.1%
Coal	179	190	166	142	142	142	142	-0.8%
Total	508	504	456	441	445	448	451	-0.4%
Eastern Europe and Eurasia								
Liquid fuels	4	4	3	3	3	3	3	-1.2%
Natural gas	123	113	95	86	92	112	130	0.2%
Coal	187	162	155	174	184	184	184	-0.1%
Total	315	279	253	263	278	299	317	0.0%
Asia Pacific								

Liquid fuels	49	55	32	18	10	7	5	-7.6%
Natural gas	618	657	637	594	575	592	602	-0.1%
Coal	7,386	7,237	7,495	7,656	7,479	7,240	6,994	-0.2%
Total	8,052	7,949	8,164	8,267	8,064	7,839	7,601	-0.2%
Japan								
Liquid fuels	9	13	9	5	3	3	3	-4.1%
Natural gas	145	145	134	117	103	97	94	-1.5%
Coal	251	249	147	126	126	126	126	-2.4%
Total	406	406	290	248	232	226	223	-2.1%
South Korea								
Liquid fuels	2	3	3	3	2	2	2	0.3%
Natural gas	69	65	60	54	50	47	47	-1.4%
Coal	130	124	134	143	147	151	151	0.5%
Total	202	192	197	200	199	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	14	14	-1.5%
Coal	123	109	125	138	140	138	138	0.4%
Total	145	132	148	156	154	153	152	0.2%
China								
Liquid fuels	2	2	1	0	0	0	0	-13.4%
Natural gas	121	148	145	155	170	196	209	2.0%
Coal	5,206	5,016	4,838	4,737	4,506	4,265	4,062	-0.9%
Total	5,328	5,166	4,984	4,892	4,676	4,461	4,271	-0.8%
India								
Liquid fuels	3	2	1	0	0	0	0	-14.5%
Natural gas	24	24	26	31	31	31	31	0.9%
Coal	1,077	1,168	1,492	1,533	1,556	1,556	1,424	1.0%
Total	1,104	1,194	1,519	1,563	1,587	1,587	1,455	1.0%
Other Asia Pacific								
Liquid fuels	33	34	18	10	5	2	0	-14.5%
Natural gas	237	254	249	219	207	207	207	-0.5%
Coal	598	572	760	980	1,004	1,004	1,093	2.2%
Total	867	860	1,027	1,209	1,216	1,213	1,301	1.5%
Africa and Middle East								
Liquid fuels	205	230	119	50	22	8	2	-15.2%
Natural gas	587	612	630	677	701	732	757	0.9%
Coal	212	188	219	209	260	244	269	0.9%
Total	1,004	1,030	968	935	983	984	1,029	0.1%
Africa								
Liquid fuels	31	31	12	2	1	0	0	-16.3%
Natural gas	166	167	172	174	180	192	203	0.7%
Coal	212	187	218	209	260	244	269	0.9%
Total	409	385	402	385	441	436	473	0.5%
Middle East								
Liquid fuels	174	200	107	48	21	8	2	-15.0%
Natural gas	421	445	459	502	521	540	554	1.0%
Coal	0	0	0	0	0	0	0	-6.1%
Total	595	645	566	550	542	548	556	-0.2%
World								
Liquid fuels	404	475	287	145	83	58	49	-7.3%
Natural gas	2,757	2,702	2,610	2,526	2,555	2,617	2,685	-0.1%
Coal	9,353	9,009	8,688	8,846	8,708	8,422	8,297	-0.4%
Total	12,514	12,185	11,585	11,516	11,345	11,097	11,031	-0.4%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

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

Table A15. World population by region, Low Economic Growth case

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	1,036	1,056	1,087	1,113	1,134	1,148	1,159	0.4%
United States	333	336	342	348	351	354	356	0.2%
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	1,772	1,968	2,169	2,373	2,578	2,780	1.9%
Africa	1,386	1,486	1,661	1,843	2,031	2,221	2,410	2.0%
Middle East	273	286	307	325	342	357	370	1.1%
World	7,901	8,110	8,458	8,782	9,081	9,351	9,584	0.7%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; 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, Low 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	\$4,948	\$5,255	\$5,463	\$5,712	\$6,028	\$6,380	0.9%
Non-energy-intensive manufacturing	\$6,357	\$6,530	\$7,124	\$7,645	\$8,262	\$8,974	\$9,801	1.6%
Nonmanufacturing	\$5,265	\$5,465	\$5,792	\$6,174	\$6,590	\$7,061	\$7,571	1.3%
Services	\$40,511	\$41,644	\$44,688	\$47,607	\$50,963	\$54,748	\$58,985	1.4%
Total	\$57,079	\$58,586	\$62,858	\$66,888	\$71,527	\$76,810	\$82,738	1.3%
United States								
Energy-intensive manufacturing	\$2,388	\$2,313	\$2,436	\$2,524	\$2,660	\$2,849	\$3,072	0.9%
Non-energy-intensive manufacturing	\$3,493	\$3,585	\$3,958	\$4,303	\$4,746	\$5,274	\$5,897	1.9%
Nonmanufacturing	\$2,394	\$2,511	\$2,654	\$2,876	\$3,147	\$3,473	\$3,846	1.7%
Services	\$28,881	\$29,553	\$31,648	\$33,829	\$36,519	\$39,677	\$43,330	1.5%
Total	\$37,155	\$37,963	\$40,697	\$43,532	\$47,073	\$51,273	\$56,145	1.5%
Canada								
Energy-intensive manufacturing	\$256	\$263	\$296	\$321	\$347	\$373	\$398	1.6%
Non-energy-intensive manufacturing	\$332	\$354	\$399	\$431	\$462	\$491	\$520	1.6%
Nonmanufacturing	\$498	\$497	\$531	\$562	\$591	\$617	\$641	0.9%
Services	\$1,724	\$1,814	\$2,009	\$2,143	\$2,285	\$2,432	\$2,588	1.5%
Total	\$2,810	\$2,927	\$3,235	\$3,458	\$3,685	\$3,913	\$4,147	1.4%
Mexico								
Energy-intensive manufacturing	\$535	\$542	\$576	\$593	\$611	\$636	\$671	0.8%
Non-energy-intensive manufacturing	\$983	\$1,028	\$1,068	\$1,105	\$1,157	\$1,225	\$1,315	1.0%
Nonmanufacturing	\$466	\$481	\$504	\$518	\$525	\$530	\$532	0.5%
Services	\$1,999	\$2,065	\$2,191	\$2,292	\$2,386	\$2,467	\$2,537	0.9%
Total	\$3,982	\$4,117	\$4,339	\$4,508	\$4,678	\$4,857	\$5,056	0.9%
Brazil								
Energy-intensive manufacturing	\$868	\$893	\$932	\$940	\$941	\$942	\$935	0.3%
Non-energy-intensive manufacturing	\$612	\$649	\$703	\$738	\$763	\$785	\$803	1.0%
Nonmanufacturing	\$710	\$738	\$774	\$796	\$814	\$837	\$857	0.7%
Services	\$3,392	\$3,510	\$3,696	\$3,781	\$3,815	\$3,827	\$3,801	0.4%
Total	\$5,583	\$5,789	\$6,105	\$6,255	\$6,332	\$6,392	\$6,396	0.5%
Other Americas								
Energy-intensive manufacturing	\$899	\$937	\$1,015	\$1,085	\$1,154	\$1,228	\$1,304	1.3%
Non-energy-intensive manufacturing	\$937	\$913	\$995	\$1,067	\$1,134	\$1,199	\$1,266	1.1%
Nonmanufacturing	\$1,197	\$1,237	\$1,329	\$1,422	\$1,513	\$1,604	\$1,695	1.3%
Services	\$4,515	\$4,702	\$5,144	\$5,561	\$5,958	\$6,345	\$6,730	1.4%
Total	\$7,548	\$7,790	\$8,483	\$9,136	\$9,760	\$10,376	\$10,995	1.4%
Europe and Eurasia								
Energy-intensive manufacturing	\$6,107	\$6,197	\$6,154	\$6,236	\$6,364	\$6,513	\$6,643	0.3%
Non-energy-intensive manufacturing	\$9,079	\$9,495	\$9,766	\$10,138	\$10,542	\$10,960	\$11,334	0.8%
Nonmanufacturing	\$6,409	\$6,511	\$6,801	\$6,950	\$7,096	\$7,187	\$7,240	0.4%
Services	\$36,028	\$37,294	\$39,028	\$40,442	\$42,018	\$43,648	\$45,268	0.8%
Total	\$57,624	\$59,496	\$61,748	\$63,766	\$66,020	\$68,308	\$70,485	0.7%
Western Europe								
Energy-intensive manufacturing	\$4,982	\$4,968	\$4,888	\$4,916	\$4,980	\$5,051	\$5,109	0.1%
Non-energy-intensive manufacturing	\$8,439	\$8,787	\$9,051	\$9,409	\$9,788	\$10,175	\$10,520	0.8%
Nonmanufacturing	\$4,377	\$4,467	\$4,591	\$4,670	\$4,747	\$4,786	\$4,802	0.3%
Services	\$31,097	\$32,070	\$33,601	\$34,764	\$36,004	\$37,229	\$38,370	0.8%
Total	\$48,895	\$50,292	\$52,131	\$53,759	\$55,519	\$57,240	\$58,801	0.7%
Russia								
Energy-intensive manufacturing	\$895	\$968	\$975	\$992	\$1,011	\$1,035	\$1,052	0.6%
Non-energy-intensive manufacturing	\$544	\$592	\$582	\$585	\$595	\$608	\$616	0.4%

Nonmanufacturing	\$1,282	\$1,234	\$1,245	\$1,219	\$1,186	\$1,159	\$1,130	-0.5%
Services	\$3,823	\$3,988	\$3,943	\$3,845	\$3,782	\$3,749	\$3,742	-0.1%
Total	\$6,544	\$6,782	\$6,745	\$6,641	\$6,574	\$6,551	\$6,539	0.0%
Eastern Europe and Eurasia								
Energy-intensive manufacturing	\$230	\$260	\$290	\$328	\$373	\$426	\$483	2.7%
Non-energy-intensive manufacturing	\$96	\$117	\$132	\$144	\$159	\$178	\$198	2.6%
Nonmanufacturing	\$750	\$810	\$965	\$1,062	\$1,163	\$1,242	\$1,308	2.0%
Services	\$1,109	\$1,235	\$1,485	\$1,834	\$2,232	\$2,671	\$3,156	3.8%
Total	\$2,185	\$2,423	\$2,872	\$3,367	\$3,927	\$4,517	\$5,145	3.1%
Asia Pacific								
Energy-intensive manufacturing	\$21,178	\$23,437	\$26,392	\$29,107	\$31,458	\$33,915	\$35,709	1.9%
Non-energy-intensive manufacturing	\$42,101	\$46,931	\$53,489	\$58,582	\$61,906	\$64,348	\$65,337	1.6%
Nonmanufacturing	\$24,048	\$25,933	\$29,271	\$31,545	\$33,166	\$34,561	\$35,272	1.4%
Services	\$58,791	\$66,585	\$81,086	\$94,728	\$107,239	\$119,463	\$129,922	2.9%
Total	\$146,118	\$162,885	\$190,239	\$213,962	\$233,768	\$252,286	\$266,241	2.2%
Japan								
Energy-intensive manufacturing	\$941	\$954	\$903	\$850	\$810	\$772	\$738	-0.9%
Non-energy-intensive manufacturing	\$2,737	\$2,979	\$3,059	\$3,042	\$2,994	\$2,937	\$2,889	0.2%
Nonmanufacturing	\$670	\$675	\$676	\$656	\$638	\$618	\$600	-0.4%
Services	\$5,789	\$5,934	\$5,985	\$5,844	\$5,715	\$5,586	\$5,485	-0.2%
Total	\$10,138	\$10,542	\$10,623	\$10,391	\$10,157	\$9,913	\$9,713	-0.2%
South Korea								
Energy-intensive manufacturing	\$1,067	\$1,110	\$1,109	\$1,086	\$1,042	\$998	\$948	-0.4%
Non-energy-intensive manufacturing	\$1,692	\$1,777	\$1,967	\$2,046	\$2,078	\$2,104	\$2,125	0.8%
Nonmanufacturing	\$362	\$372	\$370	\$370	\$368	\$364	\$358	0.0%
Services	\$2,565	\$2,691	\$2,840	\$2,926	\$2,941	\$2,949	\$2,940	0.5%
Total	\$5,686	\$5,950	\$6,286	\$6,428	\$6,429	\$6,415	\$6,371	0.4%
Australia and New Zealand								
Energy-intensive manufacturing	\$171	\$185	\$194	\$200	\$206	\$211	\$215	0.8%
Non-energy-intensive manufacturing	\$131	\$135	\$140	\$144	\$148	\$150	\$151	0.5%
Nonmanufacturing	\$590	\$622	\$713	\$776	\$831	\$881	\$928	1.6%
Services	\$1,958	\$2,107	\$2,388	\$2,628	\$2,836	\$3,024	\$3,206	1.8%
Total	\$2,850	\$3,049	\$3,435	\$3,748	\$4,021	\$4,266	\$4,500	1.6%
China								
Energy-intensive manufacturing	\$10,799	\$11,969	\$12,700	\$12,966	\$12,832	\$12,590	\$12,100	0.4%
Non-energy-intensive manufacturing	\$25,771	\$29,218	\$32,819	\$35,291	\$36,192	\$36,415	\$35,450	1.1%
Nonmanufacturing	\$12,744	\$13,702	\$15,070	\$15,706	\$15,879	\$16,007	\$15,743	0.8%
Services	\$25,046	\$28,518	\$34,927	\$40,825	\$45,508	\$49,828	\$52,677	2.7%
Total	\$74,360	\$83,406	\$95,516	\$104,787	\$110,411	\$114,840	\$115,970	1.6%
India								
Energy-intensive manufacturing	\$3,724	\$4,238	\$5,652	\$7,253	\$8,831	\$10,597	\$11,987	4.3%
Non-energy-intensive manufacturing	\$3,007	\$3,334	\$4,418	\$5,590	\$6,742	\$7,870	\$8,902	4.0%
Nonmanufacturing	\$4,474	\$4,959	\$5,953	\$6,828	\$7,520	\$8,129	\$8,573	2.4%
Services	\$7,664	\$9,639	\$13,610	\$17,933	\$22,484	\$27,279	\$32,115	5.3%
Total	\$18,869	\$22,170	\$29,633	\$37,605	\$45,577	\$53,876	\$61,577	4.3%
Other Asia Pacific								
Energy-intensive manufacturing	\$4,475	\$4,981	\$5,834	\$6,752	\$7,736	\$8,747	\$9,722	2.8%
Non-energy-intensive manufacturing	\$8,764	\$9,488	\$11,084	\$12,469	\$13,751	\$14,871	\$15,820	2.1%
Nonmanufacturing	\$5,207	\$5,603	\$6,490	\$7,209	\$7,930	\$8,562	\$9,070	2.0%
Services	\$15,769	\$17,696	\$21,337	\$24,573	\$27,755	\$30,797	\$33,498	2.7%
Total	\$34,215	\$37,768	\$44,745	\$51,003	\$57,172	\$62,977	\$68,110	2.5%
Africa and Middle East								
Energy-intensive manufacturing	\$2,927	\$3,112	\$3,431	\$3,783	\$4,107	\$4,427	\$4,738	1.7%
Non-energy-intensive manufacturing	\$1,722	\$1,848	\$2,041	\$2,260	\$2,477	\$2,676	\$2,867	1.8%
Nonmanufacturing	\$5,587	\$5,986	\$6,417	\$6,798	\$7,167	\$7,521	\$7,841	1.2%
Services	\$12,156	\$13,104	\$14,764	\$16,320	\$17,659	\$18,797	\$19,766	1.8%
Total	\$22,392	\$24,050	\$26,653	\$29,161	\$31,409	\$33,422	\$35,212	1.6%
Africa								

Energy-intensive manufacturing	\$1,364	\$1,491	\$1,686	\$1,892	\$2,104	\$2,327	\$2,560	2.3%
Non-energy-intensive manufacturing	\$885	\$965	\$1,079	\$1,196	\$1,318	\$1,439	\$1,555	2.0%
Nonmanufacturing	\$3,003	\$3,238	\$3,517	\$3,790	\$4,047	\$4,289	\$4,511	1.5%
Services	\$6,408	\$6,779	\$7,669	\$8,446	\$9,160	\$9,821	\$10,437	1.8%
Total	\$11,660	\$12,473	\$13,952	\$15,323	\$16,628	\$17,876	\$19,063	1.8%
Middle East								
Energy-intensive manufacturing	\$1,563	\$1,621	\$1,745	\$1,891	\$2,003	\$2,100	\$2,179	1.2%
Non-energy-intensive manufacturing	\$837	\$884	\$962	\$1,064	\$1,159	\$1,238	\$1,312	1.6%
Nonmanufacturing	\$2,584	\$2,748	\$2,900	\$3,008	\$3,120	\$3,232	\$3,330	0.9%
Services	\$5,748	\$6,325	\$7,094	\$7,874	\$8,499	\$8,976	\$9,329	1.7%
Total	\$10,732	\$11,578	\$12,702	\$13,837	\$14,781	\$15,546	\$16,149	1.5%
World								
Energy-intensive manufacturing	\$35,158	\$37,693	\$41,232	\$44,589	\$47,641	\$50,882	\$53,471	1.5%
Non-energy-intensive manufacturing	\$59,259	\$64,804	\$72,420	\$78,625	\$83,187	\$86,958	\$89,340	1.5%
Nonmanufacturing	\$41,308	\$43,894	\$48,281	\$51,467	\$54,018	\$56,330	\$57,924	1.2%
Services	\$147,487	\$158,626	\$179,566	\$199,097	\$217,879	\$236,656	\$253,941	2.0%
Total	\$283,213	\$305,018	\$341,499	\$373,778	\$402,724	\$430,826	\$454,676	1.7%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; 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, Low Economic Growth case

million persons

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	467	482	495	506	515	521	525	0.4%
United States	158	161	164	168	173	177	181	0.5%
Canada	20	20	21	22	23	24	25	0.8%
Mexico	57	59	61	63	64	65	66	0.5%
Brazil	98	102	103	104	104	103	101	0.1%
Other Americas	134	141	146	148	150	152	153	0.5%
Europe and Eurasia	415	415	412	407	399	390	380	-0.3%
Western Europe	289	290	288	285	282	279	275	-0.2%
Russia	72	71	70	69	66	63	60	-0.7%
Eastern Europe and Eurasia	54	55	54	53	51	48	46	-0.6%
Asia Pacific	1,855	1,910	1,951	1,978	1,982	1,985	1,967	0.2%
Japan	67	67	65	61	57	53	50	-1.0%
South Korea	28	28	28	26	24	23	21	-1.0%
Australia and New Zealand	16	17	19	20	21	22	23	1.1%
China	750	754	743	726	690	658	616	-0.7%
India	481	506	542	576	611	645	672	1.2%
Other Asia Pacific	512	537	555	568	579	585	584	0.5%
Africa and Middle East	546	589	654	723	792	860	926	1.9%
Africa	469	507	569	634	701	767	832	2.1%
Middle East	77	81	86	89	92	93	94	0.7%
World	3,283	3,396	3,512	3,614	3,688	3,757	3,799	0.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; 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, Low Economic Growth case

2015 dollars per person (PPP)

Region	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas	\$21,784	\$22,021	\$22,574	\$23,382	\$24,354	\$25,464	\$26,657	0.7%
United States	\$46,725	\$48,640	\$50,484	\$52,785	\$55,688	\$58,992	\$62,430	1.0%
Canada	\$27,994	\$27,954	\$28,894	\$29,979	\$31,042	\$32,066	\$33,108	0.6%
Mexico	\$16,588	\$15,484	\$15,781	\$16,033	\$16,323	\$16,671	\$17,111	0.1%
Brazil	\$11,919	\$11,508	\$11,444	\$11,791	\$12,013	\$12,220	\$12,409	0.1%
Other Americas	\$3,825	\$3,685	\$3,868	\$4,044	\$4,196	\$4,329	\$4,465	0.6%
Europe and Eurasia	\$20,353	\$20,605	\$21,210	\$21,917	\$22,711	\$23,594	\$24,520	0.7%
Western Europe	\$24,018	\$24,068	\$24,522	\$25,134	\$25,908	\$26,792	\$27,702	0.5%
Russia	\$15,436	\$16,173	\$17,321	\$17,972	\$18,355	\$18,764	\$19,243	0.8%
Eastern Europe and Eurasia	\$9,016	\$9,706	\$10,653	\$11,971	\$13,378	\$14,829	\$16,319	2.1%
Asia Pacific	\$8,186	\$9,056	\$10,535	\$12,000	\$13,371	\$14,775	\$16,024	2.4%
Japan	\$22,970	\$23,894	\$24,376	\$24,474	\$24,794	\$25,169	\$25,693	0.4%
South Korea	\$22,258	\$22,756	\$23,559	\$24,676	\$25,633	\$26,767	\$28,114	0.8%
Australia and New Zealand	\$32,814	\$32,187	\$34,596	\$36,034	\$36,954	\$37,611	\$38,206	0.5%
China	\$10,529	\$12,120	\$14,583	\$17,170	\$19,603	\$22,216	\$24,701	3.1%
India	\$5,497	\$6,240	\$7,772	\$9,354	\$10,866	\$12,384	\$13,693	3.3%
Other Asia Pacific	\$5,849	\$6,247	\$7,005	\$7,653	\$8,300	\$8,934	\$9,509	1.8%
Africa and Middle East	\$2,246	\$2,301	\$2,397	\$2,471	\$2,560	\$2,649	\$2,744	0.7%
Africa	\$1,673	\$1,726	\$1,819	\$1,903	\$2,003	\$2,099	\$2,204	1.0%
Middle East	\$5,155	\$5,285	\$5,520	\$5,685	\$5,872	\$6,069	\$6,258	0.7%
World	\$10,139	\$10,582	\$11,361	\$12,142	\$12,878	\$13,626	\$14,284	1.2%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run Im_230821.151939 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; 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.