

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

billion 2015 dollars

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

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

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

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run lz_230821.151531 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo; 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.