



OXFORD
ECONOMICS

ECONOMIC IMPACT OF OPERATIONS IN PROLOGIS WAREHOUSES

2022 UPDATE

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1. INTRODUCTION

Prologis is the global leader in logistics real estate. Prologis customers rent warehouse space from the company, performing logistics and sometimes light assembly operations in those spaces. These operations associated with Prologis-owned warehouse space generate considerable economic activity, which we estimate in this report using a global economic impact model developed by Oxford Economics.

In particular, we estimate:

- The value of goods (throughput) transiting through Prologis warehouses
- The direct employment engaged in activities in Prologis warehouses themselves
- The full economic impact of these activities in Prologis warehouses, as estimated in:
 - GDP impacts
 - Employment impacts
 - Taxes generated by this economic activity

These full economic impacts include the activity taking place in the warehouses themselves (direct impact), the supply chain supporting that activity (indirect impact), and the economic activity driven by spending out of wages of those employed directly and indirectly (induced impact).

In 2017, Oxford Economics released its first report on the estimated economic impacts of operations in Prologis warehouses. The report was updated in 2020. This report updates the 2020 estimates based on Prologis's most recently available portfolio of warehouse space, which is current as of October 2022. This report includes newly acquired and built portfolio additions, and fine-tunes assumptions based on the latest available information.

METHODOLOGY

Data sources and assumptions

Prologis provided its total square footage by country as of October 2022, and all estimates are as of that date. Prologis also provided an estimate of the average square footage per direct employee by country, which ranged between 1,000 and 1,900 square feet.

Estimates of throughput (the total value of goods transported through Prologis warehouses) were based on expert opinions solicited during the first iteration of this report of approximately \$2 million per thousand square feet in 2016. This estimate was updated to \$2.2 million in 2019 and \$2.3 in 2021 based on nominal productivity estimates from the Oxford Economics global industry databank.

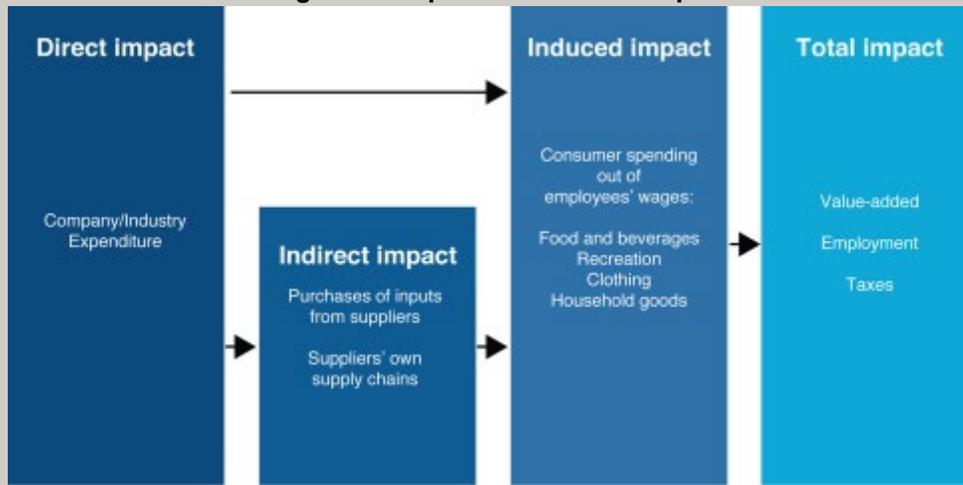
While Prologis portfolio data are current as of October 2022, productivity estimates are generally made using 2021 data. Results are benchmarked to 2021 macroeconomic data, as these are the most recently published figures.

Economic impact analysis

A standard economic impact analysis identifies three channels of impact that stem from an activity, from which we can calculate the total economic impact (see Fig. 1). In this case:

- **Direct:** These are the jobs and activity attributable directly to operations in Prologis warehouses
- **Indirect:** These are the employment and value-added contributions supported through the supply chain of operations in Prologis warehouses (and in turn, their suppliers).
- **Induced:** This is commonly referred to as the “multiplier effect” and is the economic benefit that results as those employed directly and indirectly spend their incomes in the local community.

Fig. 1. A simplified economic impact model



Economic impact sources and methods

The economic impact results are calculated using Oxford Economics' Global Sustainability Model (GSM).¹ This is a change from the earlier versions of this work, which were calculated using a purpose-built model based on the OECD's Inter-Country Input-Output Tables. As the OECD's IO tables are the primary data source behind the GSM, the current update remains largely consistent with previous iterations of this work. The GSM also relies on data from the Oxford Economics Global Economic Database, as in past work.

The GSM calculates the direct, indirect, and induced impact of economic activity taking place in Prologis warehouses based on the number of direct employees in those warehouses, estimated by the total square footage as described above. Tax impacts are also calculated directly in the GSM based on tax-to-GDP ratios by country and industry sector.

¹ <https://www.oxfordeconomics.com/service/consulting-services/economic-impact/global-sustainability-model/>

2. DIRECT RESULTS SUMMARY

2.1 THROUGHPUT

As of October 2022, Prologis operated about 1.2 billion square feet of warehouse space globally on an owned and managed basis.

Based on the assessment of industry experts, Oxford Economics estimated warehouse throughput (the value of goods transported through the warehouse over the course of one year) of approximately \$2.3 million per thousand square feet.²

Applying this ratio to the Prologis portfolio, we estimate global throughput through Prologis warehouses of approximately \$2.7 trillion globally. This is equivalent to approximately 2.8% of global GDP or 5.6% of global household consumption.³ For countries where data is available, we also estimated throughput as a share of goods consumption (excluding services). Throughput is around 36% of goods consumption in the U.S. and around 12% overall in Europe.⁴ This ratio of Prologis throughput to national GDP varies among the countries in which Prologis operates, from 0.5% in Singapore to 12.1% in the Czech Republic (see Fig. 2).

² This estimate was based on the most recently available data from 2021.

³ It is important to note that GDP represents the total value of all *final goods and services* production. Some warehouses may be used to store intermediate goods (i.e. components used in the production of final goods), and of course services do not need to be stored, and a single good will often be stored in multiple warehouses on its way to final consumers.

⁴ OECD tables for final consumption expenditure were used to derive goods consumption, and where 2021 was not yet available, 2020 data were grown proportionally to overall household compensation. The U.S. figure is from the BEA. Data are unavailable for Brazil, China, and Singapore.

Fig. 2. Annual throughput through Prologis warehouses by country as a share of GDP and household consumption⁵

Country	Prologis warehouse throughput	GDP		Household consumption			
				Goods & services		Goods only	
		\$ billions	\$ billions	throughput %	\$ billions	throughput %	\$ billions
Belgium	\$15	\$599	2.5%	\$292	5.1%	\$110	13.6%
Brazil	\$43	\$1,609	2.7%	\$980	4.4%	\$470*	9.1%*
Canada	\$24	\$1,989	1.2%	\$1,084	2.2%	\$492	4.9%
China	\$125	\$17,740	0.7%	\$6,807	1.8%	\$3,264*	3.8%*
Czech Republic	\$34	\$282	12.1%	\$128	26.6%	\$71	47.9%
France	\$80	\$2,955	2.7%	\$1,557	5.1%	\$701	11.4%
Germany	\$80	\$4,249	1.9%	\$2,094	3.8%	\$1,008	7.9%
Hungary	\$17	\$181	9.4%	\$88	19.3%	\$48	35.4%
Italy	\$41	\$2,106	2.0%	\$1,218	3.4%	\$617	6.7%
Japan	\$115	\$4,934	2.3%	\$2,659	4.3%	\$1,071	10.7%
Mexico	\$109	\$1,295	8.4%	\$837	13.0%	\$486	22.4%
Netherlands	\$68	\$1,012	6.7%	\$425	16.0%	\$199	34.2%
Poland	\$58	\$678	8.6%	\$384	15.1%	\$247	23.5%
Singapore	\$2	\$397	0.5%	\$123	1.6%	\$59*	3.4%*
Slovakia	\$12	\$115	10.4%	\$66	18.2%	\$37	32.4%
Spain	\$36	\$1,427	2.5%	\$803	4.5%	\$344	10.5%
Sweden	\$22	\$635	3.5%	\$278	7.9%	\$132	16.7%
United Kingdom	\$78	\$3,132	2.5%	\$1,825	4.3%	\$793	9.8%
United States	\$1,782	\$23,315	7.6%	\$15,903	11.2%	\$4,920	36.2%
Total of these 19	\$2,741	\$68,650	4.0%	\$37,551	7.3%	11,276	24.3%
Global	\$2,741	\$96,293	2.8%	\$48,833	5.6%		

Source: Prologis and Oxford Economics

2.2 DIRECT EMPLOYMENT

The direct employment at Prologis warehouses represents the total employment by Prologis clients of those working in Prologis warehouses, performing logistics, and light manufacturing functions.

Oxford Economics estimated direct employment of approximately 1,067,975 in Prologis warehouses globally (see Fig. 3).

⁵ Throughput is calculated for 2022. GDP and Household Consumption are based on the most recently available data from 2021. Data for goods only household consumption are unavailable for Brazil, China, and Singapore. The values for these countries were estimated using the average ratio of goods consumption to goods and services consumption in the remaining countries.

Fig. 3. Direct employment in Prologis warehouses

Country	Direct employment for 2022	Comparison with 2020 estimates	
		Estimate for 2020	% change
Belgium	6,585	3,100	112%
Brazil	16,212	9,500	71%
Canada	9,176	9,100	1%
China	54,383	49,400	10%
Czech Republic	14,864	13,700	9%
France	34,863	31,700	10%
Germany	35,072	25,600	37%
Hungary	7,228	6,800	6%
Italy	18,000	12,400	45%
Japan	26,486	23,100	15%
Mexico	47,793	35,500	35%
Netherlands	29,648	23,800	25%
Poland	25,352	22,400	13%
Singapore	951	1,000	-5%
Slovakia	5,026	4,500	12%
Spain	15,672	12,900	21%
Sweden	9,601	8,500	13%
United Kingdom	34,183	32,500	5%
United States	676,880	528,300	28%
Total / Global	1,067,975	853,700	25%

Source: Prologis and Oxford Economics

2.2.1 Direct employment changes since previous estimates

Oxford Economics estimated total direct employment of 853,700 workers in Prologis warehouses in 2020. The 2022 estimated global direct employment in Prologis warehouses is 1,067,975, representing a 25% increase from 2020.

3. TOTAL RESULTS SUMMARY

This section estimates the total economic impacts of activities in Prologis warehouses. As described in the methodology box in chapter 1, these impacts include the direct operations in the Prologis warehouses, the indirect (supply chain) impacts, and the induced impacts.

3.1 TOTAL GDP IMPACTS

The total GDP impacts of Prologis's warehouses in the 19 countries in which Prologis operates are estimated at \$300 billion. The largest impact is in the U.S., at \$213 billion, followed by China and Germany, each with \$11 billion, and then the United Kingdom at \$10 billion (see Fig. 4.)

Fig. 4. Total (direct + indirect + induced) economic impacts of operations in Prologis warehouses

Country	GDP (\$ mil)	Employment	Tax (\$mil)
Belgium	\$2,212	18,839	\$700
Brazil	\$1,312	88,014	\$365
Canada	\$5,758	47,822	\$1,253
China	\$11,280	442,254	\$4,677
Czech Republic	\$1,796	35,311	\$561
France	\$8,628	82,471	\$2,906
Germany	\$10,735	108,907	\$4,078
Hungary	\$578	16,468	\$219
Italy	\$5,150	55,051	\$1,377
Japan	\$5,804	78,742	\$653
Mexico	\$3,881	117,193	\$392
Netherlands	\$8,768	71,688	\$2,095
Poland	\$2,732	65,687	\$314
Singapore	\$708	6,139	\$106
Slovak Republic	\$620	11,668	\$123
Spain	\$3,504	48,273	\$893
Sweden	\$3,404	26,982	\$1,388
United Kingdom	\$9,864	102,563	\$2,727
United States	\$213,168	1,553,401	\$38,290
Total of these 19	\$299,904	2,977,471	\$63,116
Global	\$314,935	3,500,203	\$65,947

Source: Prologis and Oxford Economics

The economic impact model used to calculate these impacts includes spillovers in other countries besides the nineteen, where Prologis has direct operations. Although the entire direct economic impact takes place in these nineteen countries, there are indirect (supply chain) and induced (spending out of wages) spillovers from this activity in other countries, which the model does capture. **Taking this into account, the full global economic impact of operations in Prologis warehouses is \$315 billion.**

3.2 TOTAL EMPLOYMENT IMPACTS

In the 19 countries in which Prologis owns warehouses, the total employment impact, including direct, indirect, and induced impacts was 3.0 million. Over half of this impact was in the U.S., with 1.6 million jobs supported by activities in Prologis warehouses. Following this was China, with approximately 442,000 jobs, and Mexico, with approximately 117,000 jobs.

As with the GDP impacts above, it is possible to estimate spillovers in countries other than the 19 where Prologis operates. **The total global employment impacts associated with activities in Prologis' warehouses are estimated at 3.5 million.**

3.3 TOTAL TAX IMPACTS

The total tax impact in the 19 countries in which Prologis operates is estimated at \$63 billion. The largest tax impacts are generally in the countries where Prologis' GDP impacts are largest, including the U.S. (\$38 billion), China (\$5 billion), and Germany (\$4 billion). **The total global tax impacts associated with activities in Prologis' warehouses are estimated at \$66 billion.**

Importantly, as described in the methodology note, the tax estimates presented are high-level estimates and are not comprehensive of all taxes in all countries. These estimates include product-level taxes and taxes paid directly by producers, as well as high-level estimates of taxes paid on corporate and labor income.



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