

# State of Trade 2024

### **About Ports Australia**

Ports Australia is the peak body representing the interests of the Australian port industry.

It serves as a national voice and plays a crucial role in advocating for policies and initiatives that promote the growth and development of Australian ports.

### **About this Report**

The information in this document is based on findings from a report commissioned by Ports Australia and prepared by Prominence Consulting.



# Introduction

Ports Australia is proud to launch the inaugural State of Trade report, providing a snapshot of the important role ports play in Australia's prosperity, development and security.

Ports move 99% of Australia's international trade by volume, contributing \$264 billion annually to Gross State Product (GSP). As a primary driver of our economy and workforce, Australia's ports are vital to sustaining our island nation. As well as facilitating international trade and the movement of goods throughout the region, our ports are strategic assets and critical infrastructure.

With ports located across our 34,000km of national coastline, Australia's entry and exit points play a key role in the transport of natural resources, new technologies and manufactured and consumer goods.

Facilitating some 700,000 jobs and more than 1.6 billion tonnes of annual trade, Australian ports see around 31,000 vessels each year and ensure the flow of \$650 billion worth of trade.

The State of Trade report is a key indicator of Australia's economic health and regional reputation. We take pride in the fact Australia's global standing is intrinsically tied to its ports. This report highlights the crucial role of ports and Ports Australia in driving our nation's progress.



*Mike Gallacher*  
*Chief Executive Officer, Ports Australia*



# Key highlights

Note: The trade data in this section is based on a combination of ABS data and port operational data with the trade values escalated for inflation to provide results in 2023 real terms. The data includes merchandise trade only.



# Australian ports industry

**97<sup>+</sup>**   
**Million tonnes**  
Annual Volume of IMPORT trade.

**\$255**   
**Billion**  
Annual Value of IMPORT trade.


 **694K<sup>+</sup>**  
Facilitated local jobs

**1.6<sup>+</sup>**   
**Billion tonnes**  
Annual trade volume

99% of Australia's international trade by volume

**\$650**   
**Billion**  
Annual trade value

  
Approx. 1 in every 20 jobs  
across Australia.

**1.5<sup>+</sup>**   
**Billion tonnes**  
Annual Volume of EXPORT trade.

**\$395**   
**Billion**  
Annual Value of EXPORT trade.

**\$264<sup>+</sup>**   
**Billion**  
Combined annual  
contribution to GSP.

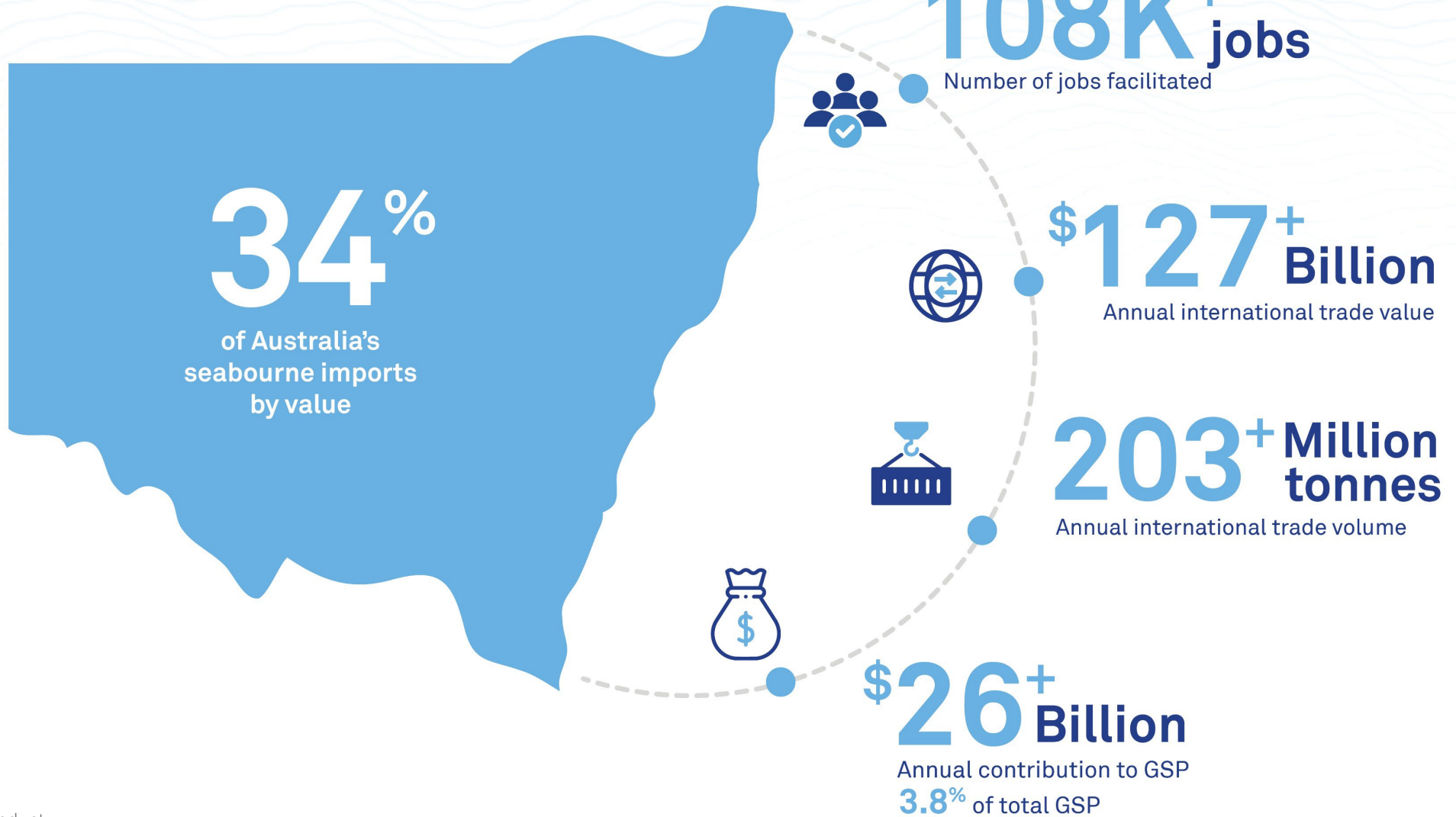
GSP = Gross State Product

Sources: ABS data, BITRE, CGE model, Ports Australia members' data





# New South Wales ports industry



GSP = Gross State Product

Sources: ABS data, CGE model, Ports Australia members' data



# Northern Territory ports industry



**10K+** jobs

Number of jobs facilitated



**\$13.6+** Billion

Annual international trade value



**36+** Million tonnes

Annual international trade volume



**\$9.1+** Billion

Annual contribution to GSP

**30.2%** of total GSP



GSP = Gross State Product

Sources: ABS data, CGE model, Ports Australia members' data

# Queensland ports industry

**251K<sup>+</sup>** jobs  
Number of jobs facilitated



GSP = Gross State Product

Sources: ABS data – 2019-2021, CGE model, Ports Australia members' data





# South Australian ports industry



**24K<sup>+</sup>** jobs  
Number of jobs facilitated



**\$22<sup>+</sup>** Billion  
Annual international trade value



**20<sup>+</sup>** Million  
tonnes  
Annual international trade volume



**\$4.5<sup>+</sup>** Billion  
Annual contribution to GSP  
**3.6%** of total GSP

GSP = Gross State Product

Sources: ABS data, CGE model, Ports Australia members' data



# Tasmanian ports industry



**8K<sup>+</sup>** jobs  
Number of jobs facilitated



**\$2.5<sup>+</sup>** Billion  
Annual international trade value



**7<sup>+</sup>** Million  
tonnes  
Annual international trade volume



**\$2.3<sup>+</sup>** Billion  
Annual contribution to GSP  
6.5% of total GSP



# Victorian ports industry



**88K<sup>+</sup>** jobs  
Number of jobs facilitated



**\$111<sup>+</sup>** Billion  
Annual international trade value



**41<sup>+</sup>** Million tonnes  
Annual international trade volume



**\$16<sup>+</sup>** Billion  
Annual contribution to GSP  
**3.3%** of total GSP





# Western Australian ports industry





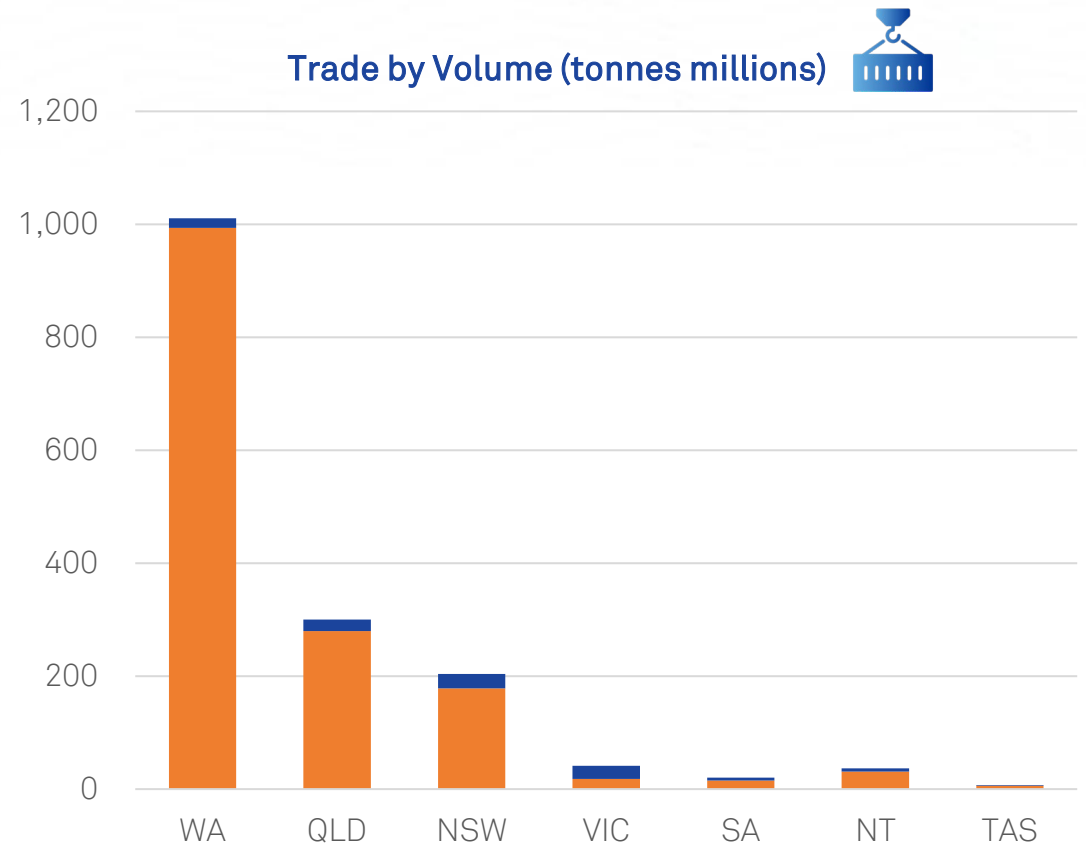
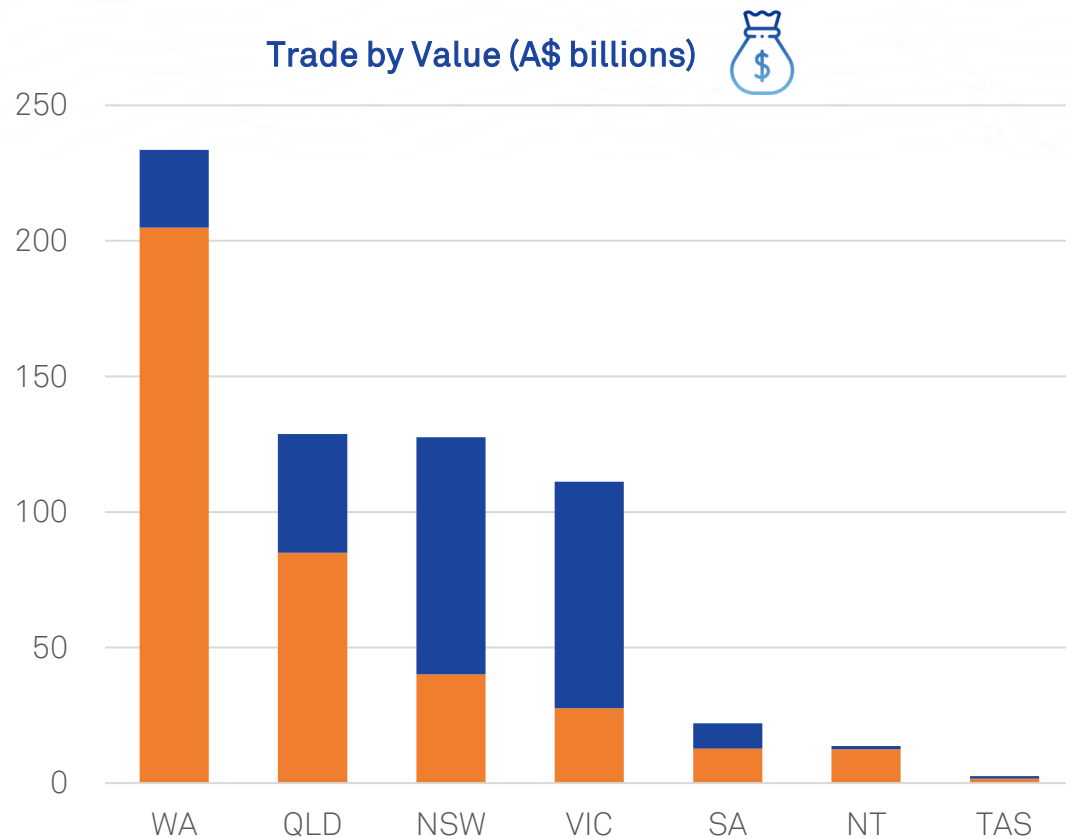
# Port trade data

Note: The trade data in this section is based on a combination of ABS data and port operational data with the trade values escalated for inflation to provide results in 2023 real terms. The data includes merchandise trade only.



# Annual international trade through Australia's ports is ~\$650 billion in value and ~1.6 billion tonnes in volume.

International trade value is relatively evenly split between imports and exports, with higher value imports coming into NSW and VIC, while trade volume is heavily skewed to exports due to the dominance of higher volume / lower value commodity exports from WA, QLD and, to a lesser extent, NSW.

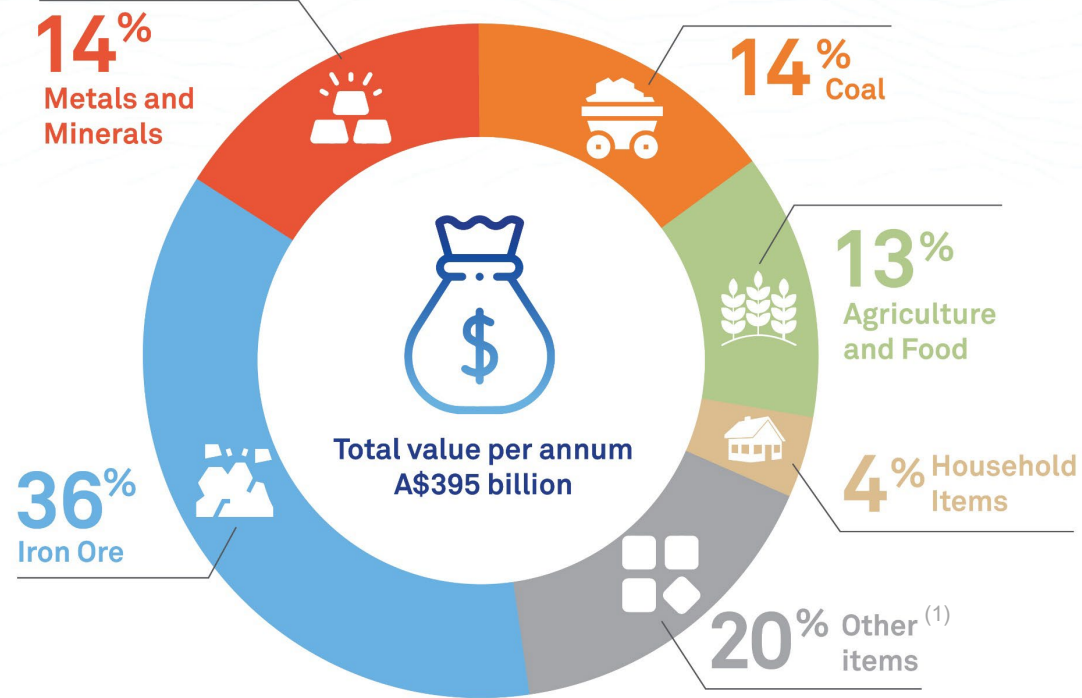


Exports Imports

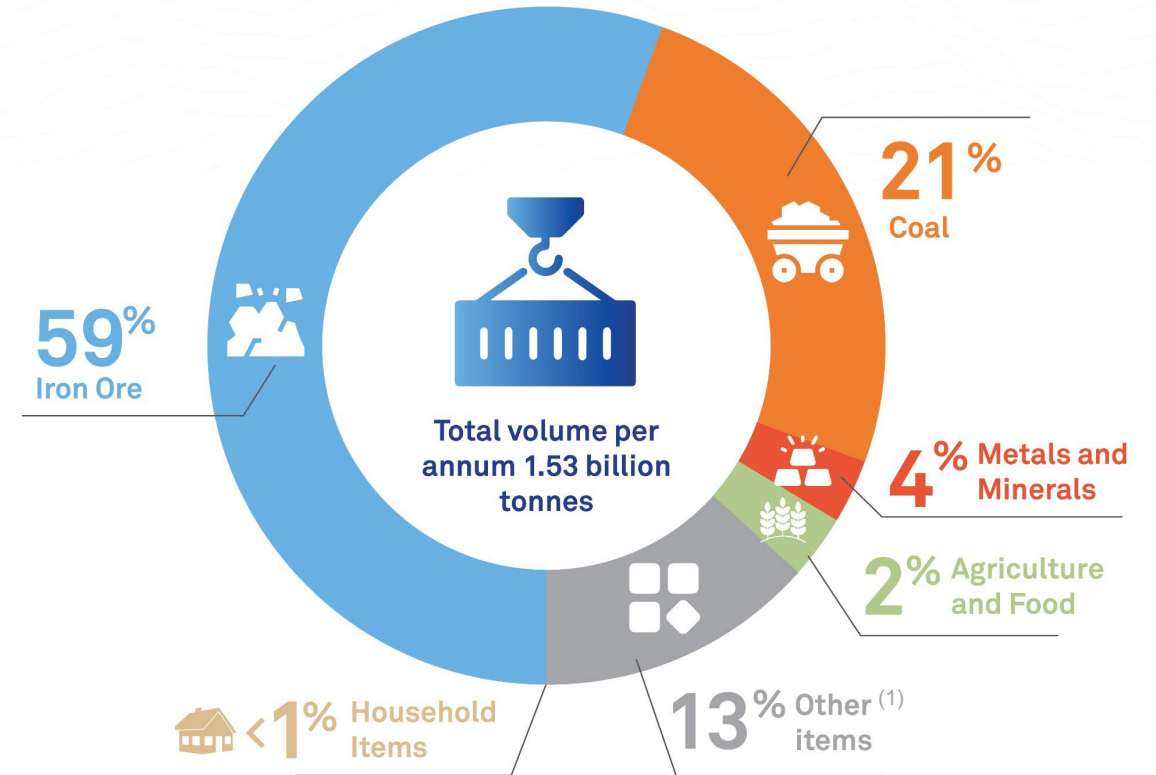


# Export Trade through Australia's ports by goods type.

## Exports By Value



## Exports By Volume



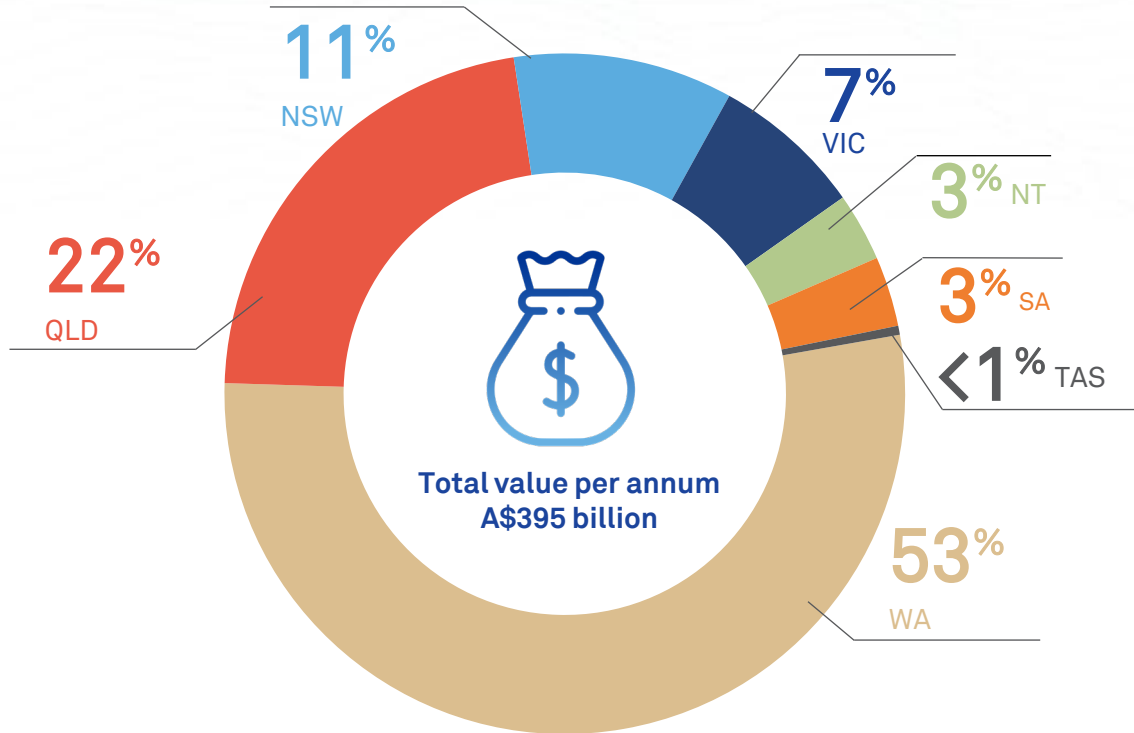
1. Other items largely refer to confidential items not identified by ABS, which include LNG exports from WA, QLD and NT

Source: ABS data

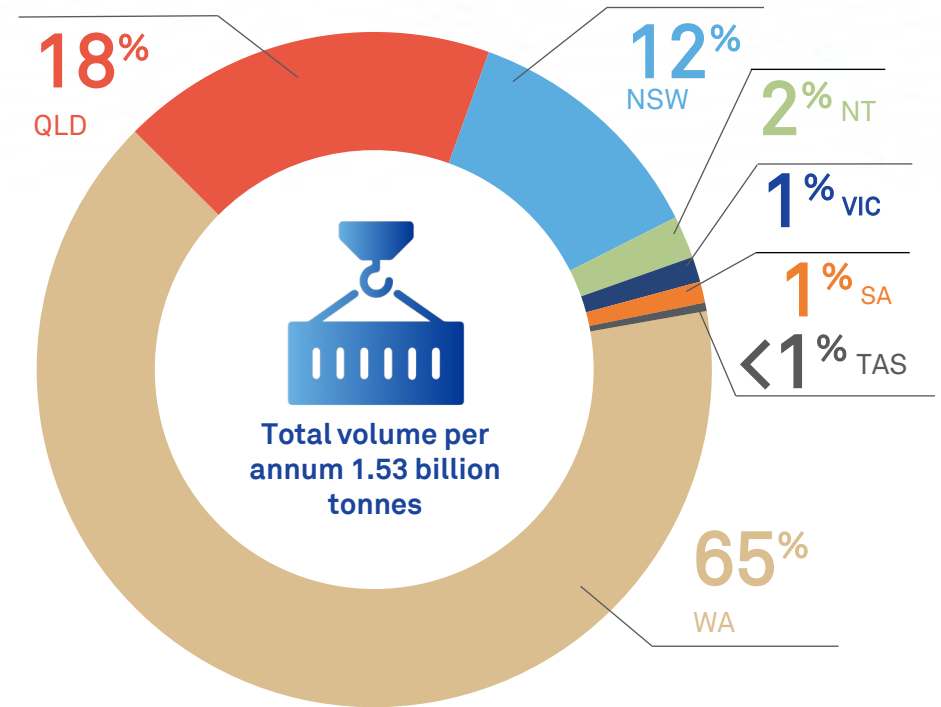


# Export Trade by state.

## Exports by Value



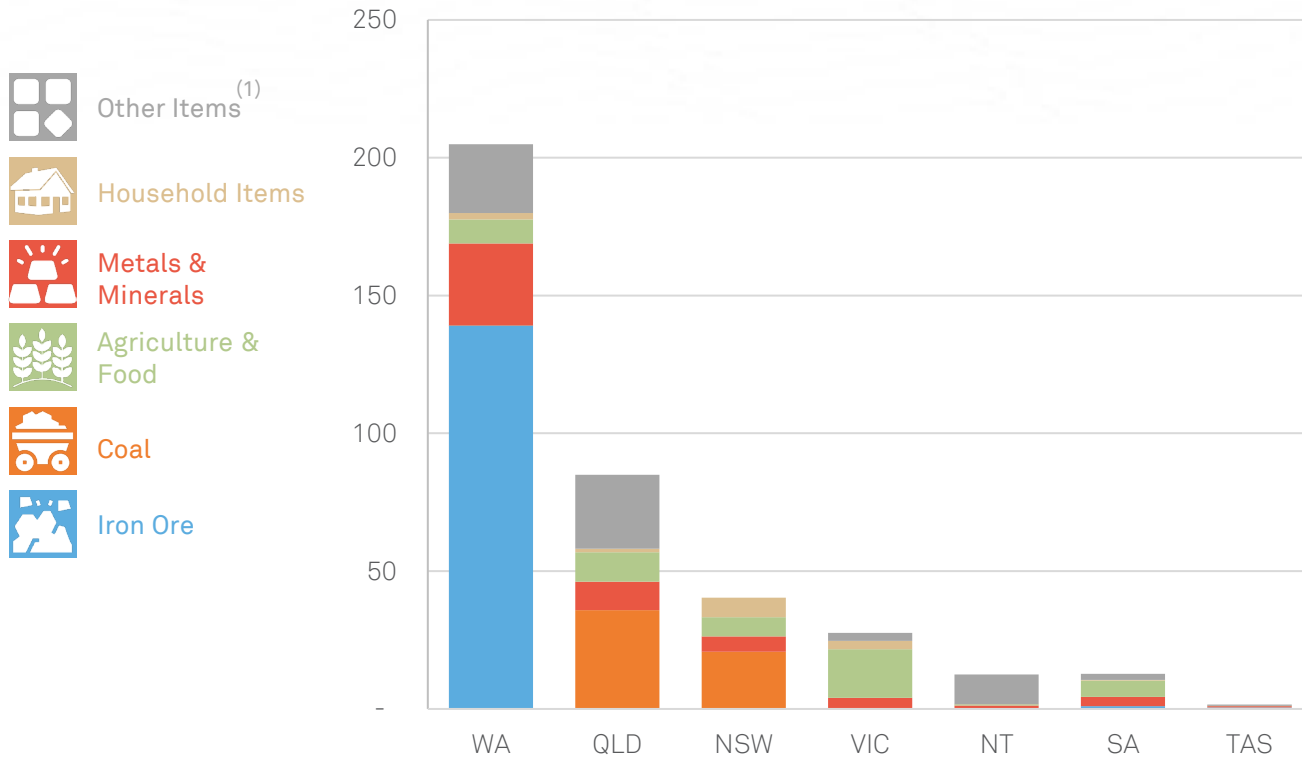
## Exports by Volume



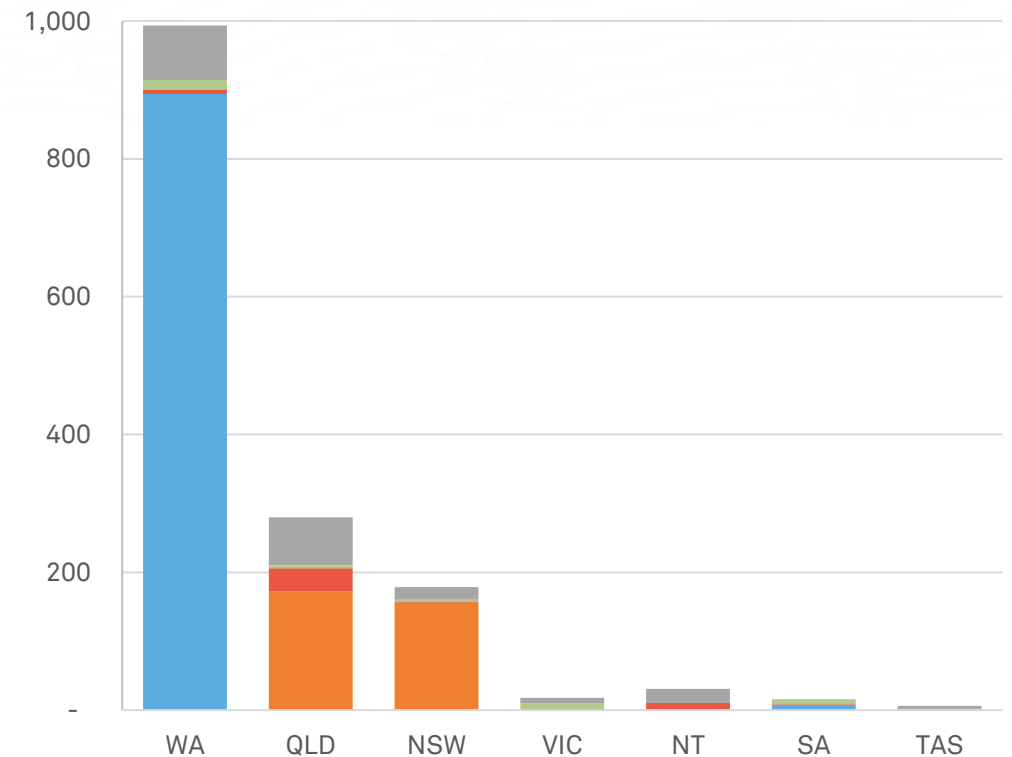


# Australia's exports are dominated by iron ore from WA and coal from Queensland and NSW, with other metals and minerals, and agricultural goods exported from a broader geographic base.

Exports by Value (A\$ billions) 



Exports by Volume (tonnes millions) 

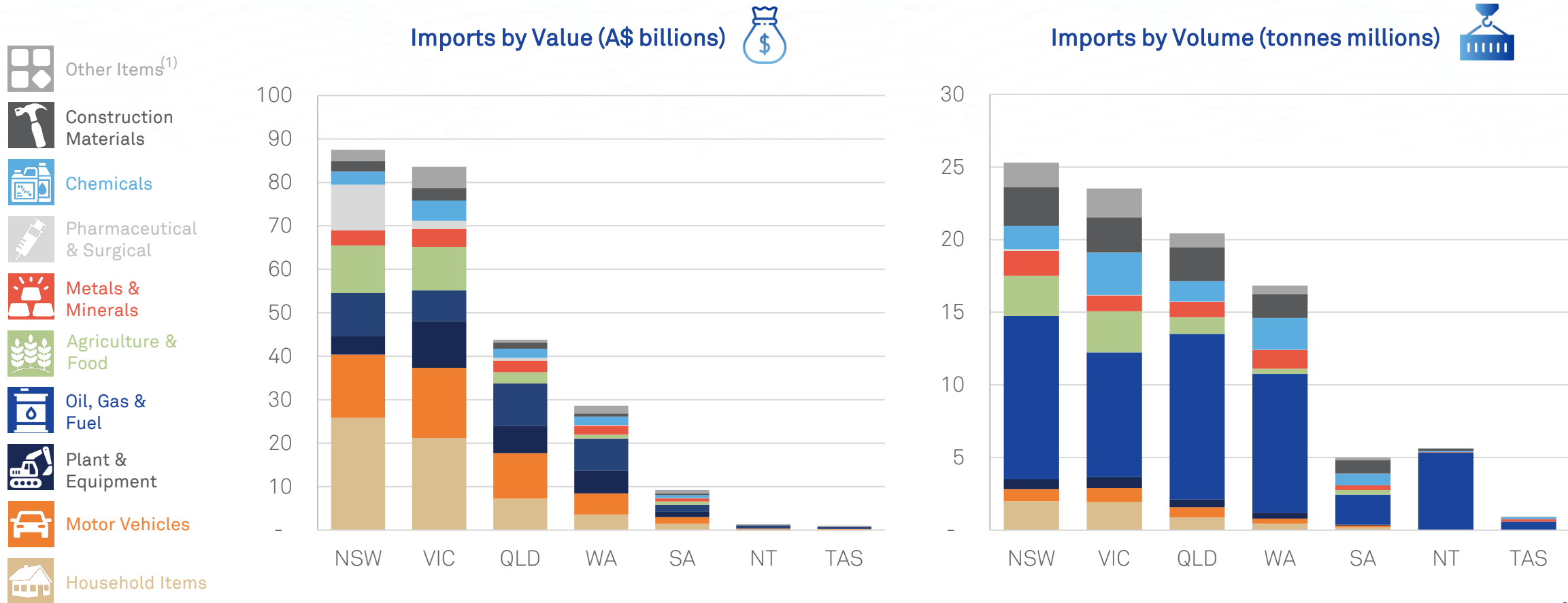


1. Other items largely refer to confidential items not identified by ABS, which include LNG exports from WA, QLD and NT

Source: ABS data



Imports are more varied in type than exports, with high volumes of fuel coming into each state, and higher value goods, such as household goods and pharmaceuticals, largely coming into NSW and VIC.



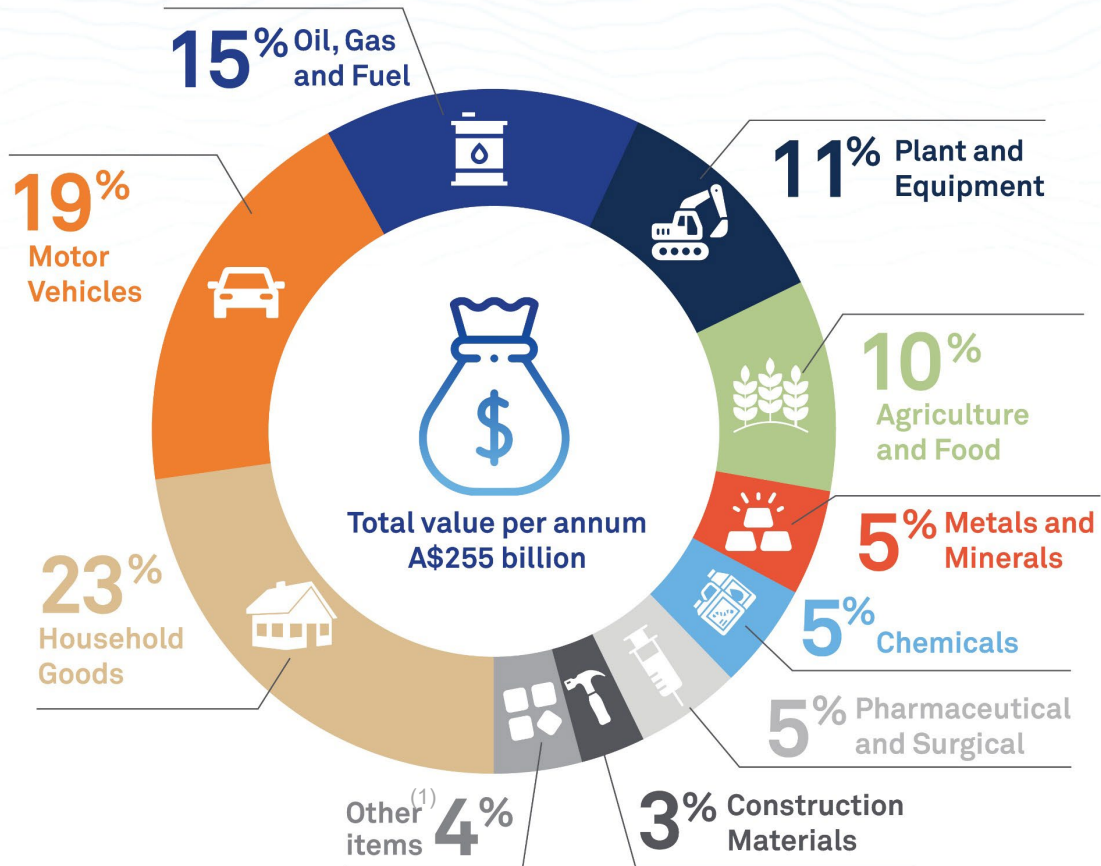
1. Other Items largely refer to confidential items not identified by ABS

Source: ABS data

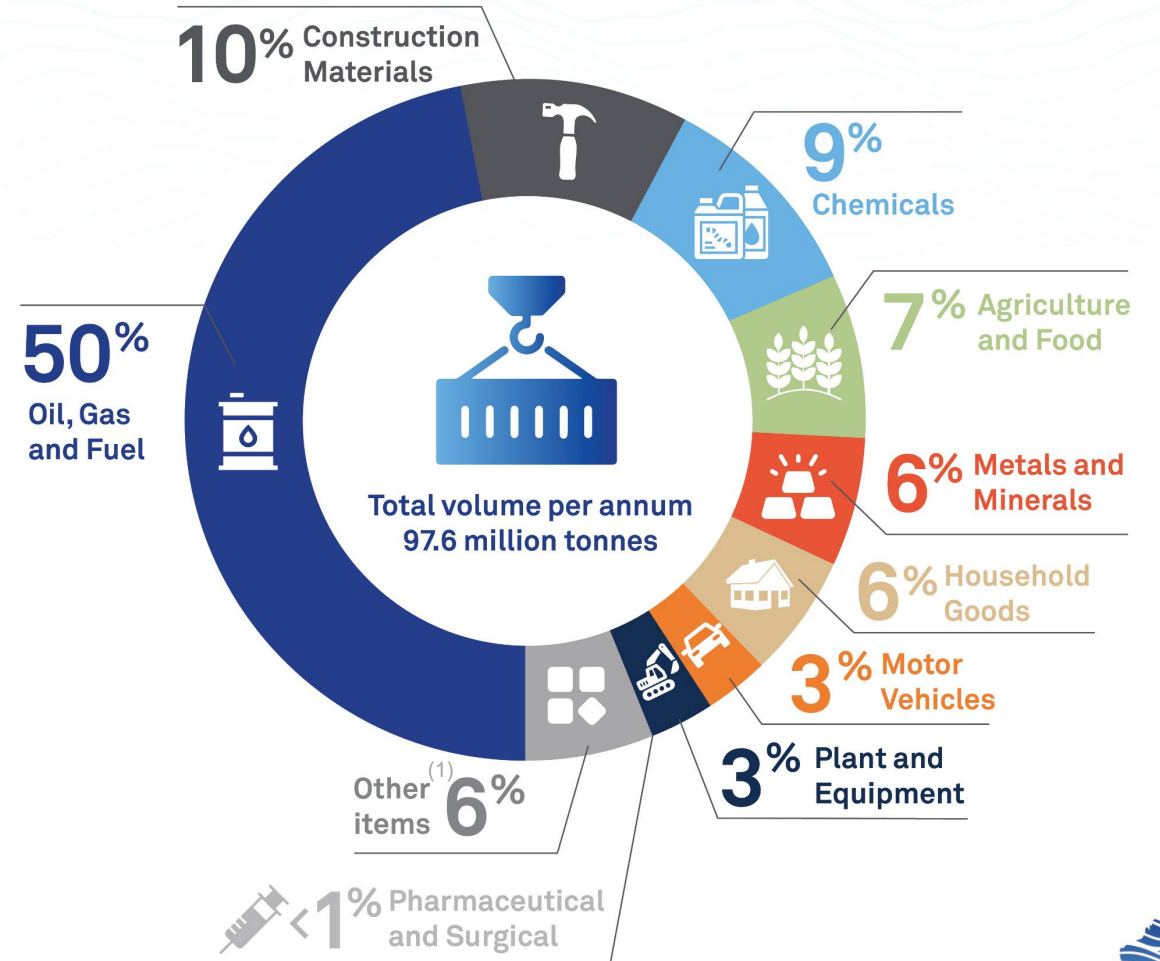


# Import Trade through Australia's ports by goods type.

## Imports By Value



## Imports By Volume



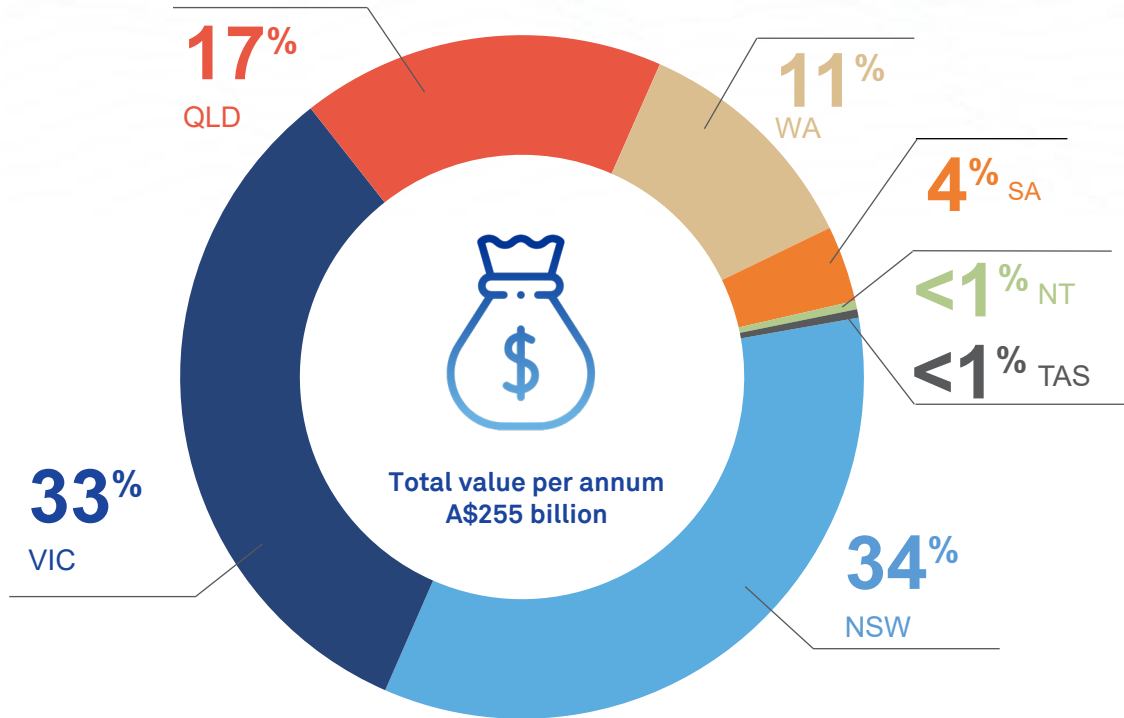
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Source: ABS data

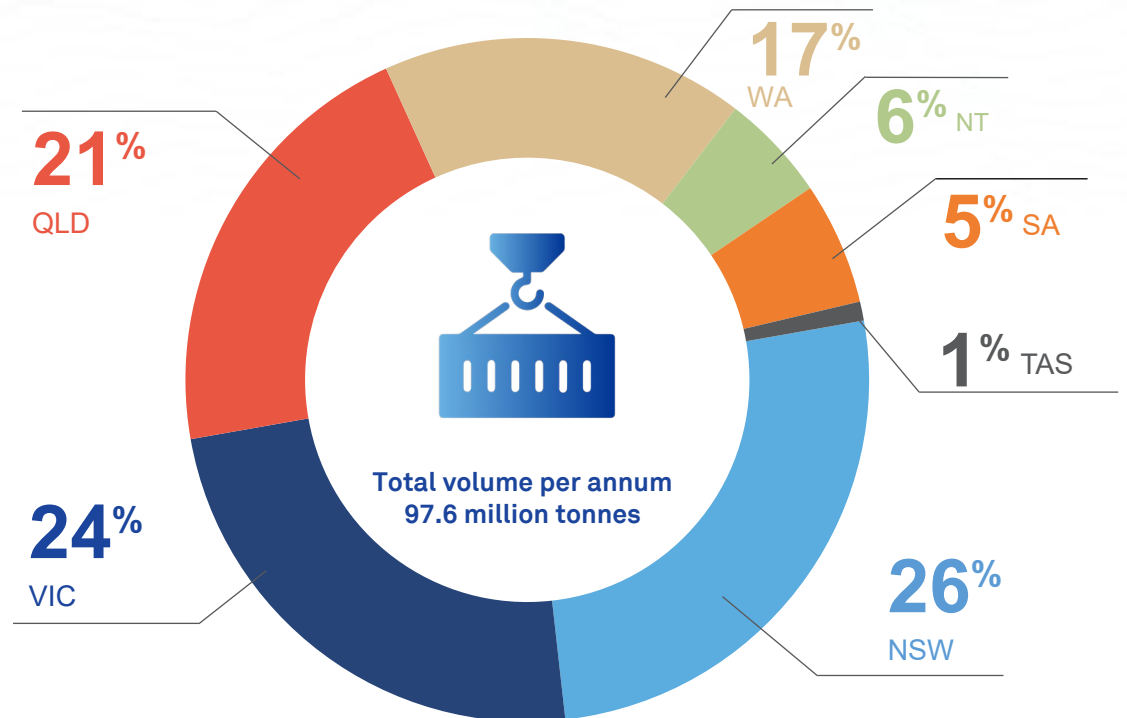


# Import Trade by state.

## Imports by Value



## Imports by Volume





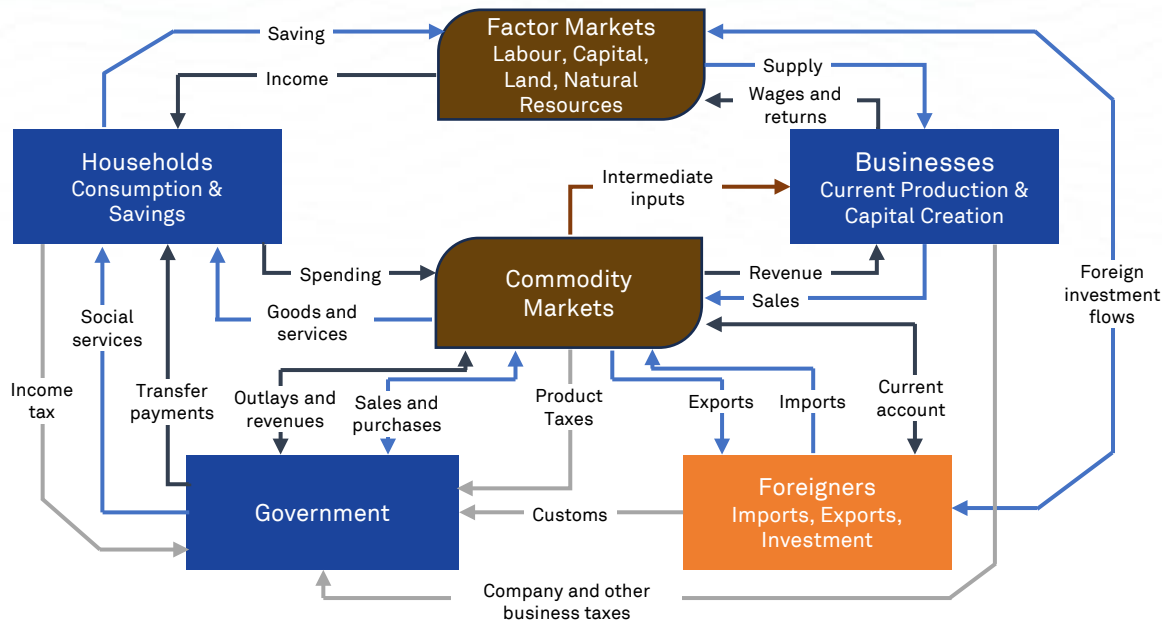
# Economic Impact Study

## key outputs



# Methodology – the CGE Framework

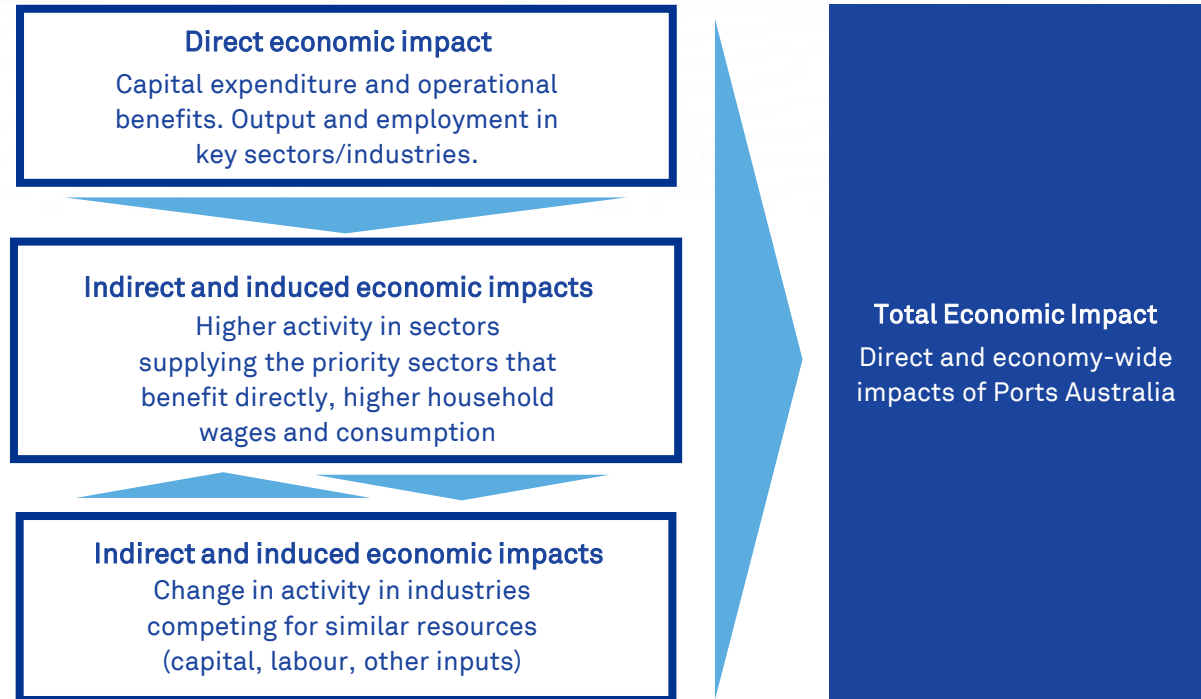
A CGE model captures the interactions of various economic agents – consumers, producers, households, investors, government, and foreigners.



The CGE model captures the following economic impacts:

- **Direct effects** – the value generated through the ports’ capital investment and own operations.

- **Indirect impacts** – the flow-on effects that port activity generates, such as the stimulation of upstream and downstream activities.
- **Induced impacts** – extra consumption of households due to higher factor income.



*“While Input-Output (I-O) multipliers may be useful as summary statistics to assist in understanding the degree to which an industry is integrated into the economy, their inherent shortcomings make them inappropriate for economic impact analysis. These shortcomings mean that I-O multipliers are likely to significantly overstate the impacts of projects or events. More complex methodologies, such as those inherent in Computable General Equilibrium (CGE) models, are required to overcome these shortcomings”, Australian Bureau of Statistics website <sup>(1)</sup>*



# CGE Model Scenario Definitions



## Investment

Economic effects of investments in capital expenditure by members and their tenants<sup>(1)</sup> in port facilities. For example, extension to land side wharf facilities or a new terminal. The primary effect is an increase in the output of the construction sector as this is the main input to investment.



## Operations

Economic effects of the operations of the port facilities and associated supply chain by members and their tenants<sup>(1)</sup>. The direct effects of operational expenditure can be attributed to job creation and increased value-added in industries directly linked to the operations of the ports, such as the transport, warehousing and storage industries. In addition to these direct effects, the model also quantifies the flow-on effects resulting from downstream and upstream linkages in the supply chain of commodities, such as wholesale and retail trade margins on imported goods.



## Trade Facilitation

Economic effects of imported and exported goods transiting through members' ports. The trade facilitated by the ports has a ripple or flow-on effect in each of the States' economies, impacting a broad range of industries. For example, this captures the impact on the industries responsible for producing exported goods (e.g. mining, manufacturing, agriculture). It should be noted that the trade facilitation impact of exported goods will largely be positive, as the value-add occurs locally, and the impact of imported goods will largely be negative, as the value-add occurs offshore and replaces labour and other economic activity that could otherwise be undertaken in Australia.



### Did you know?

The economic contribution is highest in WA and QLD, where the export of iron ore and coking coal drives significant activity.

Economic contribution is made up of three components:



#### Investment

Economic effects of investments in capital expenditure by members and their tenants.



#### Operations

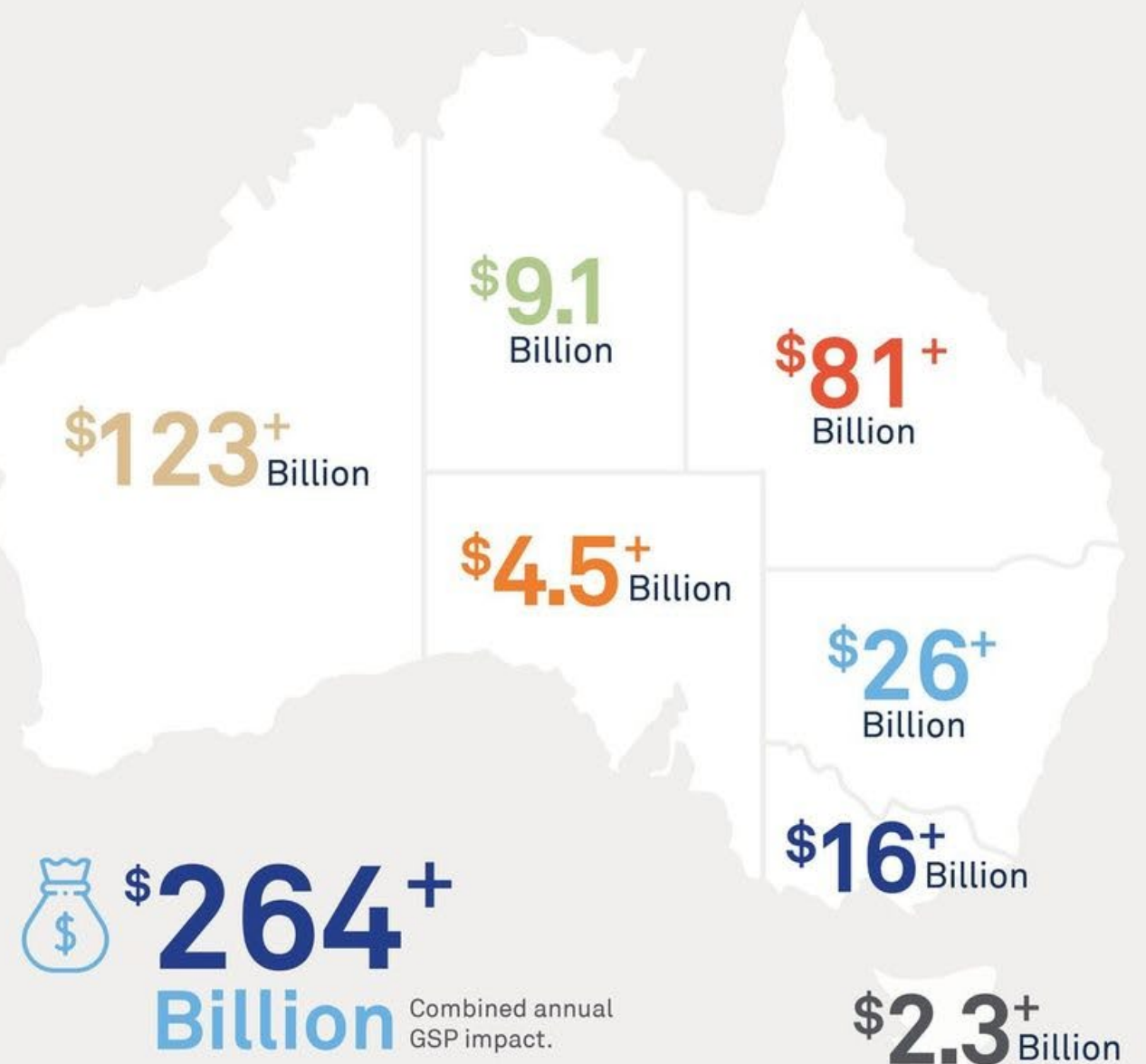
Economic effects of the operations of members and their tenants.



#### Trade facilitation

Economic effects of imported and exported goods transiting through members' ports.

## Australia's ports' economic contribution by State.

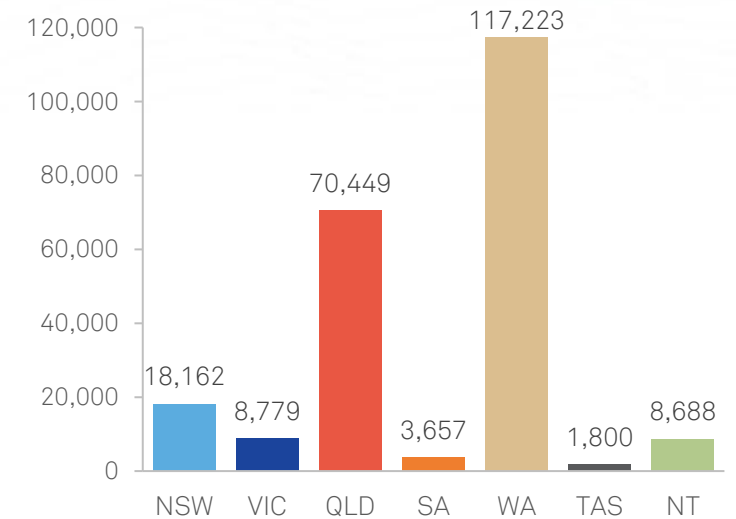
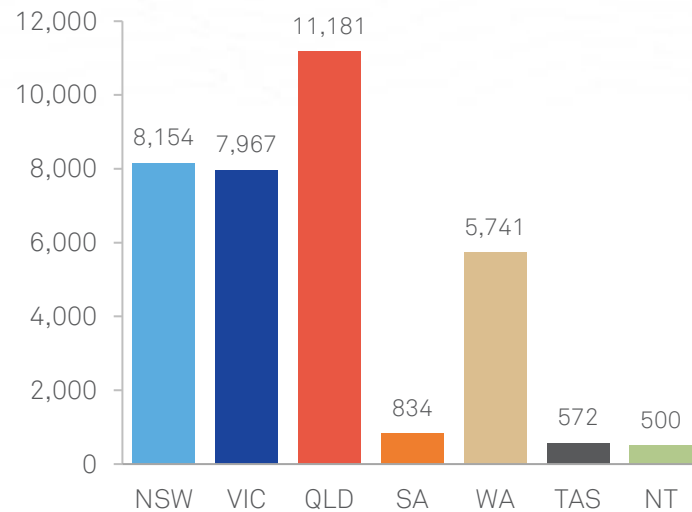
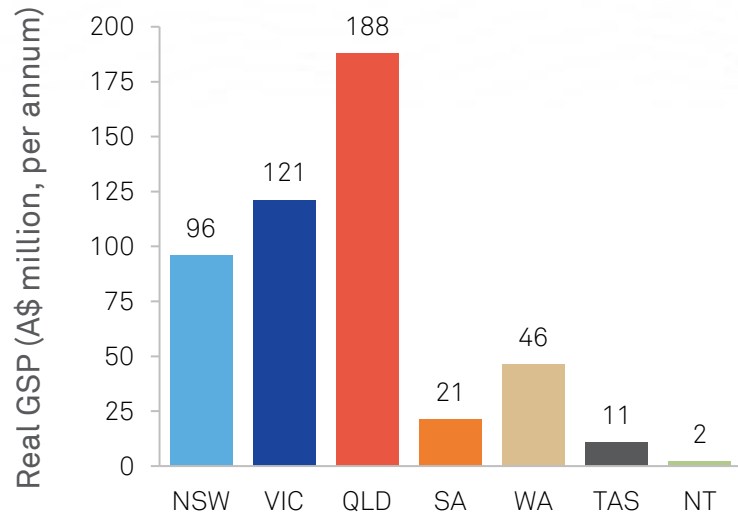


Note: GSP by state only captures the effect of ports' activities on that state and ignores the effects on other states



# GSP effects

The Gross State Product (GSP) effect is much greater in states where trade facilitated by export of iron ore (WA) and coking coal (QLD) drives significant economic activity.



Did you know?

 The mining sector accounts for:

**51%** of total GSP contributions of Australia's ports.



**\$\$\$ \$134+** Billion

More than half of the total economic contribution of Australia's ports.

And over

**95,000**

jobs facilitated by Australia's ports' activities.

## National economic contributions by sector to GSP.



1. Mining & Resources includes Iron Ore, Coal, LNG and other metals and minerals





## Employment effects - number of jobs facilitated by Australia's ports' activities by state.



### Did you know?

The contribution of Australia's ports to employment is significant, facilitating



Approx. 1 in every 20 jobs across Australia.



**194K+**

facilitated in  
Retail Trade



**104K+**

facilitated in  
Construction



**93K+**

facilitated in  
Wholesale Trade

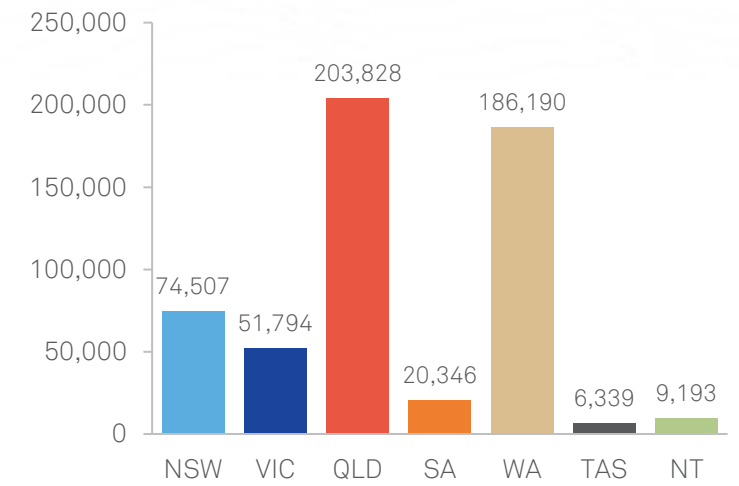
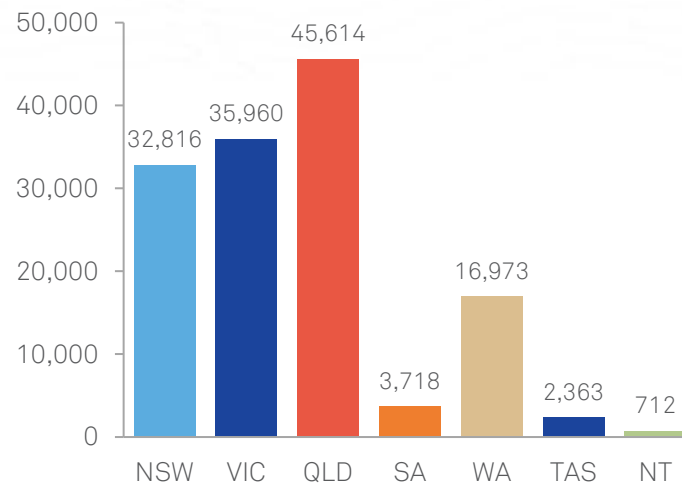
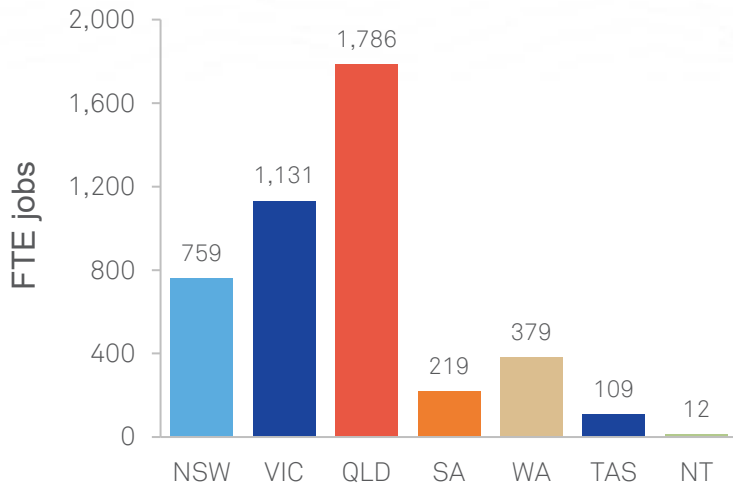


**95K+**

facilitated in Mining  
and Resources

# Employment effects

The employment impact is greatest in states where trade facilitated by the export of iron ore (WA) and coal (QLD and NSW) drives significant economic activity.





# National employment contributions by sector.



1. Mining & Resources includes Iron Ore, Coal, LNG and other metals and minerals

Source: CGE model



# Aggregated Financial and Operational metrics



## Did you know?

Over the past 5 years, Ports Australia port members:

 **Invested**  
**\$3.8+ Billion** in Capital Expenditure.

**Spent**  
**\$9.6+ Billion** in Operational Expenditure. 

 **Reduced**  
the average total recordable incidents by **36%**

 **Increased**  
permanent employees by over **17%** 

 **>2x Increase**  
in trainee roles

## Ports Australia port members' aggregated financial and operational data – by year

	Units	2022/23	2021/22	2020/21	2019/20	2018/19	Compound Growth Rate <sup>(1)</sup>
<b>FINANCIALS</b>							
Revenue	A\$M	\$ 4,736	\$ 4,222	\$ 4,195	\$ 3,757	\$ 3,756	6.0%
Capital expenditure	A\$M	\$ 980	\$ 673	\$ 485	\$ 931	\$ 737	7.4%
Operational expenditure	A\$M	\$ 2,128	\$ 2,034	\$ 1,857	\$ 1,822	\$ 1,817	4.0%
Company Tax Paid	A\$M	\$ 280	\$ 215	\$ 209	\$ 183	\$ 166	14.0%
<b>EMPLOYMENT</b>							
Number of Permanent employees	FTE	3,647	3,499	3,342	3,214	3,108	4.1%
Number of Trainees	FTE	46	53	30	24	20	23.1%
Employees working in Regional Areas	FTE	2,025	1,896	1,834	1,711	1,628	5.6%
% of Employees working Regional Areas	%	56%	54%	55%	53%	52%	
<b>MOVEMENTS<sup>(2)</sup></b>							
Number of vessel visits - container	#	6,007	5,644	5,609	5,829	6,283	-1.1%
Number of vessel visits - bulk	#	21,510	21,647	20,040	20,478	20,618	1.1%
Number of vessel visits - ro-ro	#	1,952	2,083	2,084	1,990	2,263	-3.6%
Number of vessel visits - cruise	#	1,633	292	205	1,501	1,670	-0.6%
<b>Total Number of vessel visits</b>	<b>#</b>	<b>31,102</b>	<b>29,666</b>	<b>27,938</b>	<b>29,798</b>	<b>30,834</b>	<b>0.2%</b>
<b>CRUISE PASSENGERS<sup>(2)</sup></b>							
Number of passengers - cruise	#	1,688,745	25,605	6,142	1,294,730	1,430,007	4.2%
<b>TRADE VOLUME<sup>(2)</sup></b>							
Imported containers <sup>(3)</sup>	TEU	4,266,986	4,415,376	4,410,221	3,943,492	4,107,231	1.0%
Imported bulk commodities	kt	118,507	115,782	112,140	107,941	112,240	1.4%
Imported ro-ro items	#	1,292,638	1,116,687	1,096,995	910,054	1,140,670	3.2%
Exported containers <sup>(3)</sup>	TEU	2,761,617	2,709,166	2,770,113	2,621,636	2,729,186	0.3%
Exported bulk commodities	kt	1,263,903	1,259,786	1,251,839	1,264,062	1,247,482	0.3%
Exported ro-ro items	#	129,631	148,274	110,092	78,770	74,607	14.8%

1. Compound annual growth rate from 2018/19 to 2022/23
2. Includes coastal movements and trade
3. Excludes empty containers

Source: Ports Australia members' data





2022/2023

Total number of vessel visits<sup>(1)</sup> through members' ports in 2022/23:



7.0+ Million

Full Containers<sup>(2)</sup> handled by Ports Australia members.

1.29 Million 

Motor vehicles imported through Ports Australia members.



7.5% Container

Average increase in containers transported per container ship visit over 5 years.



31% RORO

Average increase in vehicles delivered per roll on-roll off (roro) ship over 5 years.

1,633 

Total Cruise vessel visits 2022/2023

Cruise passenger numbers have returned to over 18% higher than pre-pandemic numbers.

1.6+ Million 

Cruise passengers 2022/2023

=4.2% Annualised growth in cruise passengers over 5 years (2018-2023).

1 Includes coastal trade  
2 Container numbers exclude empty containers transported

Source: Ports Australia members' data





# Members' aggregated 2022/23 operational data – by state

	Units	NSW	VIC	QLD	SA	WA	TAS	NT	Total
<b>EMPLOYMENT</b>									
Number of Permanent employees	FTE	520	329	1,288	94	1,105	234	78	3,647
Number of Trainees	FTE	2	6	15	-	23	-	-	46
Employees working in Regional Areas	FTE	221	152	1,066	21	629	157	-	2,246
% of Employees working Regional Areas	%	43%	46%	83%	22%	57%	67%	0%	62%
<b>MOVEMENTS<sup>(1)</sup></b>									
Number of vessel visits - container	#	1,179	1,087	1,340	287	392	1,650	72	6,007
Number of vessel visits - bulk	#	2,241	1,503	6,718	1,573	8,378	850	247	21,510
Number of vessel visits - ro-ro	#	344	935	400	82	152	-	39	1,952
Number of vessel visits - cruise <sup>(2)</sup>	#	320	121	290	88	272	451	91	1,633
<b>Total Number of vessel visits</b>	<b>#</b>	<b>4,084</b>	<b>3,646</b>	<b>8,748</b>	<b>2,030</b>	<b>9,194</b>	<b>2,951</b>	<b>449</b>	<b>31,102</b>
<b>CRUISE PASSENGERS<sup>(1)</sup></b>									
Number of passengers - cruise <sup>(2)</sup>	#	635,986	207,366	457,007	-	83,305	258,000	47,081	1,688,745
<b>TRADE VOLUME<sup>(1)</sup></b>									
Imported containers <sup>(3)</sup>	TEU	1,337,779	1,450,583	678,511	138,588	396,482	254,986	10,057	4,266,986
Imported bulk commodities	kt	26,147	19,190	39,192	8,487	19,002	5,569	920	118,507
Imported ro-ro items	#	417,445	414,071	279,203	61,444	113,967	-	6,508	1,292,638
Exported containers <sup>(3)</sup>	TEU	845,005	852,650	439,660	131,710	248,018	242,301	2,273	2,761,617
Exported bulk commodities	kt	155,348	10,064	260,510	17,244	811,575	8,945	217	1,263,903
Exported ro-ro items	#	30,808	86,976	8,300	2,722	825	-	-	129,631

1. Includes coastal movements, trade and passengers
2. Spirit of Tasmania only allocated to Tasmania to avoid double count with Victoria, SA passenger numbers not available
3. Excludes empty containers

Source: Ports Australia members' data



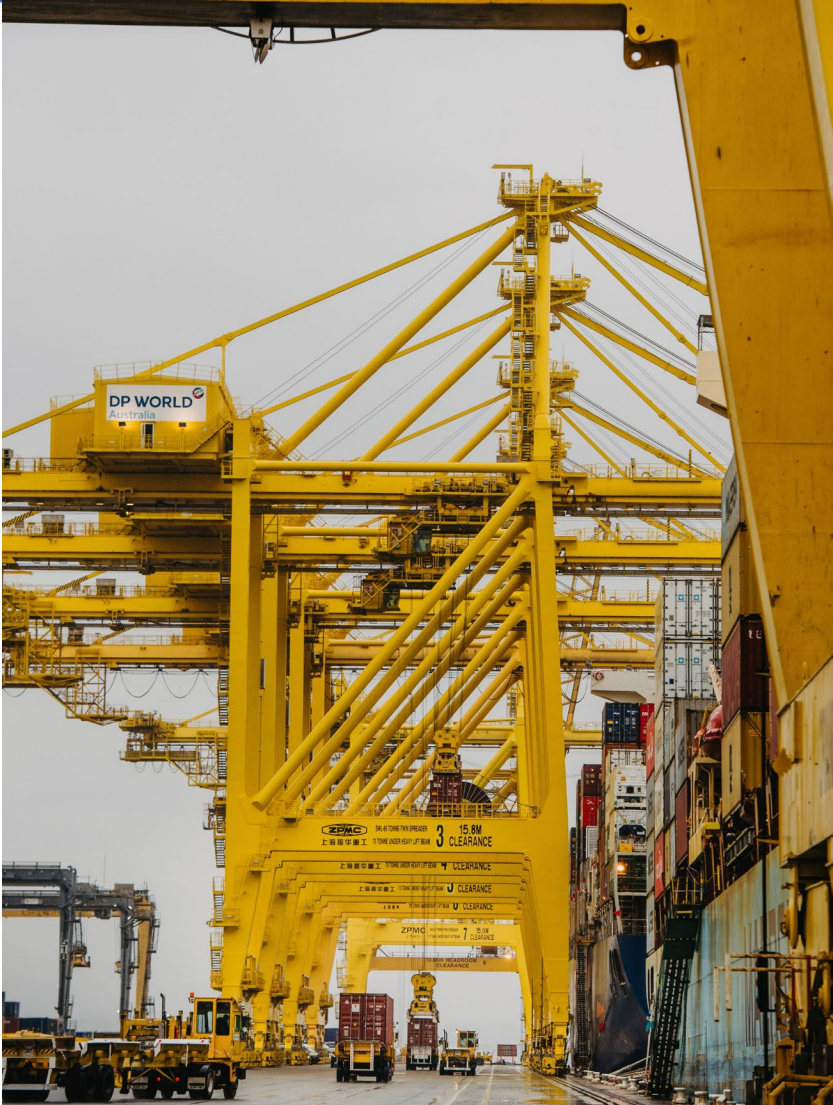
# Appendix 1 – Supplementary data



# Ports Australia members' share of Australia's total seaborne trade.

## Trade share <sup>(1)</sup>

	By Value		By Volume		Notable Exclusions
	Exports	Imports	Exports	Imports	
NSW	100%	94%	100%	85%	Kurnell
VIC	100%	100%	100%	100%	Gippsland
QLD	100%	100%	100%	100%	
SA	85%	97%	49%	87%	Whyalla, Port Bonython
WA	79%	100%	79%	100%	Port Wallcott, offshore rigs
TAS	65%	100%	63%	100%	Port Latta
NT	68%	92%	45%	98%	Confidential trade, offshore rigs
<b>Total</b>	<b>87%</b>	<b>98%</b>	<b>85%</b>	<b>95%</b>	

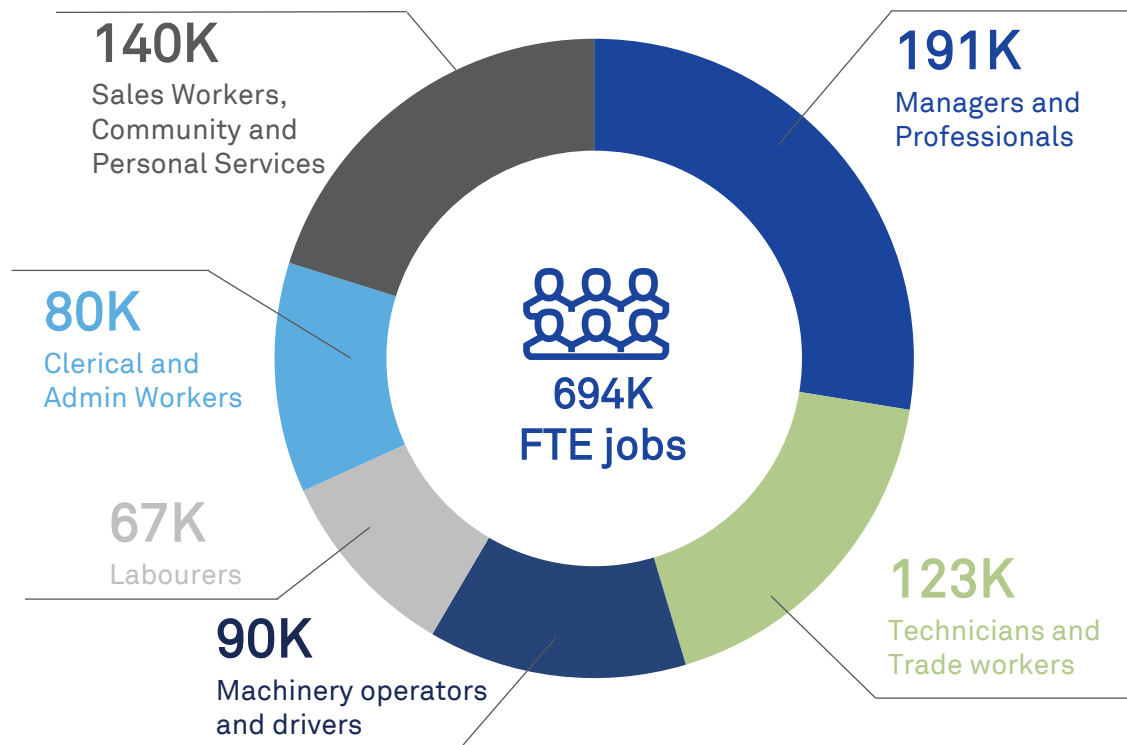


1. Trade share =  $\frac{\text{value (volume) of activity through Ports Australia members' ports}}{\text{value (volume) of total national seaborne trade}}$



# Occupational FTE jobs

Ports' contribution is spread across several job categories, with all occupational types benefiting from the operation of and trade facilitation generated by the members' ports.





# Appendix 2 – Model features, database and assumptions



# The CGE model

The model is a spatial computable general equilibrium (CGE) model of the Australian regional economies. It represents the economy as a system of interdependent economic agents and thus is capable of tracing and quantifying the impact of an infrastructure/ project from one sector of the economy to another. Figure 1 shows a stylised representation of the transmission channels through which the impact of Ports Australia affects the whole economy.

Economic theory is used to specify the behaviour and market interactions of economic agents in the model. Defining features of the theoretical structure include:

- optimising behaviour by households and businesses in the context of competitive markets with explicit resource constraints and budget constraints;
- the price mechanism operates to clear markets for goods and factors, such as labour and capital, i.e., prices adjust so that supply and demand are equal; and
- marginal costs are equal to marginal revenues in all economic activities.

The model combines data from input-output tables, labour force surveys and other sources with the model theory to quantify sophisticated behavioural responses such as:

- price and wage adjustments driven by resource constraints;

- household spending and government spending and taxing adjustments driven by budget constraints; and
- allowance for input substitution possibilities in production (e.g., allowing the combination of labour, capital, and other inputs required for production to vary in response to relative price changes).

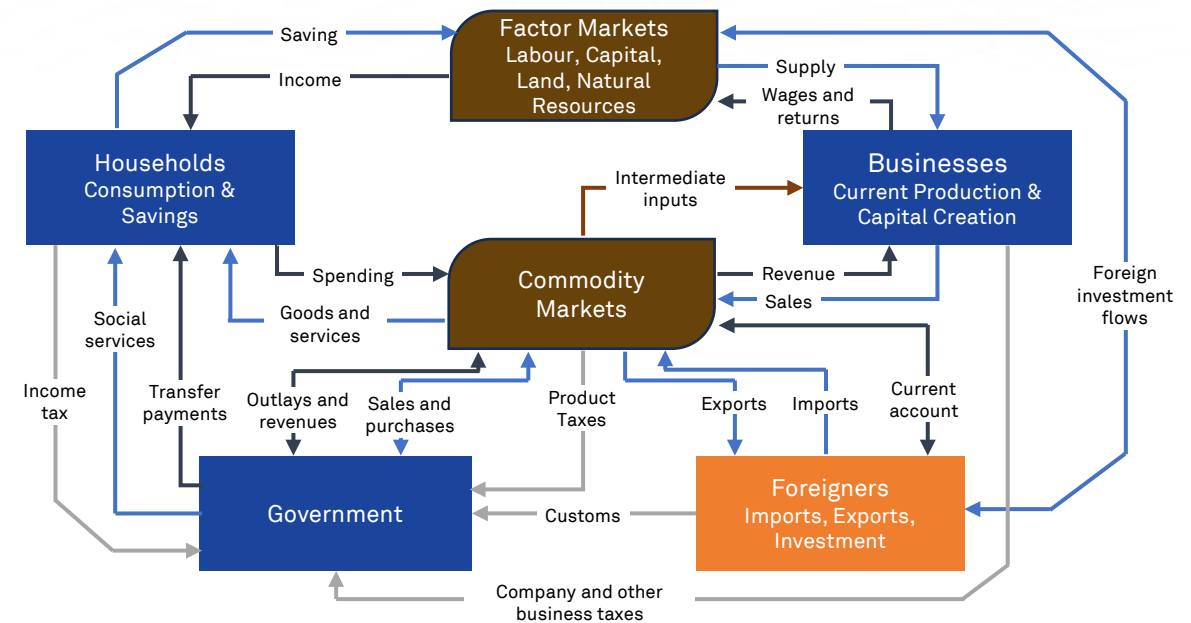


Figure 1: System of interdependent economic agents



# The CGE database

The main database of the CGE model is the 2019-20 input-output (IO) table that quantifies the flows of goods and services between producers and various users (e.g., intermediate inputs to other producers, inputs to capital creators, households, governments and foreigners) and the flows associated with primary factor inputs (i.e., labour, capital, land and natural resources). IO tables are publicly available from the Australian Bureau of Statistics (ABS).

The latest regional and national accounts data from ABS were also used to reflect the current structure of the regional economies in the model database.

The CGE model typically represents regional economies aligned to Statistical Areas Level 4 (SA4) of the Australian Statistical Geography Standard (AGSG). For this project, we used a regional aggregation that explicitly captures the eight states and territories in Australia.

The CGE model also represents the economy at a high level of industry detail. By default, the model has 117 sectors that is consistent to the Australian and New Zealand Standard Industrial Classification (ANZSIC) classification. The 117 sectors were aggregated to a more manageable representation. Key sectors for modelling the impact of Ports Australia includes:

- Stevedoring and transport-related sectors such as the Transport Support services and Storage, Passenger and Freight Transport services differentiated into Road, Rail, Air and Water transport, Postal and Courier Pick-up and Delivery services.
- Traded sectors such as coal, grain, motor vehicles, metal products, chemicals, bulk liquids, and containerised consumer goods
- Retail and Wholesale sectors that facilitate the flow of goods from the ports to the supply chain.
- Construction sectors that facilitate the creation of capital assets.
- Professional, Scientific and Technical Services, and Other services.



# The analytical framework

The impacts consist of the direct, and flow-on (indirect and induced) effects of the operations and sales activity of the ports on both states and national economy. The indirect impacts include the flow on effects that the ports' activity generates, such as the stimulation of businesses upstream in the supply chain (e.g., suppliers of material inputs, maintenance services etc.) and the stimulation of activities downstream (e.g., agriculture, mining, manufacturing and other businesses that use stevedoring and freight transport services).

The induced impacts include ripple effects or wider contributions resulting from extra consumption of households due to higher factor income. This additional consumption means additional production resulting in a further increase in employment. This induced effect on jobs can be quantified exclusive of the direct and indirect employment effects by holding the household consumption constant in real terms.

Unlike spreadsheet and input-output (IO) analysis, CGE models capture feedback effects across different parts of the economy (e.g. households, firms, governments). Capturing these feedback effects mean that the analysis is more accurate and less likely to overstate or understate the results. Moreover, CGE modelling adds additional detail to an economic assessment by taking into account the behavioural responses when identifying the costs and benefits flowing from the ports' operations. This makes CGE analysis more robust relative to the IO analysis.

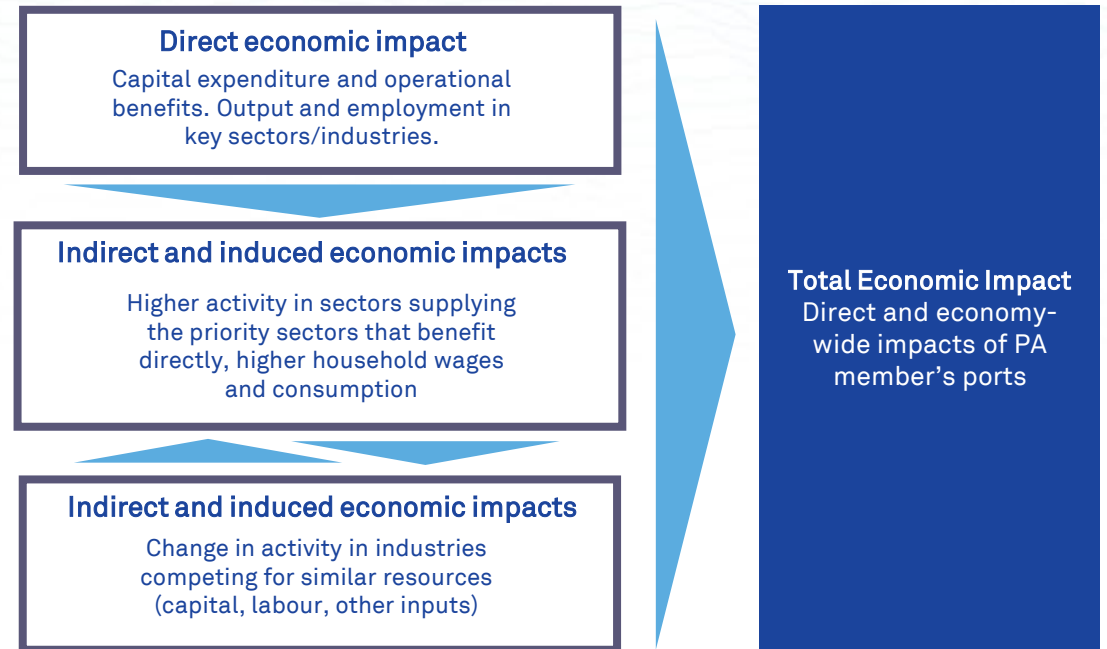


Figure 2: Assessment of economy-wide impacts using a CGE model





# Simulation design

The economy-wide effects of Ports Australia members are measured by the difference in the values of economic variables between a baseline and project scenario. The baseline is represented by the CGE model's initial database which is calibrated using the latest input-output table, and regional and national accounts data from ABS. This up-to-date baseline reflects the current structure of the regional economies. The baseline are then be used to calibrate appropriate shocks that represent the operations of Ports Australia. These shocks reflect the operational costs, capital expenditure, trade volumes, port revenues and other direct benefits (e.g., workers employed) arising from the ports' activities. By comparing the project case to the baseline, the model allows us to quantify the economic contributions of Ports Australia members across states and to Australia as a whole.

The project scenarios modelled are as follows:

**Investment scenario:** The capital expenditure (CAPEX) of Ports Australia members and their tenants are represented in the model by imposing a value for investment inputs in the Transport Services Sector across regions whilst investment in other sectors responds to sector-specific rates of return.

**Operational scenario:** The operations of Ports Australia members are represented in the model by shocking the output of the Transport Services Sector across regions that corresponds to the value of Ports Australia members' operational expenditure.

**Trade flow scenario:** This scenario is represented in the model by shocking the value of exports and imports (or cruise trips) flowing through Ports Australia members across regions.

**Port disruption scenario:** The port disruptions (e.g., a 2-week shutdown, 24-hour stoppage and a 4-hour delay) are modelled as a fall in the ports' capital utilisation and a contraction in the output of Transport Services Sector (this effectively causes a fall in the ports' labour productivity). We looked at impact of port disruption plus impact of disruption if trade was re-routed via an alternate port.



# Simulation assumptions

The capital investment, port operations and port disruptions scenarios are modelled in a short-run economic environment with the following assumptions:

- sector-specific capital stocks are held fixed at their baseline values;
- the labour market is assumed to have sufficient slackness in the short term so that increases in demand do not affect the real wage rate;
- the number of working-age people is held fixed;
- the average propensity to consume out of household disposable income is held fixed;
- tax rates and government policy settings are held fixed with budget balances free to vary; and
- consumer preferences and technical change parameters are held fixed.

The impacts of the trade flows facilitated by the ports are assessed in the context of a long-run economic environment with the following assumptions:

- the rates of return on capital are fixed while capital stocks are free to vary;
- the national unemployment rate is fixed with the real wage rate responds to changes in labour demand;
- the current account (as a ratio of GDP) is held fixed via the adjustment of the national household saving rate; and
- consumer preferences and technical change are held fixed.



# CGE models vs input-output (IO) models

In economic impact assessments, IO models are the predecessors of the more complex and robust CGE models. In the IO framework, an IO table (as typically published by the Australian Bureau of Statistics) provides a snapshot of the structure of the economy (usually for a given year) and can be used to derive estimates of the total response of the economy as a result of some specified event, policy or activity (e.g., Ports Australia). These calculations are usually based on applying IO multipliers that are derived from IO tables. However, the use of IO multipliers for this purpose has now largely been recognised as misleading due to their inherent simplifying assumptions considered to provide unreliable estimates of economic impacts. Shortcomings of IO analysis are outlined in detail by Clark (2018), Layman (2002), Gretton (2013) and ABS (2021). The shortcomings as listed by ABS (2021) appear below.

- Lack of supply-side constraints: The most significant limitation of economic impact analysis using multipliers is the implicit assumption that the economy has no supply-side constraints. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
- Fixed prices: Constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. Prices are assumed to be unaffected by policy and any crowding out effects are not captured.
- Fixed ratios for intermediate inputs and production: Economic impact analysis using multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. As such, impact analysis using multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount.

- No allowance for purchasers' marginal responses to change: Economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production.
- Absence of budget constraints: Assessments of economic impacts using multipliers that consider consumption induced effects (type two multipliers) implicitly assume that household and government consumption is not subject to budget constraints.
- Not applicable for small regions: Multipliers that have been calculated from the national I-O table are not appropriate for use in economic impact analysis of projects in small regions. For small regions, multipliers tend to be smaller than national multipliers since their inter-industry linkages are normally relatively shallow. Inter-industry linkages tend to be shallow in small regions since they usually don't have the capacity to produce the wide range of goods used for inputs and consumption, instead importing a large proportion of these goods from other regions.

Clark, M. (2018), *Whole-of-economy modelling: Beyond the black box*, Staff Research Paper, Queensland Productivity Commission, Queensland.

Layman B. (2002), *The use and abuse of input-output multipliers*, Economic Research Articles, Department of Treasury and Finance, Western Australia.

Gretton, P. (2013), *On Input -Output Tables: Uses and Abuses*, Staff Research Note, Productivity Commission, Canberra.

<https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-input-output-tables/2018-19#input-output-multipliers>

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