The Economic Impact of the Seafood Sector: Greencastle

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Foreword

The Economic Impact of the Seafood Sector: Greencastle

In 2024, BIM completed its second evaluation of Ireland's top ten ports, providing a five-year comparative analysis of the economic contribution of the seafood sector. This report builds on the 2019 assessment, offering insights into the sector's evolving role at the port, regional, and national levels. It captures key economic trends and structural changes over this period, reflecting the challenges and opportunities faced by the industry. The study examines the direct, indirect, and induced effects of the seafood sector on the Greencastle hinterland, illustrating its continued significance to the local economy.

Greencastle, located on the Inishowen Peninsula in Co. Donegal, is a key fishing port with a well-established commercial fishing and processing sector. Alongside seafood, the local economy is supported by tourism, manufacturing, and professional services. The region's geography presents logistical challenges, but strong connections to Derry (36km) and Belfast (117km) facilitate access to wider markets. The seafood sector remains a cornerstone of economic activity in this broader landscape.

Findings from this report highlight the significant economic impact of the seafood sector, particularly in terms of Gross Value Added (GVA), employment, and wages. In 2018, seafood activity accounted for 11% of the Greencastle hinterland's economy, when considering direct and indirect effects. However, due to incomplete CSO Census 2022 data, this estimation could not be updated for 2023. Direct seafood activity at the port now generates over €52 million in turnover, supporting 390 direct jobs. The commercial fishing sector remains the primary driver, with direct GVA at the port estimated at €23 million, while an additional €18 million is generated upstream. Alongside the 390 direct jobs, a further 185 jobs are supported in the wider economy. Direct wages total more than €11 million, with an additional €8 million generated through indirect effects.

Over the past five years, direct seafood sector GVA in Greencastle has declined by 22%, while employment has grown by 18% and wages have fallen by 8%. Across the wider seafood sector, GVA has increased by 2%, while employment has risen by 37% and wages by 16%. The overall GVA multiplier effect of the seafood sector has increased from 1.50 to 1.88, indicating higher supply chain spending over this period.

As part of the consultation process for this report, BIM engaged with seafood operators, fish processors, and other industry stakeholders in Greencastle to discuss sectoral trends, challenges, and future prospects. Brexit-related quota reductions have led to challenges for the fleet, particularly in relation to Rockall, where access restrictions have significantly impacted fishing activity. While fish prices have remained strong, rising operational costs including fuel and crew costs are key concerns for vessel owners. Hiring crew was identified as a major issue with stakeholders noting that it is becoming difficult to source Irish and non-EEA crew on board vessels. The increasing age of vessels at the port was also was highlighted as a concern as this results in higher maintenance costs. The Foyle Fishermen's Cooperative has invested significantly in improving fish quality and automation, supported by the Brexit Adjustment Reserve funding.

This report provides a detailed analysis of these economic trends, offering valuable insights to inform policy discussions and support the continued development of the seafood sector in Greencastle.

Executive summary

The seafood sector at the port

The seafood industry makes a significant contribution to the Greencastle economy. In 2023, direct seafood activity at the port is estimated to have generated €52.6 million in turnover. Commercial fishing is the largest seafood sub-sector, generating €24.3 million in turnover, followed by aquaculture (€16.6 million) and fish processing (€11.8 million). When translated into GVA, the seafood sector made a €23.2 million direct contribution to the local port economy. The sector is also estimated to have supported 390 direct jobs.

The survey also identified the key characteristics of the local seafood industry and the business environment for Greencastle operators. The industry is well established, with most firms operating for more than ten years. Overall, the industry appears to be suffering from the challenging economic environment; turnover was reported to have decreased over the previous 12 months by 53% of respondents, although this is in line with the average across the ten ports (52%). For 30% of respondents, turnover had neither increased nor decreased.

An analysis of the survey results allowed the port's seafood sector value to be quantified within the regional economy. Once the indirect and induced effects are calculated, it is estimated that the total economic contribution of the seafood sector at Greencastle equated to €41.1 million of GVA across the Border economy in 2023. The seafood sector at the port also supported an estimated total of 575 jobs across the region and generated €19 million in gross wages. This activity created a fiscal surplus of €8.5 million. When compared to the results of the 2018 study, Greencastle experienced a real terms increase in GVA of an estimated 1.8%. This was accompanied by a growth in employment and gross wages of 36.9% and 16.3% respectively. This was largely due to increased supply-chain spending in comparison to the last study, and salmon farming now being accounted for in the area which significantly improved aquaculture impacts.

€23.2m

Direct GVA in 2023

The seafood sector makes a significant contribution within the local port economy.

€41.1m

Total GVA contribution to the Border in 2023

The seafood sector makes a significant contribution to the wider regional economy.

Table 1. The estimated benefits of the port seafood sector, 2023

Ports seafood sector	Border		
	GVA (€m)	Employment	Gross wages (€m)
Direct	23.2	390	11.6
Indirect	13.5	135	5.3
Induced	4.4	50	2.2
Total	**41.1**	**575**	**19.0**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not sum due to rounding*

The role of the individual seafood sub-sectors

The analysis of the seafood sector at the port produced the following headline findings throughout the region (which again will include the combined direct, indirect, and induced impacts).[1]

- Activity in the commercial fishing sub-sector has been estimated to sustain 270 jobs, €8.2 million of gross wages and €20.9 million of GVA;
- Activity in the aquaculture sub-sector has been estimated to sustain 200 jobs, €6.7 million of gross wages and €12.1 million of GVA;
- Activity in the fish processing sub-sector has been estimated to sustain 110 jobs, €4.4 million of gross wages and €8.8 million of GVA.

Socio-economic characteristics

Greencastle has an ageing population, with an above-average share of those aged 65 and over. Furthermore, the educational profile is notably weaker than the national average, with 19% of residents identified as having only primary education or lower as their highest level of attainment. The accessibility to occupations in the agriculture, forestry and fishing sector is therefore an important source of employment for a sizeable share of the population with lower qualification levels.

As a result, the seafood sector is likely to play a significant role in the local port economy through its provision of direct jobs, supply-chain spending in local businesses and the consumer spending it supports. Looking forward, a vibrant and growing local seafood sector will be important for the economic and demographic health of the local area.

1 Summing the benefits of all three elements within the definition of the seafood sector (fishing, aquaculture and processing) would overestimate the indirect and induced impacts, and as a result, overall impacts. This is because the supply chain of the processing sub-sector will likely contain a proportion of the port's fishing sub-sector and its supply chain. To get the direct totals (for employment, GVA, and gross wages), the three sub-sectors are added. However, for the indirect and induced totals, those of the processing sub-sector are summed with a proportionate share of the fishing and aquaculture (according to the proportion of sales not destined for local processors and informed by the interview process). The remainder of the fishing and aquaculture indirect and induced impacts will already be accounted for within that of the processors.

1. Introduction

1.1 About the study

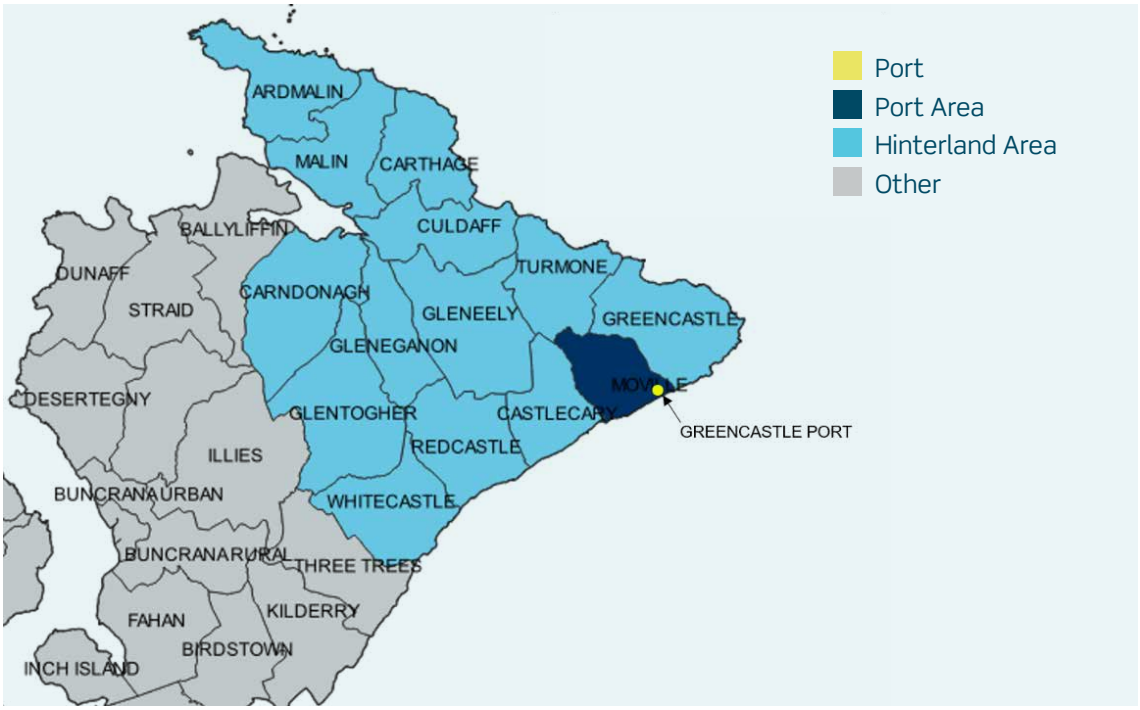
The Irish Seafood sector is an important component of the Irish economy. It is particularly important to coastal communities around the country given its concentration at Ireland's ports, and the relatively lower level of alternative economic activity in these economies. In addition, as economic and employment growth is increasingly driven by office-based activity, which favours urban areas, the seafood sector's role in providing labour market opportunities, wages and local demand in these coastal areas is arguably rising.

Against this backdrop, Bord Iascaigh Mhara (BIM) commissioned Oxford Economics and Perceptive Insight to estimate the economic contribution of the seafood sector in ten of Ireland's ports.

1.2 The seafood sector at the port

Greencastle is a fishing port located in Co. Donegal on the north coast. Sitting on Lough Foyle, the town is 36 km from Derry and is home to the National Fisheries College. In this report, the local port economy is defined as the District Electoral Divisions (DED) of Moville and those surrounding it, which constitute its hinterland — informed by BIM and shown in the below figure.

Fig. 1. Map of port area within the study



To inform the analysis, a comprehensive seafood-related survey exercise was carried out across Ireland's main ports. Researchers worked closely with BIM in order to understand the seafood population at each of the 10 ports. Following this, the market research firm Perceptive Insight collected information concerning the characteristics of the local seafood sector through both telephone and electronic surveys.

Box 1: Introducing economic impact analysis

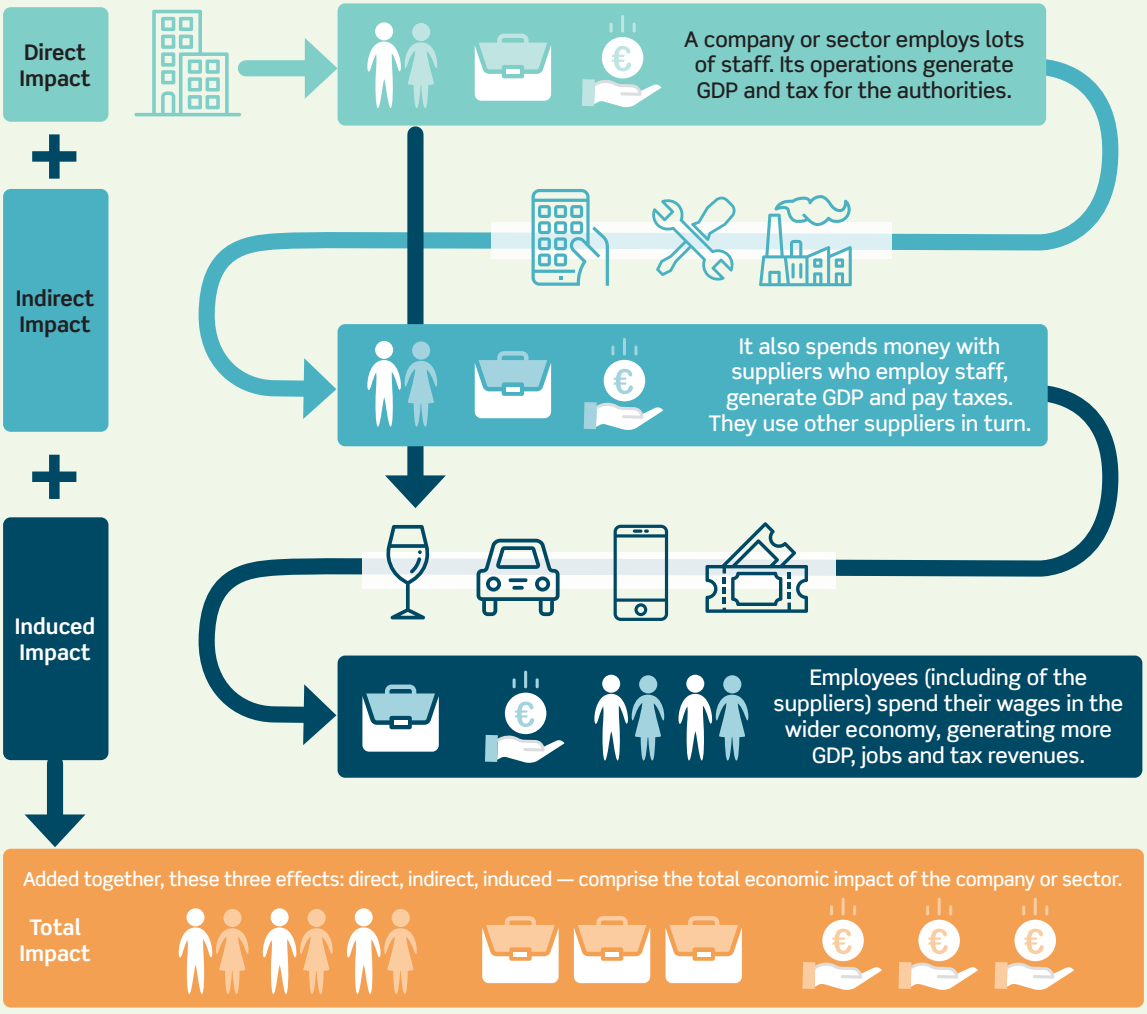
The economic impact of a sector is measured using a standard means of analysis called an economic impact assessment. The report quantifies the three 'core' channels of impact that comprise an organisation/sector's 'economic footprint':

- **Direct impact**, which is the economic activity the seafood sector generates because of its operations;
- **Indirect impact**, or supply-chain impact, that occurs because the sector buys inputs of goods and services from Irish businesses;
- **Induced impact**, which relates to the wider economic benefits that arise when employees of the local seafood sector and its supply chain spend their wages in the consumer economy, for example in local retail establishments.

Three core metrics were used to analyse thee channels of impact:

- **Employment**, measured on a Full-Time Equivalent (FTE) headcount basis. This is composed of both full-time employment and a proportion of part-time working component — where two part-time roles equate to a full-time position;
- **Gross value added (GVA)** contribution to GDP;
- **Tax receipts** generated by the Irish activity and employment supported by the seafood sector.

Fig. 2. Economic impact assessment



A total of 448 unique responses were recorded from seafood operators based in the 10 port areas — a response rate of around 50%, relative to the known seafood population. For seafood businesses that did not return a response, the study relied on turnover and employment estimates which are based on survey responses of seafood businesses of a same size. The study also drew on published data, where available, to better understand the socioeconomic environment of coastal areas within the country. Appendix 1 of this report includes a summary discussion of the pertinent issues facing the local port economy.

1.3 The key elements of the local seafood sector

Estimates of the size of the local seafood sector and how it impacts the regional economy are presented in this report. The analysis therefore estimates the direct activity associated with the commercial fishing, aquaculture, and fish processing sub-sectors at the port by drawing on the survey findings and information held by BIM. Their wider impacts within the local NUTS3 region were then estimated. These wider impacts include those associated with the seafood sector's supply chain and the consumer spending of those employed as a result of the direct and indirect activity — see Box 1 for more detail on the methodology.

The analysis is also careful to identify where the three different seafood subsectors appear in the supply chains of the other sub-sectors. The most obvious example is commercial fishing appearing within the supply chain of fish processing. The analysis has isolated the benefits to avoid instances of double counting (see Appendix 2 for further information concerning the model approach).

1.4 Report structure

This report breaks down the characteristics of the collective seafood sector within the port area. It then goes on to show the economic impact this activity creates across the Border economy.

The report takes the following structure:

- An analysis of the seafood sector within the local port economy;
- A breakdown of the economic benefits associated with the port's seafood sector across the regional economy;
- A summary of the overall benefit associated with the port's seafood sector at the regional level;
- The conclusions.

2. The seafood sector at the port

2.1 Characteristics of the seafood sector

The largest subsector within the Greencastle seafood industry is commercial fishing. In 2023, it generated €24.3 million in turnover for local firms, feeding through to €13 million in direct GVA for the Border economy. Aquaculture is the second largest subsector, with direct value added of €6.5 million, closely followed by fish processing, which contributed €3.7 million in 2023.

Commercial fishing is also estimated to have the largest direct employment impact, supporting 200 full-time equivalent (FTE) jobs, 51% of the local seafood total, across 81 separate fishing businesses. By contrast, aquaculture supported 145 jobs, while fish processing employed 40 people in 2023.

Table 2. Headline direct economic contribution of the seafood sector, Greencastle, 2023

	Turnover (€m)	Jobs	Gross Wages (€m)	Seafood operators
Commercial fishing	24.3	200	4.9	81
Aquaculture	16.6	145	4.3	18
Fish processing	11.8	40	2.4	3
Total	**52.6**	**390**	**11.6**	**102**

Source: *Oxford Economics, Perceptive Insight, BIM*
Note: *May not sum due to rounding*

To allow a comparison, the results of the 2018 study have been inflated to 2023 prices and presented here (see Table 3).

Commercial fishing turnover fell around 31.7% in real terms and gross wages fell by 51.3% while employment remained unchanged. This is largely driven by changes in the performance of one large company, since the last study in 2018, that company's turnover fell by nearly €10 million.

By contrast, the aquaculture sector experienced strong turnover growth of 118.4% due to salmon farming operations now being accounted for in the area. Previously, these activities had been allocated to one single port but are now spread across several ports, ensuring more accuracy. This also yielded similar results for employment (123.1%) and gross wages (202%).

For fish processing, turnover and gross wages grew by an estimated 20.7% and 104.9%, while employment fell by 33.3%. The difference is mainly due to the reallocation of two fish processing firms. The largest fish processor in Greencastle had been allocated to a different port in the previous study (due to the survey information they previously provided). Similarly, another large firm operating at Greencastle in the last study has been reallocated to another port.

Overall, turnover and gross wages were down 0.4%, and 8.4%, respectively, while employment grew by 18.2%. The number of seafood operators was up 7.4%.

Table 3. Headline direct economic contribution of the seafood sector (2023 prices), Greencastle, 2018

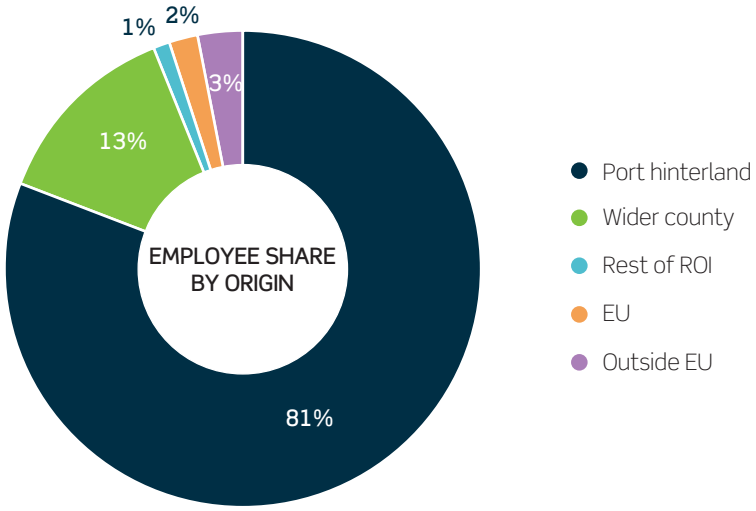
	Turnover (€m)	Jobs	Gross wages (€m)	Seafood operators
Commercial fishing	35.5	200	10.0	75
Aquaculture	7.6	65	1.4	17
Fish processing	9.7	60	1.2	3
Total	**52.8**	**330**	**12.6**	**95**

Source: *Oxford Economics, Perceptive Insight, BIM*
Note: *May not sum due to rounding*

The survey of local port operators allows for a more detailed examination of the profile and outlook for local seafood firms in Greencastle. The survey asked respondents about the composition of their workforce. It found that 81% of employees originally hailed from the port hinterland as defined in this report. This reiterates the importance of the seafood sector for local people and the local economy. A further 13% came from within the wider county. The rest of the workforce was split between those from elsewhere in the Republic of Ireland (1%), from the European Union (2%), and from outside the EU (3%).

The previous study found that two-thirds of employees originally hailed from the port hinterland. Nearly one in five employees (19%) came from other parts of the EU, and 6% of workers come from outside the EU.

Fig. 3. Origins of the workforce, Greencastle, 2023

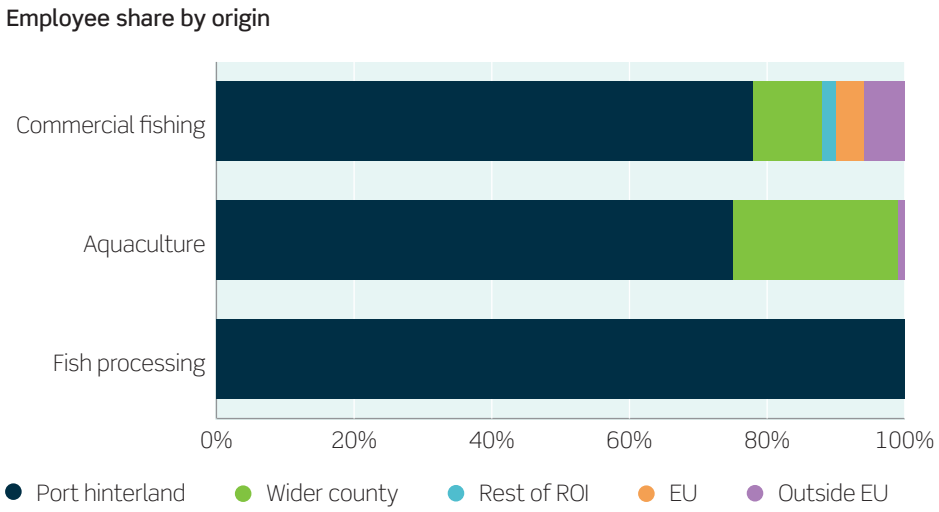


Source: *Oxford Economics, Perceptive Insight*

Fish processing workers were entirely from within the port hinterland, with the equivalent share for commercial fishing and aquaculture equal to 78% and 75%, respectively. Commercial fishing had the greatest portion of foreign workers, at 11%, with most of these coming from outside the EU (7%).

In the previous study, EU workers made up 52% of employees in fish processing, with the hinterland providing just over a third (34%) of workers. By contrast, the aquaculture sector drew much more on the local labour supply with all employees originating in Ireland, 84% of whom were from the port hinterland.

Fig.4. Workforce origin by sub-sector, Greencastle, 2023

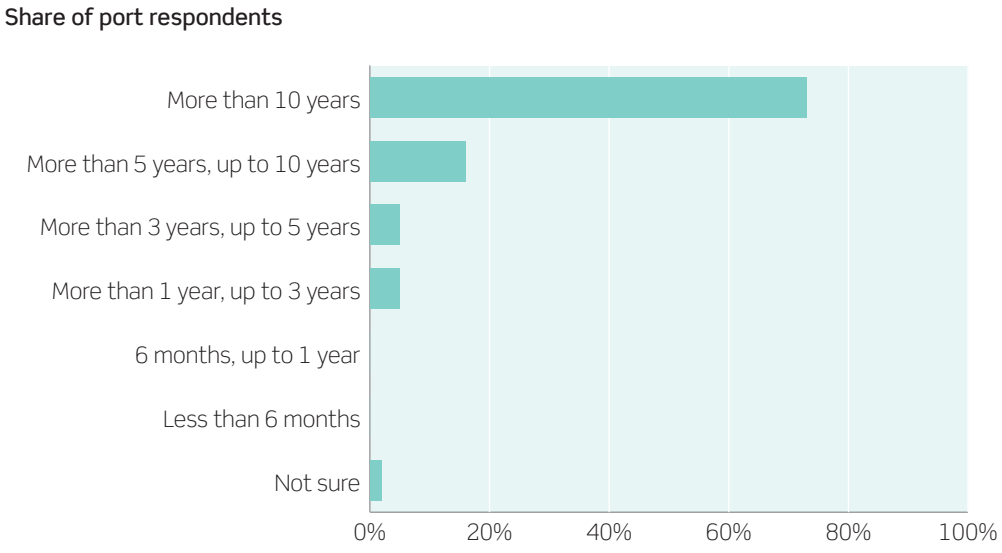


Source: *Oxford Economics, Perceptive Insight*

Of those employed in the seafood industry at Greencastle, 80% lived in the port hinterland with another 13% living elsewhere in Co. Donegal. All fish processing employees were reported to be living in the Greencastle hinterland. For aquaculture, 74% lived within the port hinterland, with the remaining workers commuting from within the wider county. Commercial fishing was the only one of the three subsectors to have workers living outside of the county, with 16% living elsewhere.

In examining the current state of the seafood industry, the survey looked at the maturity of firms operating from the port. Business longevity is high in Greencastle, with 89% of firms established for at least five years. The sample sizes, when broken down to the sub-sectoral level, are small, but they show a similar degree of maturity across all three industries in 2023.

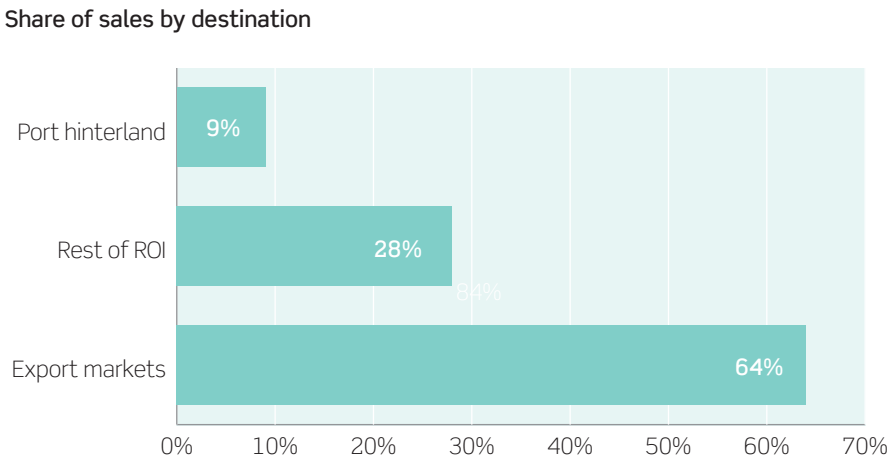
Fig. 5. Seafood sector maturity, Greencastle, 2023



Source: *Oxford Economics, Perceptive Insight*

The survey also explored the key markets for the sale of its goods. Sales to the immediate hinterland made up just 9% of total Greencastle sales, considerably below the average for all ports (21%). While the rest of Ireland took 28% of sales, the export market made up 64% of total seafood sales, the third highest of all ports.

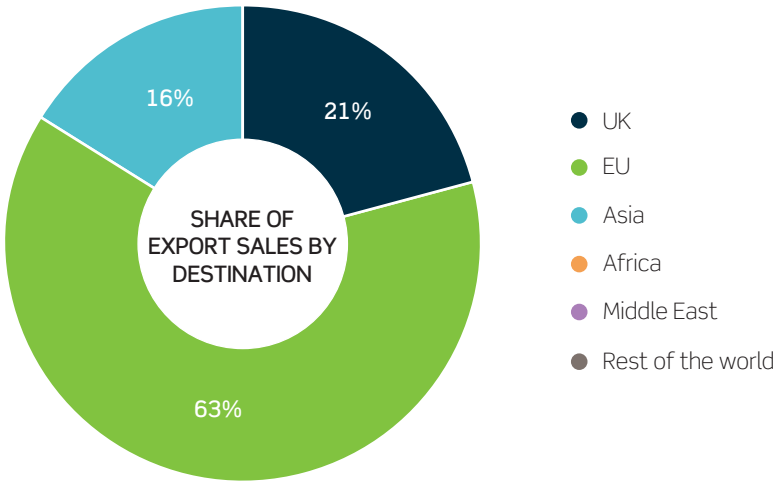
Fig. 6. Sales by destination, Greencastle, 2023



Source: *Oxford Economics, Perceptive Insight*

The export market is largest for aquaculture, where 98% of sales are abroad, compared to 50% for commercial fishing and 67% for fish processing. The largest export market for Greencastle produce is the European Union. Almost two thirds (63%) of sales go to the EU, with an additional 21% going to the UK. A considerable 16% of export sales are also destined for Asian markets.

Fig. 7. Export sales by destination, Greencastle, 2023

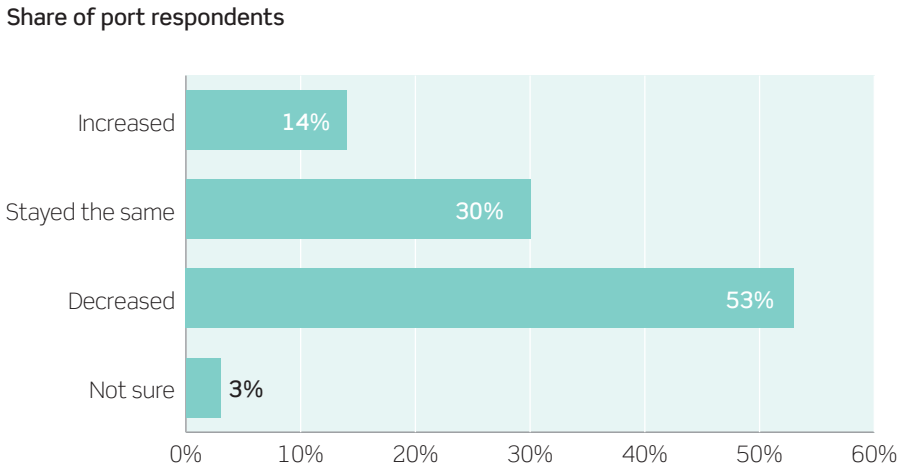


Source: *Oxford Economics, Perceptive Insight*

Overall, the industry appears to be suffering from the challenging economic environment; 53% of respondents reported that turnover had decreased over the previous 12 months, although this is in line with the average across the ten ports (52%). For 30% of respondents, turnover had neither increased nor decreased.

In the previous study, 70% of respondents reported that turnover had neither increased or decreased. For 14% of respondents, turnover had reportedly increased over the previous 12 months. By contrast, it decreased for 16% of seafood operators.

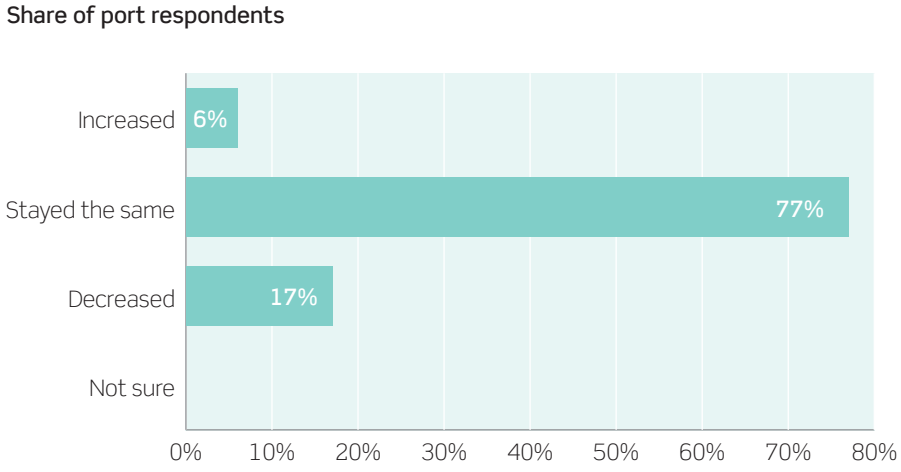
Fig. 8. Turnover in the past 12 months, Greencastle, 2023



Source: *Oxford Economics, Perceptive Insight*

When questioned about the size of their workforce over the previous 12 months, 77% of respondents in Greencastle noted it had remained unchanged on the year before, with 17% reporting that their number of employees had decreased. This reflects the picture seen across all of the ports in the sample, with the majority seeing stability in their workforce size in 2023.

Fig. 9. Change in workforce size, Greencastle, 2023



Source: *Oxford Economics, Perceptive Insight*

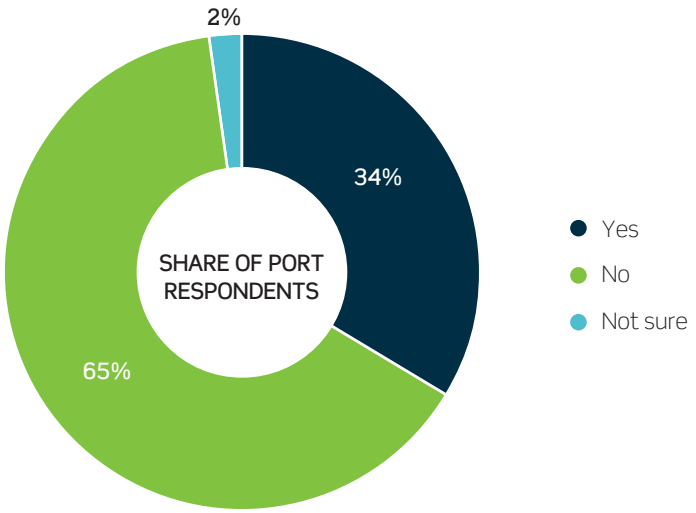
Looking ahead to the next 12 months, expectations were mixed across respondents. More respondents expected turnover to decrease (39%) than increase (22%), and 27% expected little change in turnover over this period. However, this does mean that respondents from Greencastle port were more optimistic that turnover will increase than in any other port.

In the previous study, eight out of ten respondents believed their turnover would stay unchanged in 2019. Only 14% thought it would increase.

Increases in turnover are often linked to business investment: increased productivity and turnover often result from improvements to the stock of capital at a firm's disposal. However, investment can reflect either a positive outlook for future growth or a deterioration of existing capital stock requiring additional spending. The survey results suggest the latter dominates investment decision making. Despite only 22% of respondents expecting turnover to increase, 34% had already spent money on capital investment in the previous financial year.

Annual investment averaged €162,100 for Greencastle operators, with average spending highest in the fish processing sector at €260,000. Of total investment, more than three quarters (76%) was spent locally, with just 15% of investment spend in 2023 going outside of Ireland.

Fig.10. Capital investment in the previous year, Greencastle, 2023



Source: *Oxford Economics, Perceptive Insight*

2.2 Conclusion

The seafood sector directly employed an estimated 390 people, with the majority originating from the port hinterland, and 80% living locally. In 2023, the sector generated €52.6 million in turnover, with 64% of sales going to export markets.

Survey respondents were mixed on their expectations for turnover over the next 12 months. At 22%, more respondents expected turnover to increase than in any other port, but this share was still lower than those who felt turnover would remain unchanged (27%) or decrease (39%) over the following 12 months.

3. The impact of seafood's subsectors

3.1 Commercial fishing

Greencastle's commercial fishing activity contributed €20.9 million in GVA to the Border region economy in 2023, of which almost two thirds (€13.0 million) was associated with the sector's direct activity taking place at the port itself. Commercial fishing's direct GVA impact represented 56% of the direct seafood total throughout the port. The subsector supported a further €5.9 million in indirect GVA through supply-chain linkages within the Border region, in addition to €1.9 million in induced consumer spending related benefits.

The port's commercial fishing subsector supported an estimated 270 jobs throughout the Border region, 200 of which were directly employed within the sub-sector. This direct activity supported 50 jobs throughout the regional supply chain. These jobs generally take place in more productive sectors, generating almost a third more GVA per job than the direct fishing based employment. Direct and indirect employment combined supported an additional 20 jobs across the regional economy via the spending of earnings on goods and services. The employment multiplier for the direct commercial fishing activity that takes place at Greencastle is 1.47 which is slightly higher than the employment multiplier (1.45) from the previous study.

Table 4. Benefits of the commercial fishing sub-sector, Border, 2023

Port commercial fishing	Border		
	GVA (€m)	Employment	Gross wages (€m)
Direct	13.0	200	4.9
Indirect	5.9	50	2.4
Induced	1.9	20	1.0
Total	**20.9**	**270**	**8.2**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not sum due to rounding*

Breaking down the economic benefits to the sectoral level provides insights into how these impacts are spread across the economy. The agriculture, forestry and fishing sector reaped the majority of the benefits in 2023, accounting for €13.3 million of the total GVA benefit. The agriculture, forestry and fishing sector was also the major beneficiary in employment terms, sustaining an estimated 205 jobs throughout the region, or 76% of the total employment supported by local commercial fishing.

Wholesale and retail is the next largest beneficiary of commercial fishing, experiencing a boost to value added of €3 million, supporting 35 jobs, as well as €1.4 million in gross wages in 2023. The regional manufacturing sector also benefited to the tune of €1.9 million in GVA.

Table 5. Total benefits of commercial fishing by sector, Border, 2023

Port commercial fishing	Border		
	GVA (€m)	Employment	Gross wages (€m)
Agriculture, forestry and fishing	13.3	205	5.0
Mining and quarrying	0.0	0	0.0
Manufacturing	1.9	5	0.6
Electricity, gas, steam and air conditioning supply	0.1	0	0.0
Construction	0.0	0	0.0
Wholesale and retail trade; repair of motor vehicles	3.0	35	1.4
Transportation and storage	0.4	5	0.2
Accommodation and food service activities	0.1	5	0.1
Information and communication	0.2	0	0.0
Financial and insurance activities	0.3	<5	0.1
Real estate activities	0.4	0	0.0
Other business services	0.5	5	0.2
Public administration and defence	0.0	0	0.0
Education	0.1	<5	0.1
Human health and social work activities	0.4	10	0.4
Arts, entertainment and recreation & other services	0.1	<5	0.0
Total	**20.9**	**270**	**8.2**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not add due to rounding*

3.2 Aquaculture

Aquaculture generated an estimated turnover of €16.6 million in 2023, trailing commercial fishing (€24.3 million) but ahead of fish processing (€11.8 million). This translates to a €6.5 million direct GVA contribution to regional GVA from aquaculture. With significant multiplier effects, an additional €5.6 million was generated from indirect and induced impacts.

In total, aquaculture supported 200 jobs across the Border region economy, thereby sustaining €6.7 million in associated gross wages across a range of sectors. Again, it is notable that the indirect employment supported by aquaculture tended to belong to more highly productive sectors, with GVA per job more than double that of the direct employment. The employment multiplier for the direct aquaculture activity that takes place at Greencastle is 1.37 which is slightly higher than the employment multiplier (1.31) from the previous study.

Table 6. Benefits of the aquaculture sub-sector, Border, 2023

Port aquaculture	Border		
	GVA (€m)	Employment	Gross wages (€m)
Direct	6.5	145	4.3
Indirect	4.0	35	1.6
Induced	1.6	20	0.8
Total	**12.1**	**200**	**6.7**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not sum due to rounding*

Most of the total impacts resulting from aquaculture tended to belong to the agriculture, forestry and fishing sector. This sector alone accounted for 160 jobs and €6.9 million of the GVA benefits generated through the combined direct, indirect, and induced activity. While agriculture, forestry and fishing accounted for 78% of the employment benefits, over a third of the value added belonged to other sectors. Manufacturing was the next biggest beneficiary, with €1.5 million in GVA. Wholesale and retail also saw a notable value added impact (€1.1 million) resulting from the port's aquaculture activity in 2023.

Table 7. Total benefits of aquaculture by sector, Border, 2023

Port aquaculture	Border		
	GVA (€m)	Employment	Gross wages (€m)
Agriculture, forestry and fishing	6.9	160	4.4
Mining and quarrying	0.0	0	0.0
Manufacturing	1.5	<5	0.5
Electricity, gas, steam and air conditioning supply	0.1	0	0.0
Construction	0.0	0	0.0
Wholesale and retail trade; repair of motor vehicles	1.1	10	0.5
Transportation and storage	0.7	10	0.3
Accommodation and food service activities	0.1	5	0.1
Information and communication	0.1	0	0.0
Financial and insurance activities	0.3	<5	0.1
Real estate activities	0.2	0	0.0
Other business services	0.5	5	0.2
Public administration and defence	0.0	0	0.0
Education	0.1	<5	0.1
Human health and social work activities	0.4	5	0.3
Arts, entertainment and recreation & other services	0.1	<5	0.0
Total	**12.1**	**200**	**6.7**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not add due to rounding*

3.3 Fish processing

Fish processing was estimated to have had the smallest economic impact of Greencastle's three seafood-related subsectors. However, the subsector's employment multiplier was estimated at 2.6, meaning that for every 10 jobs in the port's processing subsector, 16 additional jobs were supported somewhere else in the wider regional economy. This multiplier effect was stronger than that of both the aquaculture and commercial fishing activities (1.4).

Fish processing's direct activity supported an estimated 40 full-time equivalent jobs, which in turn generated €2.4 million in gross wages and represented €3.7 million of GVA within the local economy. The GVA impact increased to €8.8 million throughout the regional economy after the indirect and induced effects were considered. As with employment, the GVA multiplier was the strongest of the three seafood subsectors at 2.39, compared to 1.60 and 1.87 in commercial fishing and aquaculture, respectively. This in turn influenced the sector's ability to generate further economic benefits within the local economy. By comparison, the GVA multiplier in the previous study for the direct fish processing activity was 1.30. This reflects the increased costs felt by fish processing businesses which, as a result, have higher supply-chain costs which drive the larger impacts in the indirect channel.

Table 8. Benefits of the fish processing sub-sector, Border, 2023

Fish processing	Border		
	GVA (€m)	Employment	Gross wages (€m)
Direct	3.7	40	2.4
Indirect	4.1	55	1.5
Induced	1.1	10	0.5
Total	**8.8**	**110**	**4.4**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not sum due to rounding*

Unlike the other two seafood sub-sectors, fish processing's largest beneficiary sector is not the agriculture, forestry and fishing sector, but manufacturing. The manufacturing sector benefited from €4.6 million in GVA, €2.7 million in gross wages, and 45 jobs in 2023. The manufacturing sector therefore accounted for over half (51%) of fish processing's total GVA benefit across the Border region economy. This large share is partially attributed to the sector's relatively high productivity (generating over €101,000 in GVA per job), in addition to the processors' procurement patterns across the wider region. After this, the agriculture, forestry and fishing and wholesale and retail sectors enjoyed the most prominent benefits, collectively accounting for over a quarter (26%) of the total GVA impact, and almost half (43%) of the total employment impact. The remaining benefits were more evenly spread across the remaining sectors.

Table 9. Total benefits of fish processing by sector, Border, 2023

Ports processing	Border		
	GVA (€m)	Employment	Gross wages (€m)
Agriculture, forestry and fishing	1.5	40	0.6
Mining and quarrying	0.0	0	0.0
Manufacturing	4.6	45	2.7
Electricity, gas, steam and air conditioning supply	0.1	0	0.0
Construction	0.0	0	0.0
Wholesale and retail trade; repair of motor vehicles	0.8	10	0.4
Transportation and storage	0.3	5	0.1
Accommodation and food service activities	0.1	5	0.1
Information and communication	0.1	0	0.0
Financial and insurance activities	0.3	<5	0.1
Real estate activities	0.4	0	0.0
Other business services	0.4	5	0.2
Public administration and defence	0.0	0	0.0
Education	0.1	<5	0.0
Human health and social work activities	0.2	5	0.2
Arts, entertainment and recreation & other services	0.1	<5	0.0
Total	**8.8**	**110**	**4.4**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not sum due to rounding*

3.4 Conclusion

In conclusion, Greencastle's commercial fishing sector provided the largest economic contribution, providing 270 jobs and €20.9 million of GVA. Local fish processing had the strongest GVA multiplier of the three seafood subsectors; it provided an estimated 110 jobs and €8.8 million of GVA across the regional economy. Finally, aquaculture was estimated to have supported a total of 200 jobs and €12.1 million of value added in 2023.

4. Total impact of the overall port seafood sector

4.1 Seafood sector activity at the port

This section takes the estimates presented in the preceding sections of the report and calculates the total economic impact resulting from the activities of the seafood sector within the port area.

Simply summing the respective benefits of all three elements (commercial fishing, aquaculture, and fish processing) would inevitably overestimate the indirect, induced and, as a result, total impacts. This is because the supply chains of the fish processing element contain a proportion of the commercial fishing/aquaculture sub-sectors and their supply chains. The following approach has therefore been taken to calculate total impacts for GVA, employment, gross wages, and tax (see Appendix 2 for further detail on the approach):

Direct impacts

- Calculated by summing the direct impacts from the three elements of the seafood sector for GVA, employment, gross wages, and tax.

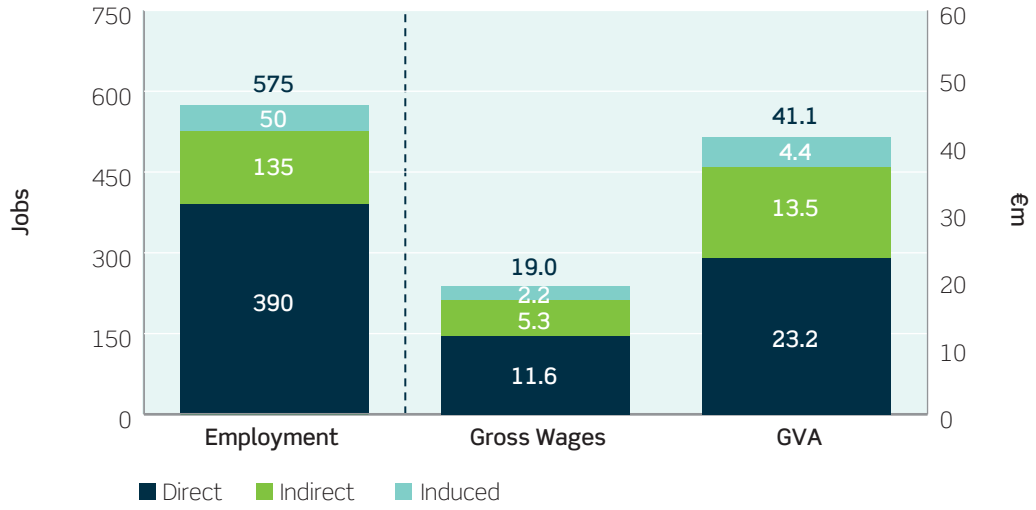
Indirect and induced impacts

- For GVA, employment, gross wages, and taxes, the total indirect and induced impacts are calculated by summing the indirect and induced impacts of fish processing, and a 100% and 90% share of the indirect and induced impacts from the respective aquaculture and commercial fishing sub-sectors (as information from the survey interviewees suggests that exports and domestic sales outside the port area's own processors account for 100% and 90% of the respective aquaculture and fishing production). The remainder of the commercial fishing/aquaculture sub-sectors' indirect and induced impacts will already be accounted for in the indirect and induced impacts from the fish processing sub-sector.

4.2 Regional estimates

Overall, the Greencastle seafood industry generated an estimated €41.1 million in GVA for the Border region's economy in 2023. This activity supported 575 jobs across a range of sectors and generated €19 million in earnings.

Fig. 11. Benefits of the seafood sector, Border, 2023



Source: *Oxford Economics, Perceptive Insight, CSO*

Most of the local seafood industry's economic impacts are associated with the direct seafood activity taking place in the local port economy. Seafood's direct GVA impact (€23.2 million) represented 56% of total GVA benefit to the Border economy. The remaining 44% was from seafood's supply-chain linkages and the induced consumer spending impacts, adding an extra €17.9 million in regional GVA and 185 jobs in 2023. The bulk of gross wage benefits came directly from the seafood industry, representing €11.6 million or 61% of the total sustained throughout the region. The employment multiplier for the direct seafood activity that took place at Greencastle was 1.47 which was higher than the employment multiplier (1.27) from the previous study.

Table 10. Total seafood sector benefits, Border, 2023

Ports seafood sector	Border		
	GVA (€m)	Employment	Gross wages (€m)
Direct	23.2	390	11.6
Indirect	13.5	135	5.3
Induced	4.4	50	2.2
Total	**41.1**	**575**	**19.0**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not sum due to rounding*

The agriculture, forestry and fishing sector was the largest beneficiary of Greencastle's seafood industry. With 400 full-time equivalent jobs, the sector accounted for almost three quarters (70%) of the total employment impact across the region. Wholesale and retail and manufacturing were the next largest beneficiaries of the seafood sector, both with 50 jobs supported indicative of their roles within the seafood regional supply chain.

Seafood activity at the port supported €7.8 million in GVA within the Border's manufacturing sector, accounting for 19% of the total. Wholesale and retail was the next largest sector in GVA terms, contributing €4.5 million within the Border economy (11% of total supported by seafood).

Table 11. Total benefits by sector, Border, 2023

Local seafood sector	Border		
	GVA (€m)	Employment	Gross wages (€m)
Agriculture, forestry and fishing	21.7	400	9.9
Mining and quarrying	0.0	0	0.0
Manufacturing	7.8	50	3.7
Electricity, gas, steam and air conditioning supply	0.3	<5	0.1
Construction	0.0	0	0.0
Wholesale and retail trade; repair of motor vehicles	4.5	50	2.2
Transportation and storage	1.3	20	0.7
Accommodation and food service activities	0.3	10	0.2
Information and communication	0.3	<5	0.1
Financial and insurance activities	1.0	5	0.4
Real estate activities	0.9	0	0.0
Other business services	1.4	10	0.5
Public administration and defence	0.0	0	0.0
Education	0.2	5	0.2
Human health and social work activities	1.0	20	0.8
Arts, entertainment and recreation & other services	0.2	5	0.1
Total	**41.1**	**575**	**19.0**

Source: *Oxford Economics, Perceptive Insight, CSO*
Note: *May not sum due to rounding*

4.3 Taxation estimates

Seafood activity at the port provides further benefits through the generation of tax revenues to the Revenue Commissioners. These fiscal impacts can again be split into their direct, indirect, and induced components depending on the channel of activity from which they arise. It is estimated that the port seafood sector's direct tax contribution was a net fiscal surplus of €4 million in 2023, consisting of the labour-based tax paid by the sector's employees (income tax, PRSI etc.), corporation tax receipts and sectoral taxation on production less subsidies.

The indirect fiscal benefits represent the same taxation components as above but are generated within the sector's wider supply chain, in addition to net taxes on input purchases. Combined, these represented a tax revenue of €1 million. As those employed in the sector and within its supply chain spend their wages, this supports further jobs and activity within the Irish economy. This induced activity supported an estimated additional €3.5 million in tax revenue.

Therefore, in total (i.e. direct, indirect and induced), Greencastle's seafood sector is estimated to have had a fiscal surplus of €8.5 million in 2023. This total was made up of €6 million in employment/labour-related tax, €1.5 million in corporation tax, €2 million in taxation associated with the spending of wages, and a net tax deficit of €0.9 million through taxation on inputs and production.[2]

2 Net tax position refers to taxes less subsidies.

In comparison, it is estimated that the Greencastle seafood sector generated €6.1 million in taxes in 2018. This was made up of €3.3 million in employment/labour-related tax, €0.9 million in corporation tax, €1.6 million in taxation associated with the spending of wages, and a net tax contribution of €0.2 million through taxation on inputs and production.[3]

Table 12. Fiscal impacts by taxation type, Ireland, 2023

Ports seafood sector	Total tax estimates (€m)				
	Labour tax	Corporation tax	Production tax	Input purchases tax	Tax on consumption
Agriculture, forestry and fishing	2.6	0.7	-1.8	0.2	0.0
Mining and quarrying	0.0	0.0	0.0	0.0	0.0
Manufacturing	1.4	0.3	0.0	0.1	1.7
Electricity, gas, steam and air conditioning supply	0.0	0.0	0.1	0.0	0.0
Construction	0.0	0.0	0.0	0.0	0.0
Wholesale and retail trade; repair of motor vehicles	0.6	0.2	0.0	0.0	0.0
Transportation and storage	0.2	0.0	0.1	0.1	0.0
Accommodation and food service activities	0.1	0.0	0.0	0.0	0.2
Information and communication	0.1	0.0	0.0	0.0	0.1
Financial and insurance activities	0.2	0.0	0.0	0.0	0.0
Real estate activities	0.0	0.1	0.1	0.0	0.0
Other business services	0.2	0.1	0.0	0.0	0.0
Public administration and defence	0.0	0.0	0.0	0.0	0.0
Education	0.1	0.0	0.0	0.0	-0.1
Human health and social work activities	0.3	0.0	0.0	0.0	-0.1
Arts, entertainment and recreation & other services	0.0	0.0	0.0	0.0	0.0
Total	**6.0**	**1.5**	**-1.4**	**0.5**	**2.0**

Source: *Oxford Economics, Perceptive Insight, CSO*

4.4 Growth since 2018

Over the period 2018 to 2023, in real terms, Greencastle had mixed results across all channels in GVA, employment and gross wages. In the direct channel, GVA and gross wages fell by 22% and 8.4%, respectively, while employment grew by 18.2%. In the indirect channel, GVA increased by 122.2%, employment by 200% and gross wages by 179.5%. In the induced channel, GVA fell by 2.6% while employment and gross wages grew, by 11.1% and 18.5%, respectively.

Overall, Greencastle experienced a real terms increase in GVA of an estimated 1.8%. This was accompanied by growth in employment and gross wages of 36.9% and 16.3% respectively. This was largely due to increased supply-chain spending in comparison to the previous study, and salmon farming now being accounted for in the area which significantly improved aquaculture impacts.

4.5 Conclusion

Overall, the Greencastle seafood industry generated an estimated €41.1 million in GVA for the Border region's economy in 2023. This activity supported 575 jobs across a range of sectors and generated €19 million in earnings.

3 Tax figures related to the 2018 study are in 2023 prices.

5. Conclusions

5.1 The seafood sector in Greencastle

Greencastle's seafood industry has a significant role within the local port economy. The port's 102 seafood-related businesses saw total turnover of €52.6 million in 2023. The direct GVA impact of the combined commercial fishing, aquaculture, and fish processing was estimated at €23.2 million. The sector directly supported 390 full-time equivalent jobs within the port area, alongside €11.6 million in earnings.

The survey also identified the key characteristics of the local seafood industry and the business environment for Greencastle operators. The industry is well established, with most firms operating for more than ten years. Overall, the industry appears to be suffering from the challenging economic environment; turnover was reported to have decreased over the previous 12 months by 53% of respondents, although this was in line with the average across the ten ports (52%). For 30% of respondents, turnover had neither increased nor decreased.

Most of the workforce (81%) originated in the Greencastle hinterland, with a further 13% drawn from the wider county. Greencastle port had a strong export market, with 64% of sales being exported outside of the Republic of Ireland.

5.2 The commercial fishing sub-sector is the main contributor

The commercial fishing sub-sector made the strongest contribution to the Border economy. In 2023, it generated €20.9 million of GVA, of which €7.9 million was linked to indirect (€5.9 million) and induced (€1.9 million) effects. The commercial fishing sub-sector is estimated to have provided benefits of the following size:

- 200 direct jobs and €4.9 million of gross wages, producing €13.0 million of GVA;
- 50 indirect jobs and €2.4 million of gross wages, producing €5.9 million of GVA;
- 20 induced jobs and €1 million of gross wages, producing €1.9 million of GVA.

Fishing

GVA

Direct -38% since 2018

Total -33% since 2018

Employment

Direct 0% since 2018

Total -7% since 2018

Wages

Direct -51% since 2018

Total -40% since 2018

5.3 Though the remaining components remain significant

Although the aquaculture sub-sector's economic footprint is smaller than that of the local commercial fishing sector, it still contributes a sizeable economic impact. Accordingly, the analysis shows the economic impact of the aquaculture element was of the following size in 2023:

- 145 direct jobs and €4.3 million of gross wages, producing €6.5 million of GVA;
- 35 indirect jobs and €1.6 million of gross wages, producing €4.0 million of GVA;
- 20 induced jobs and €0.8 million of gross wages, producing €1.6 million of GVA.

Aquaculture

GVA
Direct +54% since 2018
Total +81% since 2018

Employment
Direct +123% since 2018
Total +135% since 2018

Wages
Direct +207% since 2018
Total +201% since 2018

Furthermore, the analysis shows that the economic impact of the port's fish processing subsector equated to the following benefits across the Border economy:

- 40 direct jobs and €2.4 million of gross wages, producing €3.7 million of GVA;
- 55 indirect jobs and €1.5 million of gross wages, producing €4.1 million of GVA;
- 10 induced jobs and €0.5 million of gross wages, producing €1.1 million of GVA.

Fish Processing

GVA
Direct -20% since 2018
Total +46% since 2018

Employment
Direct -33% since 2018
Total +47% since 2018

Wages
Direct +100% since 2018
Total +158% since 2018

Therefore, it is estimated that the port's collective seafood sector supported 575 jobs, €19 million in gross wages, and €41.1 million in GVA within the regional economy in 2023. This activity created a net fiscal surplus of €8.5 million. In comparison, once the results from the 2018 study are converted to 2023 prices, it is estimated that Greencastle experienced a real terms increase in GVA of 1.8%. This was accompanied by a growth in employment and gross wages of 36.9% and 16.3% respectively. This was largely due to increased supply-chain spending in comparison to the previous study and salmon farming now being accounted for in the area which significantly improved aquaculture impacts.

Overall Seafood Sector

GVA
Direct -22% since 2018
Total +2% since 2018

Employment
Direct +18% since 2018
Total +37% since 2018

Wages
Direct -8% since 2018
Total +16% since 2018

5.4 Findings from the socio-economic analysis

Greencastle has an ageing population, with above-average shares of those aged 65 and over. Furthermore, the educational profile is notably weaker than the national average, with 19% of residents identified as having only primary education or lower as their highest level of attainment. The accessibility to occupations in the agriculture, forestry and fishing sector is therefore an important source of employment for a sizeable share of the population with lower qualification levels.

As a result, the seafood sector is likely to play a significant role in the local port economy through its provision of direct jobs, supply-chain spending in local businesses and the consumer spending it supports. Looking forward, a vibrant and growing local seafood sector will be important for the economic and demographic health of the local area.

Appendix 1: Greencastle's economic challenges

Economic activity and structure

The latest available data indicates that Greencastle's labour market is underperforming the broader regional area. The local unemployment rate across the port and its hinterland was 10.5% in 2022, above both the Border region (9.5%) and the national equivalent (8.3%).[4] The local employment rate of 49.7% was also weaker than both the regional and national averages (see Table 13). Furthermore, census data reveals that the economic inactivity rate[5] among those residents aged 15 and over was close to 45%, higher than the regional (41.2%) and national (38.8%) averages in 2022. These findings suggest that the local area faces a number of economic headwinds.

Table 13. Headline economic indicator comparisons, 2022

	Unemployment rate	Employment rate	Economic inactivity
Greencastle	10.5%	49.7%	44.4%
Border	9.5%	53.2%	41.2%
Ireland	**8.3%**	**56.1%**	**38.8%**

Source: *CSO*

Demographics

The port area and its hinterland's population grew by 15.4% in the six years between 2016 and 2022. Recent population growth therefore significantly outperformed both the regional average of a 19.8% decline in population, and the national average of an 8.1% increase over the same period. Furthermore, the working-age component of the population (60.2%) was below both the regional and national averages. Census data shows that the number of residents within the port area aged between 16 and 64 years old grew by 14.3% between 2016 and 2022.

Table 14. Population indicators, 2022

	Growth (2016-2022)		2022	
	Population	Working age	Population	Working age share
Greencastle	15.4%	14.3%	16,900	60.2%
Border	-19.8%	-20.3%	417,700	63.0%
Ireland	**8.1%**	**7.8%**	**5,149,100**	**65.3%**

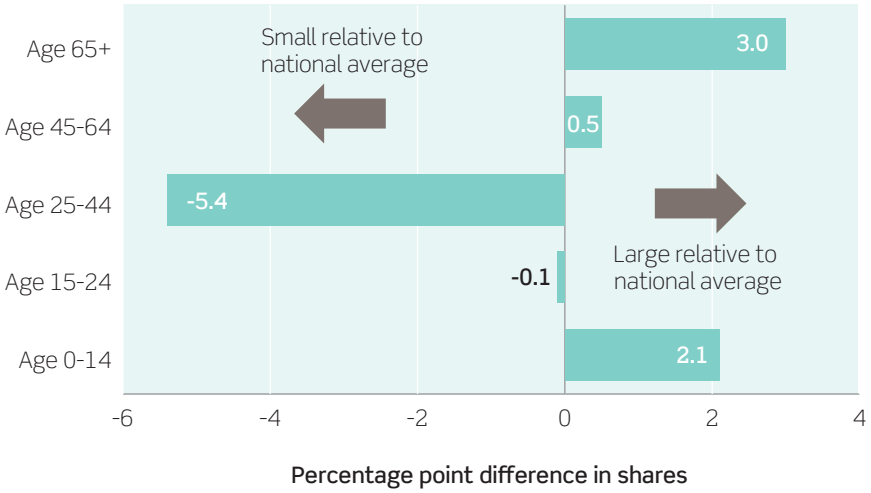
Source: *CSO*
Note: *Working age is defined as those aged between 15 and 64*

4 Defined as a share of the labour force aged 15 years and over.

5 Economic inactivity represents the share of the population aged 15 and over who were neither employed nor looking for employment.

An analysis of the local port economy's population by age cohorts relative to the national picture shows that the distribution is skewed at both the younger and older ends. Those aged 65 and over accounted for 18% of the population — three percentage points above the national average in 2022. Meanwhile, younger working-age people (aged 25-44) were more significantly underrepresented within the local population.

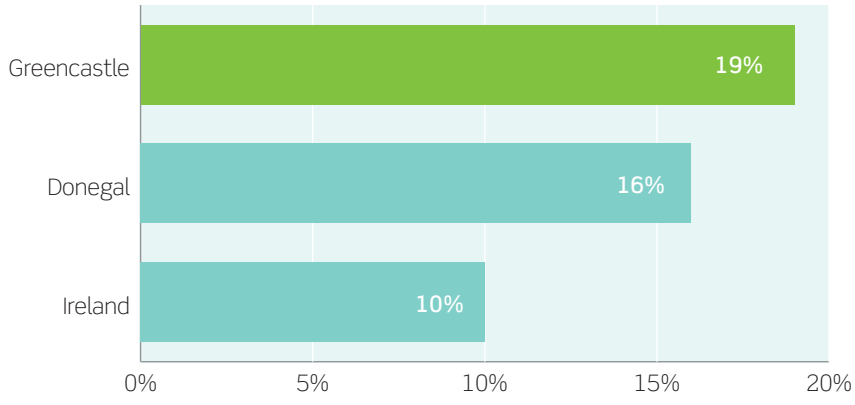
Fig. 12. Age group comparisons, Greencastle vs Ireland, 2022



Source: *CSO Ireland*

Qualification attainment within the port area tends to be weaker than the pattern observed at the national level. Those with no formal qualifications or, at most, primary-level education represented 19% of residents aged 15 and over in 2022, compared to 10% across Ireland. Similarly, higher-level attainment among the port hinterland's residents was lower than the national average. Those educated to degree level or above accounted for 25% of those aged 15 and over in Greencastle, compared to 34% across Ireland.

Fig. 13. No formal qualifications or primary level attainment, 2022



Source: *CSO*

Summary

Greencastle has an ageing population, with above-average shares of those aged 65 and over. Furthermore, the educational profile is notably weaker than the national average, with 19% of residents identified as having only primary education or lower as their highest level of attainment. The accessibility to occupations in the agriculture, forestry and fishing sector is therefore an important source of employment for a sizeable share of the population with lower qualification levels.

As a result, the seafood sector is likely to play a significant role in the local port economy through its provision of direct jobs, supply-chain spending in local businesses, and the consumer spending it supports. Looking forward, a vibrant and growing local seafood sector will be important for the economic and demographic health of the local area.

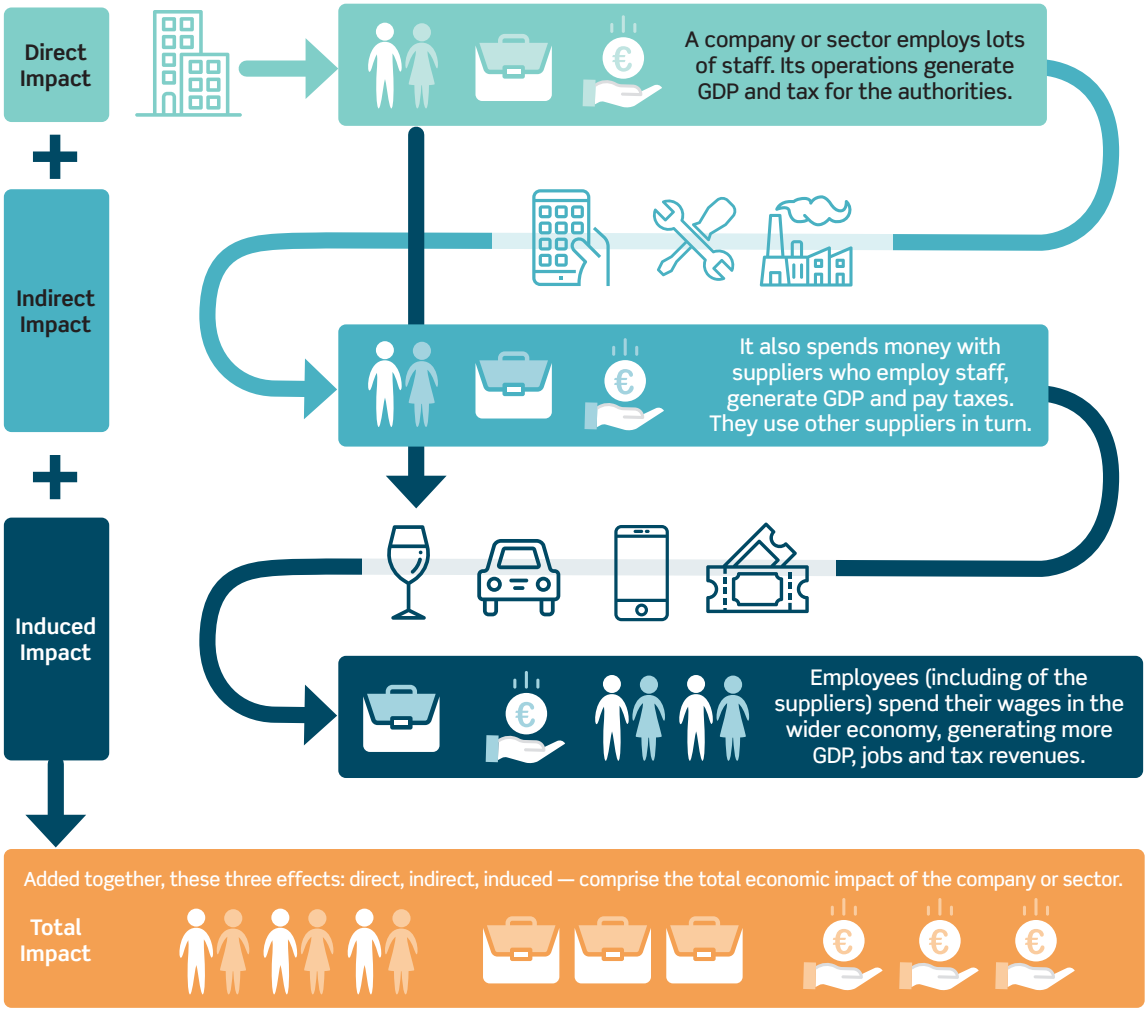
In comparison to the last study, the unemployment rate has fallen from 17.8% in 2016 to 10.5% in 2022 while the employment rate has grown from 45.5% in 2016 to 49.7% in 2022. The working-age share fell from 60.8% in 2016 to 60.2% in 2022. The age-group comparisons with the national average are largely the same as what they were in 2016 with each grouping still being smaller or larger than the national average as they were in the previous study. Greencastle improved its educational attainment as those with no formal qualifications made up 23% in 2016 and 19% in 2022.

Appendix 2: Model approach

Understanding economic impact assessments

An economic impact assessment quantifies the total economic benefit created by a sector through a range of different channels. For the seafood sector at the ports, this arises in four main ways. The first three are the standard channels through which economic impacts are usually quantified: direct operational effects, supply chain effects, and the impact of employees spending their wages in the wider consumer economy. The fourth channel, known as 'catalytic' or 'dynamic' benefits, represent the wider benefits that society and/or other industries derive from the original economic activity.

Fig. 14. Overview of economic impact methodology



This report uses three main metrics to quantify each of the channels by which the seafood sector could contribute to the regional[6] and national economy:

- **Gross value-added (GVA)** contribution to Gross Domestic Product (GDP)[7]: This measures the value of goods and services produced in an area, industry or sector of an economy, and is equal to output minus intermediate consumption;
- **Employment:** Employment is presented in terms of full-time equivalent jobs as defined in the report, the combination of workplace employment by full-time and part-time status;
- **Gross wages** is the total value of salary, bonus, and benefits offered to the workers associated with the local seafood sector alongside.

All the data used was either provided by BIM (for example recent seafood operator registrations/industry data), the seafood sector survey carried out by Perceptive Insight, or published government website data and industry standards from the likes of CSO Ireland and Oxford's own economic databases. Finally, in the absence of data, reasonable assumptions based on best judgement are clearly rationalised in the study. For example, in the absence of port-specific data, published sources for comparator geographies were used as proxy estimates where appropriate.

Estimating the direct economic contribution

The first step was to understand the direct activity associated with the local seafood sector at each of the 10 ports in 2023.

The survey

The seafood survey was designed to provide the evidence base from which to estimate the local seafood sector's contribution to the regional/national economy. Responses from the sector were analysed according to common characteristics (sub-sector, turnover band, main port area etc.) and cross-referenced with the most recent full snapshot of the local seafood sector population.[8]

Sample estimates were then 'grossed' up to that of the total population. This was done by drawing on the BIM database of the seafood sector population in each port which contained fields on sector and turnover bands. Knowing indicative turnover levels for seafood businesses not captured in the survey, researchers were able to apply the average ratio of jobs to turnover level in that sector and apply average sectoral gross wages, etc. In other words, researchers utilised knowledge of the sectors and turnover of the missing companies and applied the ratios and averages of those covered in the survey to estimate their activity. The resulting total seafood-related turnover estimate was then split into the different sectors of the economy ('Agri, forestry and fishing' and 'Manufacture of food products').

This turnover figure is essentially the value of output within the local seafood sector and encompasses intermediary demand, gross wages, and profits. Using the sectoral ratios of output to GVA in the Irish input-output tables, researchers estimated the direct sectoral GVA contributions to GDP in the local economy. Both direct employment and gross wages paid within the local port seafood sector were again informed by the survey findings, and grossed to the population total based on shared characteristics.

With this estimate of direct output and gross wages, sectoral taxation assumptions were then applied, and the resulting fiscal benefits that would likely be collected by the Revenue Commissions, were calculated.

6 Ideally, the impacts of the seafood sector on the port area, would be quantified, but there was not enough published sectoral employment, GDP, and gross wage data. Sufficient data is only available at regional level to produce sub-national impacts.

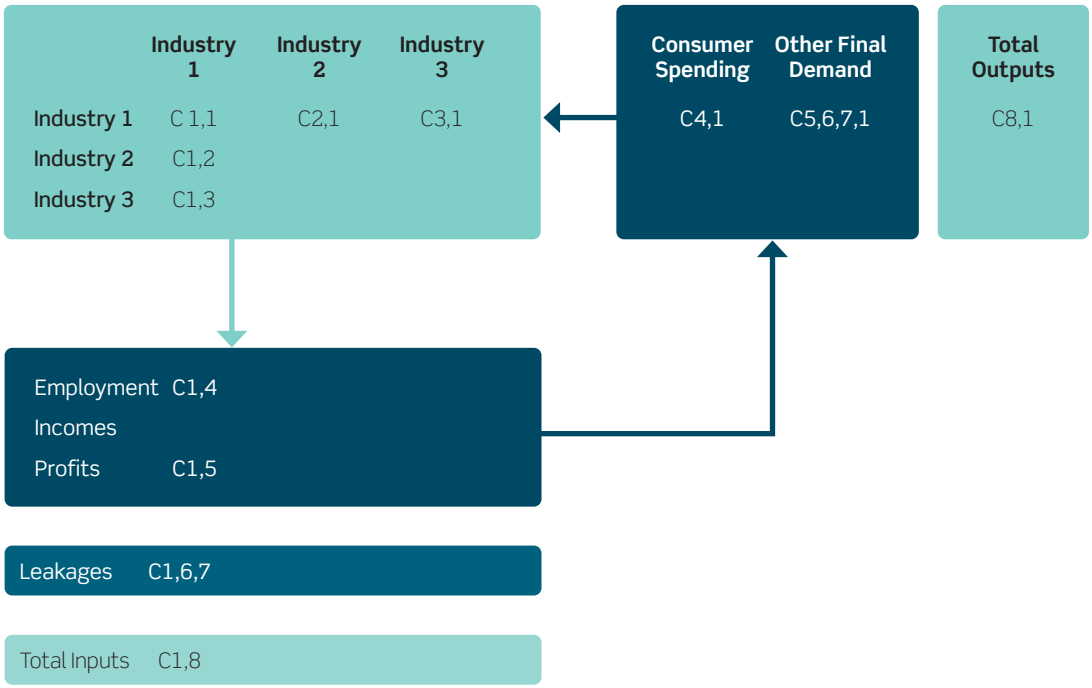
7 GDP is the main summary indicator of economic activity in Ireland. GDP can be defined as GVA plus taxes on products less subsidies on products. References to economic growth (or when the economy enters recession) typically relate to the rate of change of GDP. All references in this report relate to GVA; also known as GDP at 'basic prices'; and they exclude taxes and subsidies.

8 Provided by BIM and informed by the most recent fishery registrations and activity listings in the aquaculture and processing sectors. Turnover bands were also assigned to the local seafood population based on returns when available, and when not, estimated by BIM based on shared characteristics.

Estimating indirect and induced impacts

An input-output model was built to estimate the indirect and induced impacts. Fig. 15 presents a stylised version (showing just three sectors for presentation purposes) of the input-output model which is a model that traces how economic activity flows through an economy as one sector makes purchases from another sector.

Fig. 15. Stylised input-output model



The latest Irish input-output tables were used for the analysis, and were adjusted in line with academic guidelines (Flegg, A. T. and Tohmo, T. (2013) "Regional input-output tables and the FLQ formula: A case study of Finland") to account for the size and structure of the local economy.[9] The technique involves constructing sub-national input-output models by applying Location Quotients (LQs) and sub-national size adjustments to the standard Ireland Input-Output tables. The result is that geographies with higher concentrations of industries receiving procurement or household expenditure have larger impacts. In addition, information gathered from the survey was used further isolate the procurement spend locally, thereby strengthening the overall modelling assumptions.

MODELLING SUPPLY CHAIN IMPACTS

The survey provided information on the size of supply-chain spending relative to turnover, its allocation to specific parts of the economy/goods/services and its location (local/national/international). Using this information, it was possible to construct a more detailed picture of the first round of supply-chain spending than the published input-output tables would otherwise provide.

9 Due to data availability, the local seafood sector's economic impact can only be localised to the regional level (NUTS 3).

The impact model was then used to estimate all the **rounds of supply-chain or indirect spending** of the local seafood sector. The input-output tables provided an estimate of indirect output by sector. This output was converted back into sectoral GVA and into sectoral jobs to provide a range of sectoral impact measurements. The application of average sectoral salaries allowed the income effect to be estimated.

The induced impact is economic activity and employment supported by those directly or indirectly employed spending their income on goods and services in the wider economy. This helps to support jobs in the industries that supply these purchases, and typically includes jobs in retail and leisure outlets, companies producing consumer goods and in a range of service industries. Again, the input-output model was used to estimate the induced impacts.

Overcoming double-counting

Throughout the analysis the impact estimates are presented for the core elements of the seafood sector — commercial fishing, aquaculture, and fish processing. However, when estimating the total impact of the overall ports seafood sector, simply summing the respective benefits of all three sub-sectors would inevitably over-estimate the indirect and induced and, as a result, total impacts. This is because the supply chains of the processing element contain a proportion of the fishing/aquaculture sub-sectors and their supply chains. Therefore, adding everything together would result in the double counting some of the impacts.

To avoid this double counting, the following approach was taken to calculate total impacts for GVA, employment, gross wages, and tax:

Direct impacts:

- Calculated by summing the direct impacts from the three elements of the seafood sector for GVA, employment, and gross wages.

Indirect impacts:

- For GVA, employment, and gross wages, total indirect impacts are calculated by summing the indirect impacts of processing and a share of the indirect impacts from the fishing and aquaculture sub-sectors (as indicated by survey responses showing the extent to which local processors account for their total sales). The remainder of the fishing/aquaculture sub-sectors' indirect impacts will already be accounted for in the indirect impacts from the processing sub-sector.

Induced impacts:

- For GVA, employment, and gross wages, total induced impacts are calculated by summing the induced impacts of the local processing sector and a share of the induced impacts from the commercial fishing and aquaculture sub-sectors (as indicated by survey responses showing the extent to which local processors account for their total sales). The remainder of the fishing and aquaculture sub-sectors' induced impacts will already be accounted for within the induced impacts from the fish processing sub-sector.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