The Economic Impact of the Seafood Sector: Kilmore Quay

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Foreword

The Economic Impact of the Seafood Sector: Kilmore Quay

In 2019, BIM completed the project to evaluate Ireland's top ten seafood ports and assess the importance of the seafood sector directly and downstream in these ports, their hinterlands and at the regional and national levels. The seafood sector is a primary driver of rural economies around the coastline of Ireland and acts as an anchor in these locations around which other supporting service sectors develop. This report reveals the results of this project for the port of Kilmore Quay and its hinterland. Kilmore Quay is an important seafood port in Ireland with high volumes of whitefish landed here annually with significant fish processing activity.

Kilmore Quay is located in the south-east of Ireland a short distance south of Wexford town. The region is characterised as flat to undulating lowlands with agricultural land that is classified as good. Kilmore Quay is a popular tourist village given its scenic location. Connectivity of the port is fair with a regional road connecting it with Wexford town (23km) while a national road connects Wexford to Dublin, which is at a distance of 176km from Kilmore Quay. However, its proximity to Rosslare port (21km) means that the seafood sector has very good access to international markets in France and the rest of Europe. The seafood sector in Kilmore Quay is the main driver of the local economy.

In this report, it is shown that the seafood sector has significant multiplier effects in terms of gross value added, employment and wages downstream in the economy. In total, 30% of the Kilmore Quay hinterland economy can be attributed to the seafood sector encompassing direct, indirect and induced effects. Direct employment of the seafood economy in the region is 500 with a further 225 full-time employees generated downstream. The sector generates €14 million in wages and salaries directly with a further €8 million generated indirectly and through induced effects of the seafood sector at the regional level. Further downstream effects occur outside the region at the national level.

Participation in this survey by seafood producers in Kilmore Quay was above average for the project with 51% of the target audience responding. Special thanks are owed to all participants in the survey and to Hugo Boyle (Irish South and East Fish Producers Organisation) and Denis Flaherty (Fisherman) for their assistance in delivering this high level of participation. Richard Curtin, Economic and Strategic Services Unit, BIM would also like to recognise the excellent work carried out by Oxford Economics and Perceptive Insight in the course of this project.

Executive summary

The seafood sector at the port

The seafood industry makes a significant contribution to the economy of Kilmore Quay and the south-east region. In 2018, direct seafood activity at the port generated €81 million in turnover, supporting 500 direct jobs. Fish processing is the largest sub-sector at the port, generating €40.9 million in turnover, followed by commercial fishing (€36.2 million) and aquaculture (€3.7 million). When translated into GVA, the seafood sector makes a €41.5 million direct contribution to the local port economy.[1]

Our survey of the local seafood industry also identified the key characteristics of the business environment. With a mature seafood sector at Kilmore Quay, operators typically report stable turnover and a highly local workforce. Despite concerns around fishing quotas there was capital investment in 2018 indicating a degree of confidence in the future of the industry.

Seafood employees at Kilmore Quay tend to be very local with 86% coming from the port hinterland and most living there now. However, most seafood sales go overseas, with just 24% sold within the port hinterland.

Analysing the survey results allows us to quantify the port's seafood sector value within the regional economy. Once the indirect and induced effects are calculated, we estimate that the total economic contribution of the seafood sector at Kilmore Quay equated to €57.8 million of value added across the south-east in 2018. The port's seafood sector supported an estimated 720 jobs across the region and generated €7 million in tax revenues.

€42m

Direct GVA in 2018

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

€58m

Total GVA contribution to the south-east economy in 2018

The seafood sector makes an even larger contribution to the wider regional economy.

Fig. 1.The estimated benefits of the port seafood sector, South-East, 2018

Port seafood sector	South-East		
	GVA (€m)	Employment	Wages (€m)
Direct	41.5	500	13.9
Indirect	10.8	150	5.1
Induced	5.5	75	3.0
Total	**57.8**	**720**	**22.0**

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

1 Gross Value Added (GVA) is the difference between the value of goods and services produced by a business or a sector, and the cost of raw materials and other inputs which are used in production. It is essentially a measure of the value added to the services or products provided by a sector or firm.

The role of the individual seafood sub-sectors

Our analysis of the seafood sector at the port produces the following headline findings throughout the region (which again will include the combined direct, indirect and induced impacts).[2]

- Activity in the commercial fishing sub-sector has been estimated to sustain 360 jobs, €12.3 million of wages and €30.1 million of GVA;
- Activity in the aquaculture sub-sector has been estimated to sustain 65 jobs, €1.4 million of wages and €3.4 million of GVA;
- The fish processing sub-sector has been estimated to sustain 360 jobs, €10.8 million of wages and €29.7 million of GVA.

Socio-economic characteristics

Sectors which are closely aligned with the seafood sector are important employers within the Kilmore Quay economy. Over a third of workplace employment in the port area was within the agriculture, forestry & fishing and manufacturing, mining & utilities sectors. Furthermore, educational attainment trends suggest that local skills more closely match employment opportunities in these sectors. Commuting data also suggests that, outside of these industries, local employment opportunities are somewhat more limited.

Linked to this, unemployment rates are above the national average and economic inactivity is relatively high. 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.

2 Summing the benefits of all three elements within our definition of the seafood sector (fishing, aquaculture and processing) will 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 wages), we add all the three sub-sectors. However, for the indirect and induced totals, we sum those of the processing sub-sector 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, however, more 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 Insights to estimate the economic contribution of the seafood sector in ten of Ireland's ports.

1.2 The port area

Kilmore Quay is a small village centred around a fishing port and marina. Located in county Wexford the village is close to the county town, Wexford. In this report, we define the local port economy as the District Electoral Division (DED) of Kilmore and those surrounding it, which constitute its hinterland – informed by BIM and shown in the below figure.

Fig. 2. 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. We worked closely with BIM in order to, firstly, 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.

In total, there were close to 470 individual responses from seafood-related businesses across Ireland. Of this total, close to 330 unique responses were recorded from seafood operators based in the 10 port areas – a response rate of close to 40%, relative to the known seafood population. The study also draws on published data, were available, to better understand the sectoral composition of coastal areas within the country. Peripheral economies tend to face significant challenges from which Kilmore Quay is not exempt. **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

In this paper, we present our estimates of the size of the local seafood sector and how it impacts the regional economy. Our 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. We then estimate their wider impacts within the local NUTS3 region. 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 concerning our methodology.

Our analysis is also careful to identify where the three different seafood sub-sectors 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. Our analysis has isolated the benefits to avoid instances of double-counting (see **Appendix 2** for further information concerning the model approach).

BOX 1: INTRODUCING ECONOMIC IMPACT ANALYSIS

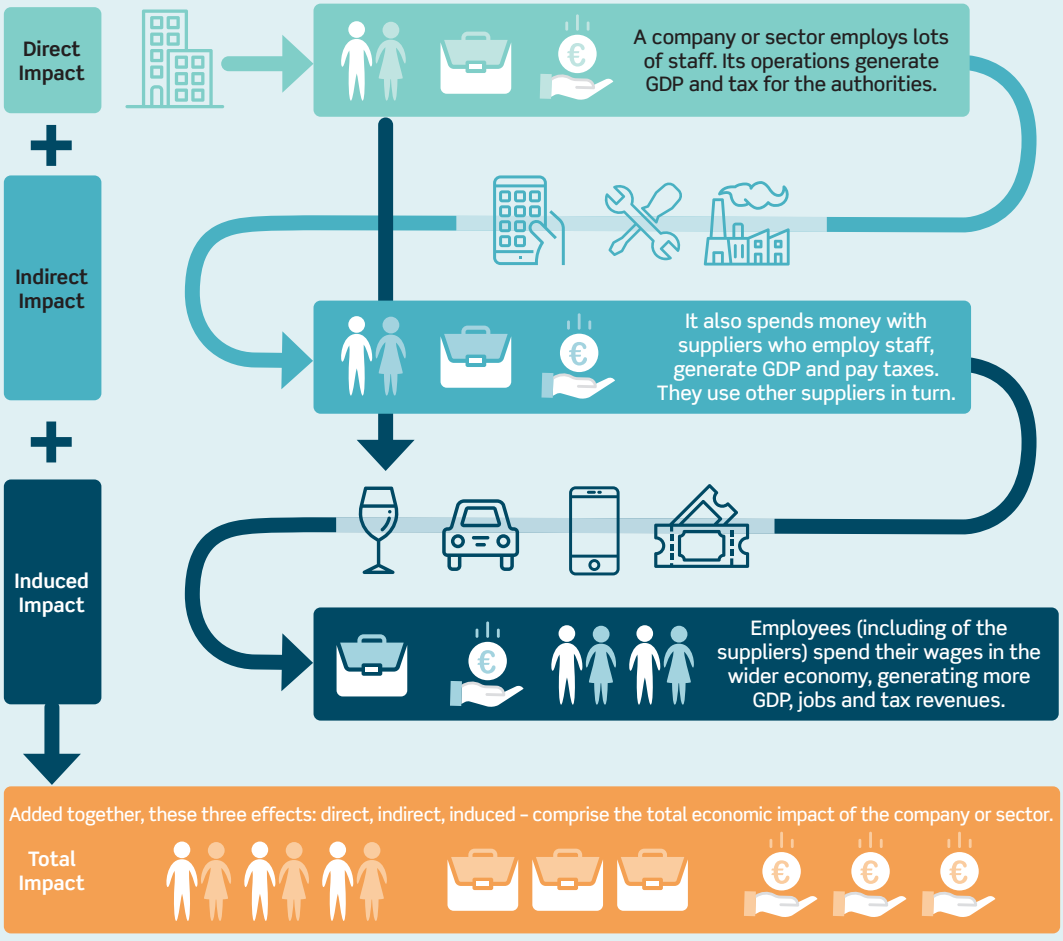
The economic impact of a sector is measured using a standard means of analysis called an economic impact assessment. The report quantifies the three 'core' channels of impact that comprise an organisation/sector's 'economic footprint':

- **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; and the
- **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.

We analyse these channels of impact using three core metrics:

- **Employment,** measured on a Full-Time Equivalent (FTE) headcount basis. This is comprised 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** contribution to GDP; and
- **Tax receipts** generated by the Irish activity and employment supported by the seafood sector.

Fig. 3: Economic impact assessment



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 south-east 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; and
- Finally, we present the report's conclusions.

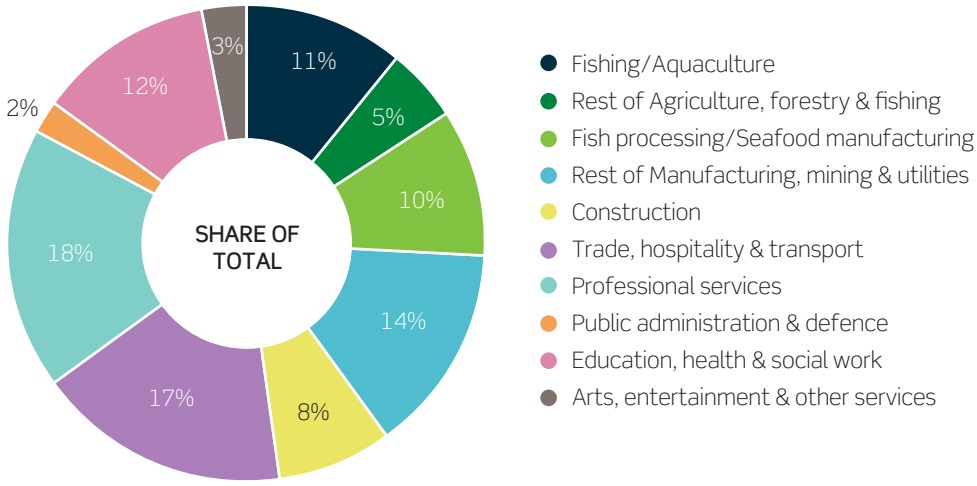
2. The seafood sector at Kilmore Quay

2.1 The importance of the local seafood sector

Before we present the total benefits associated with the port's seafood sector, it is important to first understand the size and characteristics of the sector at the port level – the direct activity.

Unsurprisingly, the seafood sector forms a significant component of Kilmore Quay's economy. The latest Census (2016) provided workplace employment data at a sectoral level for small area District Electoral Divisions (DEDs) across Ireland. By combining this employment data with our regional productivity estimates we can quantify the economic footprint of the port economy. We therefore estimate that Kilmore Quay's economy made a GVA contribution to GDP of €192 million in 2018.[3] We estimate that the seafood sector within the port represented €41.5 million of this GVA total. Seafood, therefore, represented 21% of the port economy. The most dominant sector locally was the 'Manufacturing, mining & utilities' sector which represented 24% of the local economy.

Fig. 4. GVA by sector, Kilmore Quay, 2018

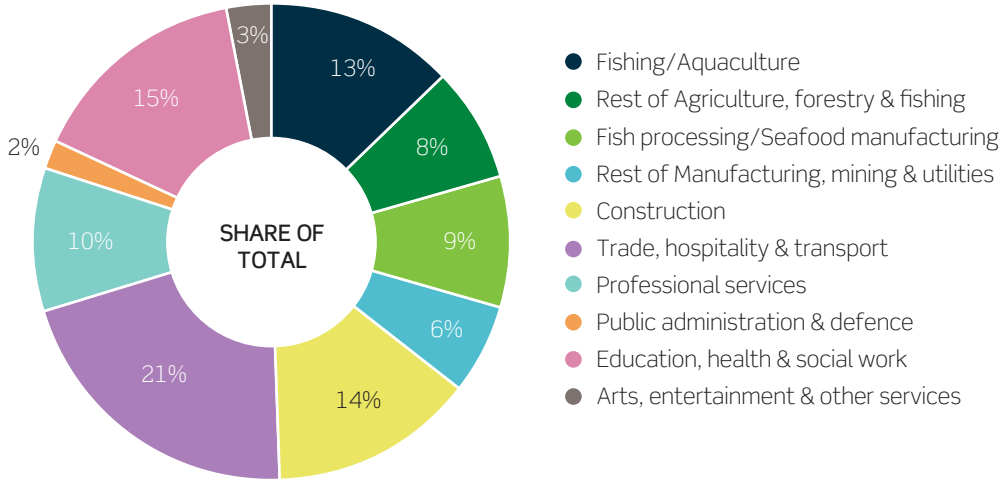


Source: *Oxford Economics, Perceptive Insight, CSO*

In employment terms, seafood is even more important within the port economy. Combined commercial fishing, aquaculture and fish processing is estimated to represent 22% of workplace employment across the port area in 2018. Furthermore, fishing and aquaculture represented 60% of local Agriculture, forestry & fishing related employment and fish processing accounted a similar proportion of local Manufacturing, mining & utilities jobs.

3 When estimating the size of the port economies we use the most recent workplace sectoral employment data from the 2016 Census. This employment data relates to workplace zones, which are slightly smaller than DEDs. The workplace zones are therefore mapped across to closely represent the DEDs which cover to the port areas. We then supplement this data with the current snapshot of the local seafood sector as estimated through the survey exercise. Finally, we subtract the commercial fishing and aquaculture activity from the broader 'Agriculture, forestry & fishing' sector to get an indication of its prominence locally. A similar approach is adopted with fish processing in relation to the 'Manufacturing, mining & utilities' sector.

Fig. 5. Employment by sector, Kilmore Quay, 2018



Source: *Oxford Economics, Perceptive Insight, CSO*

2.2 Characteristics of the seafood sector

Within the local seafood industry, commercial fishing is the largest direct contributor to the local port economy. In 2018, this sector generated €19.9 million in GVA to the local economy, higher than both fish processing (€19.5 million) and aquaculture (€2.1 million).

Commercial fishing also had the largest contribution to employment, supporting 240 full-time equivalent roles across 43 separate firms. Processing closely followed by employing 210 people across six operators, highlighting the lower number of average employees for fishing vessels compared to processing plants. Aquaculture supported an extra 50 direct jobs. Turnover was highest for fish processing, at €40.9 million it accounted for half of the seafood turnover total, generating €5.5 million in wages to Kilmore Quay workers. By contrast, the wage bill for commercial fishing was higher (€7.6 million) despite similar number of jobs on offer, highlighting the wage differential between the different sub-sectors in 2018.

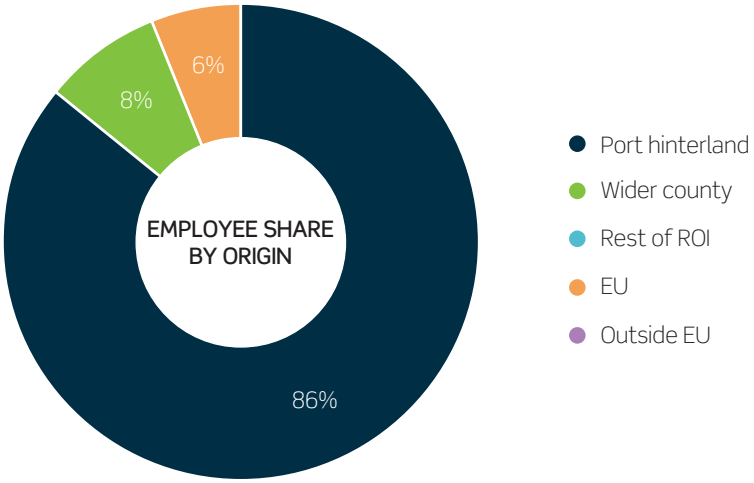
Fig. 6. Headline direct economic contribution of the seafood sector, Kilmore Quay, 2018

	Turnover (€m)	Jobs	Wages (€m)	Seafood operators
Commercial fishing	36.2	240	7.6	43
Aquaculture	3.7	50	0.9	7
Fish processing	40.9	210	5.5	6
Total	**80.8**	**500**	**13.9**	**56**

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

As well as the headline figures our survey of the local seafood sector sought to gain insight into the business environment that these seafood firms were operating in. Seeking to better understand the role of Kilmore Quay in the context of regional, national and wider economies our survey examined the employment supported by the local seafood sector. Looking first at where employees originated from, we found 86% hailed from the port area and its hinterland, the highest rate of local workforce of any port in our analysis. This reinforces the importance of the seafood industry for local workforce. Of the rest, 8% came from elsewhere in the wider county and 6% from the European Union.

Fig. 7. Workforce origin, Kilmore Quay, 2018

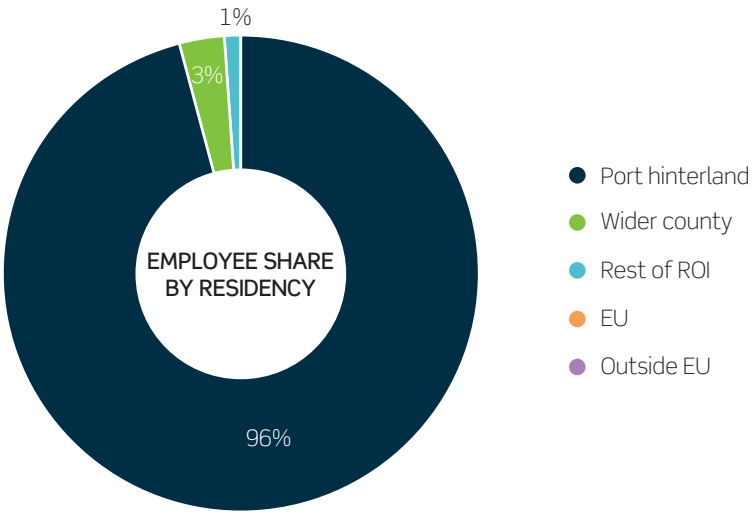


Source: *Oxford Economics, Perceptive Insight*

This picture was broadly the same across the three seafood sub-sectors, with over 80% of workers originating in the hinterland in each. 100% of aquaculture employees were from the Kilmore Quay area, whilst all reported EU workers were working on commercial fishing in 2018.

Unsurprisingly, given the high concentration of locals in the Kilmore Quay seafood sector, 96% of employees also lived within the port hinterland.

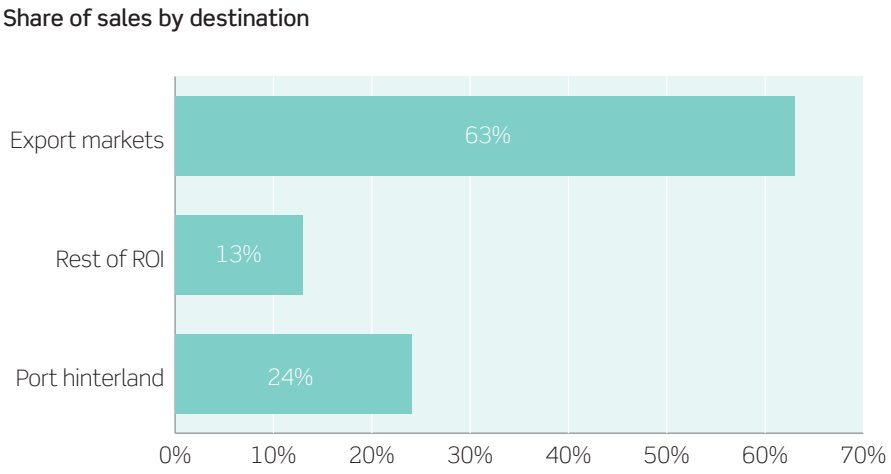
Fig. 8. Workforce residency, Kilmore Quay, 2018



Source: *Oxford Economics, Perceptive Insight*

Whilst the hinterland remains the key location for the workforce the survey also explored the key markets for sale of goods. Sales to the immediate hinterland made up just under a quarter of total seafood sales (24%). The rest of Ireland made up just 13%. However, the largest share by far was the export market at 63%, the highest for any of our ports, and 18 percentage points above the all ports average.

Fig. 9. Sales by destination, Kilmore Quay, 2018

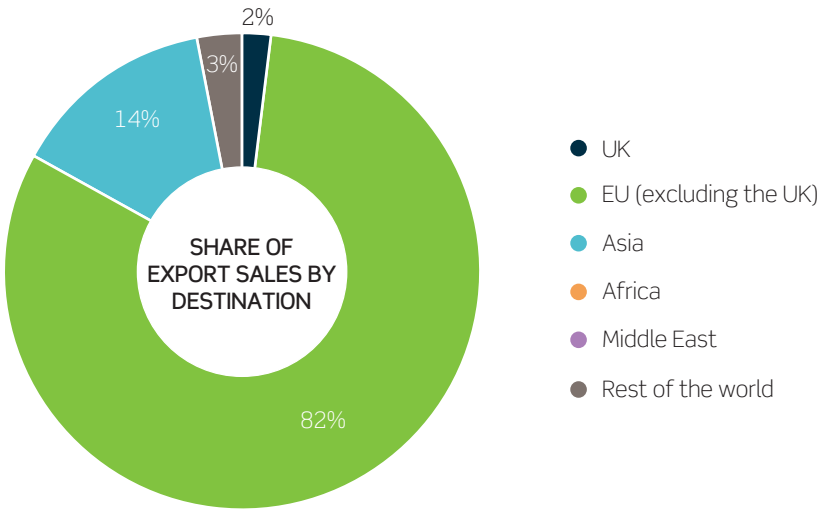


Source: *Oxford Economics, Perceptive Insight*

The share of exports to total sales is biggest for fish processing with 100% of sales heading abroad in 2018. This compares with 43% for commercial fishing. These numbers are based on limited sample size but reflect the general pattern of exports between sub-sectors.

The largest export market is the continental EU (excluding the UK) which took 82% of exported sales in 2018. This was followed by Asia which took an additional 14%.

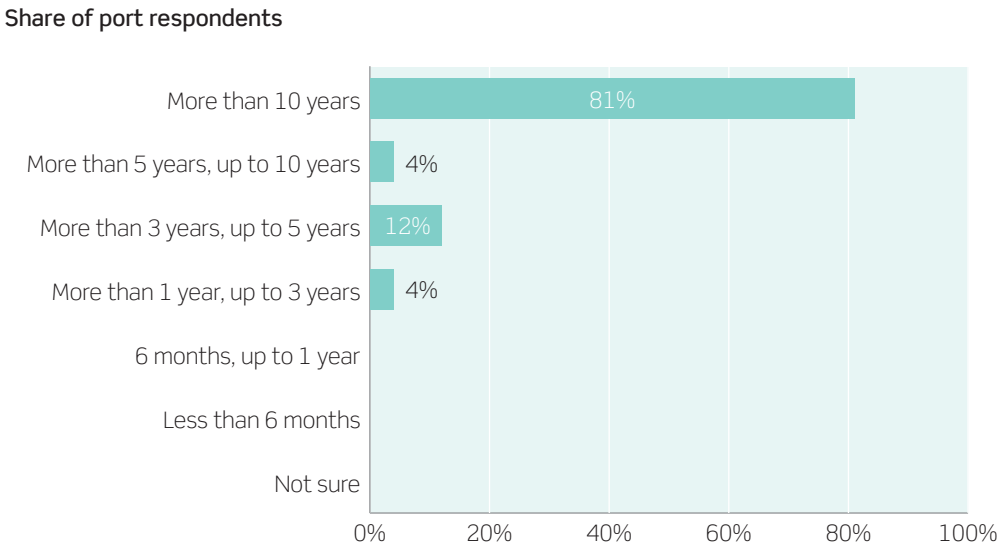
Fig. 10. Export sales by destination, Kilmore Quay, 2018



Source: *Oxford Economics, Perceptive Insight*

As well as looking at the current state of the seafood industry our survey looked to understand the profile of businesses that operated from the port. Business maturity in Kilmore Quay is high; 81% of respondents reported their business had been operating for at least a decade in 2018. Another 4% had been around for at least five years, while another 4% were between one and three years old. Whilst the survey samples for Kilmore Quay are small at the sectoral level, the results show that the maturity level is broadly the same across fishing, processing and aquaculture industries.

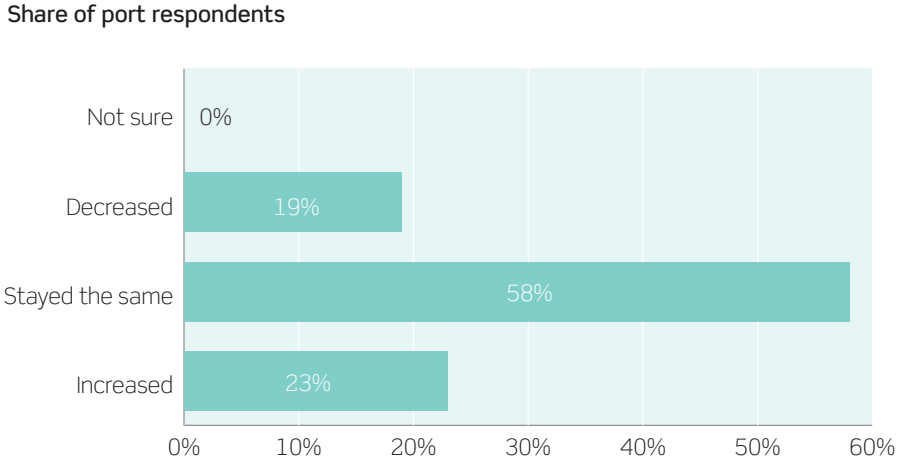
Fig. 11. Seafood sector maturity, Kilmore Quay, 2018



Source: *Oxford Economics, Perceptive Insight*

Looking at the individual performance of these operating firms our survey addressed turnover and investment in the seafood industry. Overall, the operators look to be performing well at Kilmore Quay; 81% reported their turnover had either stayed the same in 2018 or had increased on the year before. However, this left 19%, or nearly one in five respondents, reporting a fall in turnover on levels seen the year before, the third highest rate in our sample. Turnover performance was relatively similar across the three sub-sectors based on our sample.

Fig. 12. Turnover in the past 12 months, Kilmore Quay, 2018

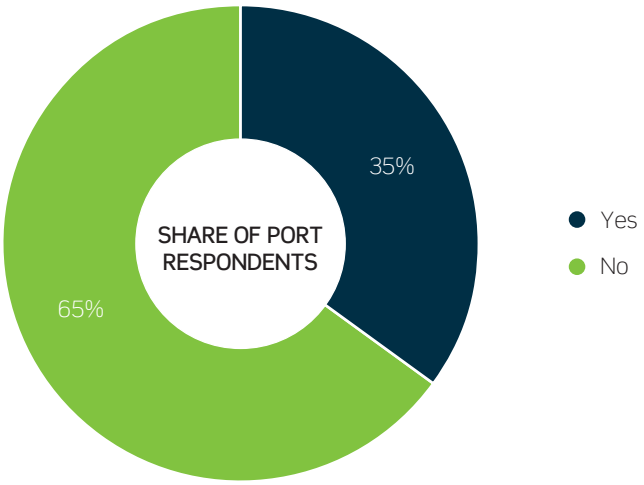


Source: *Oxford Economics, Perceptive Insight*

Turning from the past to future expectations we also asked respondents how they thought their turnover may change over the coming 12 months. The responses were optimistic, 69% of respondents expect their turnover to remain unchanged and 19% expected to see increased turnover in 2019.

Improving turnover is often linked with investment: improving the quality and/or quantity of capital available to the workforce can enable improved productivity and turnover. On the one hand, the willingness of firms to engage in capital investment may, in itself, signal a positive outlook for the future; on the other, it may reflect the deterioration of existing capital stocks. Our survey results suggest the latter predominates investment decision making. While 19% of firms expected turnover to grow into 2019, 35% had already spent money on capital investment in the last financial year.

Fig. 13. Capital investment in the previous year, Kilmore Quay, 2018



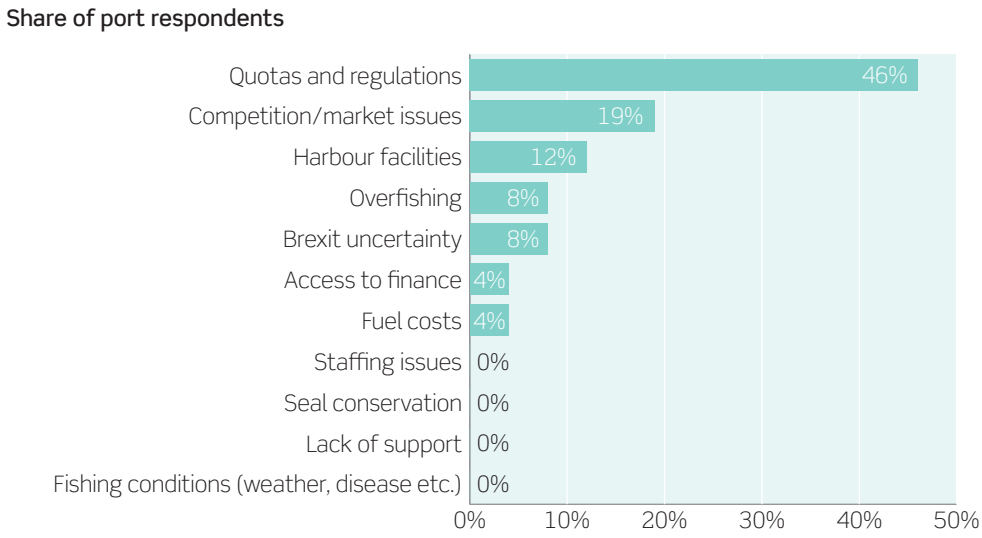
Source: *Oxford Economics, Perceptive Insight*

From our survey it appears most of these investments were made in the commercial fishing sub-sector, though limited sample sizes make it difficult to give an accurate view on investment levels at the disaggregated level.

To better understand the decision making behind these investment decisions our survey also explored the perceived constraints on growth within the seafood sector. The biggest cap on growth was reported as quotas and regulations (46% of respondents). However, when asked whether an increase in quotas by 20% would lead operators to hire more staff, less than half of respondents (38%) said yes, in line with the all ports average.

Competition and market issues were the second most reported constraint on growth prospects at 19% followed by local harbour facilities, quoted by 12% of survey respondents.

Fig. 14. Main constraints on growth, Kilmore Quay, 2018



Source: *Oxford Economics, Perceptive Insight*

2.3 Conclusion

Our survey of the local seafood industry also identified the key characteristics of the business environment. With a mature seafood sector at Kilmore Quay, operators typically report stable turnover and a highly local workforce. Despite concerns around fishing quotas there was capital investment in 2018 indicating a degree of confidence in the future of the industry.

Seafood employees at Kilmore Quay tend to be very local with 86% coming from the port hinterland and most living there now. However, most seafood sales go overseas, with just 24% sold within the port hinterland.

3. The impact of seafood's sub- sectors

In this section, we estimate the wider economic footprint of Kilmore Quay's seafood sector on the regional economy.

3.1 Commercial fishing

The commercial fishing industry contributed €30.1 million to the south-east regional economy in 2018, the largest contribution from a seafood sub-sector at Kilmore Quay. Almost two thirds of this total contribution (€19.9 million) was directly associated with fishing activities themselves, while €6.3 million of GVA came through the supply chain, with a further €3.9 million being generated through the spending power of those employed both directly and indirectly by the local commercial fishing sector.

We estimate that commercial fishing supported 360 FTE jobs throughout the region in 2018. Of this total, 240 were directly employed in commercial fishing in the port area, with an additional 65 jobs being reliant on the sector via supply chain links across the south-east region. These indirect/supply chain related jobs appear to, on average, be more productive than those in commercial fishing, generating higher GVA per worker than the direct workforce. These combined direct and indirect jobs support an additional 55 jobs across the regional economy through their consumer spending impacts.

Fig. 15. Benefits of the commercial fishing sub-sector, South-East, 2018

Port commercial fishing	South-East		
	GVA (€m)	Employment	Wages (€m)
Direct	19.9	240	7.6
Indirect	6.3	65	2.6
Induced	3.9	55	2.1
Total	**30.1**	**360**	**12.3**

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

The Agriculture, forestry & fishing sector is the main beneficiary of commercial fishing activity at the port. This sector was home to €20.3 million of the total GVA impacts across the regional economy. This was only €0.4 million more than the direct impact, showing the sector receives limited benefit from the subsequent multiplier impacts. The sector does however enjoy a significant share of the total employment (245 jobs) and wages (€7.8 million) benefits, representing 69% and 64% of the respective totals.

The wholesale & retail sector receives the next largest benefit from commercial fishing activity, representing €3.6 million in GVA and 50 jobs. These benefits originate predominantly from local fisheries' procurement spending, in addition to the spending of those both directly and indirectly employed as a result. Manufacturing and real estate also saw boosts to GVA of €1.8 million and €1.4 million respectively.

Fig. 16. Total benefits by sector, South-East, 2018

Port commercial fishing	South-East		
	GVA (€m)	Employment	Wages (€m)
Agriculture, forestry & fishing	20.3	245	7.8
Mining & quarrying	0.0	0	0.0
Manufacturing	1.8	10	0.4
Electricity, gas, steam	0.1	0	0.0
Water supply	0.0	0	0.0
Construction	0.1	<5	0.0
Wholesale & retail	3.6	50	1.9
Transportation & storage	0.4	5	0.2
Accommodation & food	0.4	15	0.3
Information & communications	0.0	0	0.0
Financial & insurance	0.5	<5	0.1
Real estate	1.4	10	0.7
Professional, scientific & technical	0.7	5	0.2
Administration & support	0.1	0	0.0
Public administration	0.0	<5	0.0
Education	0.2	5	0.2
Human health	0.3	5	0.2
Arts, entertainment & recreation	0.1	<5	0.1
Other service activities	0.1	5	0.1
Total	**30.1**	**360**	**12.3**

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

3.2 Aquaculture

The aquaculture industry at Kilmore Quay contributed a total of €3.4 million in value added to the south-east region in 2018. Close to 60% of this GVA total was directly generated by aquaculture activity within the local port economy, with the additional €1.3 million coming via indirect and induced impacts. Together, this activity supported 65 jobs across the south-east economy, 50 of which were directly employed in the aquaculture industry at the port. In total, this employment generated €1.4 million in wages in 2018. The indirect and induced jobs account for a relatively high proportion of the earnings total, due to their increased GVA per head and higher average wages.

Fig. 17. Benefits of the aquaculture sub-sector, South-East, 2018

Port aquaculture	South-East		
	GVA (€m)	Employment	Wages (€m)
Direct	2.1	50	0.9
Indirect	0.8	10	0.3
Induced	0.4	5	0.2
Total	**3.4**	**65**	**1.4**

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

The agriculture, forestry & fishing sector absorbed almost two thirds of aquaculture's subsequent GVA impact across the regional economy. Most of this total was attributed to aquaculture's direct activity taking place within the port area. Of the remaining impacts, the Wholesale & retail sector experienced the largest benefit – including €0.3 million in GVA, five jobs and €0.17 million in associated earnings. Smaller benefits were also found in manufacturing and real estate.

Fig. 18. Total benefits by sector, South-East, 2018

Port aquaculture	South-East		
	GVA (€m)	Employment	Wages (€m)
Agriculture, forestry & fishing	2.2	55	0.9
Mining & quarrying	0.0	0	0.0
Manufacturing	0.2	<5	0.0
Electricity, gas, steam	0.0	0	0.0
Water supply	0.0	0	0.0
Construction	0.0	0	0.0
Wholesale & retail	0.3	5	0.2
Transportation & storage	0.1	<5	0.1
Accommodation & food	0.0	<5	0.0
Information & communications	0.0	0	0.0
Financial & insurance	0.1	0	0.0
Real estate	0.2	<5	0.1
Professional, scientific & technical	0.1	<5	0.0
Administration & support	0.0	0	0.0
Public administration	0.0	0	0.0
Education	0.0	0	0.0
Human health	0.0	<5	0.0
Arts, entertainment & recreation	0.0	0	0.0
Other service activities	0.0	0	0.0
Total	**3.4**	**65**	**1.4**

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

3.3 Fish processing

The port's fish processing sector supported a total of 360 jobs across the south-east, paying an estimated €10.8 million in wages in 2018. This seafood sub-sector also provided a total GVA contribution of €29.7 million across the regional economy, with two thirds of this total (€19.5 million) originating directly from the port's own fish processing activity. The remaining GVA impact was supported through the resulting supply chain spending (€7 million) and the associated consumer spending the direct and indirect activity supports (€3.2 million). The fish processing sector had the strongest employment multiplier of the three seafood sub-sectors at the port (1.7), meaning that each direct fish processing job supported 0.7 of an additional job elsewhere within the regional economy.

Fig. 19. Benefits of the processing sub-sector, South-East, 2018

Port fish processing	South-East		
	GVA (€m)	Employment	Wages (€m)
Direct	19.5	210	5.5
Indirect	7.0	110	3.6
Induced	3.2	45	1.7
Total	**29.7**	**360**	**10.8**

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

Unlike with the commercial fishing and aquaculture elements, the majority of the benefits from fish processing accrue to the manufacturing sector, in line with the nature of its food processing operations. The regional manufacturing sector saw a boost to value added of €20.3 million in 2018, supporting 210 FTE jobs and €5.6 million in wages.

The next largest benefit accrued within the agriculture, forestry & fishing – due in part to processing's procurement relationship with this sector. Fish processing supported 75 jobs and €3.9 million of GVA within the sector – representing 21% and 13% of the respective totals. The higher employment share relative to GVA is a consequence of lower output per job in comparison to the manufacturing sector. Wholesale & retail was the next largest beneficiary, with a GVA impact of €1.6 million and 25 jobs supported across the region.

Fig. 20. Total benefits by sector, South-East, 2018

Port fish processing	South-East		
	GVA (€m)	Employment	Wages (€m)
Agriculture, forestry & fishing	3.9	75	2.3
Mining & quarrying	0.0	0	0.0
Manufacturing	20.3	210	5.6
Electricity, gas, steam	0.1	0	0.0
Water supply	0.0	0	0.0
Construction	0.1	<5	0.0
Wholesale & retail	1.6	25	0.9
Transportation & storage	1.0	15	0.5
Accommodation & food	0.3	10	0.3
Information & communications	0.0	0	0.0
Financial & insurance	0.2	<5	0.1
Real estate	1.0	10	0.5
Professional, scientific & technical	0.3	<5	0.1
Administration & support	0.1	0	0.0
Public administration	0.0	<5	0.0
Education	0.2	5	0.1
Human health	0.3	5	0.2
Arts, entertainment & recreation	0.1	<5	0.0
Other service activities	0.1	<5	0.1
Total	**29.7**	**360**	**10.8**

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

3.4 Conclusion

In conclusion, Kilmore Quay's commercial fishing sub-sector has the largest economic footprint of the three-seafood related sub-sectors. We estimate that it supported 360 jobs, €12.3 million in wages and over €30.1 million in GVA throughout the south-east economy in 2018.

4. Total impact of the seafood sector at Kilmore Quay

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 hinterlands.

However, simply summing the respective benefits of all three elements (commercial fishing, aquaculture and fish processing) will 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. Therefore, adding everything together would result in double-counting some of the impacts. See **Appendix 2** for further detail on our approach.

We have therefore laid out the following approach to calculate total impacts for GVA, employment, wages and tax:

Direct impacts:

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

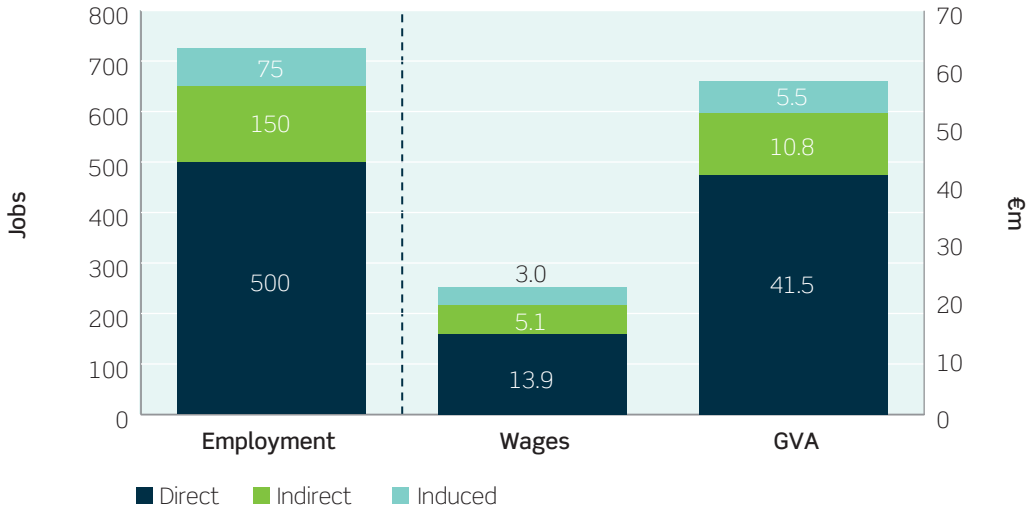
Indirect and induced impacts

- For GVA, employment, wages and taxes, the total indirect and induced impacts are calculated by summing the indirect and induced impacts of fish processing and a 34% and 55% share of the indirect and induced impacts from the respective aquaculture and commercial fishing sub-sectors (as information from the survey interviewees suggest that exports and domestic sales outside the port areas own processors account for 34% and 55% 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, we estimate that the Kilmore Quay seafood industry generated €57.8 million in GVA for the south-east economy in 2018. This activity supported 720 jobs across a range of sectors and generated €22 million in wages to employees.

Fig. 21. Benefits of the seafood sector, South-East, 2018



Source: *Oxford Economics, Perceptive Insight*

Whilst the bulk of the economic impacts belonged to seafood's direct activities, 28% of the GVA impact resulted from the associated supply chain and/or consumer spending. The local seafood sector is estimated to support 720 jobs throughout the south-east, alongside €22 million in associated wages. Over 30% of these jobs are supported within seafood's regional supply chain (150) or through the consumer spending the direct activity supports (75). The port's seafood sector therefore has an employment multiplier of 1.45 – meaning that every two direct seafood jobs within the port area nearly support one additional job within the south-east.

Fig. 22. Total seafood sector benefits, South-East, 2018

Port seafood sector	South-East		
	GVA (€m)	Employment	Wages (€m)
Direct	41.5	500	13.9
Indirect	10.8	150	5.1
Induced	5.5	75	3.0
Total	**57.8**	**720**	**22.0**

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

Our analysis shows that the agriculture, forestry & fishing sector gains the most from the port's seafood activity, reflective of both the size of its local commercial fisheries and the supply chain relationship with local fish processors. This sector accounts for €26.2 million of the total regional GVA benefits, 45% of the total. It also accounts for 375 FTE jobs and therefore half of the employment benefits. The manufacturing sector also sees considerable benefit, mainly due to the fact the fish processing sits within its sector. This sector represents just over a third of the total GVA impact (€21.4 million), alongside 215 jobs and €5.9 million in wages.

Outside of these two sectors, the wholesale & retail sector recorded the next highest economic benefit. It enjoyed 6% of the overall GVA impact across the region (€3.7 million), alongside 50 jobs and €2 million in wages. Furthermore, €6.5 million in GVA was shared across the remaining sectors through local seafood's spill over effects.

Fig. 23. Total benefits by sector, South-East, 2018

Port seafood sector	South-East		
	GVA (€m)	Employment	Wages (€m)
Agriculture, forestry & fishing	26.2	375	10.9
Mining & quarrying	0.0	0	0.0
Manufacturing	21.4	215	5.9
Electricity, gas, steam	0.1	0	0.0
Water supply	0.0	0	0.0
Construction	0.1	<5	0.1
Wholesale & retail	3.7	50	2.0
Transportation & storage	1.3	15	0.7
Accommodation & food	0.6	20	0.5
Information & communications	0.0	0	0.0
Financial & insurance	0.5	<5	0.1
Real estate	1.8	15	0.9
Professional, scientific & technical	0.7	5	0.2
Administration & support	0.2	<5	0.0
Public administration	0.1	<5	0.0
Education	0.3	5	0.2
Human health	0.4	5	0.3
Arts, entertainment & recreation	0.2	<5	0.1
Other service activities	0.1	5	0.1
Total	**57.8**	**720**	**22.0**

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 what channel of activity they originate from. We estimate that port seafood sector's direct tax contribution equated to €4.4 million in 2018, consisting of both the labour-based tax paid by the sector's employees (income tax, PRSI etc) and corporation tax receipts.

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 and sectoral taxation on production less subsidies. Combined these represent a net fiscal deficit of €0.9 million, mainly because of agriculture's prominence within the fish processing supply chain. However, the indirect deficit is compensated for by the consumption related tax the sector supports across the economy. As those employed in the sector and within its supply chain spend their wages, this supports further jobs and activity within the Irish economy. We estimate this induced activity supported a further €3.5 million in tax revenue.

Therefore, in total, Kilmore Quay's seafood sector is estimated to have supported €7 million in fiscal benefits in 2018. This total was made up of €5.6 million in employment/labour related tax, €1.4 million in corporation tax, €2.2 million in taxation associated with the spending of wages, and a net tax deficit of €2.2 million through taxation on inputs and production.[4]

4 Net tax position refers to taxes less subsidies.

Fig. 24. Fiscal impacts by taxation type, Ireland, 2018

Ports seafood sector	Total tax estimates (€m)				
	Labour tax	Corporation tax	Production tax	Input purchases tax	Tax on consumption
Agriculture, forestry & fishing	2.0	0.5	-3.5	0.4	0.0
Mining & quarrying	0.0	0.0	0.0	0.0	0.0
Manufacturing	2.3	0.5	0.0	0.0	1.7
Electricity, gas, steam	0.0	0.0	0.0	0.0	0.1
Water supply	0.0	0.0	0.0	0.0	0.0
Construction	0.0	0.0	0.0	0.0	0.0
Wholesale & retail	0.3	0.2	0.0	0.0	0.0
Transportation & storage	0.1	0.1	0.1	0.3	0.0
Accommodation & food	0.1	0.0	0.0	0.0	0.2
Information & communications	0.0	0.0	0.0	0.0	0.1
Financial & insurance	0.1	0.1	0.0	0.1	0.0
Real estate	0.2	0.0	0.1	0.1	0.0
Professional, scientific & technical	0.1	0.0	0.0	0.0	0.0
Administration & support	0.0	0.0	0.0	0.0	0.0
Public administration	0.0	0.0	0.0	0.0	0.0
Education	0.1	0.0	0.0	0.0	-0.1
Human health	0.1	0.0	0.0	0.0	-0.1
Arts, entertainment & recreation	0.0	0.0	0.0	0.0	0.0
Other service activities	0.0	0.0	0.0	0.0	0.0
Total	**5.6**	**1.4**	**-3.2**	**1.0**	**2.2**

Source: *Oxford Economics, Perceptive Insight, CSO*

4.4 Conclusion

In calculating the overall impact of the local seafood sector, we consider the degree to which output from aquaculture and commercial fishing can appear in the supply chain of local fish processors.

Therefore, our analysis shows the Kilmore Quay's overall seafood sector supports 720 jobs and €57.8 million in GVA throughout the regional economy. Furthermore, the sector generates €7 million in tax revenues towards the public purse.

5. Conclusions

5.1 The seafood sector in Kilmore Quay

The seafood industry plays an important role in Kilmore Quay's economy. In 2018, the direct seafood activity within the port area generated an estimated €80.1 million in turnover, supporting 500 jobs and representing 22% of the local port economy in GVA terms. Fish processing is the largest seafood related activity at the port, generating €40.1 million in turnover, followed by commercial fishing (€36.2 million) and aquaculture (€3.7 million). When translated into GVA, the seafood sector directly contributes €41.5 million to the local port economy.

Our survey of the local seafood industry also identified the key characteristics of the business environment. With a mature seafood sector at Kilmore Quay, operators typically report stable turnover and a highly local workforce. Despite concerns around fishing quotas there was capital investment in 2018 indicating a degree of confidence in the future of the industry.

Seafood employees at Kilmore Quay tend to be very local with 86% coming from the port hinterland and most living there now. However, most seafood sales go overseas, with just 24% sold within the port hinterland.

5.2 The commercial fishing sub-sector is the main contributor

The commercial fishing sub-sector makes the strongest contribution to the south-east economy. In 2018, it alone generated €30.1 million of GVA, of which €10.2 million is linked to indirect (€6.3 million) and induced (€3.9 million) effects. The commercial fishing sub-sector is estimated to provide benefits of the following size:

- 240 direct jobs and €7.6 million of wages, producing €19.9 million of GVA;
- 65 indirect jobs and €2.6 million of wages, producing €6.3 million of GVA; and
- 55 induced jobs and €2.1 million of wages, producing €3.9 million of GVA.

5.3 Though the other components remain significant

Although the fish processing sub-sector's economic footprint is slightly smaller than that of the commercial fishing sector, its employment multiplier is estimated to be the stronger of the two. Accordingly, our analysis shows the economic impact of fish processing was of the following size in 2018:

- 210 direct jobs and €5.5 million of wages, producing €19.5 million of GVA;
- 110 indirect jobs and €3.6 million of wages, producing €7.0 million of GVA; and
- 45 induced jobs and €1.7 million of wages, producing €3.2 million of GVA.

Furthermore, our analysis shows that the economic impact of the port's aquaculture sector equates to the following benefits across the south-east economy:

- 50 direct jobs and €0.9 million of wages, producing €2.1 million of GVA;
- 10 indirect jobs and €0.3 million of wages, producing €0.8 million of GVA; and
- 5 induced jobs and €0.2 million of wages, producing €0.4 million of GVA.

Therefore, we estimate that the port's collective seafood sector supported 720 jobs, €22 million in wages and €57.8 million in GVA within the regional economy in 2018. This activity was enough to sustain €7 million in tax revenues towards the public accounts.

5.4 Findings from the socio-economic analysis

Sectors which are closely aligned with the seafood sector are important employers within the Kilmore Quay economy. Over a third of workplace employment in the port area was within the agriculture, forestry & fishing and manufacturing, mining & utilities sectors. Furthermore, educational attainment trends suggest that local skills more closely match employment opportunities in these sectors. Commuting data also suggests that, outside of these industries, local employment opportunities are somewhat more limited.

Linked to this, unemployment rates are above the national average and economic inactivity is relatively high. 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: Kilmore Quay's economic challenges

Economic activity and structure

The latest available data indicates that Kilmore Quay's labour market suffers from a relatively high unemployment and a declining working age population. The unemployment rate within the local port economy, at 13.8%, was almost one percentage point higher than the national rate in 2016.[5] Furthermore, the employment rate was low (50.9%) relative to the national average (53.3%). This is compounded with relatively high rates of economic inactivity – 41% of residents aged 15 and over were either not in employment or actively looking for a job.

Fig. 25. Headline economic indicator comparisons, 2016

	Unemployment rate	Employment rate	Economic inactivity
Kilmore Quay	13.8%	50.9%	41.0%
South-east	15.4%	50.3%	40.5%
Ireland	**12.9%**	**53.3%**	**38.8%**

Source: *CSO*

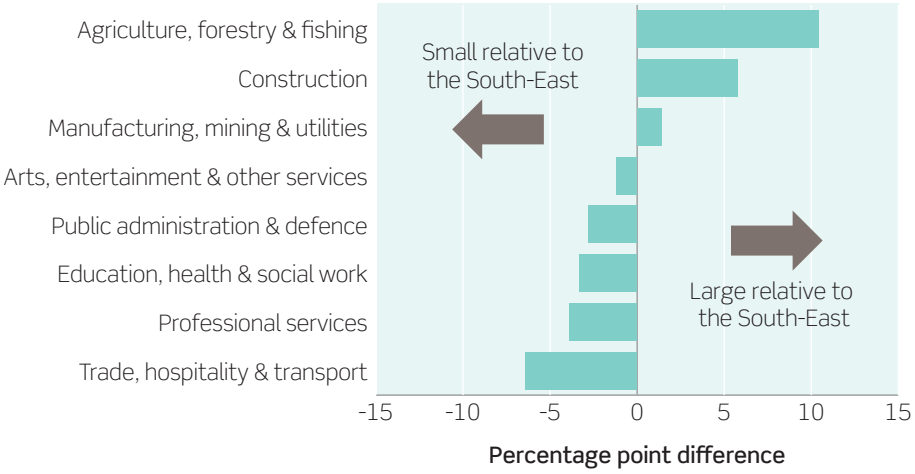
The latest Census in 2016 showed there were close to 2,500 people employed within the local port economy. Meanwhile, there were close to 5,100 residents of the area employed in jobs based either in the local economy or elsewhere. The difference represents the degree of net out-commuting of local people away from Kilmore Quay to take up work elsewhere. These commuting patterns suggest that employment opportunities may be limited within the local economy.

A sectoral breakdown of workplace employment at Kilmore Quay highlights the significance of the local seafood sector. The data shows that workplace employment within the agriculture, forestry & fishing and manufacturing, mining & utilities sectors collectively accounted for over 800 jobs (35% of total).[6] Indeed, both these sectors are relatively strongly concentrated within the local economy when compared to the region overall (see **Fig. 26**). Outside of these sectors, the trade, hospitality and transport sector is the largest source of workplace employment within the port area, accounting for just over 22% of all jobs in the local economy.

Because of this sectoral structure, the local economy may find job creation challenging. The data shows it is more highly exposed to manufacturing, which has been shedding jobs in recent decades as it transitions away from traditional sub-sectors to more capital-intensive activity. In addition, the education, health and social work sector (15% of current employment) will be reliant on future changes to population levels and its age structure. While, professional services have been experiencing significant growth across Ireland in recent times, the sector is underrepresented locally, accounting for only 9.7% of jobs.

5 Defined as a share of the labour force aged 15 years and over.
6 Commercial fishing and aquaculture fall within the 'Agriculture, forestry & fishing' sector. Fish processing related activity is classified within the industry grouping of 'Manufacturing, mining & utilities'.

Fig. 26. Employment share differences, Kilmore Quay vs region, 2016



Source: *Oxford Economics, CSO*

Demographics

Kilmore Quay's population grew by 1.4% in the five years between 2011 and 2016. Recent population growth has therefore been weaker than both the national average (3.8%) and the broader region (1.9%). Furthermore, the working age population contracted by 1.1% over this period, leaving the working age share of the total population (62.8%) well below average for both the south-east and Ireland.

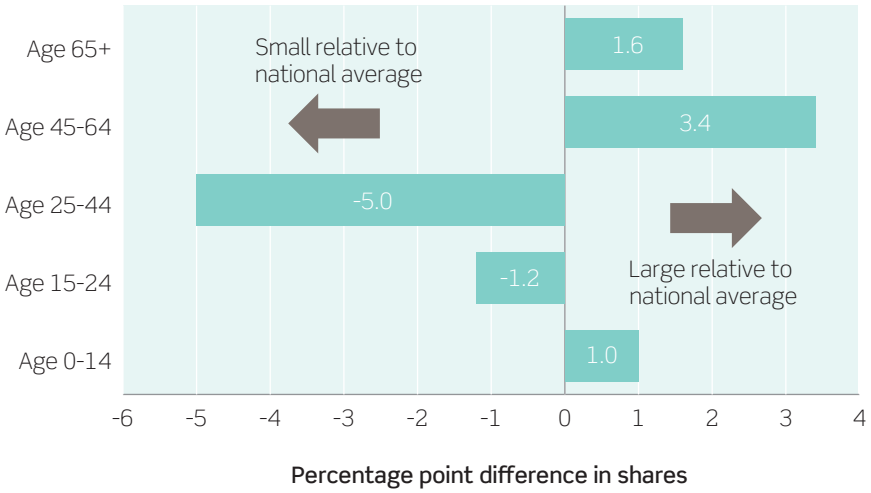
Fig. 27. Population indicators, 2016

	Growth (2011-16)		2016	
	Population	Working age	Population	Working age share
Kilmore Quay	1.4%	-1.1%	29,100	62.8%
South-east	1.9%	-0.8%	559,800	64.0%
Ireland	**3.8%**	**1.4%**	**4,761,900**	**65.5%**

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

An analysis of the port area's population by age cohorts relative to the national picture shows that the distribution is skewed towards those both younger and older. Those aged 65 and over accounted for close to 15% of all residents – 1.6 percentage points above the national average in 2016. However, younger working age people (aged 25-44) were under-represented within the local population.

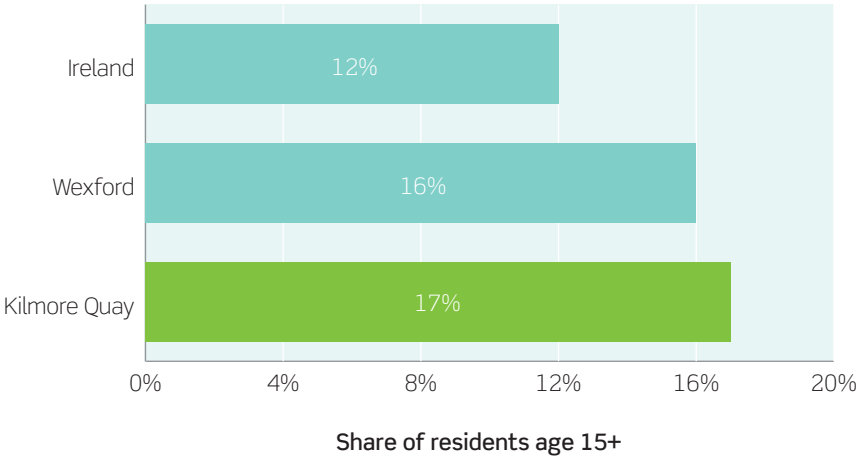
Fig. 28. Age group comparisons, Port area vs Ireland, 2016



Source: *CSO Ireland*

Qualification attainment tends to be weaker among Kilmore Quay residents relative to national rates. Those with higher level attainment represented only 20% of residents aged 15 and over, compared to 28% across Ireland. Similarly, lower level educational attainment was relatively more common in the port area relative to the national average. Those with no formal qualifications or at most primary level education accounted for 17% of those aged 15 and over in Kilmore Quay, compared to 12% on average across Ireland.

Fig. 29. No formal or primary level attainment, 2016



Source: *CSO*

Summary

Sectors which are closely aligned with the seafood sector are important employers within the Kilmore Quay economy. Over a third of workplace employment in the port area was within the agriculture, forestry & fishing and manufacturing, mining & utilities sectors. Furthermore, educational attainment trends suggest that local skills more closely match employment opportunities in these sectors. Commuting data also suggests that, outside of these industries, local employment opportunities are somewhat more limited.

Linked to this, unemployment rates are above the national average and economic inactivity is relatively high. 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.

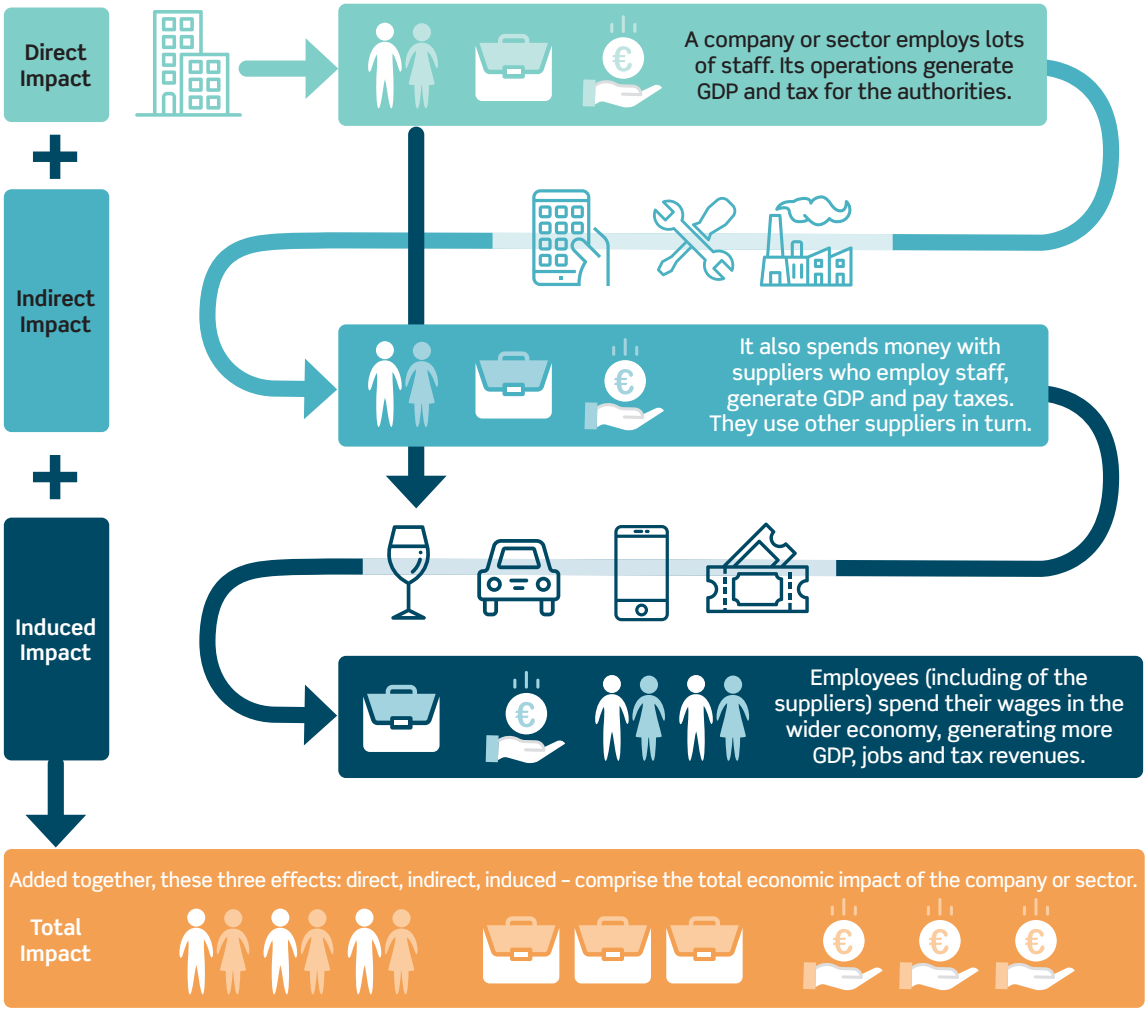
Appendix 2: Model approach

*(**Note:** Feels too long for a summary/port specific report. We could summarise or point to the main report for reference)*

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 impact is 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. 30. Overview of economic impact methodology



Our report uses three main metrics to quantify each of the channels by which the seafood sector could contribute to the regional[7] and national economy:

- **Gross value-added** contribution to Gross Domestic Product (GDP)[8]: This measured 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 persons in employment as defined in the report, the combination of workplace employment by full time and part time status; and
- **Wages** is the total value of remuneration offered to the workers associated with the local seafood sector.

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 we will use published sources for comparator geographies as a proxy estimates were 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 2018.

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.[9]

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 band. Knowing indicative turnover levels for firms not captured in the survey, we were able to apply the average ratio of jobs to turnover level in that sector and apply average sectoral wages, etc. In other words we 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 is then split into the different sectors of the economy ('Agri, forestry & fishing' and 'Manufacture of food products').

This turnover figure is essentially the value of output within the local seafood sector and encompasses intermediary demand, wages and profits. Using the sectoral ratios of output to GVA in the Irish input-output tables we 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 are again informed by the survey findings and grossed to the population total based on shared characteristics.

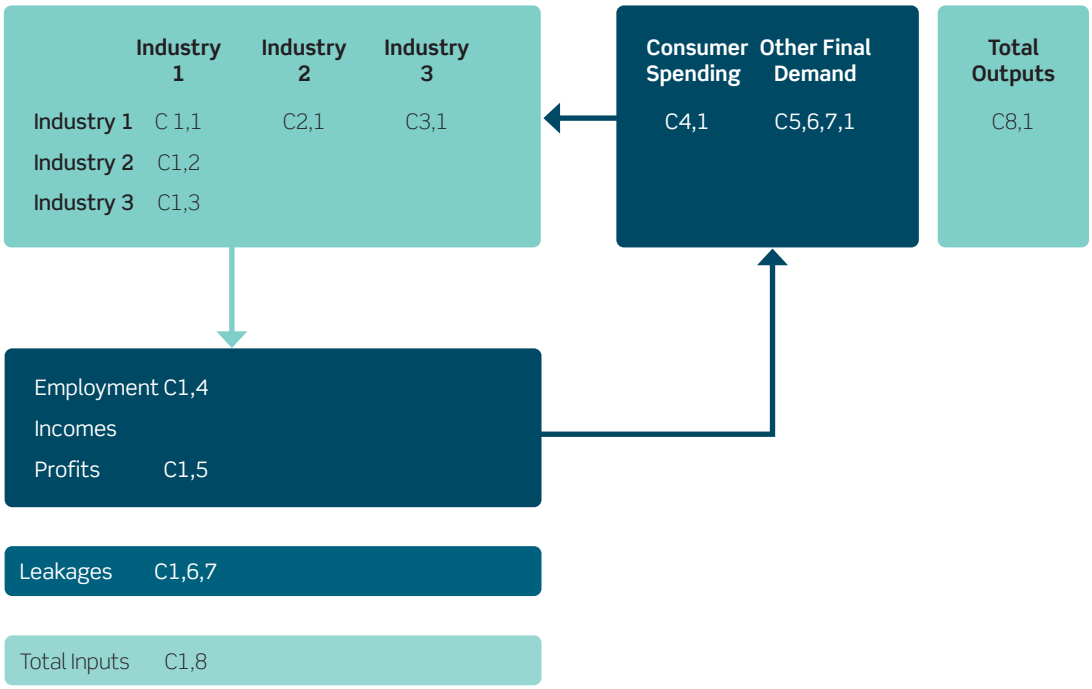
With an estimate of direct wages, we then applied income tax rates and estimated the income tax that will be collected by the Revenue Commissioners.

7 Ideally, we would quantify the impacts of the seafood sector on the port hinterlands, however, there is not enough published sectoral employment, GDP and wage data. Sufficient data is only available at regional level to produce sub-national impacts.
8 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.
9 Provided by the client 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

To estimate the indirect and induced impacts we have built an input-output model. **Figure 31** presents a stylised version (showing just three sectors for presentation purposes) of our 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. 31. Stylised input-output model



We have used the latest Irish input-output tables for the analysis, but have adjusted these 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.[10] 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, we have used information gathered from the survey to further isolate the procurement spend locally, thereby strengthening the overall modelling assumptions.

MODELLING SUPPLY CHAIN IMPACTS

The survey provided us with 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, we were able to construct a more detailed picture of the first round of supply chain spending than the published input-output tables would otherwise provide.

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

We then used the impact model to estimate all the **rounds of supply chain or indirect spending** of the local seafood sector. The input-output tables provide us with an estimate of indirect output by sector. We then convert this output back into sectoral GVA and into sectoral jobs to provide a range of sectoral impact measurements. Applying average sectoral salaries allowed us to estimate the income effect.

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, our input-output model were 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 processing. However, when estimating the total impact of the overall port seafood sector, simply summing the respective benefits of all three elements will 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.

We have, therefore, the following approach to calculate total impacts for GVA, employment, wages and tax:

Direct impacts:

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

Indirect impacts:

- For GVA, employment and 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. Furthermore, at this stage a proportional share of fishing and aquaculture direct impacts were also removed as they fall within the local processing supply chain.

Induced impacts:

- For GVA, employment and 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 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 processing sub-sector.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