# The Economic Impact of the Seafood Sector: Howth

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To discuss the report further please contact:

Neil McCullough: **nmccullough@oxfordeconomics.com**
**Oxford Economics, Lagan House, Sackville Street, Lisburn, BT27 4AB, UK**
Tel: **+44 28 9263 5400**

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# Foreword

## The Economic Impact of the Seafood Sector: Howth

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 Howth and its hinterland. Howth is an important seafood port in Ireland with high volumes of seafood landed here annually.

Howth is located on the northern edge of Dublin Bay and is a suburb of Dublin city. As such, the port is the best-connected port of the top ten ports analysed in this project. The port is connected by national road to the city centre of Dublin including rail access. The tourism sector is very important to the economy of Howth with the landscape of Howth Head and the multitude of seafood restaurants drawing tourists to this suburb. These factors have lead to Howth becoming an affluent commuter town to the city with very high property prices and so the structure of the local economy is dominated by manufacturing, tourism and professional services. Nevertheless, the seafood sector is an integral part of the heritage and activity in the town with the sector composing an integral part of the tourist attraction of the town, supplying fresh seafood to the thousands of tourists visiting daily.

In this report the seafood sector in Howth is shown to have significant downstream effects in terms of gross value added, employment and wages downstream. In total, 5% of the local economy can be attributed to the seafood sector encompassing direct, indirect and induced effects. Direct employment of the seafood sector in the hinterland is 440 while a further 260 full-time employees are supported downstream through the indirect and induced effects of the seafood sector at the regional level. The sector generates over €14 million in wages directly with a further €10.2 million in wages generated downstream at the regional level. Further downstream effects occur outside the region at the national level.

Participation in this survey by seafood producers in Howth was good with over one in four producers in the target audience responding. Special thanks are due to Denis O'Flaherty (Fisherman), John Lynch (Fisherman) and Paul Downes (BIM) for their assistance in this analysis. 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 notable contribution to the Howth and Dublin region economies. In 2018, direct seafood activity at the port generated €84.7 million in turnover, supporting 440 direct jobs. Fish processing is the largest seafood sub-sector activity at the port, generating €58 million in turnover, followed by commercial fishing (€26 million) and aquaculture (€0.4 million). When translated into GVA, the seafood sector makes a €38 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. The sector is well established at Howth, with a majority of firms operating for at least ten years. On the back of this, turnover appears to be stable or growing for most. Despite most operators expecting turnover to remain flat over the next 12 months, 42% had made capital investments over the previous year. The workforce is not as local as at other ports, with a large number commuting to Howth from elsewhere in the county. However, this probably reflects a more dynamic labour market here than in more rural ports due to Howth's proximity to Dublin workforce.

Analysing the survey results allows us to quantify the ports' 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 Howth equated to €62 million of GVA in the Dublin economy in 2018. The seafood sector at Howth supported an estimated 700 jobs across the region and generated €8.5 million in tax revenues.

**€38m**

**Direct GVA in 2018**

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

**€62m**

**Total GVA contribution to the Dublin 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, 2018**

| Port seafood sector | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Direct | 37.6 | 440 | 14.3 |
| Indirect | 15.4 | 175 | 6.6 |
| Induced | 9.0 | 85 | 3.6 |
| **Total** | **62.0** | **700** | **24.6** |

***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 295 jobs, €10.5 million of wages and €23.2 million of GVA;
- Activity in the aquaculture sub-sector has been estimated to sustain 5 jobs, €136,000 of wages and nearly €324,000 of GVA;
- The processing sub-sector has been estimated to sustain 405 jobs, €14 million of wages and €38.8 million of GVA.

## Socio-economic characteristics

Sectors which are closely aligned with the seafood sector are significant employers within the Howth economy. Commuting data suggests that outside of these industries, local employment opportunities are more limited. Indeed, the local economy has limited exposure to some of the faster growing industries within the wider Dublin region.

Howth has a highly educated workforce, four in ten working age residents are educated to degree level or higher, 12 percentage points higher than the national rate. Combined with proximity to employment opportunities in central Dublin, the seafood industry is not a major source of employment for younger people. However, Howth has an ageing population as the share of those aged 0-44 is considerably lower than the national average. As a northern suburb of Dublin, Howth has become a commuter area, with most residents working outside the port area and its hinterland. Therefore, the local seafood sector is important in terms of retaining economic activity and employment within the local economy.

As a result, the seafood sector is likely to play an important 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 it's 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 Insight to estimate the economic contribution of the seafood sector in ten of Ireland's ports.

## 1.2 The port area

Howth is a commercial fishing port situated on the Irish Sea in Fingal. 15 kilometres from Dublin city centre, the village has now become a northern suburb of the capital. In this report, we define the local port economy as the District Electoral Divisions (DED) of Howth 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 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 Howth 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

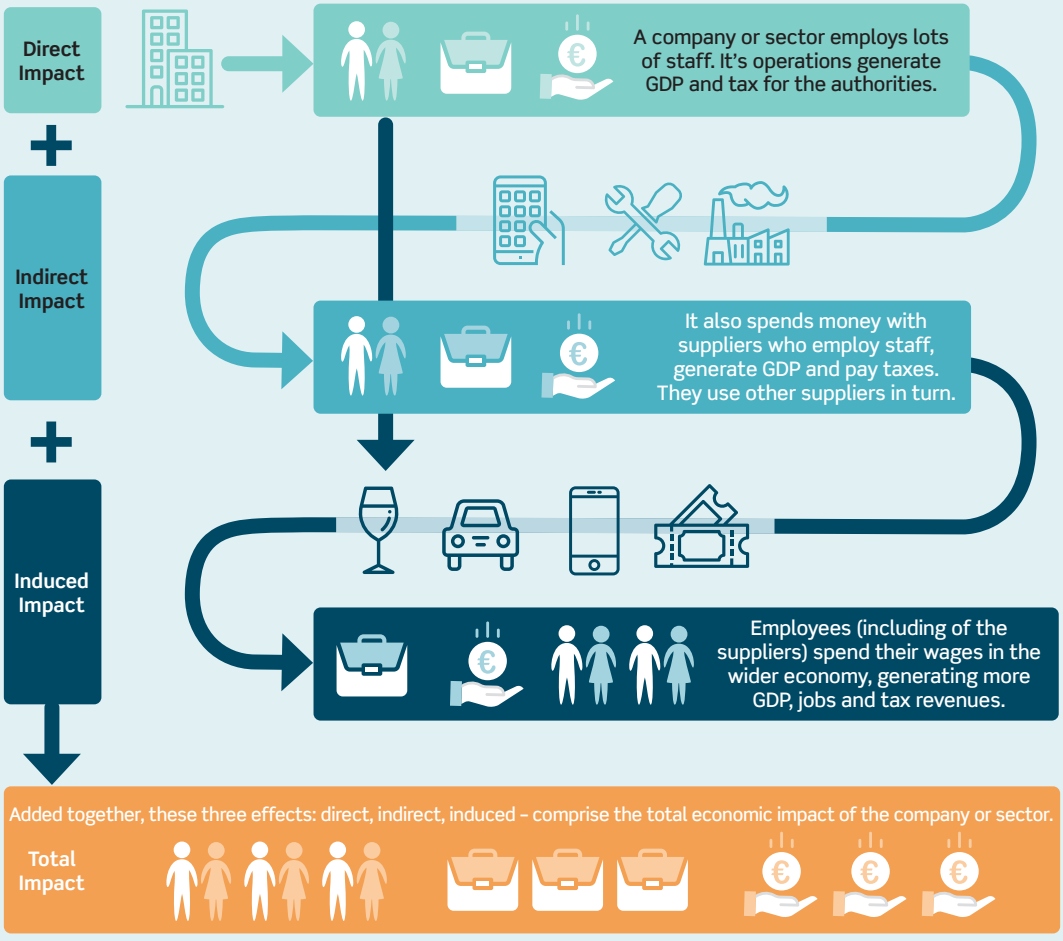
The economic impact of a sector is measured using a standard means of analysis called an economic impact assessment. The report quantifies the three 'core' channels of impact that comprise an organisation/sector's 'economic footprint':

- **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 Dublin 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.

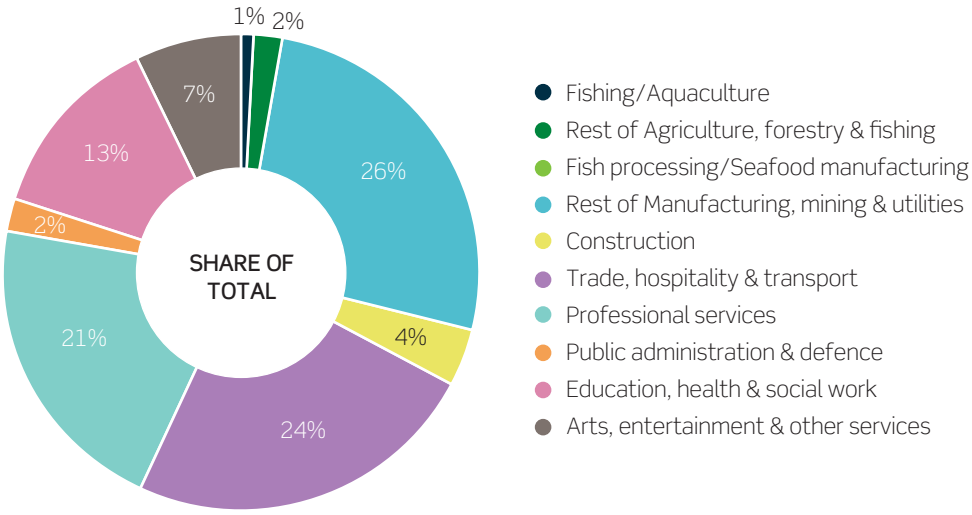
# 2. The seafood sector at Howth

## 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.

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 Howth economy made a GVA contribution to GDP of €1.1 billion in 2018.[3] We estimate that the port's seafood sector represented €37.6 million of this GVA total. Seafood therefore represented 3% of the local port economy. This share is relatively smaller than that realised in some of the other ports but this reflects the proximity to Dublin city.

**Fig. 4. GVA by sector, Howth, 2018**



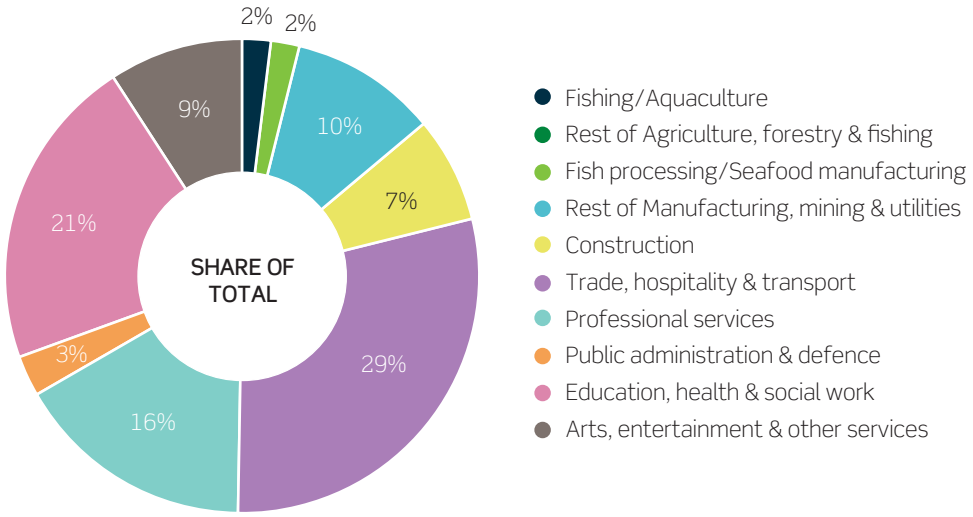

***Source:*** *Oxford Economics, Perceptive Insight, CSO*

In employment terms, seafood is more important within the port economy. Combined commercial fishing, aquaculture and fish processing are estimated to directly sustain approximately 4% of workplace employment across the port area in 2018.[4] Unsurprisingly, fishing and aquaculture represented close to all of local agriculture, forestry and fishing related employment and fish processing accounted for a fifth of local manufacturing, mining and 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.

4 The latest available sectoral employment data for the port area economies was for 2016. Therefore, both the GVA and employment estimates shown for the port economies combine this data with the current snapshot of the seafood sector.

**Fig. 5. Employment by sector, Howth, 2018**




***Source:*** *Oxford Economics, Perceptive Insight, CSO*

## 2.2 Characteristics of the seafood sector

Fish processing is the largest seafood sub-sector in Howth generating an estimated €58 million in turnover, compared to €26 million from commercial fishing. By contrast aquaculture generated an estimated €400,000 in direct turnover throughout the port area economy in 2018.

Direct employment across fish processing and commercial fishing activities are roughly similar (approximately 200 jobs each). However, wage level is relatively higher within fish processing at €7.7 million, than for commercial fishing employees (€6.5 million). The difference in wage totals are a reflection of employment differences, rather than average wages, with both sub-sectors offering average wages of close to €32,500. The commercial fishing sector is spread across 66 operators at Howth, compared to just seven processing firms; indicative of the exploitation of economies of scale possible in this sub-sector. Overall processing generated the most direct value added, €25.6 million in 2018.

**Fig. 6. Headline direct economic contribution of the seafood sector, Howth, 2018**

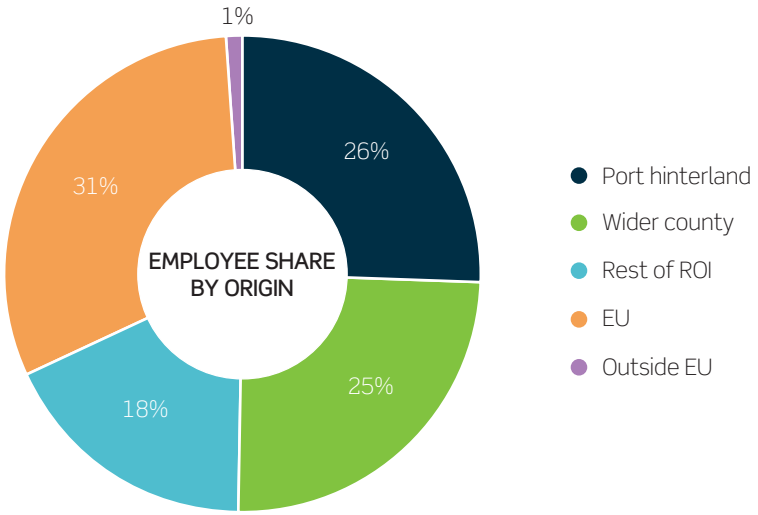
| | Turnover (€m) | Jobs | Wages (€m) | Seafood operators |
|---|---|---|---|---|
| Commercial fishing | 26.1 | 200 | 6.5 | 66 |
| Aquaculture | 0.4 | 5 | 0.1 | 2 |
| Fish processing | 58.2 | 240 | 7.7 | 7 |
| **Total** | **84.7** | **440** | **14.3** | **75** |

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

From our survey of local businesses, we have gained additional insight into the composition and profile of local seafood operators. Examining these data for Howth highlights some interesting findings.

Seeking to better understand the role of Howth in a broader context our survey examined the employment supported by the seafood sector. We found that close to a quarter of jobs are taken by those originating in the port hinterland. Given the proximity to Dublin and a large pool of labour, the wider county represents 25% of the total workforce. Interestingly, one in four jobs are taken by migrants from the EU, while 1% of workers hail from outside the European Union.

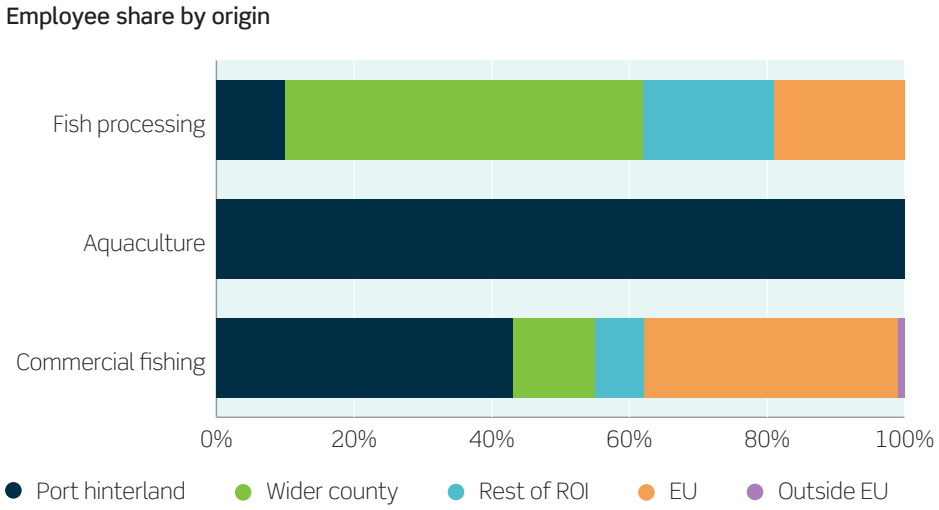
## Fig. 7. Workforce origin, Howth, 2018




***Source:*** *Oxford Economics, Perceptive Insight*

More than half of the fish processing workforce originated outside the hinterland but elsewhere in the county, but just 12% of commercial fishing crews. EU workers were most prevalent in commercial fisheries, making up 37% of all employees.

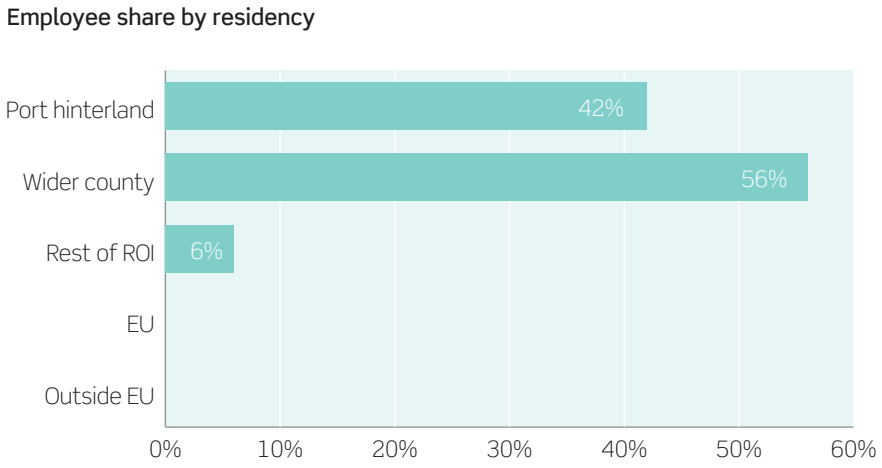
## Fig. 8. Workforce origin by sub-sector, Howth, 2018




***Source:*** *Oxford Economics, Perceptive Insight*

Of those employed in seafood at Howth, 42% lived within the port hinterland, the lowest rate seen for any of the ports in our survey. Over half of all respondents (56%) commuted to Howth from the wider county. This likely reflects the proximity to Dublin and the relative ease to live outside the local port and commute in. Another 5% live beyond the immediate county and also commute to Howth.

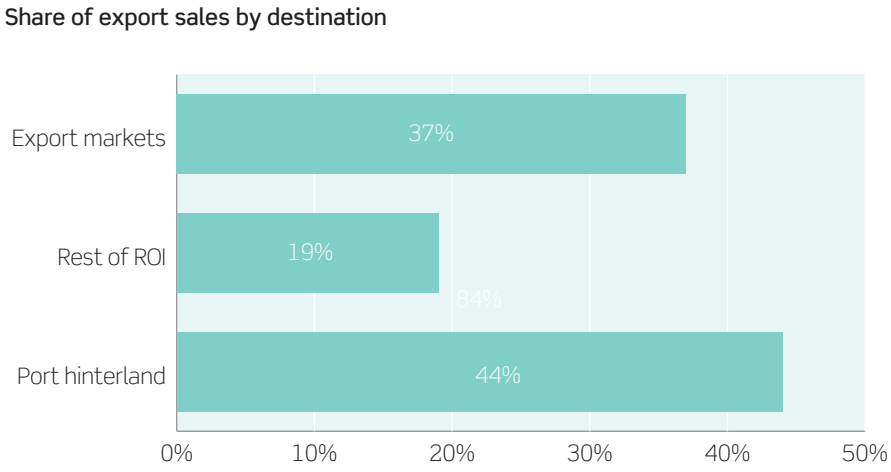
## Fig. 9. Workforce residency, Howth, 2018




***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 44% of all Howth sales; a relatively high share when compared with other ports covered in our analysis. Whilst the rest of Ireland took 19% of sales, the export market represented 37% of all sales in 2018. This is lower than for a lot of other ports but may reflect a large urban market on the doorstep of Howth reducing need to rely on overseas sales.

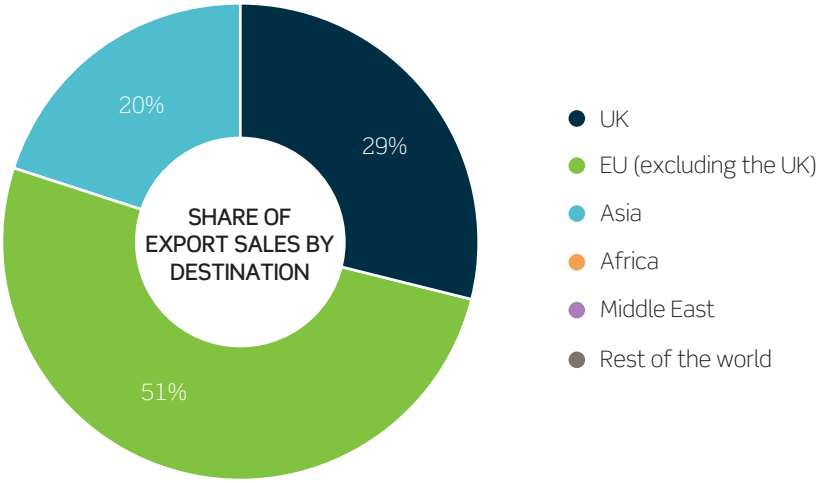
## Fig. 10. Sales by destination, Howth, 2018




***Source:*** *Oxford Economics, Perceptive Insight*

Of the 37% of sales heading to export markets half of these went to the European Union (not including the UK). Another 29% was sold to the UK in 2018. Asian markets are also important for Howth produce, taking one fifth of all export sales.

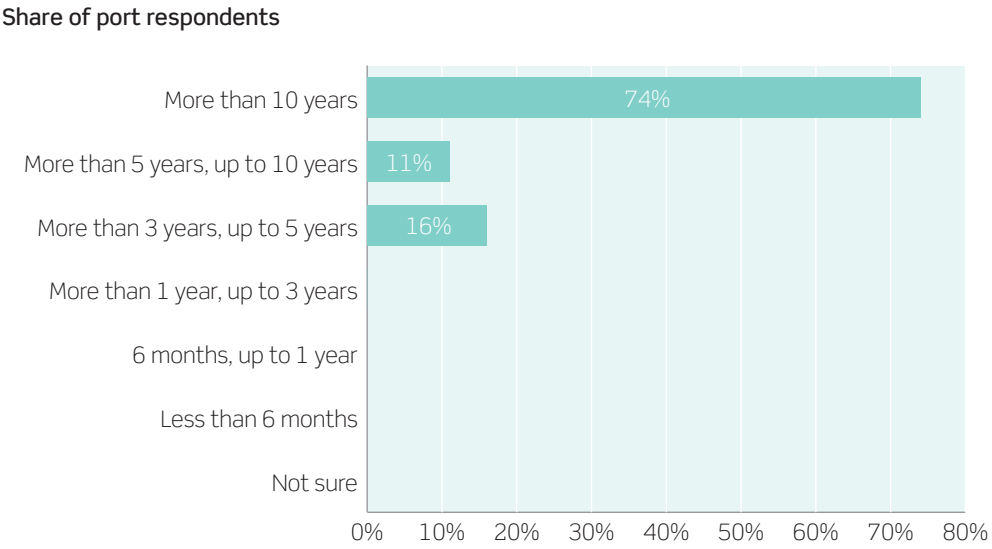
## Fig. 11. Export sales by destination, Howth, 2018




***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. All operators who responded to our survey had been in operation for at least three years as of 2018. 74% of these had been established for at least a decade, with another 11% operating for at least five years. This indicates that the industry has a strong heritage at Howth, with most businesses operating for many years. Whilst the survey samples for Howth are small at the sectoral level, the results show that the maturity level is broadly the same across fishing, processing and aquaculture industries.

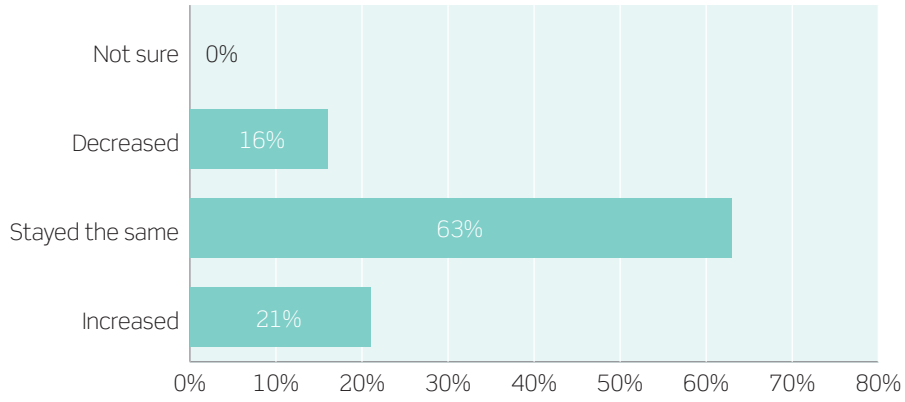
## Fig. 12. Seafood sector maturity, Howth, 2018




***Source:*** *Oxford Economics, Perceptive Insight*

Looking at the performance of these operating firms our survey questioned respondents on their levels of turnover and investment. In general, turnover was reported to have neither increased nor decreased over the last 12 months for 63% of respondents in 2018. Another one in five (21%) reported increases in turnover over the previous 12 months. It is hard for us to break down these numbers at the sub-sectoral level due to the small sample sizes to some of these questions.

### Fig. 13. Turnover in the past 12 months, Howth, 2018

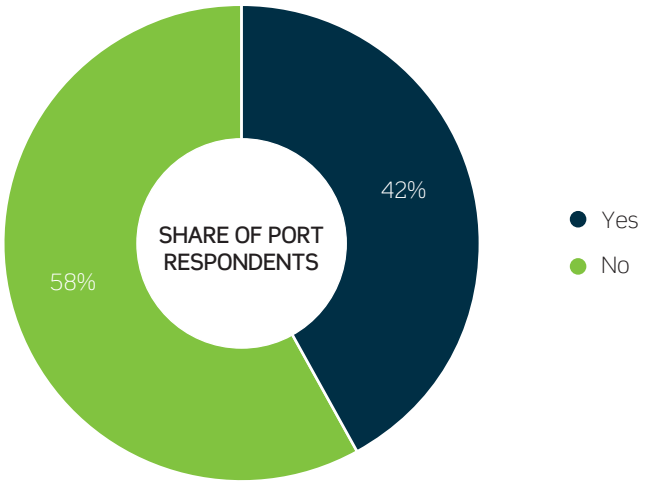



***Source:*** *Oxford Economics, Perceptive Insight*

Looking forward we also asked respondents on their expectations for future turnover. The outlook in Howth is broadly in line with historic turnover. Almost two-thirds of respondents (63%) expect turnover to stay the same over the next 12 months, whilst 11% believe it will grow, though, again, the sample sizes are small. The consensus across the three seafood sectors is that turnover will likely remain unchanged over the next year.

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. Despite 11% of respondents expecting turnover to increase, 42% have already spent money on capital investment in the last financial year, the second highest of the ports in our survey behind Clogherhead.

### Fig. 14. Capital investment in the previous year, Howth, 2018

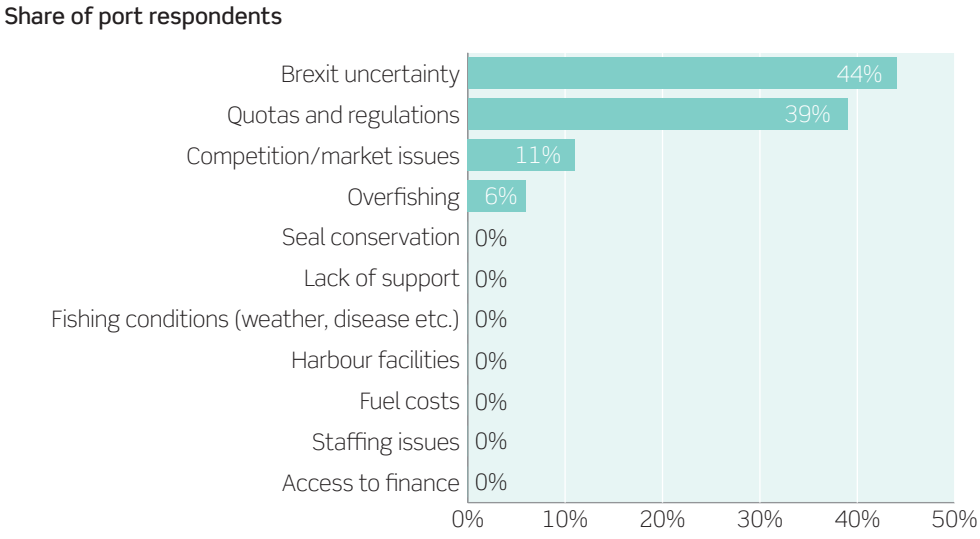



***Source:*** *Oxford Economics, Perceptive Insight*

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 constraint to future growth was reported as the uncertainty surrounding Brexit, mentioned by 44%. This likely reflects the nearly 30% of exports that were destined for the UK in 2018, and the position of Howth on the Irish Sea.

The next biggest issue was quotas and regulations on the seafood industry. 42% of respondents also said that they would hire additional staff members if fish quotas were reduced by 20%. Competition and market issues was quoted by 11% of survey respondents as the main constraint on growth in 2018.

### Fig. 15. Main constraint on growth, Howth, 2018




***Source:*** *Oxford Economics, Perceptive Insight*

## 2.3 Conclusion

Given its proximity to Dublin, the Howth Port area is in many ways different to the relatively more rural ports covered by our study. The seafood sector in Howth directly employed an estimated 440 people. Just over 40% lived within the port hinterland, the lowest rate seen for any of the ports in our survey. Over half of all respondents (56%) commuted to Howth from the wider county.

In addition, seafood businesses at the port exported less than businesses in the other ports, probably given the likely high levels of demand from Dublin City. Despite the differences, the sector faces the same barriers to growth in Howth as those in other ports, with Brexit uncertainty, and quotas and regulations given as the main constraints.

# 3. The impact of seafood's sub-sectors

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

## 3.1 Commercial fishing

The commercial fishing industry contributed €23.2 million to the Dublin regional economy in 2018, the second largest seafood sub-sector based out of Howth. Of this contribution just 50% (€11.9 million) was a direct impact from fishing activities themselves, while nearly the same again (€7.3 million) of value added came indirectly along the regional supply chain. Another €4.0 million of the GVA gains were generated from consumer spending from those employed both directly and indirectly by the commercial fishing sector.

Commercial fishing firms directly supported 200 jobs in Howth in 2018, paying out €6.5 million in wages. An estimated additional 55 full-time equivalent jobs were created along the supply chain in the Dublin area, and 40 were estimated to be supported by induced spending. These results indicate that those jobs created along the supply chain are typically more productive than the fishing roles themselves.

**Fig. 16. Benefits of the commercial fishing sub-sector, Dublin, 2018**

| Port commercial fishing | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Direct | 11.9 | 200 | 6.5 |
| Indirect | 7.3 | 55 | 2.4 |
| Induced | 4.0 | 40 | 1.6 |
| **Total** | **23.2** | **295** | **10.5** |

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

The bulk of the economic benefits from commercial fishing accrue within the agriculture, forestry & fishing sector, €12.1 million in GVA, 205 jobs and €6.7 million in wage payments. The sector, therefore, accounts for close to two-thirds of all the regional employment impact supported by the Howth's commercial fishing.

After agriculture, forestry & fishing, the wholesale & retail sector benefited the most, with €2.7 million in value added in 2018 and supporting 30 jobs across the Dublin region. Over two-thirds of this sector's boost came through supply chain links, with the remainder from consumer spending. The manufacturing and transport and storage sectors also saw relatively strong benefits from fishing with €1.3 and €1.2 million in GVA respectively.

### Fig. 17. Total benefits of commercial fishing by sector, Dublin, 2018

| Port commercial fishing | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Agriculture, forestry & fishing | 12.1 | 205 | 6.7 |
| Mining & quarrying | 0.0 | 0 | 0.0 |
| Manufacturing | 1.3 | <5 | 0.1 |
| Electricity, gas, steam | 0.2 | <5 | 0.0 |
| Water supply | 0.1 | 0 | 0.0 |
| Construction | 0.0 | <5 | 0.0 |
| Wholesale & retail | 2.7 | 30 | 1.2 |
| Transportation & storage | 1.2 | 15 | 0.5 |
| Accommodation & food | 0.3 | 5 | 0.2 |
| Information & communications | 0.2 | 0 | 0.0 |
| Financial & insurance | 0.6 | <5 | 0.1 |
| Real estate | 2.8 | 15 | 0.8 |
| Professional, scientific & technical | 0.7 | 5 | 0.3 |
| Administration & support | 0.2 | <5 | 0.0 |
| Public administration | 0.1 | <5 | 0.1 |
| Education | 0.2 | 5 | 0.1 |
| Human health | 0.3 | 5 | 0.2 |
| Arts, entertainment & recreation | 0.1 | <5 | 0.1 |
| Other service activities | 0.1 | <5 | 0.1 |
| **Total** | **23.2** | **295** | **10.5** |

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

## 3.2 Aquaculture

By contrast the aquaculture industry at Howth was relatively small contributing €320,000 in value added to the Dublin economy in 2018. This was the smallest aquaculture sub-sector of the ten ports included in our analysis, apart from Clogherhead which had none. Just under two thirds of this GVA impact was directly associated with aquaculture itself. However, we estimate that this activity was enough to directly employ four people in 2018, with these employees earning €90,000 in wages.

### Fig. 18. Benefits of the aquaculture sub-sector, Dublin, 2018

| Port aquaculture | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Direct | 0.19 | 4 | 0.09 |
| Indirect | 0.08 | 1 | 0.02 |
| Induced | 0.06 | 1 | 0.02 |
| **Total** | **0.32** | **5** | **0.14** |

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

The majority of aquaculture's subsequent benefits are generated within the Agriculture, forestry & fishing sector. This sector alone accounts for almost 60% of the total GVA impacts and 80% of the associated employment benefits. The Wholesale & retail sector was the next largest beneficiary, enjoying €40,000 in GVA benefits and supporting half a job within the regional economy.

### Fig. 19. Total aquaculture benefits by sector, Dublin, 2018

| Port aquaculture | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Agriculture, forestry & fishing | 0.19 | 4.0 | 0.09 |
| Mining & quarrying | 0.00 | 0.0 | 0.00 |
| Manufacturing | 0.03 | 0.0 | 0.00 |
| Electricity, gas, steam | 0.00 | 0.0 | 0.00 |
| Water supply | 0.00 | 0.0 | 0.00 |
| Construction | 0.00 | 0.0 | 0.00 |
| Wholesale & retail | 0.04 | 0.4 | 0.02 |
| Transportation & storage | 0.00 | 0.0 | 0.00 |
| Accommodation & food | 0.00 | 0.1 | 0.00 |
| Information & communications | 0.00 | 0.0 | 0.00 |
| Financial & insurance | 0.01 | 0.0 | 0.00 |
| Real estate | 0.02 | 0.1 | 0.01 |
| Professional, scientific & technical | 0.01 | 0.1 | 0.00 |
| Administration & support | 0.00 | 0.0 | 0.00 |
| Public administration | 0.00 | 0.0 | 0.00 |
| Education | 0.00 | 0.0 | 0.00 |
| Human health | 0.00 | 0.1 | 0.00 |
| Arts, entertainment & recreation | 0.00 | 0.0 | 0.00 |
| Other service activities | 0.00 | 0.0 | 0.00 |
| **Total** | **0.32** | **5.0** | **0.14** |

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

## 3.3 Fish processing

The fish processing sector supported a total of 405 jobs across the Dublin region, alongside an associated €7.7 million in wages. The sub-sector is estimated to have generated a total GVA impact of €38.8 million, €25.6 million directly by local fish processing businesses and €13.2 million non-directly from the supply chain or induced spending.

Just under two thirds of the estimated total employment benefit was generated directly by fish processing. The supply chain impacts supported an additional 120 jobs and €8.2 million in GVA within the regional supply chain. Spending linked to the direct and indirect activity are estimated to have supported another €5.0 million in GVA, €2 million in wages and a further 45 jobs.

### Fig. 20. Benefits of the fish processing sub-sector, Dublin, 2018

| Port fish processing | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Direct | 25.6 | 240 | 7.7 |
| Indirect | 8.2 | 120 | 4.2 |
| Induced | 5.0 | 45 | 2.0 |
| **Total** | **38.8** | **405** | **14.0** |

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

The region's manufacturing sector accrued most of the benefits, as fish processing sits within the manufacturing of food sector. The sector accrued €27 million in value added as a result, supporting 240 jobs, alongside €7.8 million in wages. The manufacturing benefits, therefore, broadly match that of the direct processing activity, suggesting that the sector benefits relatively little from the subsequent indirect and induced impacts.

Agriculture, forestry & fishing gains the most from the multiplier effects, supporting 85 jobs and €3.1 million in GVA across the Dublin region. This is predominantly due to the supply chain links between commercial fishing/ aquaculture and fish processing works. Outside of this, the direct fish processing activity also realised notable GVA benefits for the wholesale & retail (€2.3 million) and real estate (€1.6 million) sectors in 2018.

### Fig. 21. Total benefits of fish processing by sector, Dublin, 2018

| Port fish processing | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Agriculture, forestry & fishing | 3.1 | 85 | 2.7 |
| Mining & quarrying | 0.0 | <5 | 0.0 |
| Manufacturing | 27.0 | 240 | 7.8 |
| Electricity, gas, steam | 0.4 | <5 | 0.1 |
| Water supply | 0.1 | 0 | 0.0 |
| Construction | 0.1 | <5 | 0.0 |
| Wholesale & retail | 2.3 | 25 | 1.0 |
| Transportation & storage | 1.0 | 10 | 0.4 |
| Accommodation & food | 0.4 | 10 | 0.2 |
| Information & communications | 0.2 | <5 | 0.0 |
| Financial & insurance | 0.6 | <5 | 0.1 |
| Real estate | 1.6 | 10 | 0.5 |
| Professional, scientific & technical | 0.8 | 5 | 0.3 |
| Administration & support | 0.2 | <5 | 0.0 |
| Public administration | 0.1 | <5 | 0.1 |
| Education | 0.2 | 5 | 0.2 |
| Human health | 0.3 | 5 | 0.2 |
| Arts, entertainment & recreation | 0.2 | <5 | 0.1 |
| Other service activities | 0.1 | 5 | 0.1 |
| **Total** | **38.8** | **405** | **14.0** |

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

## 3.4 Conclusion

In conclusion, Howth's fish processing sector has the largest economic footprint of the three sub-sectors. We estimate that it supported 405 jobs and €38.8 million in GVA contributions through the region in 2018. Commercial fishing was, however, also important, supporting an additional 295 jobs and €23.2 million in GVA contributions. By contrast, aquaculture is a relatively small component of the local seafood sector – however, it still supported an estimated five jobs and €320,000 of GVA contributions to the region.

# 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) 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 impacts from the three elements of the seafood sector for GVA, employment, wages and tax.

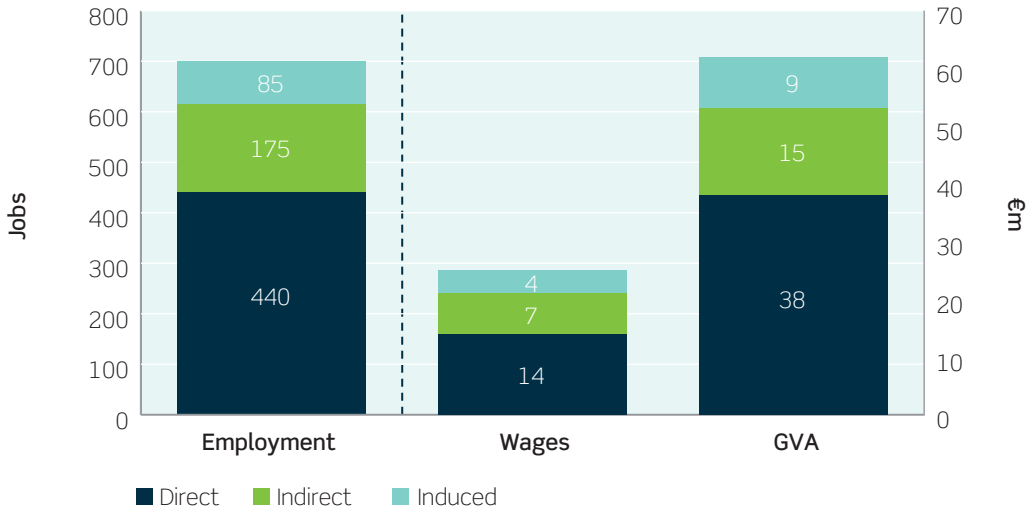
### Indirect and induced impacts

- For GVA, employment, wages and taxes total indirect and induced impacts are calculated by summing the indirect and induced impacts of fish processing and a 13% and 98% 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 13% and 98% 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 Howth seafood sector generated €62 million in GVA for the Dublin region economy in 2018. This activity supported 700 jobs across the whole economy and generated €24.6 million in wages to those employed.

## Fig. 22. Benefits of the seafood sector, Dublin, 2018




***Source:*** *Oxford Economics, Perceptive Insight, CSO*

Direct seafood activity accounts for just under two thirds of the total employment benefits, but only 58% of earnings benefits. This reflects lower levels of productivity and average wage levels in the seafood sector relative to the activity within its wider supply chain.

## Fig. 23. Total seafood sector benefits, Dublin, 2018

| Port seafood sector | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Direct | 37.6 | 440 | 14.3 |
| Indirect | 15.4 | 175 | 6.6 |
| Induced | 9.0 | 85 | 3.6 |
| **Total** | **62.0** | **700** | **24.6** |

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

Given the dominance of the fish processing and commercial fishing sub-sectors, the manufacturing and agriculture, forestry and fishing sectors accounted for the majority of the subsequent economic benefits. Collectively, they account for €43.7 million of GVA across the Dublin region in 2018, equivalent to 70% of the total regional impact. They also accounted for three quarters of the estimated employment impacts. Manufacturing generates the larger GVA impact due to higher output per head on average. However, manufacturing's relatively stronger average productivity levels mean it supports fewer jobs than the agriculture, forestry and fishing sector.

However, the presence and activity of the seafood sector in Howth has benefits for every sector of the Dublin economy, with benefits seen from real estate to arts and entertainment. We estimate that the local seafood sector had GVA and employment multipliers of 1.7 and 1.6 respectively across the regional economy. Therefore, for every €1 of direct value added another 70 cents was generated elsewhere in the economy due to wage spending and supply chain linkages.

**Fig. 24. Total benefits by sector, Dublin, 2018**

| Port seafood sector | Dublin | | |
|---|---|---|---|
| | GVA (€m) | Employment | Wages (€m) |
| Agriculture, forestry & fishing | 15.4 | 295 | 9.5 |
| Mining & quarrying | 0.0 | <5 | 0.0 |
| Manufacturing | 28.3 | 240 | 7.9 |
| Electricity, gas, steam | 0.7 | 5 | 0.1 |
| Water supply | 0.1 | <5 | 0.0 |
| Construction | 0.1 | <5 | 0.1 |
| Wholesale & retail | 5.0 | 55 | 2.2 |
| Transportation & storage | 2.2 | 25 | 1.0 |
| Accommodation & food | 0.7 | 15 | 0.4 |
| Information & communications | 0.4 | <5 | 0.1 |
| Financial & insurance | 1.1 | 5 | 0.2 |
| Real estate | 4.4 | 20 | 1.3 |
| Professional, scientific & technical | 1.5 | 10 | 0.6 |
| Administration & support | 0.5 | <5 | 0.1 |
| Public administration | 0.2 | <5 | 0.1 |
| Education | 0.4 | 5 | 0.3 |
| Human health | 0.6 | 10 | 0.4 |
| Arts, entertainment & recreation | 0.3 | 5 | 0.1 |
| Other service activities | 0.2 | 5 | 0.2 |
| **Total** | **62.0** | **700** | **24.6** |

***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 €4.3 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 €0.4 million. However, 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 €4.6 million in tax revenue.

Therefore, in total, Howth's seafood sector is estimated to have supported €8.5 million in fiscal benefits in 2018. This total was made up of €6 million in employment/labour related tax, €1.6 million in corporation tax, €2.9 million in taxation associated with the spending of wages, and a net tax deficit of €1.9 million through taxation on inputs and production.[5]

5 Net tax position refers to taxes less subsidies.

**Fig. 25. 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 | 1.5 | 0.3 | -3.6 | 0.4 | 0.0 |
| Mining & quarrying | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Manufacturing | 2.7 | 0.6 | 0.0 | 0.0 | 2.3 |
| 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 | 0.1 |
| Wholesale & retail | 0.4 | 0.3 | 0.0 | 0.0 | 0.0 |
| Transportation & storage | 0.2 | 0.1 | 0.1 | 0.3 | 0.0 |
| Accommodation & food | 0.1 | 0.0 | 0.0 | 0.1 | 0.3 |
| Information & communications | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Financial & insurance | 0.1 | 0.2 | 0.0 | 0.1 | 0.0 |
| Real estate | 0.3 | 0.0 | 0.2 | 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 | 0.1 |
| Public administration | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Education | 0.2 | 0.0 | 0.0 | 0.0 | -0.1 |
| Human health | 0.2 | 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** | **6.0** | **1.58** | **-3.2** | **1.2** | **2.9** |

***Source:*** *Oxford Economics, Perceptive Insight, CSO*

## 4.4 Conclusion

In conclusion, we estimate that the Howth seafood sector generated €62 million in GVA for the Dublin region economy in 2018. This activity supported 700 jobs across the whole economy and generated €24.6 million in wages to those employed.

# 5. Conclusions

## 5.1 The seafood sector in Howth

The seafood sector at Howth constitutes an important part of the local and regional economies. Fishing, processing and aquaculture activities generated €37.6 million in direct value added within the local port economy. The port's 75 seafood related businesses supported 440 full-time equivalent jobs and paid its employees an estimated €14.3 million in wages. Between them these businesses had a total turnover of €85 million in 2018.

Our survey of the local seafood industry also identified the key characteristics of the business environment. The sector is well established at Howth, with a majority of firms operating for at least ten years. On the back of this, turnover appears to be stable or growing for most. Despite most operators expecting turnover to remain flat over the next 12 months, 42% had made capital investments over the previous year.

The workforce is not as local as at other ports, with a large number commuting to Howth from elsewhere in the county. However, this probably reflects a more dynamic labour market here than in more rural ports due to Howth's proximity to the Dublin workforce.

## 5.2 The fish processing sub-sector is the main contributor

Howth's fish processing sub-sector makes the strongest contribution to the Dublin region economy in GVA terms. In 2018, it alone generated €38.8 million of GVA, of which €13.2 million is linked to indirect (€8.2 million) and induced (€5 million) effects. Linked to this, the fish processing sub-sector enjoys the strongest employment multiplier of the three seafood sub-sectors, with every one direct job supporting an additional 0.7 of a job within the rest of the Dublin region. The fish processing sub-sector is estimated to provide benefits of the following size:

- 240 direct jobs and €7.7 million of wages, producing €25.6 million of GVA;
- 120 indirect jobs and €4.2 million of wages, producing €8.2 million of GVA; and
- 45 induced jobs and €2 million of wages, producing €5 million of GVA.

## 5.3 Though the other components remain significant

Commercial fishing was the second most impactful seafood sub-sector within the port area. Fishing enjoys the strongest GVA multiplier of the three seafood sub-sectors, with every €1 of direct value added supporting a further €1 of GVA within the regional economy. Accordingly, our analysis shows the economic impact of commercial fishing was of the following size in 2018:

- 200 direct jobs and €6.5 million of wages, producing €11.9 million of GVA;
- 55 indirect jobs and €2.4 million of wages, producing €7.3 million of GVA; and
- 40 induced jobs and €1.6 million of wages, producing €4 million of GVA.

In comparison, aquaculture had the smallest economic impact of the seafood activities across the local port economy. That said, our analysis shows that aquaculture sub-sector supported five jobs, alongside €0.14 million in wages and €0.32 million in GVA.

**Therefore, we estimate that the port's collective seafood sector supported 700 jobs, €24.6 million in wages and €62 million in GVA within the regional economy in 2018. This activity was estimated to be enough to sustain €8.5 million in tax revenues towards the public accounts.**

## 5.4 Seafood supporting peripheral economies

Sectors which are closely aligned with the seafood sector are significant employers within the Howth economy. Commuting data suggests that outside of these industries, local employment opportunities are more limited. Indeed, the local economy has limited exposure to some of the faster growing industries within the wider Dublin region.

Howth has a highly educated workforce, four in ten working age residents are educated to degree level or higher, 12 percentage points higher than the national rate. Combined with proximity to employment opportunities in central Dublin, the seafood industry is not a major source of employment for younger people. However, Howth has an ageing population as the share of those aged 0-44 is considerably lower than the national average. As a northern suburb of Dublin, Howth has become a commuter area, with most residents working outside the port area and its hinterland. Therefore, the local seafood sector is important in terms of retaining economic activity and employment within the local economy.

As a result, the seafood sector is likely to play an important 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: Howth's economic challenges

## Economic activity and structure

The latest available data indicates that Howth's labour market is performing relatively strongly. The local unemployment rate within the port area and its hinterland was relatively low at 8.1% in 2016, over three percentage points below that of Dublin (11.6%) and Ireland (12.9%) respectively.[6] However, the local employment rate of 52.5% was relatively weaker than both the regional and national averages **(see Fig. 26)**. Furthermore, Census data reveals that the economic inactivity rate[7] among those residents aged 15 and over stood at 42.8% in 2016, somewhat higher than the rates across both Dublin (36%) and Ireland overall (39%).

### Fig. 26. Headline economic indicator comparisons, 2016

| | Unemployment rate | Employment rate | Economic inactivity |
|---|---|---|---|
| Howth | 8.1% | 52.5% | 42.8% |
| Dublin | 11.6% | 56.5% | 36.1% |
| **Ireland** | **12.9%** | **53.3%** | **38.8%** |

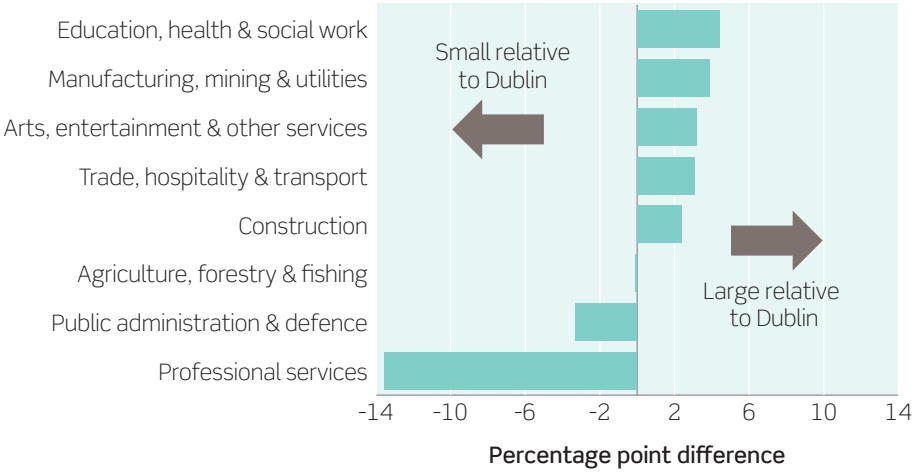
***Source:*** *CSO*

The latest data for 2016 showed there were 10,700 people employed within the port area and its hinterland. Meanwhile, there was close to 27,000 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 out of the port area to take up employment opportunities elsewhere.

A sectoral breakdown of workplace employment within the port area and its hinterland points to the significance of the local seafood sector. The data shows that the combined workplace employment within the agriculture, forestry and fishing and manufacturing, mining and utilities sectors collectively accounted for 13% of the total.[8] However, only the manufacturing sector is strongly concentrated within the local economy when compared to the region overall. Manufacturing, mining and utilities' share of local employment was close to four percentage points larger than the respective share found across the Dublin region **(see Fig. 27)**. The strongest contrast the local economy has with the regional sectoral structure relates to professional services – one of the fastest growing sectors within the Dublin region. Howth's local economy is significantly underrepresented in this sector in employment terms, with professional services share of employment representing half that observed at the regional level.

6 Defined as a share of the labour force aged 15 years and over.
7 Economic inactivity represents the share of the population aged 15 and over who were neither employed nor looking for employment.
8 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. 27. Employment share differences, Howth vs region, 2016




***Source:*** *Oxford Economics, CSO*

## Demographics

The port area and hinterland's population has grown by 4.4% in the five years between 2011 and 2016. Recent population growth has therefore been weaker than the Dublin average (5.5%) but slightly stronger than Ireland overall (3.8%). At 62.3%, the working age component of the population remains well below average, which is compounded by a recent contraction in the number of residents aged 15 to 64, despite growth across Dublin and nationally.

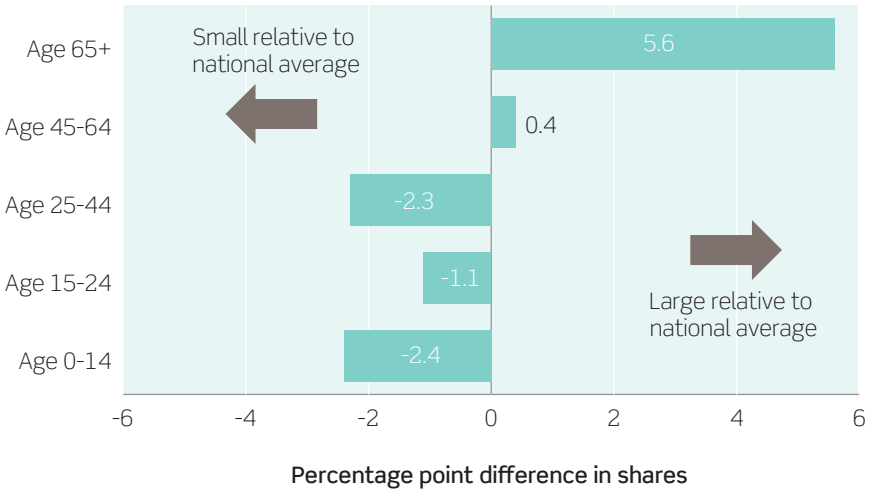
### Fig. 28. Population indicators, 2016

| | Growth (2011-16) | | 2016 | |
|---|---|---|---|---|
| | Population | Working age | Population | Working age share |
| Howth | 4.4% | -1.0% | 63,900 | 62.3% |
| Dublin | 5.5% | 3.4% | 1,331,300 | 68.4% |
| **Ireland** | **3.8%** | **1.4%** | **4,761,900** | **65.5%** |

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

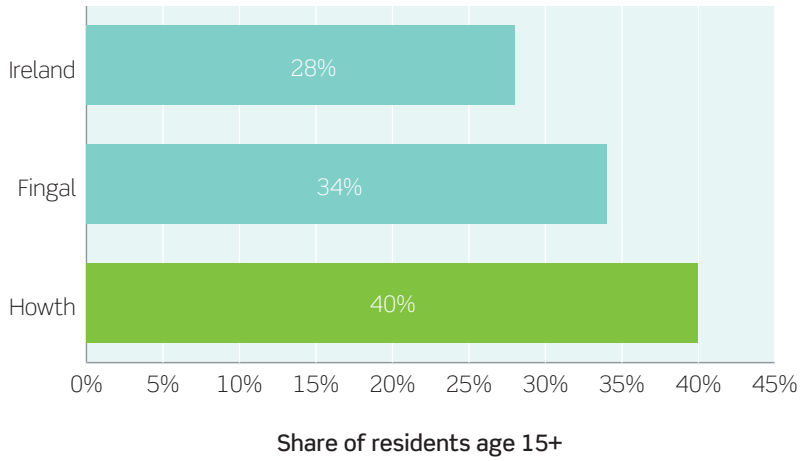
An analysis of the port area's population by age cohorts relative to the national picture shows that the distribution is skewed at both the younger and older ends. Those aged 65 and over accounted for close to 20% of all residents, six percentage points above the national average in 2016. However, younger working age people (aged 25-44) were underrepresented within the local population.

## Fig. 29. Age group comparisons, Port area vs Ireland, 2016




Qualification attainment within the port area tends to be better than at the national level. Those with no formal qualifications or at most primary level education represented 9% of residents aged 15 and over in 2016, compared to 12% across Ireland. Similarly, higher level attainment among the port hinterland's residents was much stronger than the national average. Those educated to degree level or above accounted for over 40% of those aged 15 and above in Howth, compared to 28% on average across Ireland.

## Fig. 30. Degree level or above attainment, 2016




***Source:*** *CSO*

## Summary

Sectors which are closely aligned with the seafood sector are significant employers within the Howth economy. Commuting data suggests that outside of these industries, local employment opportunities are more limited. Indeed, the local economy has limited exposure to some of the faster growing industries within the wider Dublin region.

Howth has a highly educated workforce, four in ten working age residents are educated to degree level or higher, 12 percentage points higher than the national rate. Combined with proximity to employment opportunities in central Dublin, the seafood industry is not a major source of employment for younger people. However, Howth has an ageing population as the share of those aged 0-44 is considerably lower than the national average. As a northern suburb of Dublin, Howth has become a commuter area, with most residents working outside the port area and its hinterland. Therefore, the local seafood sector is important in terms of retaining economic activity and employment within the local economy.

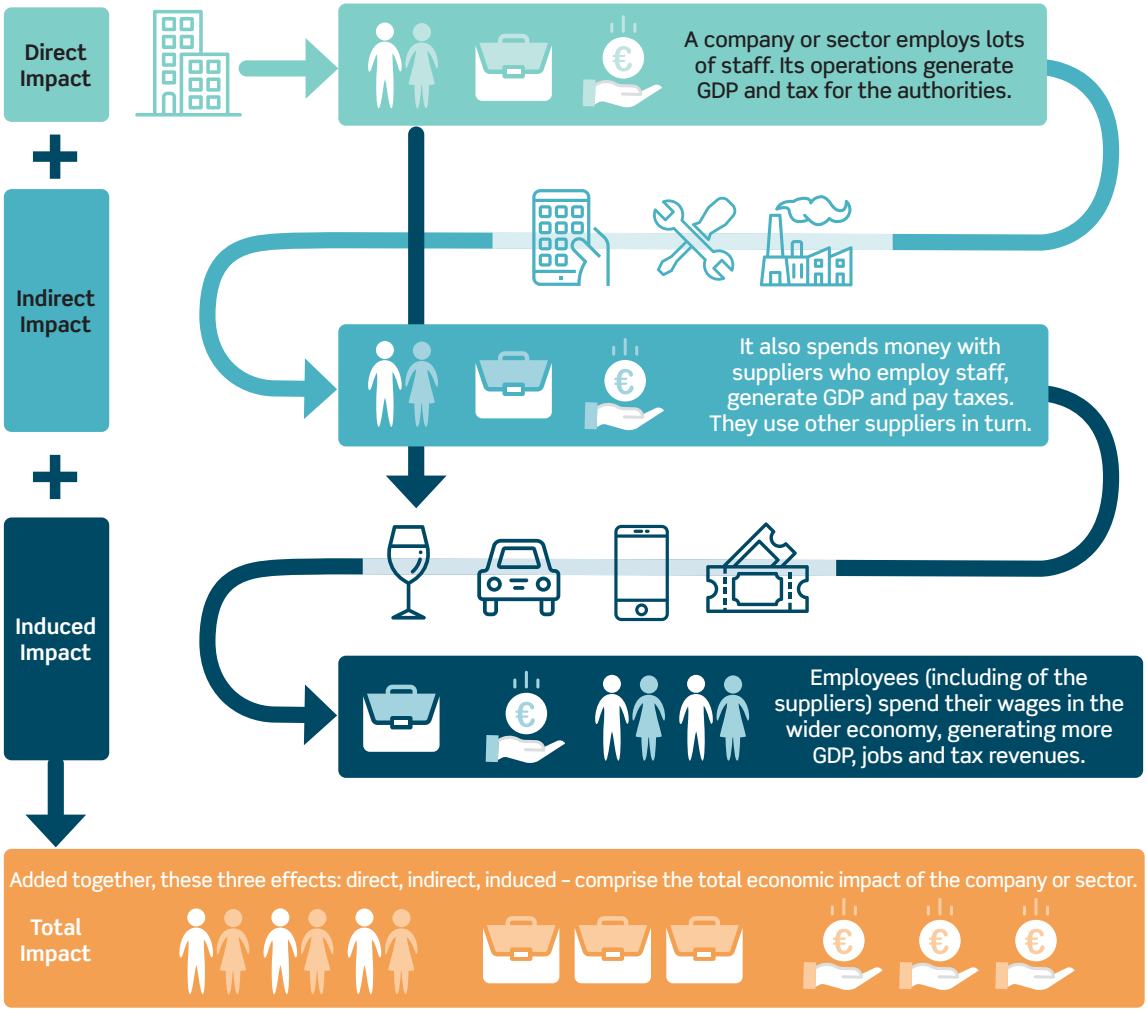
As a result, the seafood sector is likely to play an important role in the local port economy through its provision of direct jobs, supply chain spending in local businesses and the consumer spending it supports. Looking forward, a vibrant and growing local seafood sector will be important for the economic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

# Appendix 2: Model approach

## 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. 31. 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[9] and national economy:

- **Gross value-added** contribution to Gross Domestic Product (GDP)[10]: 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 full-time equivalent jobs 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.[11]

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, 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 ('Agriculture, 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.

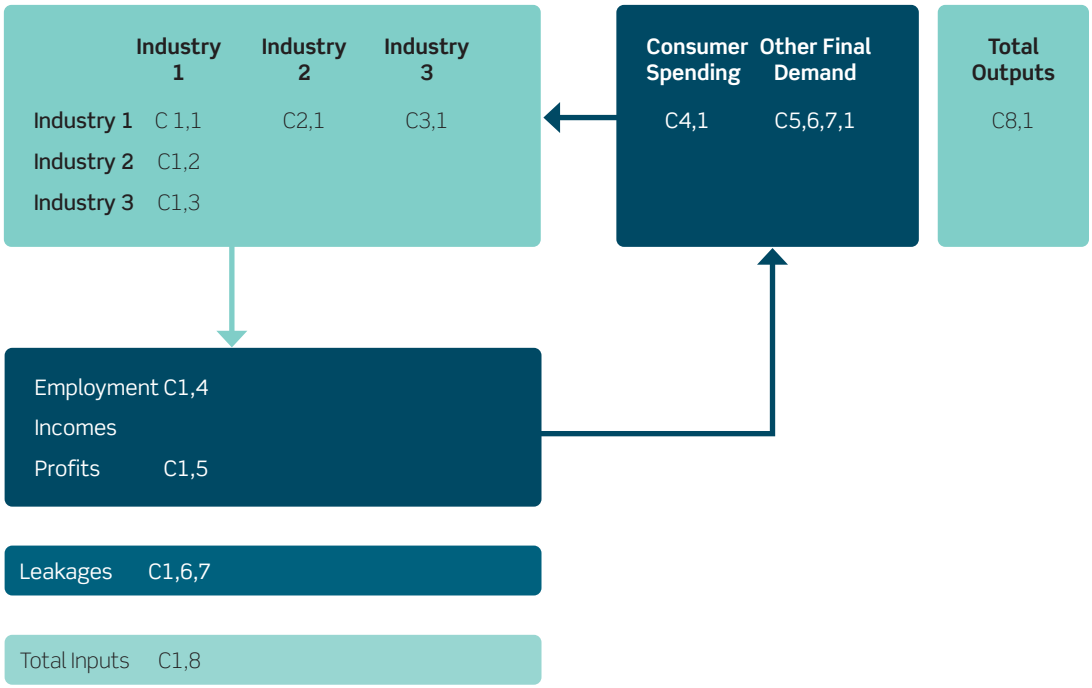
With our estimate of direct output and wages, we then applied sectoral taxation assumptions and calculated the resulting fiscal benefits that would likely be collected by the Revenue Commissioners.

9 Ideally, we would quantify the impacts of the seafood sector on the port area, 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.
10 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.
11 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

To estimate the indirect and induced impacts we have built an Input-Output model. **Figure 32** 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. 32. 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.[12] 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.

12 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 fish processing. However, when estimating the total impact of the overall ports seafood sector, simply summing the respective benefits of all three sub-sectors 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.

### 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 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.


FSC

OXFORD ECONOMICS

**Global headquarters**
Oxford Economics Ltd
Abbey House
121 St Aldates
Oxford, OX1 1H B
UK
**T** +44 (0)1865 268900

**London**
Broadwall House
21 Broadwall
London, SE1 9PL
UK
**T** +44 (0)203 910 8000

**New York**
5 Hanover Square, 8th Floor
New York, NY 10004
USA
**T** +1 (646) 786 1879

**Singapore**
6 Battery Road
#38-05
Singapore 049909
**T** +65 6850 0110

**E** mailbox@oxfordeconomics.com
**www.oxfordeconomics.com**

**Europe, Middle East and Africa**
Oxford
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Frankfurt
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Singapore
Sydney
Melbourne
Hong Kong
Tokyo

BIM Ireland's Seafood Development Agency

**Irish Sea Fisheries Board**
Head Office, Crofton Road,
Dun Laoghaire, Co. Dublin, A96 E5A0

**T** +353 1 214 4100 | **E** info@bim.ie | **www.bim.ie**