

# Scotland's Marine Economic Statistics 2021

December 2023

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## Key Points

### Marine economy

Scotland's marine economy includes activities dependant on the marine environment. They provide an important source of income and employment across Scotland. There are signs that some parts of the marine economy are recovering from the impacts of Covid-19, however, there hasn't been a return to pre-pandemic levels:

- In 2021, the marine economy generated £4.5 billion in gross value added, 3% of the overall Scottish economy.
- In 2021, the marine economy employed 69,800 people (headcount), 2.7% of the total Scottish employment.
- Between 2020 and 2021, the marine economy's gross value added increased by 19%.
- The longer term trend shows that between 2012 and 2021 the marine economy gross value added fell by 18%.

### Sector performance

The economic contribution of some sectors, such as aquaculture, increased over the past ten years. Other sectors, such as oil and gas support services, decreased their economic contribution over the past ten years. However, all sectors apart from construction and water transport services increased between 2020 and 2021. The main changes are:

- In the longer term, from 2012 to 2021, the gross value added from aquaculture increased by 154% to 472 million.
- The oil and gas support services gross value added decreased by 37% from 2012 to 2021.
- From 2020 to 2021, the gross value added from ship building increased by 50%.
- Construction and water transport services gross value added decreased by 35% from 2020 to 2021.
- Marine tourism gross value added increased by 41% from 2020 to 2021.
- The Scottish offshore wind sector, which is not included in the overall marine economy numbers, had an estimated turnover of £2.6 billion in 2021.
- From 2014 to 2021, the turnover from the Scottish offshore wind farm industry increased by 2275%.

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# Introduction

This report presents statistics on Scotland's marine economy. Scotland's marine economy includes all activities that:

1. Relate to the oceans, seas, bays, estuaries and other major water bodies.
2. Take place in Scotland or within Scottish waters.
3. Directly contribute to Scotland's economy.
4. Are not part of related supply chains.

This publication includes activities such as fishing, aquaculture and marine tourism with reliable economic data.

Scotland's marine economy is measured using:

1. Gross value added (GVA): the contribution to the economy of each individual producer, industry or sector. It is the difference between the value of the outputs and the costs of inputs used up in production.
2. Turnover: defined as total sales and work done. Calculated by adding together the values of:
  - a. sales of goods produced
  - b. goods purchased and resold without further processing
  - c. work done and industrial services rendered
  - d. non-industrial services rendered.
3. Employment: the number of employees on the payroll and working owners employed on a set day. Employment is a head count and not a Full Time Equivalent (FTE).

Most of the economic information comes from [Scottish Annual Business Statistics](#). Aquaculture, commercial fishing and offshore wind use other data sources. To enable comparison of monetary values over time, all values are in 2021 prices. This involved applying HM treasury deflation tables to previous years data. The sources and methods used in this report are set out in the [Data and Methodology](#).

## **An Official Statistics in Development Publication for Scotland**

These statistics are official statistics in development. Official statistics in development may be new or existing statistics, and will be tested with users, in line with the standards of trustworthiness, quality, and value in the [Code of Practice for Statistics](#).

Currently only selected marine sectors are included as limited reliable economic data is available. We are still considering how to include other sectors and how to estimate offshore wind gross value added. The Standard Industry codes are currently under revision and the future addition of a new code on "Electric power generation activities from renewable sources" may enable us to calculate gross value added for offshore generation activities.

Scottish Government statistics are regulated by the Office for Statistics Regulation (OSR). OSR sets the standards of trustworthiness, quality and value in the [Code of Practice for Statistics](#) that all producers of official statistics should adhere to.

# Marine economy overview

## Marine economy key points

In 2021, the Scottish marine economy generated £4.5 billion in GVA. This accounted for 3% of the total Scottish economy. The Scottish marine economy provided employment for 69,800 people. This was 2.7% of the total Scottish employment.

Support for oil and gas has the biggest marine economy turnover and GVA. But, marine tourism employs the most people of all the sectors covered in this report. Support for oil and gas provide 42% of the marine economy GVA. But, only 20% of the employment. Marine tourism provides 11% of the GVA and 41% of the employment.

Labour productivity (GVA per worker) varies across the marine economy. Freight water transport has the highest GVA per worker in 2021 (around £392,000). Marine tourism has the lowest at around £17,000.

Economic information on oil and gas extraction is not included in this report. See [Data and Methodology](#) for more information.

**Table 1. The support for oil and gas sector has the highest GVA at £1.9 billion but marine tourism has the highest employment at 28,600 in 2021.**

GVA, turnover, employment and GVA per head by marine sector, 2021

Marine sector	GVA (millions of pounds)	Turnover (millions of pounds)	Employment headcount (thousands)	GVA per head (pounds)
Fishing	321	562	4.2	75,769
Aquaculture	472	1,107	2.3	207,206
Support for oil and gas	1,876	3,804	13.8	135,906
Seafood processing	406	1,714	7.6	53,368
Shipbuilding	403	1,026	6.8	59,191
Construction and water transport services	278	539	4.8	57,833
Passenger water transport	89	231	1.2	74,167
Freight water transport	157	269	0.4	391,750
Renting and leasing of water transport equipment	18	41	0.1	177,000
Marine tourism	494	980	28.6	17,273
<b>Total</b>	<b>4,512</b>	<b>10,274</b>	<b>69.8</b>	<b>64,619</b>

## Marine economy trends

Between 2020 and 2021, the marine economy's GVA increased by 19% from £3.8 billion to £4.5 billion (2021 prices). Employment increased by 2%. This increase shows a partial recovery from the impact of the Covid-19 pandemic.

Employment increased by 1% between 2012 and 2021, but the estimated full time equivalent (FTE) decreased by 2%. This is due to the increase in marine tourism employment, which has more part-time or seasonal work.

**Table 2: Between 2012 and 2021 the marine economy GVA fell by 18%. Employment increased by 1% between 2012 and 2021.**

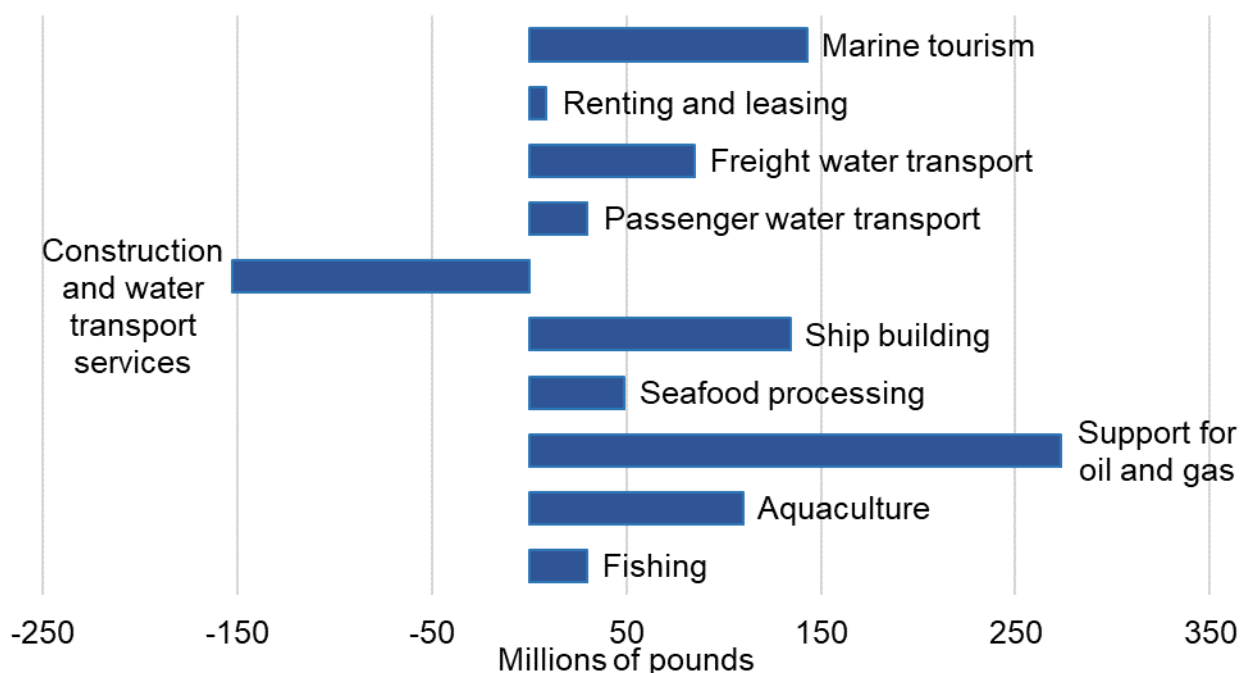
Marine GVA, turnover and employment, 2012 to 2021 (2021 prices)

Year	GVA (millions of pounds)	Turnover (millions of pounds)	Employment headcount (thousands)	Estimated FTE (thousands)
2012	5,513	14,260	69.3	61.3
2013	5,526	14,795	73.5	64.2
2014	5,598	15,640	74.6	65.8
2015	5,369	15,138	78.7	68.8
2016	4,866	11,871	75.7	65.8
2017	5,707	12,814	74.1	64.2
2018	4,765	11,952	74.7	64.8
2019	5,378	12,404	75.3	64.1
2020	3,801	10,409	68.7	59.8
2021	4,512	10,274	69.8	59.9

GVA increased in all marine sectors apart from construction and water transport services between 2020 and 2021 (Figure 1). However, the GVA for all marine sectors in 2021 was still lower than in 2019. This indicates a partial recovery from the impacts of Covid-19.

**Figure 1. The GVA for construction and water transport services fell between 2020 and 2021. Support for oil and gas and marine tourism had the largest increases.**

Change in GVA by marine sector in millions of pounds, 2020 to 2021



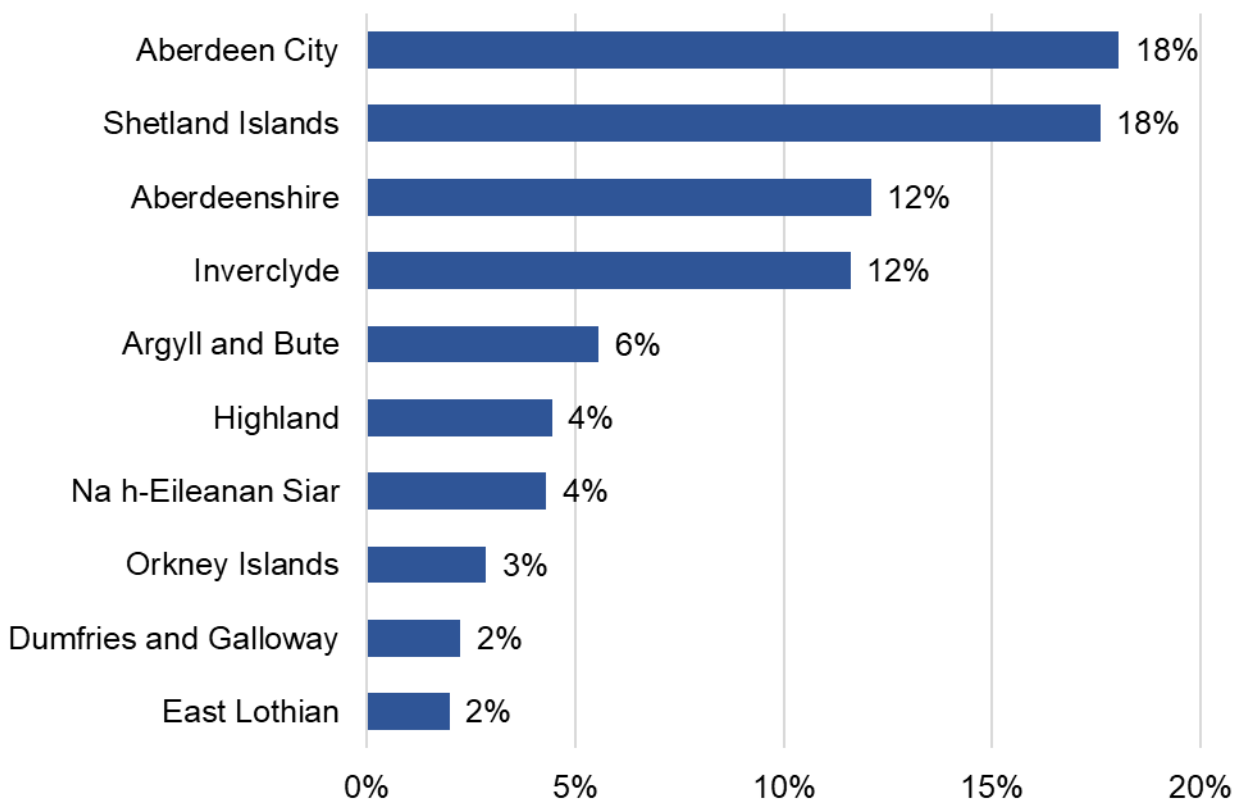
## Marine economy by geography

Marine economic information is available for most local authorities, subject to confidentiality considerations. Aberdeen City accounted for £1.7 billion (38%) of Scotland's marine economy's GVA for 2021 ([Table 3](#)).

Marine GVA and employment is particularly important to rural economies. Marine GVA contributes most to Aberdeen City, accounting for 18% of their total GVA in 2021 (Figure 2). Shetland Islands are a close second, with marine sectors also contributing 17.6% of their GVA.

**Figure 2. Marine GVA contributed most to the total GVA in Aberdeen City in 2021. It accounted for 18% of the total GVA.**

Percentage of GVA accounted for by the marine sector for the top 10 local authorities, 2021



# Fishing

This fishing section covers commercial sea fishing only. Fishing is important to Scotland's rural and coastal economies. It feeds into Scotland's food and drink economy and provides rural employment. Fishing economic data comes from the Seafish survey. Employment comes from Scottish Sea Fisheries Statistics. These sources are more complete than the Scottish Annual Business Statistics. See [Data and Methodology](#) for more information.

In 2021, fishing generated £321 million GVA, 0.21% of the Scottish economy and 7% of the marine economy GVA. Fishing employed 4,241 people, 0.16% of Scottish employment and 6% of marine economy employment.

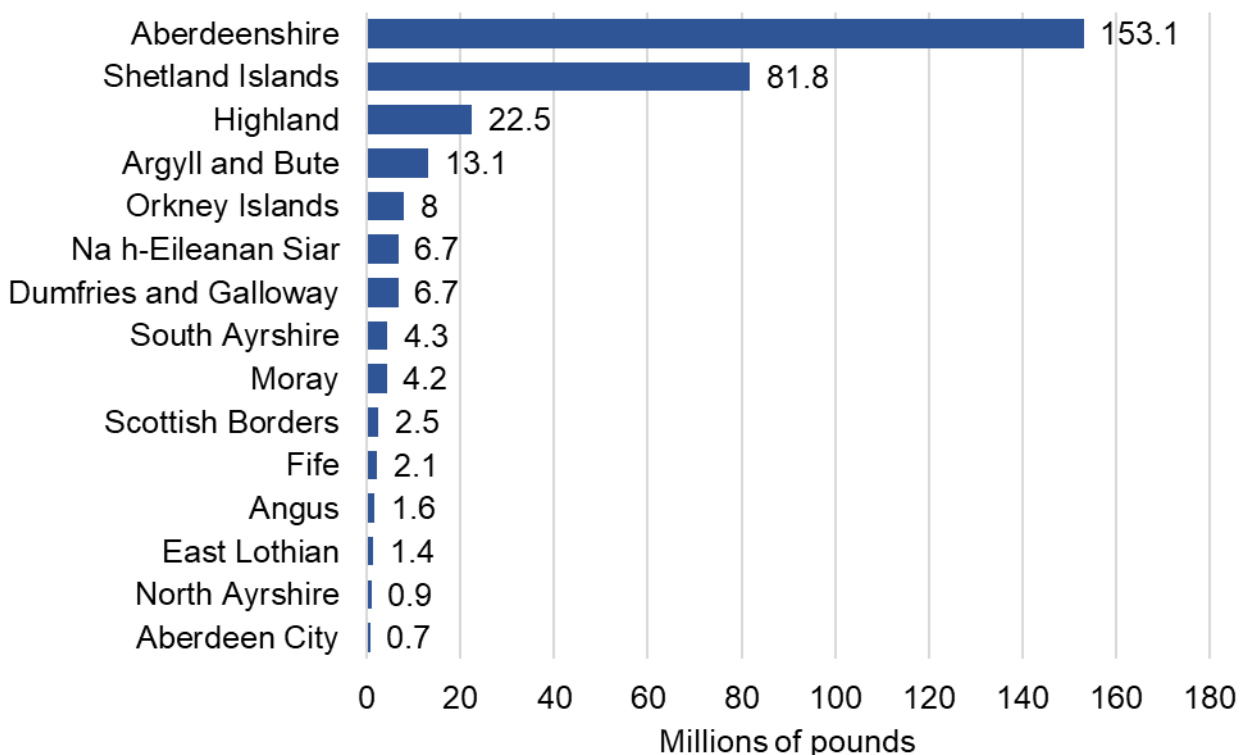
From 2020 to 2021, the GVA from fishing (adjusted to 2021 prices) increased by 10%. The longer term trend from 2012 to 2021, showed that fishing GVA increased by 27%. From 2012 to 2021, employment fell by 6%.

Fishing GVA depends on the price and weight of fish landed. Between 2020 and 2021, both the weight and value of fish landed increased, but the value has not returned to pre-pandemic levels. More information on fish landings is in the [Scottish Sea Fisheries Statistics publication](#).

Aberdeenshire had the highest fishing GVA at £153 million in 2021 (Figure 3) This is 48% of all fishing GVA. Aberdeenshire includes Peterhead, the largest UK fishing port.

**Figure 3. Aberdeenshire had the highest fishing GVA at £153 million, followed by Shetland Islands at £82 million.**

Fishing GVA by local authority, 2021





# Aquaculture

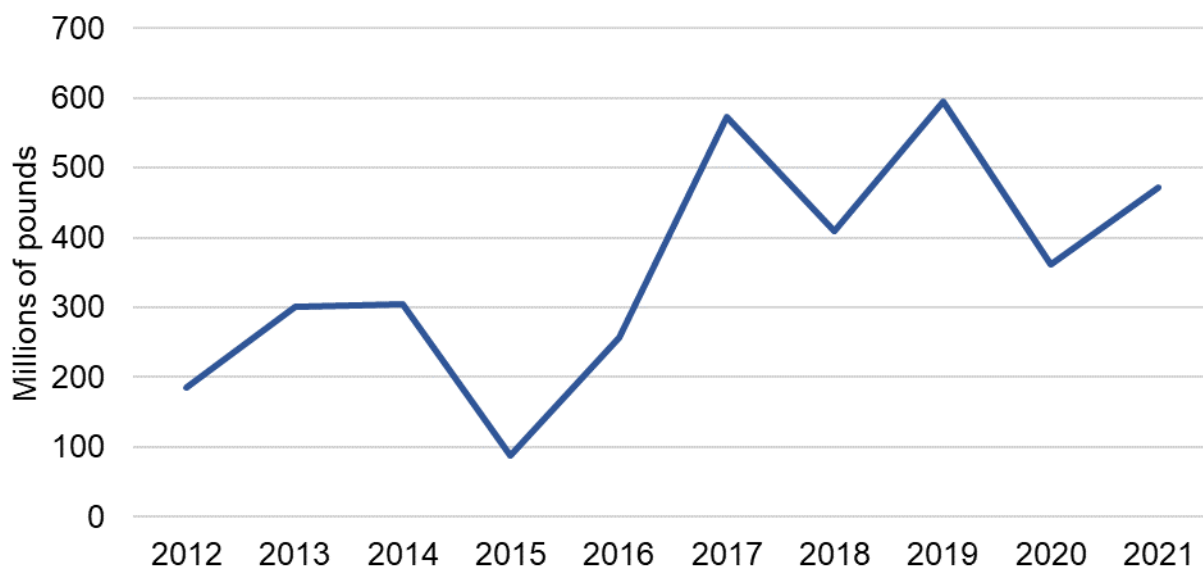
Aquaculture is the breeding, growing, and harvesting of plants and animals in water. It can take place in natural water bodies such as ponds, lakes, and the ocean. Tanks, commonly found in fish hatcheries, are also used. Aquaculture production in Scotland includes salmon, trout, mussels, and other shellfish. Scottish Annual Business Statistics is not the sole or main source for the aquaculture data. Instead, data from several surveys are combined for more reliable estimates. See [Data and Methodology](#) for more information.

In 2021, aquaculture generated £472 million GVA, 0.31% of the Scottish economy and 10% of the marine economy GVA. Aquaculture employed 2,300 people, 0.09% of Scottish employment and 3% of marine economy employment.

From 2020 to 2021, the GVA from aquaculture increased by 30% from £362 million to £472 million. The longer term trend from 2012 to 2021 increased by 154% from £185 million. From 2012 to 2021, employment increased by 20%.

**Figure 4. The aquaculture GVA has fluctuated over the last ten years with a low of £88 million in 2015 and a high of £594 million in 2019.**

Aquaculture GVA by year, 2012 to 2022



In 2021, Atlantic salmon made up 96% of the aquaculture value, similar to previous years. The production of salmon is a process that takes several years. So, some years will have higher costs and lower production than others. In 2015, the GVA dropped (Figure 4) due to lower salmon prices and higher costs because of disease challenges. In 2020, the Covid-19 restrictions impacted on demand for salmon products abroad, especially in China.

Local authority breakdowns of the aquaculture data are not available. But, salmon and mussel production are available by grouped Scottish marine region ([Tables 26 and 27](#)). A third of salmon production is in the combined North Coast and West Highlands region. Eighty percent of Scottish mussel production takes place in the Shetland Isles.

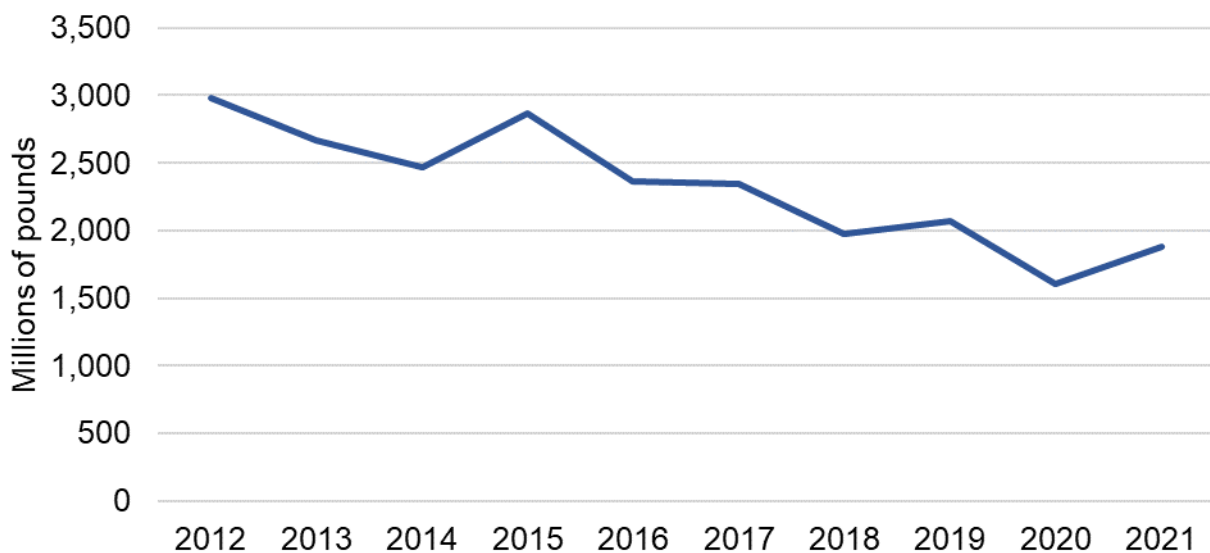
# Support for oil and gas

Support for oil and gas, includes exploration, test drilling and decommissioning. This activity is the largest contributor to marine economy turnover and GVA. But, oil and gas price changes tend to impact on this activity. Scottish Annual Business Statistics is the source of the support for oil and gas data. Economic information on oil and gas extraction is not included in this report. See [Data and Methodology](#) for more information.

In 2021, support for oil and gas generated £1,876 million GVA, 1.25% of the Scottish economy GVA and 42% of the marine economy GVA. Support for oil and gas employed 13,800 people, 0.53% of Scottish employment and 20% of marine economy employment. Support for oil and gas GVA has declined by 37% since 2012. Between 2020 and 2021, GVA increased by 17%. From 2012 to 2021, employment decreased by 25%.

**Figure 5. Support for oil and gas GVA decreased from £3 billion in 2012 to £1.9 billion in 2021.**

Support for oil and gas GVA by year, 2012 to 2021



A geographic breakdown of support for oil and gas is not available.

# Seafood processing

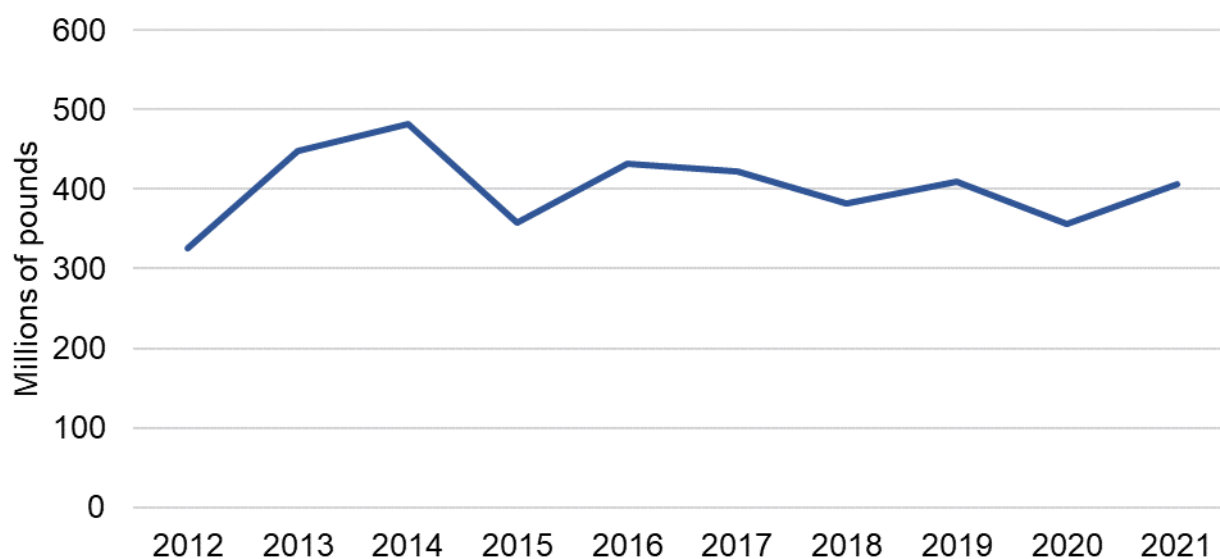
Seafood processing includes the processing and preserving of fish, crustaceans, and molluscs. While fish processing is mainly land based, it is highly dependent on fish landed from Scottish waters. So, fish processing has been included within the marine economy. Scottish Annual Business Statistics is the source of the seafood processing data. See [Data and Methodology](#) for more information.

In 2021, Seafood processing generated £406 million GVA: 0.27% of the Scottish economy and 9% of the marine economy GVA. Seafood processing employed 7,600 people, 0.29% of Scottish employment and 11% of marine economy employment.

In 2021, the GVA from seafood processing increased by 14% from the previous year. The longer term trend, from 2012 to 2021, increased by 25%. Employment decreased by 1% between 2012 and 2021.

**Figure 6. Seafood processing GVA increased from a low of £326 million in 2012 to a high of £482 million in 2014. From 2015 to 2021, the GVA remained stable at around £400 million.**

Seafood processing GVA by year, 2012 to 2021



A geographic breakdown of seafood processing economic data is not available.

# Shipbuilding

Shipbuilding includes building, repair and maintenance of ships and boats. Scottish Annual Business Statistics is the source of the shipbuilding data. See [Data and Methodology](#) for more information. Shipbuilding economic data fluctuates between years. It can take several years to build and sell a ship. So, costs are higher in some years and income higher in other years. Company re-structuring also contributes to year-on-year fluctuations. The [Shipbuilding Profile](#) in the industry profiles compares Scottish shipbuilding to the UK.

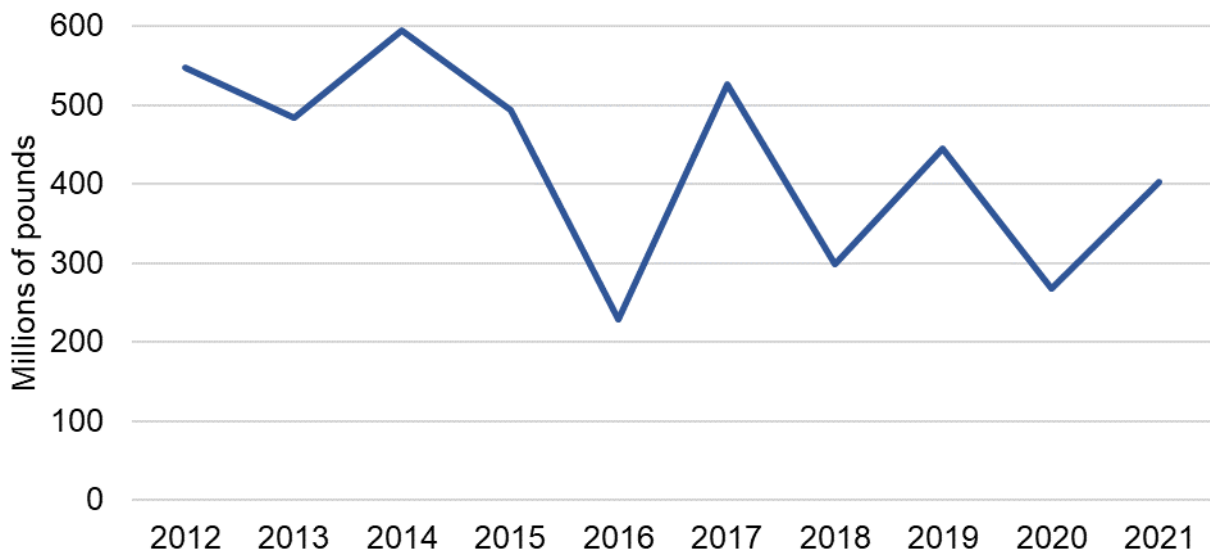
In 2021, Shipbuilding generated £403 million in GVA, 0.27% of the Scottish economy and 9% of the marine economy GVA. Shipbuilding employed 6,800 people, 0.26% of Scottish employment and 10% of marine economy employment.

Scottish shipbuilding made up 15% of UK shipbuilding GVA in 2021 ([Shipbuilding Profile](#)). This is a higher proportion than Scotland's contribution to the whole of manufacturing. Scotland accounted for 8% of UK manufacturing GVA in 2021.

From 2012 to 2021, Shipbuilding GVA decreased by 26%. Employment decreased by 4% between 2012 and 2021. Changes in a small number of large shipbuilding companies can have a large impact on the annual data. So, long term trends are more reliable than year on year comparisons (Figure 7).

**Figure 7. Ship building GVA has decreased from £547 million in 2012 to £403 million in 2021. However, there are large annual fluctuations with some years changing by more than £200 million compared to the previous year.**

Ship building GVA by year, 2012 to 2021



The top five local authority areas in 2021 (Glasgow City, Aberdeen City, Inverclyde, Aberdeenshire and Fife) accounted for 88% of GVA in the sector. Full local authority breakdowns are not available. See the industry profiles [Shipbuilding Profile](#) for more information.

# Construction and water transport services

Construction and water transport services include:

- Construction of waterways, harbours, marinas, locks and river works.
- Construction of dams and dredging of waterways.
- Operation of harbours, piers and waterway locks.
- Navigation, pilotage, berthing, lighterage, salvage and lighthouse activities.

This excludes cargo handling and operation of marinas.

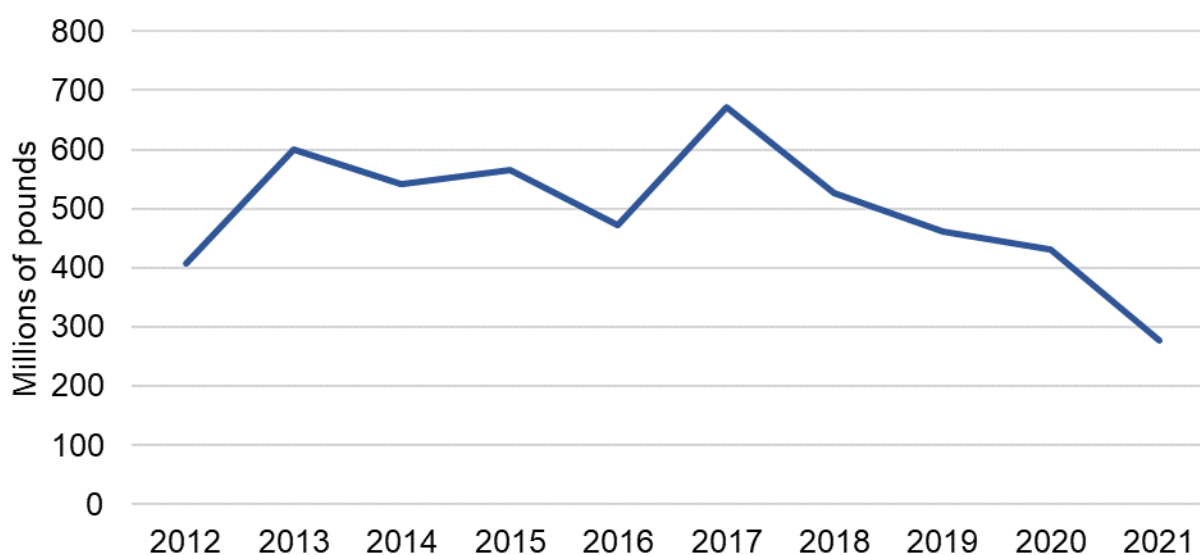
Marine construction and water transport services are key for connectivity and supporting growth for the marine economy. Scottish Annual Business Statistics provides the construction and water transport services data. See [Data and Methodology](#) for more information.

In 2021, marine construction and water transport services generated £278 million in GVA. This was 0.19% of the Scottish economy, and 6% of the marine economy. Marine construction and water transport services employed 4,800 people in 2021. This was 0.18% of Scottish employment, and 7% of marine economy employment.

Construction and water transport services GVA fell by 35% between 2020 and 2021. Employment increased by 12% between 2020 and 2021. In the longer term, construction and water transport services GVA decreased by 32% between 2012 and 2021 (Figure 8).

**Figure 8. Construction and water transport services GVA increased to £671 million in 2017 before decreasing steadily to £278 million in 2021.**

Construction and water transport services GVA by year, 2012 to 2021



A geographic breakdown of construction and water transport services are not available.

# Sea and coastal water transport

This sector includes both passenger and freight water transport. Inland water transport is not included. Sea and coastal water transport is an essential part of Scotland's transport network. It is key for connectivity and supports island and mainland communities. Travel in Scotland in 2020 was significantly affected by the Covid-19 pandemic. Scottish Annual Business Statistics provides the economic and employment data. See [Data and Methodology](#) for more information.

Supplementary information comes from the [Scottish Transport Statistics publication](#), and the [Department of Transport statistics](#).

## Passenger water transport: key points

In 2021, passenger water transport generated £89 million in GVA, 0.06% of Scottish and 2% of marine economy GVA. Passenger water transport employed 1,200 people, 0.05% of Scottish employment and 2% of marine economy employment.

From 2020 to 2021, the GVA from passenger water transport increased by 51%. The longer term GVA trend fluctuated by year, but fell by 19% from 2012 to 2021. From 2012 to 2021, employment decreased by 20%.

Transport Scotland report passenger journeys by operator rather than location. In 2021, around 52% of the passenger journeys were on the Caledonian MacBrayne services in the West of Scotland. These services travel between the mainland of Scotland and 22 of the major islands on Scotland's west coast.

## Freight water transport: key points

In 2021, freight water transport generated £157 million GVA, 0.1% of Scottish and 3% of marine economy GVA. Freight water transport employed 400 people, 0.02% of Scottish employment and 1% of marine economy employment.

From 2020 to 2021, freight water transport GVA increased by 118%. In the longer term, from 2012 to 2021, GVA fell by 8%. This is a small sector so the figures can fluctuate from one year to the next.

Transport Scotland report by freight traffic by port. The highest freight traffic in 2021 was through Forth ports. This accounted for 36% of tonnage through the top 11 ports.

# Renting and leasing of water transport equipment

This sector includes renting and leasing of marine transport equipment, such as commercial boats, without an operator. This excludes renting of pleasure boats, water-transport equipment with an operator and financial leasing. Scottish Annual Business Statistics provides this data. See [Data and Methodology](#) for more information.

In 2021, renting and leasing of water transport equipment generated £18 million in GVA. This is 0.01% of the Scottish economy and 0.4% of the marine economy GVA.

The renting and leasing industry employed 100 people, 0.004% of Scottish employment and 0.1% of marine economy employment.

From 2020 to 2021, the renting and leasing industry GVA increased by 99%. The longer term GVA trend, from 2012 to 2021, increased by 204%.

From 2012 to 2021, employment was unchanged. Low numbers mean small changes can generate large percentage differences between years. Over the last ten years, employment was between 100 or 200 people. This is at the limit of the accuracy of the Scottish Annual Business Statistics survey figures.

A geographic breakdown of renting and leasing is not available.

# Marine tourism

Marine tourism includes tourism and recreation businesses located within 100 metres of the coastline. Tourism businesses are specified in the [Sustainable Tourism growth sectors](#). Postcodes are used to determine whether the businesses are within 100 metres of the coast. This method may include some businesses that are not marine-related, and exclude some that are. But, it is a reasonable and replicable method for estimating the marine tourism economy using existing data. Scottish Annual Business Statistics provides this data. See [Data and Methodology](#) for more information.

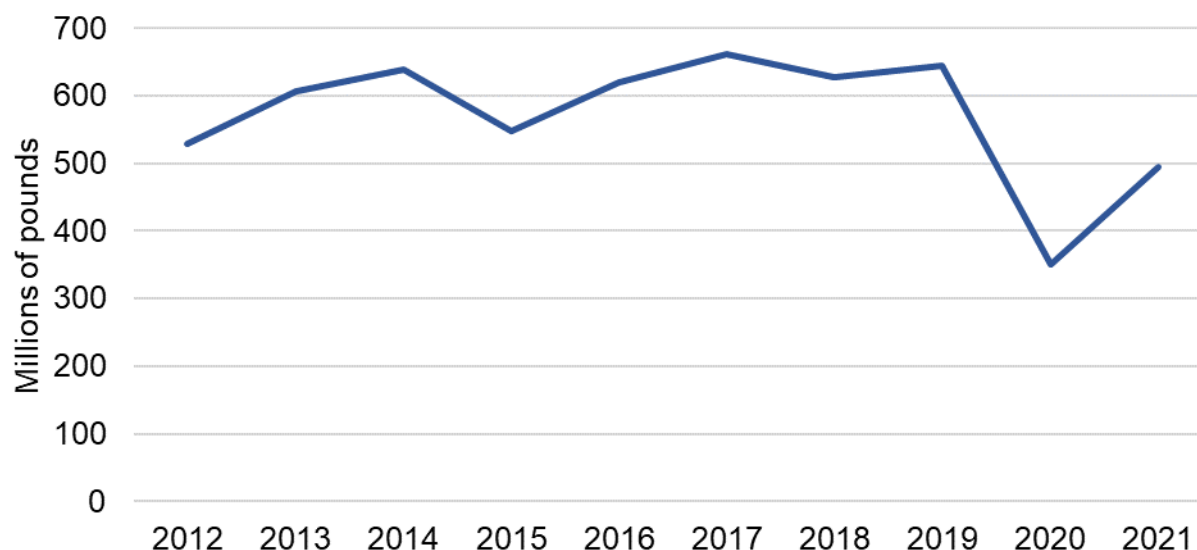
In 2021, marine tourism generated £494 million GVA, 0.33% of the Scottish economy and 11% of the marine economy GVA. Marine tourism employed 28,600 people, 1.1% of Scottish employment. It is the biggest marine economy employer with 41% of marine economy employment. However, most jobs will be seasonal and part time, which is reflected in the estimated full time equivalent (FTE) of 20,600.

Scottish sustainable tourism was estimated to be worth £3.4 billion in GVA in 2020, a increase of 31.3% compared to 2020.

From 2020 to 2021, marine tourism GVA increased by 41%. In the longer term, from 2012 to 2021, GVA decreased by 7%. From 2012 to 2021, employment increased by 18%.

**Figure 9. Marine tourism GVA increased gradually from £529 million in 2012 to £645 million in 2019. It then dropped dramatically to £351 million in 2020, as a result of Covid-19 restrictions, before increasing to £494 million in 2021.**

Marine tourism GVA by year, 2012 to 2021



The marine tourism economic values are available by Scottish Marine Regions. In the Clyde region, marine tourism generated £135 million GVA in 2021. This was 27% of the Scottish marine tourism GVA in 2021.



## Offshore wind

Marine Scotland has been investigating how to measure offshore wind farm economic activity. This is under development, so it is not included in the marine economy figures. Employment and turnover estimates for offshore wind come from the Office for National Statistics's [Low Carbon and Renewable Energy Economy Survey](#). This collects economic information on Low Carbon and Renewable Energy sectors, including offshore wind. The accuracy of these estimates varies by sectors and country. This limits the use of the data for some small sectors and at a Scotland level. More information on this, including confidence intervals, can be found in the [Low carbon and renewable energy economy, UK: 2021 bulletin](#).

Unfortunately, we are still unable to calculate GVA estimates. But, we have estimated employment headcounts from the full time equivalent estimates. The annual population survey was used to work out the proportion of full time workers in Scotland. The annual survey of hours and earnings was used to estimate the average hours worked by full and part time staff.

Scottish offshore wind directly employed an estimated 3,900 people in 2021. It generated 2,729GWh of electricity, 10% of all renewable energy generation in Scotland. Scottish offshore wind had an estimated turnover of £2,594 million in 2021, 1.1% of overall Scottish turnover.

From 2020 to 2021, the Scottish offshore wind farm turnover increased by 333%. But, between 2014 to 2021, the turnover increased by 2275%. Both of these increases are statistically significant.

The estimated number of people employed increased by 39% between 2020 and 2021. This increase is not statistically significant and could be due to sampling variability rather than a real change. See [Data and Methodology](#) for more information.

## Other marine economic sectors

The information provided in this report is based on available, validated economic data sources. As relevant data on other marine economy sectors become available we will add them to this report.

Recreational sea angling is not included separately in this publication. But, may be covered within other sectors, such as marine tourism or renting and leasing of water equipment.

Marine renewable energy (wind, wave and tidal) has continued to grow in Scotland. We are still working on calculating GVA for offshore wind and sourcing economic information for wave and tidal energy.

Seaweed harvesting is a potential addition to future reports, when data and appropriate methods have been developed.

# Data and Methodology

## Additional Tables

Additional tables are available alongside this publication in Excel format. These tables provide more detail on the individual marine sectors. This includes: ten year trends and geographical breakdowns where possible. They can be downloaded from [the supporting documents of Scotland's Marine Economic Statistics 2021](#).

## Sources

The main source for the economic data in this publication is the Scottish Annual Business Statistics. This is based on data from the Annual Business Survey conducted by the Office for National Statistics (ONS). Businesses are classified by industry using the UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). All marine sectors apart from fishing, aquaculture and offshore wind use Scottish Annual Business Statistics. The detail on the industry codes included in each sector is shown below:

- Oil and gas services: 09.1 support activities for petroleum and natural gas extraction
- Seafood processing: 10.2 processing and preserving of fish, crustaceans and molluscs
- Shipbuilding: 30.1 building of ships and boats and 33.15 repair and maintenance of ships and boats
- Construction and water transport services: 42.91 construction of water projects and 52.22 service activities incidental to water transportation
- Passenger water transport: 50.1 sea and coastal passenger water transport
- Freight water transport: 50.2 sea and coastal freight water transport
- Renting and leasing: 7.34 renting and leasing of water transport equipment
- Marine Tourism: tourism and recreation business at postcodes within 100 metres of coastline. Includes industry codes:
  - 55.1 Hotels and similar accommodation
  - 55.2 Holiday and other short-stay accommodation
  - 55.3 Camping grounds, recreational vehicle parks and trailer parks
  - 56.1 Restaurants and mobile food service activities
  - 56.3 Beverage serving activities
  - 79.12 Tour operator activities
  - 79.9 Other reservation service and related activities
  - 91.02 Museum activities
  - 91.03 Operation of historical sites and buildings and similar visitor attractions
  - 91.04 Botanical and zoological gardens and nature reserve activities
  - 93.11 Operation of sports facilities
  - 93.199 Other sports activities (not including activities of racehorse owners)
  - 93.21 Activities of amusement parks and theme parks
  - 93.29 Other amusement and recreation activities

Industry code 06 Extraction of crude petroleum and natural gas is a key component of the Scottish economy. But, estimates are not included here as this is offshore activity. To be consistent with National Accounts Statistics, this is not allocated to UK regions.

The fishing data sources are:

1. [Seafish Industry Authority Fleet Economic Survey](#) for GVA and turnover estimates for the Scottish fishing fleet.
2. [Scottish Sea Fisheries Statistics 2022](#) for employment data.

These sources provide a more reliable estimate of economic activity than the Scottish Annual Business Statistics. Seafish use the value of fish landings as source data for turnover. They then carry out their own financial survey to produce estimates of GVA. This survey is stratified to produce a representative sample of fishing businesses. Fish landings are administrative data and cover all fishing vessels. The employment data covers all registered Scottish fishing vessels.

The aquaculture data sources are:

1. Marine Scotland Shellfish production survey for employment and production value.
2. Marine Scotland Fin fish production survey for salmon and other fin fish employment and production value.
3. An aquaculture economic survey used to meet clause one of the UK Fisheries Act 2020. This replaces the previous European Commission's Data Collection Framework requirements (DCF). Provides information on income and expenditure.
4. Scottish Annual Business Statistics for change in stock value.

The offshore wind data source is the [Low carbon and renewable energy economy, UK: 2021 bulletin](#). The Scottish Annual Business Statistics does not include separate information on offshore wind. There is no separate industry code for this activity.

## Methodology

A bespoke extract of data is supplied for the marine industries covered by the Scottish Annual Business Statistics. This is combined with the data for industries derived from other data sources. Offshore wind is an exception. It is not combined with the other industries as GVA is not available.

In the publication, all values have been adjusted to 2021 prices using 2021 calendar year [GDP deflators at market prices](#). This makes it simpler to compare values across a time series.

## Aquaculture methodology

The aquaculture production value from the shellfish and fin fish production surveys are used as the turnover. The employment is also taken from these surveys which include all aquaculture businesses in Scotland. The GVA for aquaculture is calculated by:

1. Totalling the production income and other income for the sample of businesses that responded to the aquaculture economic survey.
2. Totalling the costs of inputs (not staffing or financial costs) for the sample of businesses that responded to the aquaculture economic survey.
3. Calculating aquaculture production value by adding the fin fish and shellfish surveys production values together.

4. Calculating the ratio of of aquaculture production value (in step 3) to the production income (in step 1).
5. Calculate change in stock value adjusted to the same level as the production survey by:
  - a. Dividing the total production survey value by the Scottish Annual Business Statistics turnover for aquaculture.
  - b. Multiplying the change in stock value from the Scottish Annual Business Statistics by this ratio.
6. Calculating total income at Scotland level by multiplying total income from the aquaculture economic survey by the ratio in step 4.
7. Calculating cost of inputs at Scotland level by multiplying cost of inputs (step 2) from the aquaculture economic survey by the ratio in step 4.
8. Calculate GVA by subtracting cost of inputs at Scotland level (step 7) from total income at Scotland level (step 6) and then adding change in stock value (step 5).

### **Marine tourism methodology**

Marine tourism and recreation has been defined as including “activities which involve travel away from one’s “habitual” place of residence, which have as their host or focus the marine environment and/or the coastal zone”. This is the definition used in the 2015 [Scottish Marine Recreation and Tourism Survey](#).

Marine tourism is estimated using the Scottish Annual Business Statistics tourism and recreation businesses and their postcodes. Tourism and recreation businesses located in postcodes within 100 metres of the coastline are counted as marine tourism.

The list of industry codes for relevant tourism and recreation business activities is provided on page 18. This list aligns with the definition of Sustainable Tourism in the Growth Sector Statistics. We have assumed that marine tourism businesses are located close to the coast. This may exclude relevant activities of tourism businesses that are located further from the coast. The 100 metre threshold was selected to minimise chances of including in the estimates activities from non-marine tourism businesses. This effects urban coastal areas such as Aberdeen and Edinburgh more than rural areas.

### **Offshore wind methodology**

The Low carbon and renewable energy economy survey was designed to provide greater detail on these sectors in the UK. The survey collects a wide range of information including turnover and employment. 17 low carbon sectors including offshore wind are included.

The figures are survey-based estimates and gather information from a sample rather than the whole population. This means that they are subject to measurable sampling uncertainty, which has an effect on how changes in the estimates should be interpreted. Estimates of the level of uncertainty associated with all figures (coefficients of variation and confidence intervals) reported are presented in the [ONS Low carbon and renewable energy economy, UK: 2021 bulletin](#) and datasets to aid interpretation.

In the case of offshore wind, the annual changes in employment estimates have too much sampling variability to show any changes. However, we can be confident that the turnover in 2021 was significantly higher than all previous years.

The offshore wind employment was published in this survey as a full time equivalent. Data from other sources was used to convert the full time equivalent estimates to headcounts. The [annual population survey](#) provided the percentage employed full time (around 74% but varies by year) in Scotland. The [annual survey of hours and earnings](#) gave the average number of hours part time and full time staff work in Scotland. Part time staff work an average of 19 hours and full time staff work an average of 39 hours. So, the headcount works out at about 27% higher than the full time equivalent.

### **Full time equivalent estimates**

Following specific stakeholder feedback, we have added estimates for the full time equivalent estimates to all marine sectors. Data from other sources was used to convert the headcounts to full time equivalent estimates.

Part and full time employee numbers by year and industry code were taken from the [Business Register and Employment Survey](#). This was used to calculate the percentage in each sector that worked part time in each year. The [annual survey of hours and earnings](#) gave the average number of hours part time and full time staff work in Scotland by year. This was used to calculate the average proportion of full time hours that part time workers actually work.

### **Geography**

A total for all marine economy sectors, excluding fishing and aquaculture, by local authority was provided from the Scottish Annual Business Statistics data. Values for fishing and aquaculture were combined with this data to produce marine economy totals by local authority. The fishing values were provided by local authority subject to confidentiality constraints. Any that could not be provided separately, are included in the 'unallocated' category. Aquaculture values were not available by local authority, so are included in "unallocated".

Marine tourism information is unavailable separately by local authority. This is due to the small quantity of data. So, Scottish Marine Regions are used to show the geographic distribution of marine tourism. There are 11 Scottish Marine Regions that divide the seas around Scotland.

# Tell us what you think

We are always interested to hear from our users about how our statistics are used, and how they can be improved.

## Feedback survey

We'd appreciate it if you would complete our short [feedback survey](#) on this publication.

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