



Maritime
UK

State of the Maritime Nation 2022

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NB The industry figures making up the broad Maritime Sector are not always additive because some of the reports have been customised to cater for the overlap between certain industries. Simply adding together the industries would therefore produce a degree of double counting. Nonetheless, the broad Maritime report has had this double counting stripped out.

The report does not necessarily reflect the views of Maritime UK.

London, June 2022

Our members

The Belfast Maritime Consortium

British Marine

British Ports Association

The Baltic Exchange

CLIA UK & Ireland

The Institute of Chartered Shipbrokers

Maritime London

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Mersey Maritime

Nautilus International

Port Skills and Safety

The Seafarers' Charity

Shipping Innovation

The Solent LEP

The Society of Maritime Industries

Trinity House

The UK Chamber of Shipping

The United Kingdom Major Ports Group Ltd (UKMPG)

The Workboat Association

About Maritime UK

Maritime UK is the umbrella body for the maritime sector, bringing together the shipping, ports, services, engineering and leisure marine industries. Our purpose is to champion and enable a thriving maritime sector. Maritime UK has responsibility for the coordination and delivery of industry recommendations within Maritime 2050.

Maritime UK National Priorities



People

Our aim is to understand and meet future skills and employee needs through promoting maritime careers with our new #MaritimeCareers campaign, enhancing diversity by building upon the Women in Maritime programme and investing in the workforce.

Environment



Our aim is to minimise the sector's impact upon the environment, to help other industries to minimise their impact, take advantages of new technological opportunities such as decarbonisation and encourage modal shift to coastal and inland shipping.



Innovation

Our aim is to position the UK as a leader in innovation across decarbonisation, automation and digitisation by facilitating collaboration across the sector and securing government investment for Maritime Research & Innovation UK.



Competitiveness

Our aim is to attract new maritime businesses to the UK by working with government to enhance the competitiveness of the UK's business environment and to grow the export of maritime products and services by supporting companies to export and promoting the sector across the UK's diplomatic and commercial network.



Regional Growth

Our aim is to support economic development in coastal communities by working with government to create the conditions to encourage further private investment by ports and create a network of regional maritime cluster organisations to foster collaboration and drive growth.



Foreword

I am delighted to present Maritime UK's latest 'State of the Maritime Nation' report, delivered by the Centre for Economics and Business Research (Cebr).

Since the last report was published at London International Shipping Week in 2019, the maritime industries have faced huge challenges but have also made significant progress on key priorities.

During the pandemic this sector supported the country like few others. The maritime industries had a unique responsibility to keep our island nation fed, fuelled, and supplied and maritime key workers were on the frontline whilst most were asked to stay at home. The country recognised the role that our sector and its key workers play in national life.

The pandemic had a very significant impact on maritime in the UK, but thanks to a strong partnership between industry and government focused on business continuity and restart, the sector is forecast to exceed its pre-pandemic levels at the end of 2022.

We have also seen some real signs of progress toward our Maritime 2050 ambitions since 2019:

- Recognition of the sector's critical role in decarbonisation through inclusion in the Prime Minister's Ten Point Plan for a Green Industrial Revolution
- £206m allocated for a new UK Shipping Office for

Reducing Emissions and extension to the Clean Maritime Demonstration Competition

- The first freeports and green ports established
- Publication of the National Shipbuilding Strategy refresh, establishment of the National Shipbuilding Office and over £4 billion committed for new vessels.
- The reintroduction of the vital Home Shipbuilding Credit Guarantee Scheme, alongside a thirty-year pipeline of public vessels.
- Establishment of the Maritime Capability Campaign Office and UK Shipping Concierge to promote UK maritime and provide a one-stop-shop for investors.
- Reforms to enhance the competitiveness of Tonnage Tax.
- The announcement of a new national flagship acquisition programme
- A fantastic London International Shipping Week and COP26 programme.
- And more and more businesses getting involved with Maritime UK's cross-sector industry programmes. Whether on careers, diversity or regional cluster development.

All of these will help to boost productivity, increase inward investment, drive exports, grow the sector and create new well-paid jobs.

This report shows that maritime is one of Britain's biggest industries, with £116bn turnover; bigger than the rail and aviation industries combined.

For every £1 of turnover generated directly by the sector, a further £1.62 was generated indirectly across the supply chain, underscoring the far-reaching impact of an industry that carries 95% of Britain's global trade.

The sector's employment story is also strong, supporting 1,064,000 jobs. This represents an 18% increase since the start of the report series, outpacing the rise in UK employment of 13% over the same period. These are highly productive jobs, adding 45% more value than the UK average, and well paid, with average remuneration 30% higher than the UK benchmark.

Many of these jobs are found in coastal areas, where employment opportunities are having an impact on communities. According to a poll by Survation in September 2021, commissioned by Maritime UK, of 1,000 young people (18-24) in coastal areas, 49% plan on moving away. Jobs were cited as the overwhelming reason with 70% saying they would be more likely to stay if the right career opportunities were made available. Maritime UK believes growing the sector can help turn the tide for coastal communities.

As we look to the future the report forecasts ambitious investments in infrastructure, technology, education and environmental sustainability that will lead to major gains in efficiency and productivity over the longer term.

Whilst there is increasing competition from across the world, we believe that the future is bright for UK maritime. The OECD forecast the global maritime economy to double in size to \$3 trillion in the next ten years, and we are determined to position the UK to benefit from this growth.

Maritime 2050 gives the UK a framework within which to ensure our competitiveness and I am very pleased to see how the sector is increasingly collaborating to realise our ambitions.

The maritime sector is working closer than ever through Maritime UK and I'm very pleased that colleagues from across the organisation have provided articles in the report to share their thinking on the state of play for the maritime sector, its future, and how we can get there.

I hope you find the report useful and that we can work together to grow the maritime sector in the UK further still.

Sarah Kenny OBE
Chair *Maritime UK*



Contents

Headline findings

- Report Purpose
- Defining the Maritime Sector
- Economic contribution of the Maritime Sector
- Economic contribution of the Maritime Sector

1 Introduction

- 1.1 About Maritime UK
- 1.2 Purpose of this report
- 1.3 Overview of the study and methodology
 - Objectives of the study
 - Mapping the UK Maritime Sector
 - Quantifying the direct economic impacts of the Maritime Sector
 - Quantifying the aggregate economic impacts of the Maritime Sector
 - Removal of “double-counting” effects
 - Changes from 2019 Cebr study
- 1.4 Structure of the report

2 The direct economic impact of the Maritime Sector

- 2.1 The direct economic impact through turnover
- 2.2 The direct economic impact through GVA
- 2.3 The direct economic impact through employment
- 2.4 The direct economic impact through the compensation of employees
- 2.5 The direct contribution of the Maritime Sector to the UK Exchequer
- 2.6 The direct contribution of the UK’s exports of products and services

3 Aggregate economic impact of the Maritime Sector

- 3.1 The aggregate economic impacts through turnover
- 3.2 The aggregate economic impacts through GVA
- 3.3 The aggregate economic impacts through employment
- 3.4 The aggregate economic impacts through the compensation of employees

4 The regional economic impact of the Maritime Sector

- 4.1 The direct economic impact of the Maritime Sector by UK region
- 4.2 The aggregate economic impact of the Maritime Sector by UK region
 - The aggregate economic impacts for business turnover and GVA by region
 - The aggregate economic impacts for employment and the compensation of employees by region

5 The UK Maritime Sector: A forward look

Maritime worldwide trends and key themes shaping the future UK Maritime economy

The Maritime Sector Forecast (2021-2025)

- Modelling approach
- Modelling Assumptions
- The 2021-2025 forecast

- Annex A: Full set of direct economic impacts by region
- Annex B: Supplementary results of aggregate economic impact analysis
 - The aggregate economic impacts through turnover
 - The aggregate economic impacts through GVA
 - The aggregate economic impacts through employment
 - The aggregate economic impacts through the compensation of employee

Industry Insight

Ports as key catalysts for regional growth
Tim Morris CEO UK Major Ports Group

Welcoming the National Shipbuilding Strategy refresh
Tom Chant CEO Society of Maritime Industries

UK ports: gateways for growth
Richard Ballantyne CEO British Ports Association

Tackling climate change is the greatest challenge facing mankind
Sarah Treseder CEO UK Chamber of Shipping

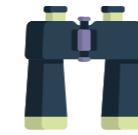
A future our maritime professionals can believe in
Mark Dickinson General Secretary Nautilus International

Mersey Maritime optimistic as it drives forward
Simon Eardley Head of Partnerships and Policy Mersey Maritime

Maritime industry ready to play its part in fighting climate crisis
Dr Iain Percy OBE Belfast Maritime Consortium

Do we really have a recruitment crisis?
Iain Mackinnon Maritime Skills Commission

A Decade of Innovation
Llewellyn Bankes-Hughes CEO Shipping Innovation



Headline findings

Report Purpose

The Centre for Economics and Business Research (Cebr) has been commissioned by Maritime UK to quantify the economic contribution of the Maritime Sector to the UK economy. This report forms one of ten reports assessing the contribution of the Maritime Sector as a whole, at an industry-level, and in Scotland, Northern Ireland, the Liverpool City Region and the Solent LEP region.

Defining the Maritime Sector

The Maritime Sector is defined as consisting of the individual shipping, ports, leisure marine, marine engineering and scientific and maritime business services (MBS) industries, each of which comprises a diverse array of activities. This report draws upon a combination of data sources, including company financial database FAME, industry sources and publicly available data to quantify both the direct and aggregate economic impact of Maritime Sector activities in the UK economy in the years 2010 to 2019.

Economic contribution of the Maritime Sector

The Maritime Sector makes a substantive macroeconomic contribution to the UK through turnover, Gross Value Added (GVA), employment and through the compensation of employees (COE). It is estimated that the sector directly supported just over £55 billion in business turnover, £18.7 billion in GVA and 227,100 jobs for UK employees in 2019. The marine engineering and scientific (MES) and shipping industries are the largest constituent

industries in terms of economic activity, contributing £5.7 billion and £6.6 billion in GVA respectively, and directly supporting around 80,400 jobs and 60,500 jobs in 2019.

In 2019, it is estimated that the Maritime Sector directly contributed to the UK economy:



The substantial direct economic contribution of the Maritime Sector exceeds those of other comparable industries. For example, the sector's direct turnover contribution of £55 billion compares to £53 billion from the Road and Other Land Transport industry in 2019; similarly, the sector's direct GVA contribution of £18 billion compares favourably to £10 billion from the Air Transport industry as well as the £7 billion from the Rail Transport industry.

The direct contribution of the Maritime Sector through turnover, GVA and employment has increased since 2010, when turnover, GVA and employment are estimated to have been £35.9 billion, £13.4 billion and 192,000 jobs respectively. Average productivity in the Maritime Sector

– as measured through the GVA generated by each job – **exceeds that of the national average.** Average productivity in each maritime industry also exceeded the national average in each year from 2010 to 2019, barring the leisure marine industry.

The Maritime Sector also helped to **raise billions of pounds each year for the UK Exchequer** and made a **sizeable contribution to UK trade through exports of goods and services.** The sector contributed an estimated total of just under **£5.2 billion in tax revenues in 2019, or 0.63% of total UK tax revenues,** spread across Income Tax, NICs, VAT, Corporation Tax and Business Rates. The Maritime Sector **exported £15.1 billion of goods and services in 2019, or around 2.2% of the UK total.**

After quantifying the indirect economic impacts through the industry supply chains and induced effects on the wider employee spending, it is estimated that the **Maritime Sector helped to support a total of £48.9 billion of GVA in 2019.** This implies that, **for every £1 of GVA directly generated by the Maritime Sector, a further £1.62 was supported** through its associated supply chains (indirect impacts) and wider spending (induced impacts) across the UK economy.

These aggregate economic impacts associated with the Maritime Sector also extend to turnover, employment and the compensation of employees. It is estimated that the Maritime Sector **helped to support a total of £116.0 billion in turnover, 1,064,000 jobs and £23.4 billion through the compensation of employees in 2019:**



Turnover
£116bn



GVA
£49bn



Employment
1,064,000



COE
£23bn

While the economic contribution of the industry is spread across all UK regions, **London contributes the most to turnover, GVA and employee compensation** (in terms of both direct and aggregate impacts) **as well as employment** (in terms of aggregate impact). In 2019, it is estimated that the industry in **London directly contributed £15.3 billion of turnover** (27.5% of the industry) and **45,900 jobs** (20.2%), although the latter is slightly lower than the direct employment effects of the South East region which accounted for 20.7% of the total. After indirect and induced effects are considered, **the aggregate contribution from London rises to £29.0 billion of turnover (29.5%) and 149,500 jobs (26.9%).**

Economic contribution of the Maritime Sector

We have modelled the Maritime economy as a function of its macroeconomic drivers and industry features to produce projections of GVA and Turnover over the next five years. Our model shows that the **sector is set to grow at a Compounded Annual Growth rate (CAGR) of 3.9% which translates into cumulative growth of 16.6% for 2021-2025, in nominal terms.**

Within the considered horizon arising out of the COVID-19 pandemic, this **relatively strong growth is resulting from** the combination of a **quick recovery** in global maritime transport, **moderate GDP growth projections,** and **high costs reflecting ambitious investments** in infrastructure, technology, education and environmental sustainability. We expect these investments to lead to major gains in efficiency and productivity over the longer term.

Industry Insight

Ports as key catalysts for regional growth

Louise Logan was looking for a role in hospitality or retail as she struggled to find a job after finishing college in Falkirk. Now, via Forth Port's involvement in the in the Kickstart programme, Louise has a well-paying, permanent role at the heart of the operations at Grangemouth, Scotland's biggest port.

Louise is integral to ensuring that all the container traffic through the port flows as efficiently as possible, helping haulage drivers with their enquiries and ensuring the right containers get released to the correct customers.

It's great news for Louise. And it's great news for Forth Ports too, as they develop the young, diverse workforce of the future.

Louise's experience is not unusual in facing difficulties in job hunting in coastal and estuarine communities. Neither is the engagement of Forth Ports with the communities around the UK's ports.

All across the UK you'll find ports acting as major catalysts for jobs, investment and opportunity in areas which are, too often, facing real challenges.

In fact, Louise is now one of the 125,000 people employed on ports in jobs which are 50% more productive than the UK average and 20% better paid. For every Louise there are 6 extra jobs in often local supply chains. The UK's port operators invest around £600 million of private sector money each year in ports and associated infrastructure – the infrastructure that facilitates 95% of UK trade and creates ports as economic hubs in their own right, sites for manufacturing, logistics and even film studios.

There's a lot of talk about 'levelling up'. This is it in practice.

And its not just economic benefits or 'capital' that ports are growing. It's natural and social capital too. Associated British Ports' electric vessel charging in Southampton, tree planting in Bristol, hydrogen corridor development by the Port of London Authority, and PD Port's Teesside Explorers junior

school engagement programme to highlight just some. It's a long and proud list.

Over what has been an incredibly challenging period – pandemic, global supply chain pressures, Brexit – ports have not just maintained operations but also their commitment to the future, as Louise's story illustrates. But also, perhaps more conventionally, the examples of tens to hundreds of pounds of investment in capacity and capability at the likes of Peel Ports, DP World and Hutchison Ports.

Ports and other maritime businesses are ambitious to do more. Not out of philanthropy but because its what's responsible, successful businesses do. Ports are an inherently long term sector, with one example being this year's 175th birthday of the Belfast Harbour Commissioners. Long term success comes through adapting our businesses, playing our part in healthy communities and through ensuring sustainability is at the heart of what we do.

Ports can't do it alone. But what they're seeking from Government is not big handouts or direct intervention. In fact, such moves could be counterproductive. The key role of Government is providing the right enabling conditions for the business investment and job creation to take place.

Those are physical conditions, like good road and rail links. They are also the policy and regulatory conditions like planning rules for coastal locations that incentivise responsible investment. And they are the environmental frameworks that provide for ambitious but viable transitions to a net zero future.

Ports and other maritime businesses are ready made conduits for prosperity and opportunity in coastal communities all around the UK. We're ready and ambitious to not just bounce back from the recent challenging conditions but also bounce forward. We look forward to working with Government and others to deliver more success stories like Louise's.

Tim Morris CEO UK Major Ports Group

1

Introduction

Cebr is pleased to present this report, which examines the economic impact of the Maritime Sector on the UK economy, to Maritime UK. For the purposes of this study, the Maritime Sector is broadly defined as comprising of the individual shipping, ports, marine engineering and scientific (MES), marine leisure and Maritime Business Services (MBS) industries; each of these industries comprises numerous and diverse activities which are reflected in the study.

This report forms one of ten reports on the economic contribution of the Maritime Sector. The other reports focus on the economic contribution of each of the five constituent Maritime Sector industries at the UK level, and the economic contribution of the sector in Scotland, Northern Ireland, the Solent LEP and the Liverpool City Region. It is therefore important to consider this report as part of the wider framework set out in the ten reports, which set out the impact of the Maritime Sector both at a national and regional level.

Our examination spans the period from 2010 to 2019 (inclusive), with the latter being the latest year for which full data are available, and endeavours to capture the full economic 'footprint' of the maritime sector. As such, our report is not confined to direct ongoing contributions to GDP and employment through the maritime sector's operations and activities in the UK, but also provides assessments of the associated indirect and induced multiplier impacts.

Maritime UK previously commissioned Cebr in 2017 and in 2019 to produce the same study focused on measuring the impact of the maritime sector to the UK economy.

1.1 About Maritime UK

Maritime UK is the industry body for the UK's Maritime Sector, representing companies and partner organisations in the shipping, ports, marine and maritime business services industries. It acts to promote the sector, influence government and drive growth.

1.2 Purpose of this report

This research provides up-to-date insights on the size and performance of the UK maritime sector, presenting a range of statistics and figures which demonstrate different aspects of the economic value brought by the sector to the UK economy. The intention of this is to empower Maritime UK with a thorough and comprehensive knowledge and evidence base, such that they can support and advocate for the sector across the UK.

As such, Cebr has focused on the following key economic indicators: business turnover, employment, Gross Value Added (GVA), the compensation of employees, the Exchequer contribution (through tax revenues raised) and exports of goods and services.

The study also seeks to identify the contribution of the Maritime Sector at a regional level (across the former Government Office Regions), after accounting for the relatively high concentration of economic activity taking place in the City of London.

It should be noted that given the data lags associated with many of the official national statistics used within this study, it is not possible for our analysis to capture the full extent to which the sector was directly affected by the COVID-19 pandemic in 2020/21. As such, because of the timeframe examined in this report, this research offers a picture of the value of the maritime sector right before the pandemic occurred. Further to this, our research does consider the impacts of Covid in our Forward Look section, where we provide forecasts

for the Maritime Sector as well as for each of its five constituent industries and the four regions included within our analysis.

1.3 Overview of the study and methodology

Objectives of the study

This report provides a thorough and comprehensive examination of the role of the Maritime Sector in the UK and its constituent sub-regional economies. It presents a range of analyses demonstrating different aspects of the value contributed by the overall sector, including direct contributions to GDP and employment, indirect and induced multiplier impacts and the Maritime Sector's contribution to the UK Exchequer through tax revenues raised.

To produce a robust study, it is necessary to analyse the available data to ensure that it captures the full range of activities that should be included in establishing the total economic 'footprint' of the industry. Following the collation of the necessary data which capture these activities, the values of key economic indicators were established to demonstrate the impact of the sector.

The key macroeconomic indicators include:

- GVA¹ contributions to UK and regional GDP generated by the Maritime Sector, directly and through indirect and induced multiplier impacts.
- Jobs supported by the sector, including direct, indirect and induced jobs through multiplier impacts.
- The value of the turnover of the Maritime Sector and, again, the turnover supported in the UK and regional economies through multiplier impacts.
- The value of employee compensation² generated by the Maritime Sector, representing the total remuneration of employees operating in the sector.
- The contribution of the Maritime Sector through revenues raised for the Exchequer.
- The value of goods and services exported by the industries comprising the Maritime Sector.

In addition to the core modelling and analysis, we also undertake a range of comparisons to contextualise the findings, including:

- How the economic indicators vary over the period 2010-2019.
- How the economic indicators vary across the different industries of the maritime sector.
- How the economic indicators for the maritime sector vary across the different UK nations and regions.
- How the indicators for the maritime sector compare with other important sectors of the UK economy.

Mapping the UK Maritime Sector

Here we set out how the Maritime Sector has been defined for the purposes of the study. On a holistic level, the wider sector can be disaggregated into the shipping, ports, leisure marine, marine engineering and scientific and Maritime Business Services industries, which in themselves are formed of numerous individual and distinct activities.

Building up on the experience gained through previous studies for Maritime UK, Cebr has subsequently undertaken a mapping exercise based on the previous study to identify how each of these five industries align with the national accounts. For most industry activities, a corresponding Standard Industrial Classification (SIC) code exists which enables the identification and quantification of the direct economic impacts using publicly available data sources. A minority of activities do not map neatly against the SIC framework, necessitating the use of industry or local-level data for quantification purposes.

The mapping of the maritime sector has remained the same as in the 2019 Cebr study and is broken down as follows:

- **Shipping industry**
 - International passenger transport (cruise and ferry);
 - Domestic and inland waterway passenger transport;
 - International freight transport (bulk, container, gas and tanker);
 - Domestic & inland waterway freight transport;
 - Other shipping activity.

- **Ports industry**

- Warehousing and storage;
- Port activities and management;
- Stevedores, cargo and passenger handling;
- Border agency, HMRC and public sector employees operating in ports.

- **Leisure marine industry**

- Recreational marine activities, marine finance and legal activities and general marine services;
- Boatbuilding (marine leisure vessels);

- **Marine engineering and scientific industry**

- Shipbuilding;
- Marine renewable energy;
- Marine support activities for offshore oil and gas, engineering and mining;
- Marine science and academic activities, including government vessels and technical consulting;

- **Maritime Business Services industry**

- Shipbroking services;
- Maritime Insurance services;
- Maritime Financial services;
- Maritime Legal services;
- Ship Surveying and Classification activities;
- Maritime Education (including Maritime university courses and cadetships);
- Maritime Consultancy; and
- Maritime Accountancy.

Here we focus solely on the Maritime Sector on a holistic basis; a full description of how the direct, aggregate and regional economic impacts of each industry have been measured can be found in Cebr's separate reports for each industry.

Quantifying the direct economic impacts of the Maritime Sector

The first stage of the study, discussed in more detail in Cebr's separate reports on the shipping, ports, leisure marine, marine engineering and scientific and Maritime Business Services industries, involved mapping the activities of each industry against the National Accounts framework,

in order to establish clarity on the precise definition of activities as they map against the Standard Industrial Classification (SIC) framework.³

In essence therefore, this involves taking each of the sector and industries' activities, and mapping these to the most relevant Standard Industrial Classification (SIC) code in order to identify the activity's economic data. It is clear from Cebr's analysis that the majority of activities do map neatly onto the National Accounts framework. As a result, Cebr has been able to exploit company financials data in addition to publicly available data sources such as the Annual Business Survey to gather data for some constituent activities of the sector.

In order to quantify the direct economic impacts of the Maritime Sector, a number of different approaches have been taken which reflect the degree of alignment (or otherwise) for each activity against the National Accounts framework. They are as follows:

- The major source of data used to quantify the direct economic contribution of the Maritime Sector is the Financial Accounts Made Easy (FAME) database, which provides business demography and financial accounts data for companies operating in the UK Maritime Sector. The FAME database has been used to generate estimates for the business turnover, GVA, employment, the compensation of employees and profitability of the sector and industries.
- For those industries and constituent activities which do not map neatly against the national accounts framework, a combination of industry sources (such as the British Marine Key Performance Indicators) and publicly available data sources have been used to generate direct economic impact estimates.
- As FAME does not provide data on exports of goods and services, data have instead been sourced from both the ONS Pink Book or industry sources such as the UK Chamber of Shipping's (UKCoS) Annual Sea Inquiry. In some instance the ONS Supply Use Tables have been used to generate estimates.

- Data for the direct economic contribution of each industry have by extension been used to quantify the contribution that the Maritime Sector makes to the UK Exchequer, and the productivity of the sector in terms of GVA per job.

Again, a more detailed description of sources used for each industry and their constituent activities can be found in Cebr's separate industry reports, which quantify the economic contribution of each industry.

Quantifying the aggregate economic impacts of the Maritime Sector

After collation and interrogation, the direct economic impacts of the Maritime Sector have then been embedded within Cebr's economic impacts models of the UK economy. For each of the activity groups, the direct impacts are then combined with the bespoke economic multipliers to generate indirect, induced and aggregate impacts. These multipliers were calculated by Cebr, using our input-output modelling approaches, as these activities are not 'standard' sectors reported in the ONS' input-output tables. Cebr's models establish the relationships between industries through supply chain linkages, as well as industries' linkages with government, capital investors and the rest of the world (through trade).

The models produce three types of impact for four indicators – turnover, GVA, employment and the compensation of employees. The three types of impact are:

- **Direct impact:** this is the value generated and jobs supported directly by the economic activities within the UK Maritime Sector.
- **Indirect impact:** this is the value and jobs supported in industries that supply inputs to the UK Maritime Sector industry.
- **Induced impact:** this is the value and jobs supported in the wider economy when the direct and indirect employees of the sector spend their wages and salaries on final goods and services.

These three impacts are then combined to convey the aggregate impact associated with each industry and activity within the Maritime Sector in terms of turnover, GVA, employment, and the compensation of employees.

Consistent with previous analysis, these models have been adjusted to remove any potential double-counting (for example where one industry within the Maritime Sector purchases goods and services from another).

Removal of “double-counting” effects

As this report considers the activities of the entire Maritime Sector (as defined above), when quantifying the associated aggregate economic impacts it is necessary to consider and account for the crossovers or interlinkages that will exist between each of the constituent industries. For example, the UK shipping industry will purchase a significant amount of services from either the UK ports or UK Maritime Business Services industries. So if we were to simply apply multipliers to each of the five maritime industries and combine the resulting aggregate impacts, we would in effect be double-counting some of the economic contributions, and would by extension overstate the aggregate impacts of the sector.

To avoid double-counting it has therefore been necessary to remove these surplus interlinkages from our analysis. In practice, this involves removing coefficients relating to affected industries within Cebr’s input-output models which would otherwise feature as part of the maritime industry multipliers. For example, the coefficient reflecting the additional activity generated when the shipping industry consumes ports services has been removed. As a result, the summation of the aggregate economic impacts taken from Cebr’s individual industry reports will not align with the aggregate economic impacts for the Maritime Sector as presented in this report (and the Maritime Sector aggregate impacts will necessarily be lower).

Changes from 2019 Cebr study

The main change to the methodology compared to the one used in the 2019 Cebr study is that we have developed an even more robust approach for the quantification of the economic impacts for the Maritime Business Services industry. Due to the difficulty in mapping and quantifying this particular industry, for our 2017 study we relied in large part on the 2016 PwC report,⁴ at the time the only study that had been published on the industry. For the second iteration of our study, in 2019, we relied on a survey we carried out and discussions with industry representatives as well as our own expertise on the topic to develop a more advanced methodology. This involved a targeted approach whereby we could build up a picture of the industry and its associated activities on a bottom-up basis for a significant part of the industry, but still utilised PwC’s 2016 report to drive some of the assumptions. For this new study we developed our bottom-up methodology even further such that it is even more robust and reflects the size and value of the industry more precisely.

In addition, we have updated the underlying supply-use data within our input-output models, to reflect updated ONS data released over the intermediary period. This means the models now represent a more contemporaneous structure of the economy.

Since 2019, we have also further refined our input-output modelling framework. The conceptual framing of our methodology remains the same, but for industries which span multiple SIC codes (such as the Maritime Sector and many of the constituent industries) the models themselves have been adjusted to simplify the required data inputs. For the sake of consistency with our previous research, these further refinements are not fully reflected within the results presented in Section 3. However we do present these supplementary figures alongside further detail in Annex B.

1.4 Structure of the report

The remainder of the report is structured as follows:

- **Section 2** outlines the direct economic impacts of the Maritime Sector. We consider the direct impacts through turnover, GVA, employment, the compensation of employees, the contribution to the UK Exchequer through tax revenues contributed by the industry, and the contribution through exports.
- **Section 3** considers the multiplier impacts of the Maritime Sector through the activities it stimulates in local supply chains and in the wider economy when employees directly and indirectly employed by the different industries spend their wages and salaries in the local and wider economy.
- **Section 4** examines the direct and multiplier impacts of the Maritime Sector at a regional level, as disaggregated by the 12 former Government Office Regions (GORS).⁵
- **Section 5** provides forecasting analysis for the Maritime Sector in the context of the current economic climate, with a focus on the impact of COVID-19 on the sector.
- **Annex A** sets out the full set of direct economic impacts by region.
- **Annex B** presents the supplementary results of the aggregate economic impact analysis based on our updated input-output methodology.

¹ GVA, or gross value added, is a measure of the value of production in the national accounts. Conceptually it can be considered the value of what is produced, less the value of intermediate goods and services used to produce it. GVA is distributed in three directions – to employees, to shareholders and to government. It is often used as the proxy for the contribution of a sector or industry to GDP: strictly this relationship is $GVA + \text{ Taxes on products} - \text{ Subsidies on products} = \text{ GDP}$.

² Compensation of employees (COE) or employee compensation, is the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter. This consists of wages paid to employees; employers’ actual social contributions (excluding apprentices); employers’ imputed social contributions (excluding apprentices); and employers’ social contributions for apprentices.

³ The United Kingdom Standard Industrial Classification of Economic Activities (SIC) is used to classify business establishments and other standard units by the type of economic activity in which they are engaged.

⁴ PwC (2016), ‘Catching the Wave: UK maritime professional services competitiveness study.’

⁵ These are: Scotland, Wales, Northern Ireland, the East of England, the East Midlands, London, the North East, the North West, the South East, the South West, the West Midlands, and Yorkshire and the Humber.



Industry Insight

Welcoming the National Shipbuilding Strategy refresh

First published in 2017, the National Shipbuilding Strategy outlined ambitions to transform naval procurement, providing greater certainty about the Royal Navy's procurement plans and helping to secure export and design contracts for British naval ships. It's fair to say the first iteration of the Strategy received a lukewarm reception. Limited in scope, the procurement route for the new Royal Navy support vessels was uncertain and there was no "value" scoring given to UK shipyards and the supply chain for these vessels. On the plus side it did result in the Type 31 UK only competition with a clear 5 ship order for Babcock. This commitment to a 5-ship order meant Babcock was able to invest £76m in their facilities at Rosyth. This has been game changing and gives us a glimpse of how UK yards and the entire shipbuilding enterprise can grow.

Our members have consistently told us industry requires confidence in order to invest. The "stop-start" approach to Government procured vessels has stifled the investment opportunities for the UK supply chain. Do we invest in new robotic welding? How many apprentices can we take on? Can that dry-dock be refurbished? Endless questions like this have delayed investment at UK shipyards but also throughout the supply chain that competes on a global basis.

So SMI firmly supported the release of the updated strategy on March 10 2022 as it recognised the opportunity for the UK in developing the whole of the UK's shipbuilding enterprise. The Government's firm commitment to a 30-year shipbuilding pipeline shows it is listening and we further welcome the increased emphasis on the social value of shipbuilding. This is a huge step forward which, consistently applied, will help to prevent UK shipbuilding opportunities go abroad.

With greater confidence, businesses can invest for the long term, ramping up productivity and apprenticeship programmes. Driving up skills and investment in UK yards

and the entire supply chain helps create a climate where we can offer more innovative and higher tech vessels and systems than our overseas competition, to time, cost and quality. This increase in competitiveness works for UK PLC in terms of jobs, taxes, regional development but also puts the UK in a strong export position.

Supporting UK exports, The Department for International Trade's new organisation, the Maritime Capability and Campaign Office (MCCO) has a growing team that has recognised the value of relationship development with prospects and clients. Selling complex maritime engineering solutions isn't something for a simple e-mail exchange. I recall Mike Coomber at Rivertrace Engineering talking about the 10 years it took them to enter the Japanese market. It takes face to face meetings on sales trips, conferences and exhibitions to build confidence and relationships to win new business. Once you've won your project you need to keep your brand and products fresh in your client's mind with more visits, conferences and exhibitions. Selling maritime engineering overseas is not for the fainthearted!

My final word on the strategy release is a reflection back to one of the original drivers for the Sir John Parker 2017 report. The UK wants to maintain a sovereign capability in warship building. The Rich Picture workshops convened through 2020-21 discovered that this isn't feasible if you solely rely on warship vessel builds. If you combine defence and civil vessel builds and stimulate the UK supply chain you can deliver this capability in a sustainable and much greater value for money way.

The importance of this capability is underlined by tragic events in Ukraine which demonstrate Britain requires the resilience to be able to defend itself as an island nation as well as support our allies around the globe.

Tom Chant CEO *Society of Maritime Industries*

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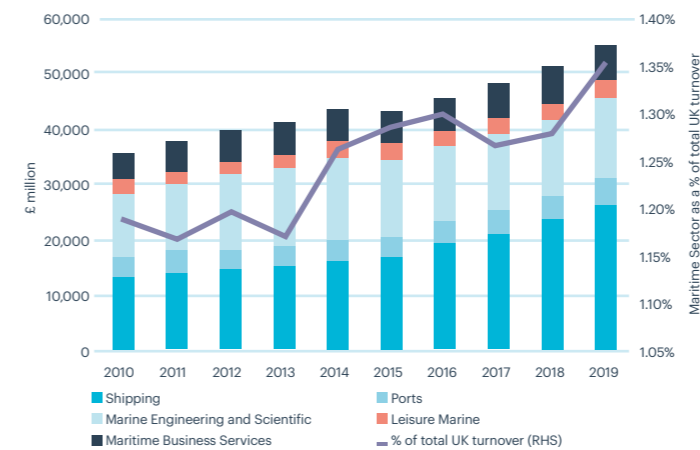
The direct economic impact of the Maritime Sector

The direct contribution of the Maritime Sector is measured in terms of the following key macroeconomic indicators: turnover, GVA, employment, the compensation of employees, the Exchequer contribution through tax revenues raised, and exports.

2.1 The direct economic impact through turnover

Figure 1 below shows the breakdown of business generated by the Maritime Sector and its constituent industries between 2010 and 2019, expressed as a share of the total UK Non-Financial Business Economy.⁶ Overall, the Maritime Sector contributed an estimated £55.5 billion in turnover in 2019, or 1.35% of total UK turnover. This is an increase of approximately £20 billion on the 2010 level of turnover (£35.9 billion), and in nominal terms the Maritime Sector turnover has been growing over the past 5 years.

Figure 1: The estimated turnover of the Maritime Sector, and expressed as a share of total UK turnover from the non-Financial Business Population, 2010 to 2019



Source: FAME, UKCoS, British Marine, SMI, ONS, PwC, ABS, Cebr analysis

The largest constituent industry within the Maritime Sector in terms of turnover directly generated was the shipping industry, with £26.7 billion of business turnover in 2019, with marine engineering and scientific second, contributing £14.5 billion. Shipping also grew the most over the period considered, both in nominal terms (£2.2 billion) and as a percentage (52% growth since 2010). This growth is largely driven by turnover for international passenger transport (cruise and ferry), which grew by over £6 billion (and accounts for almost half of the total growth of the sector) over the assessed period. This is consistent with very solid growth in the global cruise industry over similar timeframes, with The Cruise Lines International Association reporting growth of over 20% from 2011 to 2016.⁷

Combined, the shipping and MES industries contributed 74.2% of total Maritime Sector turnover in 2019 establishing a new peak over the past 10 years. Although this joint percentage contribution is relatively consistent over the period, and in 2010 stood at 69.5%.

In line with increases in turnover directly generated by the Maritime Sector, average profitability (as measured using the ratio of gross profits to turnover) in the Maritime Sector is estimated to have grown since 2010. Table 1 shows trends in profitability for the sector and across each industry. The overall average profitability of the industry rose from 18% to 20%; in other words, for every £1 in turnover generated by a business in the Maritime Sector in 2019, an estimated 20 pence was generated in gross profit, compared to 17 pence in 2010. However this growth over the assessed period was actually driven by strong increases in profitability from 2010 to 2014, since, profitability has actually fallen slightly, by 0.7 percentage points from the 2016 peak of 20.6%

Table 1: Estimated average profitability (gross profit ratio) of the Maritime Sector and constituent industries

Profitability	2010	2011	2012	2013	2014
UK Maritime Sector	17.7%	18.4%	19.7%	19.8%	20.5%
Shipping industry	16.4%	17.4%	19.8%	20.1%	23.4%
Ports industry	29.2%	29.9%	34.0%	33.5%	32.8%
Leisure marine industry	13.4%	12.0%	11.5%	11.6%	11.6%
MES industry	17.9%	18.7%	18.7%	17.9%	15.7%
MBS industry	14.7%	15.6%	17.8%	19.3%	21.4%

Profitability	2015	2016	2017	2018	2019
UK Maritime Sector	19.4%	20.6%	19.3%	19.2%	20.3%
Shipping industry	24.4%	25.9%	23.1%	22.0%	24.5%
Ports industry	33.7%	35.2%	34.5%	32.5%	31.2%
Leisure marine industry	11.7%	14.3%	15.3%	15.3%	14.6%
MES industry	12.6%	10.9%	9.9%	11.0%	11.8%
MBS industry	16.4%	18.2%	19.5%	19.0%	17.7%

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

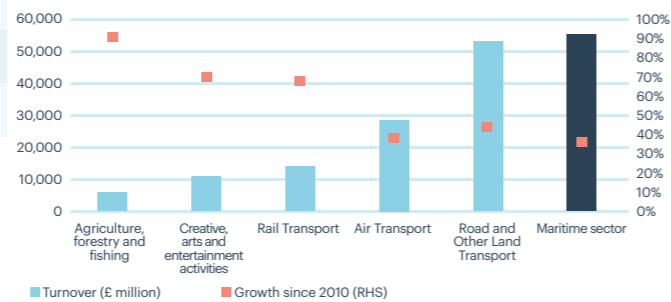
Over the majority of the period, the most profitable industry was the ports industry. Weighting each year equally, it had an average profitability of 33%. Shipping and the MBS industry were second and third respectively, with average rates of 22% and 18%. Average profitability increased in every industry from 2010 levels to 2019, except for the marine engineering industry, where profitability fell by approximately 6 percentage points. Driven by the declining offshore support activities for the oil & gas sector, the marine engineering industry went from being the second most profitable industry in 2010 to the least profitable in 2019. By the same metric, average profitability increased the most in the shipping industry, with an 8.1 percentage point rise.

Maintaining the UK's competitive advantage as a leading maritime nation is also a key theme in the UK's Maritime 2050 strategy report.⁸ This is targeted through a series of themes, setting out the overall vision for the sector, with those of particular pertinence to firm profitability including maintaining

fiscal attractiveness, the efficiencies available through the UK's maritime cluster, government support of maritime innovation and a modern regulatory framework. All this is promising for a continued trend of strong business profitability in the Maritime Sector, if the sector can successfully bounce back following the economic downturn as a result of the pandemic.

To place the Maritime Sector's direct contribution through turnover in context, Figure 2 below compares turnover in the Agriculture, Forestry and Fishing; Creative, Arts and Entertainment; Rail Transport; Air Transport; and Road and Other Land Transport industries with that of the Maritime Sector; both in absolute levels and growth since 2010. Turnover data for the comparable industries has been sourced from ADS Group and the Annual Business Survey (ABS).

Figure 2: The direct contribution through turnover of the Maritime Sector against comparable sectors in 2019, and growth against the 2010 level

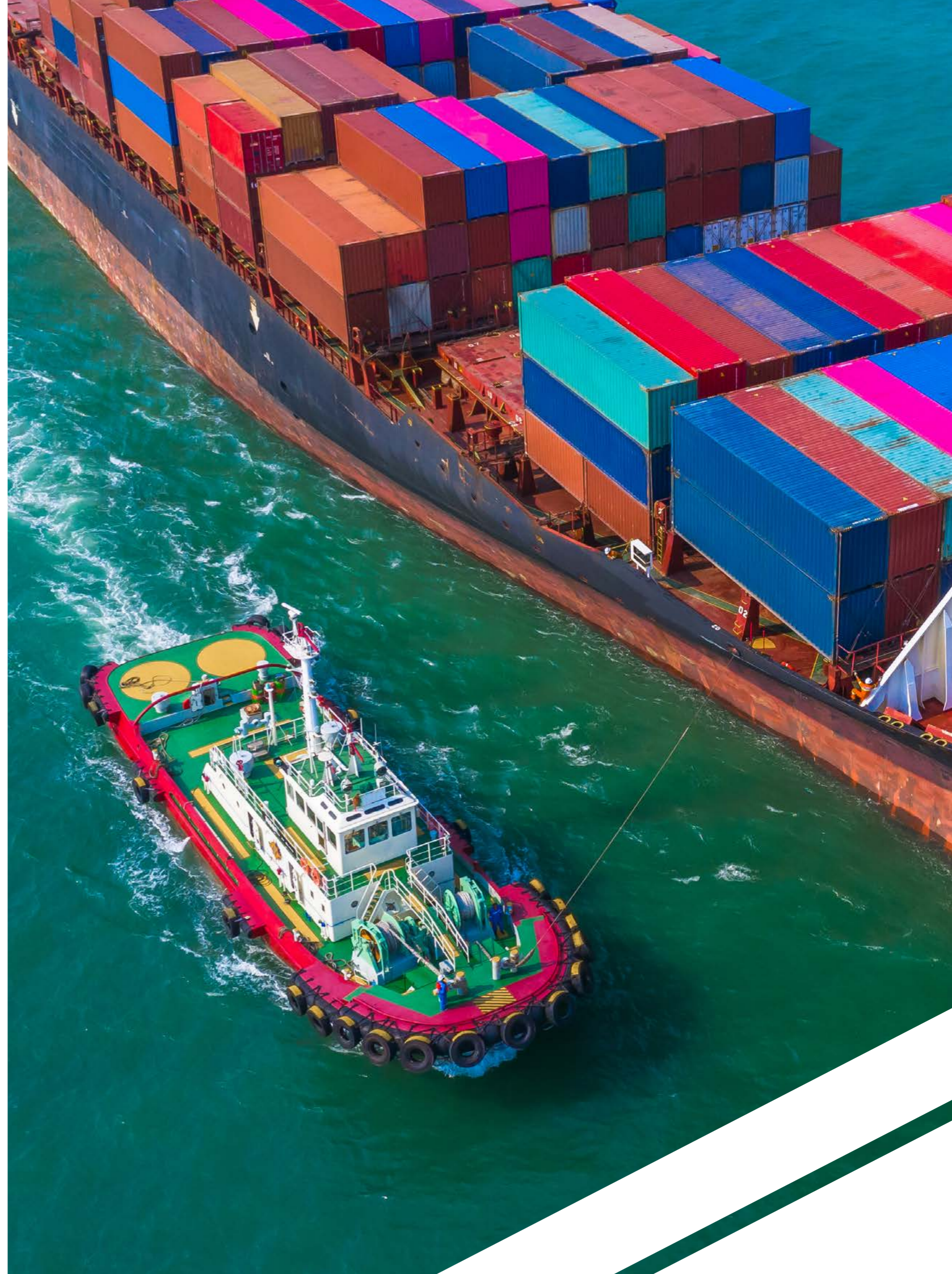


Source: ADS, ONS, Cebr analysis

In 2019, Maritime Sector turnover exceeded that of all the other sectors considered, at £55.5 billion although Road and Other Land Transport was within £2.5 billion. Turnover generated by the Maritime Sector in 2019 is estimated to have increased by approximately 35% since 2010, with this outturn comparing favourably to the other two industries with the highest 2019 level of turnover (Road and Other Land Transport and Air Transport).

2.2 The direct economic impact through GVA

This subsection illustrates the contributions in terms of the GVA from the Maritime Sector to UK GVA. Figure 3 shows this direct impact, disaggregated by industry in



Industry Insight

UK ports: gateways for growth

A sector overview from the British Ports Association (BPA), the national association for the sector, representing 400 ports and facilities around the UK that facilitate 86% of port activities.

Ports are critical to the UK economy, handling 95% of the UK's international trade and providing vital gateways for economic success in the energy, tourism, recreation, and fishing industries. They often act as stewards of the local community; from offering educational schemes and facilitating community activities, to sponsoring breakfast clubs and accessibility projects.

The BPA strongly argues that the sector is a catalyst for Britain's prosperity and growth on a global scale, but if their transport links are not effectively maintained and improved, goods face congestion and delay, interrupting delivery to industries and their customers. The UK economy loses out because of this. Maintaining excellent surface access of ports to the wider transport network is a vital part of Britain's economic prosperity.

Infrastructure

The sector is also critical national infrastructure and play an imperative role in providing well-paid jobs for their local communities, often in areas of high deprivation. They continue to invest in infrastructure, equipment, and their people at no cost to the Government. They play a vital role in driving regional and national economies, but they must be awarded equal opportunities to thrive, compete and maximise the benefits of easements and government policies.

Port investments are market-led and last year they invested more than £1.1bn in various development and projects. In terms of infrastructure, the sector asks for very little from the Government but they do rely on a modern transport infrastructure, which is subject to sometimes competing demands, for example between passenger and freight-based projects, and especially budget constraints.

Ownership and strategy

UK ports are predominantly privately owned and commercially managed, operating strategically and financially independent of Government. Just as the markets they serve vary, so too do ports themselves. The ports sector in the UK has changed substantially over the last twenty years. A process of deregulation has created a ports sector unique compared to many other countries.

There are three main types of Statutory Harbour Authorities in the UK – private ports, municipal ports and trust ports, as well as a handful of facilities owned by parts of government. Freeports, which provide zones for growth and investment, are a new entity covering some port locations across the country. It will be interesting to see how these develop and also how the wider sector might be given similar tools to drive regional growth.

Activity

As mentioned over 95% of imports and exports by volume, and 75% by value still pass through the country's ports. They support all maritime activity from securing the vital provision of goods, food and medicine, to facilitating offshore wind and marine recreation and tourism.

Regional contribution

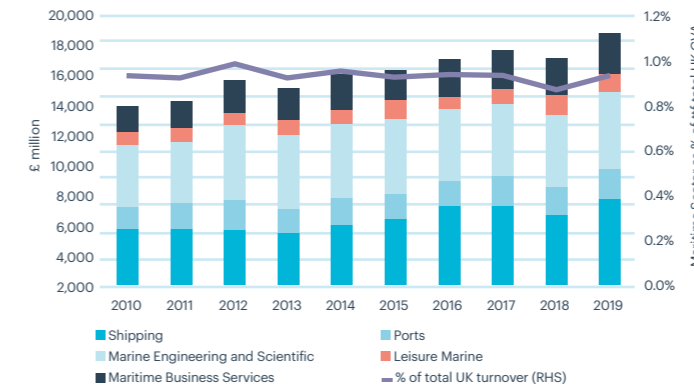
Ports are critical economic hubs and are intricately linked to their hinterland economies, boosting employment and prosperity in their coastal communities and around the whole country through wider supply chain benefits.

Ports and harbours are often at the heart of their communities. Whatever their size, they are major providers of employment within their areas, and through leisure activities such as yachting, many contribute to local economies in other ways. Indeed, the sector often offers educational schemes and facilitate community activities, to sponsoring breakfast clubs and accessibility projects. Unlike many businesses, ports are anchored to a specific location and therefore have a continuing interest in contributing to their surroundings.

Richard Ballantyne CEO British Ports Association

the years 2010 to 2019, as well as the Maritime Sector's share of total GVA in the UK. It is estimated that the Maritime Sector directly contributed a total of £18.7 billion in GVA in 2019, an increase of 39% from £13.4 billion in 2010.

Figure 3: The direct contribution of the Maritime Sector through GVA, and the sector's share of total UK GVA, 2010 to 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

The majority of this cumulative 39% increase occurred in three year-on-year jumps. GVA increased by £1.5 billion, £1.2 billion and £1.8 billion in 2012, 2014 and 2019 respectively, with GVA growth relatively flat in the other years, or declining (GVA fell by £500 million in 2013 and again in 2018). As a percentage of UK GVA, Maritime Sector GVA in 2019 improved over the previous year, and was recorded at 0.93%, slightly lower than the peak in 2012 of 0.99%.

These three different increases occurred for differing reasons, and are worth examining separately. The GVA increase in 2014 was primarily driven by the 17% GVA growth of the shipping industry, although the GVA contribution from Maritime Business Services also grew by £0.3 billion.

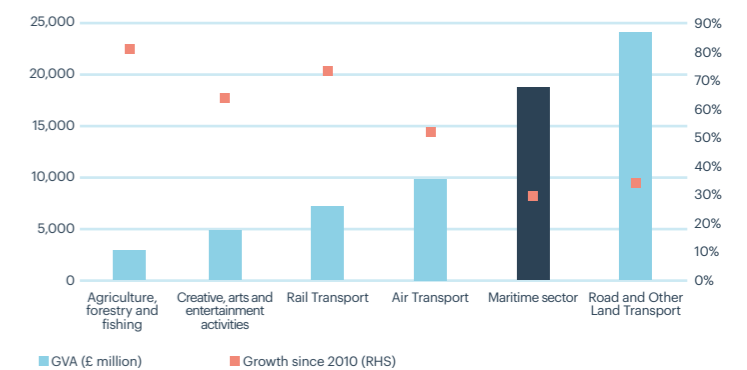
The largest increase, occurring in 2012, was driven by strong growth in the ports (£0.4 billion) and marine engineering and scientific (£1 billion) industries. Within each of these constituent industries, the most significant factor was a rise of over £0.5 billion in GVA associated with marine oil and gas support activities alone.

This intuitively is likely to be linked to UK natural gas prices, with the demand for support services derived from the demand for oil and gas itself. Looking at trends in the UK National Balancing Point (NBP) price,¹⁰ this does seem correlated with economic activity associated with marine oil and gas support activities, albeit with a slight lag (which makes sense, as the level of support activity required would be expected to have a degree of stickiness, as market changes take time to filter through supply chains). The level of economic activity supported by these support activities are very volatile. The GVA impact generated here decreased from £2.6 billion in 2010 to £2 billion in 2011, and then increased to around £2.5 billion in 2012-2013 only to decrease again to £2.1 billion in 2014.

The majority (65% in 2019) of GVA was contributed by the shipping and marine engineering and scientific industries. In terms of the observed £5.3 billion GVA growth for the entire sector, £2.2 billion (around 42%) was due to increasing GVA in the shipping industry. The marine engineering & scientific and the MBS industries contributed £1.3 billion and £1 billion in GVA growth, respectively. In percentage terms, GVA in the shipping industry grew by the most from 2010 to 2019 (52%), with Leisure Marine Services second (51%). All five of the constituent industries saw a GVA growth of at least 15% from 2010 to 2019.

Following Figure 2, Figure 4 below compares Maritime Sector GVA against those of comparable activities in 2019.

Figure 4: The estimated GVA of the Maritime Sector against comparable industries in 2019, and growth against the 2010 level



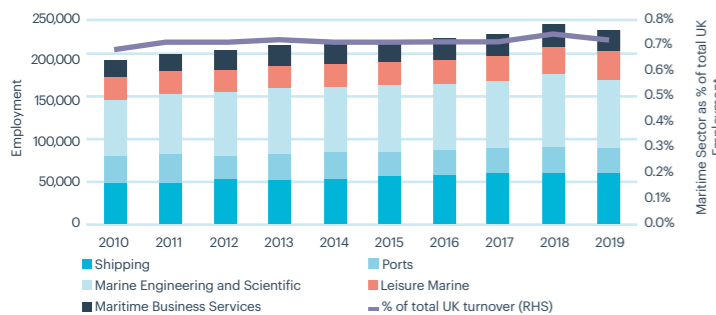
Source: ADS, ONS, Cebr analysis

The Maritime Sector is larger than the entire Rail and Air Transport Sectors, along with the Creative, Arts and Entertainment activities and Agriculture, Forestry and Fishing sectors. In 2019, only GVA from Road and Other Land Transport (£23.9 billion) exceeds that of the Maritime Sector.

2.3 The direct economic impact through employment

In addition to its contribution through GVA, the Maritime Sector also directly supports a significant number of jobs. Figure 5 below highlights the direct contribution of the Maritime Sector to UK employment, again disaggregated by individual industry.

Figure 5: The direct contribution of the Maritime Sector through employment, and the sector's share of total UK employment, 2010 to 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

It is estimated that the Maritime Sector directly supported around 227,000 jobs for UK employees in 2019, an increase of 35,000 jobs (18%) on the 192,000 provided in 2010. The sector's share of total UK employment remained broadly stable over this period, on average around 0.68%. As with turnover, in each year the MES and shipping industries contributed the lion's share of employment, equating to 62% in 2019. Employment over the period increased for every constituent industry, however in the case of ports, this was the smallest increase of about 200 jobs.

Based on trends in GVA and employment presented in Figure 2 and Figure 4, employees operating in the Maritime Sector are highly productive, as measured by GVA per job. Table 2 below shows the estimated productivity of jobs in the sector and across each industry across the years 2010 to 2019, and compared against the UK economy as a whole.

Table 2: Productivity (GVA per job) in the Maritime Sector and constituent industries

GVA per job	2010	2011	2012	2013	2014
UK economy	46,953	47,857	48,973	50,158	51,356
UK Maritime Sector	69,858	68,874	78,836	70,499	75,385
Shipping industry	83,139	83,492	91,632	71,293	82,339
Ports industry	62,206	61,305	83,032	66,903	6,948
Leisure marine industry	30,285	29,986	32,260	34,524	4,984
MES industry	67,471	63,985	74,386	71,240	72,767
MBS industry	109,867	110,463	114,381	116,045	128,611

GVA per job	2015	2016	2017	2018	2019
UK economy	52,546	53,779	55,066	56,088	6,670
UK Maritime Sector	74,332	77,548	78,999	72,760	2,329
Shipping industry	87,729	102,726	100,142	87,888	08,327
Ports industry	63,733	65,238	69,521	68,516	72,447
Leisure marine industry	34,706	33,799	34,127	35,865	38,273
MES industry	72,618	68,650	69,545	61,686	70,926
MBS industry	110,255	112,342	121,825	125,905	26,535

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

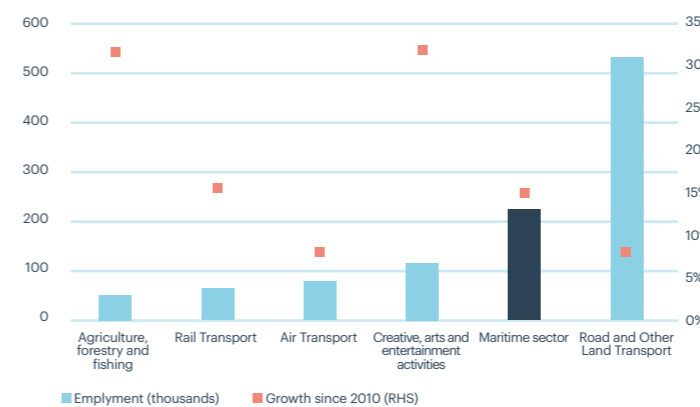
The average job in the Maritime Sector in 2017 raised approximately £82,300 in GVA, and so compares favourably to the UK average of £56,600. The average job in each constituent industry bar leisure marine was more productive than the UK average in each year, with those operating in the Maritime Business Services industry and shipping industry averaging over £100,000 of GVA produced per job in 2019. Every industry increased in productivity over the period, and barring Marine Engineering Services and Maritime Business Services, also reached its peak in 2019. For these two industries i.e. Marine Engineering Services and Maritime Business Services, the peaks were reached in 2012 (£74,400) and 2014 (£128,600) respectively.

Maintaining and improving this impressive productivity record is also a focus moving forwards. Investment in

technology such as autonomous vessels and autonomous freight movement through ports has the potential to be beneficial in this regard, and is targeted in the Maritime 2050 strategy report.¹¹ Additionally, focus has been placed on addressing the relatively flat productivity in the MES industry, with long-term support of the Maritime Enterprise Working Group. This is a body set up following the publication of the National Shipbuilding Strategy in 2017¹² and the Maritime 2050 strategy highlights the importance of working with the group to raise productivity and secure a sustainable and globally successful UK shipbuilding sector – one of the constituent activities in the marine engineering and scientific industry. Further focusing in on MES, it is encouraging that despite the slight headline decrease over the decade preceding the pandemic, GVA per worker in the marine renewable energy sub-industry increased substantially (over 47% from 2010 to 2019). This is particularly pertinent given the recent moves in this direction, particularly in the light of the recent government commitment to cut greenhouse gas emissions to almost zero by 2050.¹³

Figure 6 compares the direct contribution that the Maritime Sector made through UK employment in 2019 against comparable industries. Employment in the Maritime Sector compares favourably, with 2019 employment and growth since 2010 second and fourth respectively, out of the six considered industries.

Figure 6: The estimated employment of the Maritime Sector against comparable industries in 2019, and growth against 2010 level

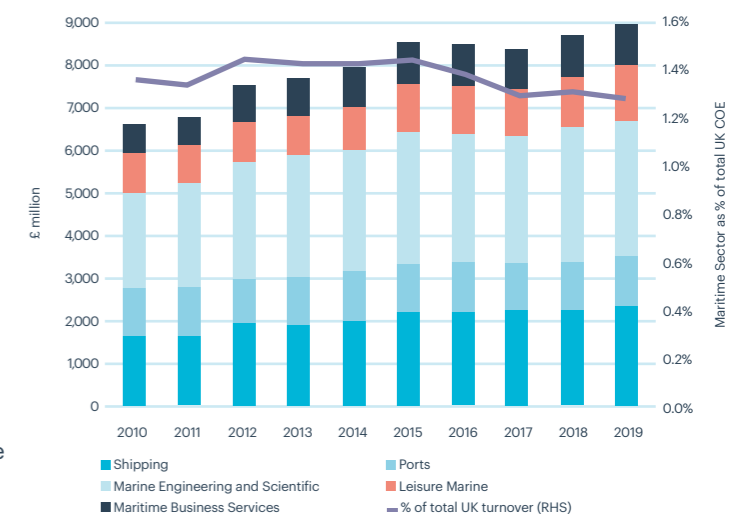


Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

2.4 The direct economic impact through the compensation of employees

Figure 7 below illustrates the compensation of employees which is directly supported by the Maritime Sector in 2019, disaggregated by industry. It also illustrates the proportion of all direct employee compensation in the Maritime Sector which is directly supported by the industry.

Figure 7: The direct contribution of the Maritime Sector through the compensation of employees, and the sector's share of total UK employee compensation, 2010 to 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

It is estimated that the Maritime Sector directly contributed just under £9 billion through the compensation of employees in 2019; equivalent to around 1.3% of the total employment costs of the total UK Non-Financial Business Economy. Overall, the sector increased its direct employee compensation by £2.3 billion over the assessed period, although as a share of total UK employee compensation this was down from a level of 1.36% in 2010.

Due to both its high direct employment contribution (35% of the Marine Sector total), and high average employee compensation, the MES industry contributed the highest share (around 34.5% in 2019). The total growth in Marine Sector employee compensation was also driven primarily

by the £1.2 billion increase in MES industry, although in percentage terms leisure marine industry employee compensation increased the most (55% higher in 2019 than in 2010).

The shipping and MES industry together contributed about 61% of employee compensation, and 68% of the growth since 2010.

2.5 The direct contribution of the Maritime Sector to the UK Exchequer

This subsection discusses the contribution of the Maritime Sector to the UK Exchequer through tax revenues. For each industry and constituent activity, Cebr has calculated the contributions in terms of the tax heads listed below:

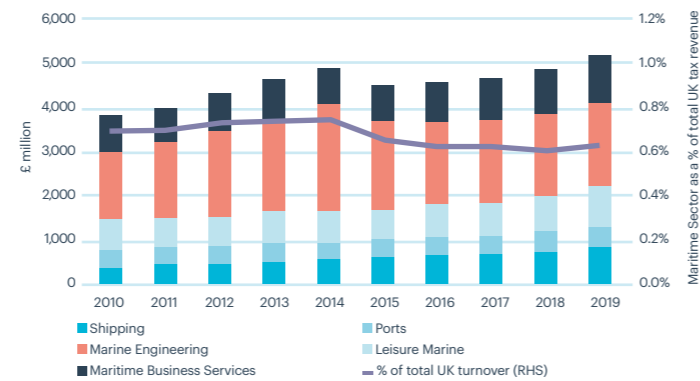
- Income Tax;
- National Insurance Contributions (NICs) – from both employees and employers;
- Value-Added Tax (VAT);
- Corporation Tax;
- National Non-Domestic Rates (Business Rates).

For the personal taxes listed above, Income Tax and NICs revenues have been calculated by applying tax rates to the estimated wages and salaries paid to employees operating in each industry; rates and thresholds have been sourced from HMRC for the years 2010 to 2019. Wages and salaries for employees have been sourced from FAME and the Annual Survey for Hours and Earnings (ASHE).¹⁴

For the business taxes listed above and aside from revenues raised from the Tonnage Tax regime applied to the shipping industry (discussed in Cebr’s separate report on the economic contribution of the shipping industry), Corporation Tax revenues have been estimated by applying HMRC estimates for Average Effective Tax Rates (AETRs) to the estimated Gross Profit of each industry activity. Business Rates have been estimated using the average level of Business Rates paid as a proportion of GVA, drawing upon the ONS Annual Business Survey (ABS).

Figure 8 shows the direct contribution of the Maritime Sector to the UK Exchequer across the years 2010 to 2019, disaggregated by industry and expressed as a share of total UK tax revenues.

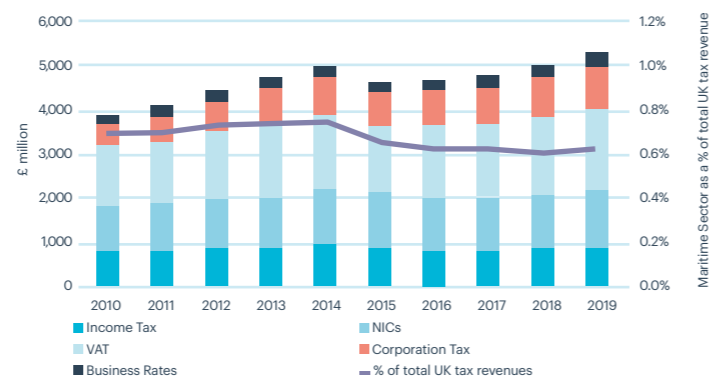
Figure 8: The direct contribution of the Maritime Sector to the UK Exchequer, and the share of total UK tax revenues, 2010 to 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, HMRC, Cebr analysis

The Maritime Sector is estimated to have directly generated £5.2 billion in tax revenues for the UK Exchequer in 2019, 36% higher than the £3.8 billion in 2010. In all years, the MES industry contributed the most, with on average 42% of the total sectoral contribution. Shipping benefits from the tonnage tax regime, hence the lower tax contributions. Exchequer contributions increased over the period for every constituent industry, however as a share of total UK tax revenue, Maritime Sector Exchequer contributions fell slightly, from 0.69% of the total UK revenue in 2010 (and a 2014 peak of 0.75%), to 0.63% in 2019. Figure 9 below disaggregates the Exchequer contribution of the Maritime Sector by tax head.

Figure 9: The direct contribution of the Maritime Sector to the UK Exchequer, by tax head, 2010 to 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, HMRC, Cebr analysis

Industry Insight

Tackling climate change is the greatest challenge facing mankind

Concrete and immediate action is required to reduce, and then eliminate, the harm we cause to the environment. And this can only be done collectively. International shipping has made a clear commitment to reducing emissions. But the IMO, and we as member states, must act now if we are to reach net zero by 2050.

Last November COP26 in Glasgow brought together businesses, international organisations, scientists, Prime Ministers and Presidents to negotiate a meaningful strategy for global climate change. We saw positive progress in reducing our dependence on coal, tackling deforestation and curbing the amount of methane released into the atmosphere.

We also saw an unprecedented focus on maritime, with the launch of the Clydebank Declaration for Green Shipping Corridors establishing the framework for governments to establish zero-emission shipping routes between ports.

But we need to do more. The Declaration on Zero Emission Shipping by 2050, signed on 1 November by the UK and 13 other States, and the Getting to Zero Coalition’s Call to Action, signed by the UK Chamber and 200 other industry leaders, both demand that the maritime sector steps up its ambition. Ahead of London International Shipping Week last September the Chamber made a public statement of the UK industry’s commitment to a net zero carbon emissions target by 2050 for global shipping – one of the first nations to do so.

Of course, achieving net zero by 2050 will be no easy task. Development of the fuels, infrastructure and skills required to transition will be difficult and expensive. There is currently no economic case for moving to green fuels. It’s all cost and no benefit to the shipowner. The benefit is to the planet.

To accelerate the change to a net zero world, a Market Based Measure (MBM) is urgently required to create an economic incentive that will drive through the change. That MBM can only be put in place and regulated by the IMO. And it is needed now - as the ships we build in 2030 will still be part of the fleet in 2050.

Following COP26, there is huge momentum to push for ambitious targets and the policy measures to implement them. Both the UK government and the UK Chamber of Shipping have been clear that international shipping must align itself to the Paris Agreement and decarbonise by 2050. We need the IMO to help deliver this and we need bravery and leadership from the Secretary General to convince everyone of the urgency – and give us the MBM that will drive the change.

There are multiple ways such an MBM can be constructed, each with pros and cons. The UK Chamber is willing to support any measure that the IMO can introduce which:

- Incentivises the transition to net zero by 2050
- Can be implemented quickly
- Provides a level playing field to all shipowners
- Is simple to administer and is not open to abuse
- Provides a just transition, ensuring no seafarer or developing nation is left behind

It is imperative we see some real action in the coming months.

Of course, we shouldn’t forget the successes and progress made by the shipping sector in recent years. Shipping emits around 2% of global GHG emissions, and over the last decade it has improved its energy efficiency through technical and operational measures. There was a 20-30% improvement in carbon intensity between 2008 and 2018, despite a 40% increase in trade moved by ships.

Significant progress has also been made in other areas. Improving air quality through significant reductions in sulphur and nitrogen oxide emissions. Introducing strict controls on pollution from oil, ballast water and marine litter. Recycling end of life ships in a responsible manner. But for all these positive things, we know that without determined, long-term, collective action agreed at the IMO, the world will still rightly be able to point to us and say ‘you must do more’. We must not allow that to happen on our watch.

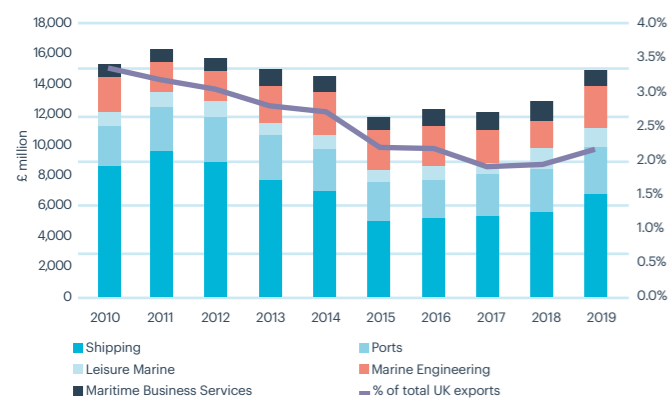
Sarah Treseder CEO UK Chamber of Shipping

VAT formed the largest component of Exchequer contributions, with £1.8 billion in 2019 and constituting almost 34% of total revenues from the sector from 2010 to 2019; this is despite the assumed zero contribution from those businesses undertaking shipping, ports and shipbuilding activities (among others). The sector also contributed over £1 billion in NICs in 2019, although in percentage terms, Corporation Tax revenue increased the most over the period and actually more than doubled from £460 million in 2010 to £960 million in 2019, thereby registering a 109% growth rate.

2.6 The direct contribution of the UK's exports of products and services

In this subsection we consider the contribution that the Maritime Sector makes to goods and services exported from the UK. We compare this total value to the total value of products and services exported from the UK.¹⁵ Figure 10 shows trends in the value of services exports from the Maritime Sector between 2010 and 2019, with exports then expressed as a share of the total value of UK exports across the same period.

Figure 10: Exports of goods and services from the Maritime Sector, and the share of total UK exports, 2010 to 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, HMRC, Cebr analysis

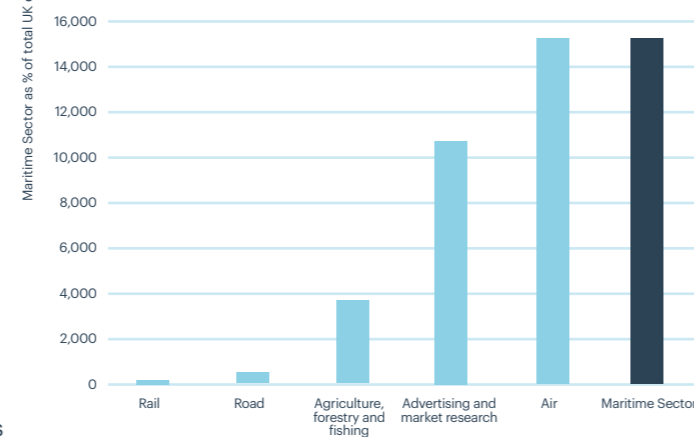
The Maritime Sector is estimated to have exported services valued at £15.1 billion in 2019. This is 2% lower than the

£15.4 billion in 2010, and 8% below the 2011 peak of £16.4 billion. In recent years the steady decline in the export value has stabilised, with the figure in 2019 26% above the 2015 trough. Still, the proportion of UK exports supported by the Maritime Sector has fallen from 3.4% in 2010 to 2.2% in 2019. This decline is primarily driven by a £1.8 billion decline in the value of exports from the shipping industry. Stripping this out, the value of exports from every other industry has risen from its 2010 levels.

There are targeted ways in which the Maritime Sector can address declining exports. One of the impacts of Brexit is a decline in the value of the pound, which as of January 2022 is still 6% lower (against the US dollar) than in June 2016. This has the potential to help UK exporters, as UK goods and services become more competitive. This could indeed help explain why exports been increasing since 2017.

Figure 11 compares exports from the Maritime Sector against those from other comparable sectors. We observe that amongst all categories, in 2019 the value of exports of products and services from the Maritime Sector was the highest. While it was substantially larger than that of the Rail, Road, Agriculture, forestry and fishing and Advertising and market research sectors, it overtook the value of exports from the Air travel sector by £40 million.

Figure 11: Exports of services from the Maritime Sector in 2019 against comparable activities, £ million



Source: ADS, ONS, Cebr analysis

⁶ This is the total level of turnover for businesses not in the Financial Services industry as taken from the Annual Business Survey; The Annual Business Survey covers only the UK Non-Financial Business Economy, which accounts for approximately two thirds of the UK economy in terms of Gross Value Added (GVA). Simply put, this is the turnover for businesses that do not trade in financial/investment-related goods and services.

⁷ Maritime Executive. (2018). 'Cruise Industry Poised for Growth'.

⁸ Department for Transport. (2019). 'Maritime 2050'.

⁹ www.adsgroup.org.uk/about

¹⁰ ERCE. (2019). 'UK Natural Gas NBP Spot Price'.

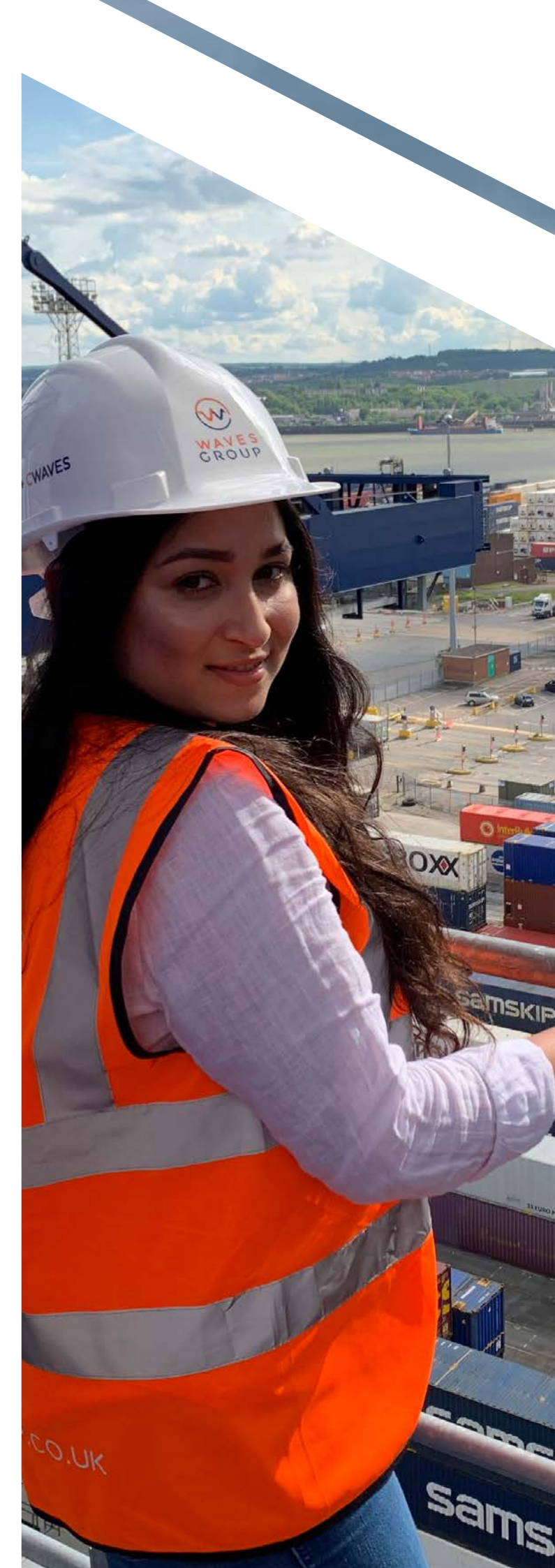
¹¹ Department for Transport. (2019). 'Maritime 2050: Navigating the Future'.

¹² Ministry of Defence. (2017). 'National Shipbuilding Strategy'.

¹³ UK Government (October 2021). 'Net Zero Strategy: Build Back Greener'.

¹⁴ The Annual Survey of Hours and Earnings (ASHE) provides data on the levels, distribution and make-up of earnings and hours worked for UK employees by sex and full-time or part-time status in all industries and occupations.

¹⁵ A full description of how the value of industry exports have been calculated can be found in each of Cebr's reports for the Shipping, Ports, Marine and Maritime Business Services industries.



3

Aggregate economic impact of the Maritime Sector

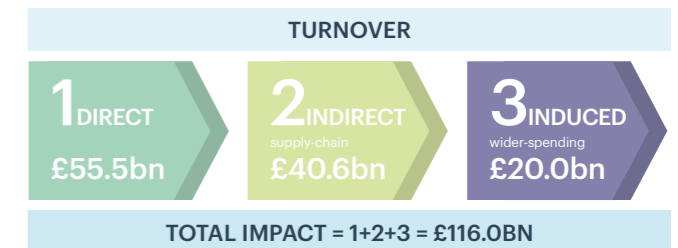
This section sets out the aggregate economic impacts of the Maritime Sector, by taking into account the indirect (or supply chain) and induced (employee spending) impacts that arise from the activities of firms within this industry. The four macroeconomic indicators for which the aggregate economic impacts have been calculated are as follows: business turnover; GVA; employment; and the compensation of employees. Multipliers have been generated from Cebr’s economic impact model for the UK. Note that the methodology used to generate these multipliers is consistent to that employed in our 2019 study.

Within this report, we also present estimates for the aggregate impact of the Maritime Sector, incorporating methodological refinements made to the modelling framework which have been developed since 2019. These figures based on Cebr’s updated methodology can be found in Annex B.

3.1 The aggregate economic impacts through turnover

Figure 12 below illustrates the turnover multipliers for the Maritime Sector within the UK. Combined, the shipping, ports, leisure marine, marine engineering and scientific and Maritime Business Services industries contributed £55.5 billion in direct turnover. However, considering the turnover supported in the industries’ supply chains (indirect impact) and when employees (and supply chain employees) spend their earnings (induced impact), a total aggregate turnover footprint of £116.0 billion is supported. Approximately £40.6 billion of this is due to the indirect impact, and £20.0 billion due to the induced impact.

Figure 12: Turnover multiplier impacts of the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Another way of conceptualising this is the additional value of the turnover supported, for every pound earned in the Maritime Sector. Based on these figures, for every £1 of turnover initially generated by the Maritime Sector in 2019, a further turnover of £1.09 was supported through its indirect and induced impacts in the UK economy.

Table 3 shows the breakdown of this estimated aggregate turnover impact, by considering the impacts from the individual industries in the Maritime Sector.

Table 3: Turnover impact of the Maritime Sector by industry, £ million, 2019

Turnover in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	55,475	40,644	19,965	116,084
Shipping	26,651	16,657	6,285	49,593
Ports	4,193	3,494	2,322	10,009
Leisure marine	3,411	2,870	1,801	8,083
Marine engineering and scientific	14,498	13,106	7,073	34,676
Maritime Business Services	6,722	4,517	2,484	13,722

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Within this aggregate economic contribution, the activities of the shipping industry supported the largest turnover impact, with £49.6 billion in 2019. After shipping, the MES industry supported the most in aggregate turnover, with £34.7 billion in 2019.

The ports and marine engineering & scientific industries had the highest aggregate multiplier, with every £1 of direct turnover supporting a total aggregate turnover footprint of £2.39 in the UK economy.

Table 4 below presents in each year the direct contribution to turnover from the Maritime Sector, alongside our estimate of the composite turnover multiplier that applies to the entire sector, together with some indicative estimates for the aggregate impact.¹⁶ Our estimates indicate a composite turnover multiplier value of 2.04, with the direct impact rising from £35.9 billion in 2010 to £55.5 billion in 2019.

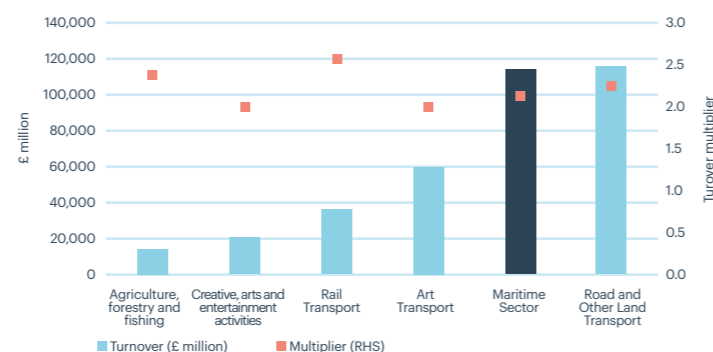
Table 4: Direct and total turnover impact of the Maritime Sector, £ million, 2010 to 2019

	Direct Impact	Composite Turnover multiplier	Aggregate Impact
2010	35,858	2.09	76,889
2011	37,871		81,120
2012	39,800		85,230
2013	41,327		88,532
2014	43,501		93,333
2015	43,252		92,297
2016	45,712		96,615
2017	48,356		101,976
2018	51,458		107,972
2019	55,475		116,084

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

To place these results in context, Figure 13 below compares the total turnover impact of the Maritime Sector against the comparable sectors identified in the previous section. In addition, the turnover multipliers associated with each activity are also presented.

Figure 13: The aggregate turnover impact and turnover multiplier of the Maritime Sector against comparable industries, 2019

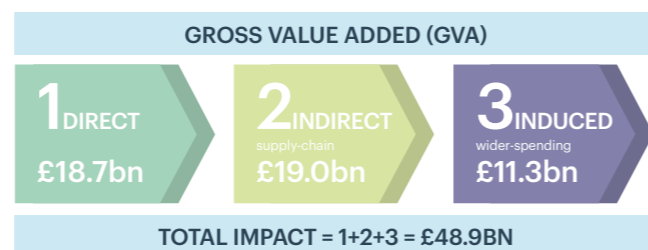


Source: ADS, ONS, Cebr analysis

3.2 The aggregate economic impacts through GVA

Figure 14 below illustrates the GVA multipliers for the Maritime Sector within the UK. As for turnover, the direct impact is augmented by the indirect (supply-chain) and induced (wider employee spending) impacts, to estimate the aggregate economic footprint of the sector.

Figure 14: GVA multiplier impacts of the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

The Maritime Sector directly contributed £18.7 billion in GVA in 2019, and once the indirect and induced economic channels are taken into consideration the sector supported £48.9 billion in GVA. Therefore, for every £1 of GVA directly generated by the Maritime Sector in 2019, a further GVA impact of £1.62 was supported through its associated supply chains and wider spending impacts in the UK economy.

Table 5 below shows the estimated direct and total GVA impacts from the individual industry activities when taken in isolation. Within the aggregate economic contribution of £48.9 billion, the shipping, then MES industries made the largest aggregate contributions, with £17.6 billion and £16.4 billion respectively in 2019.

Industry Insight

A future our maritime professionals can believe in

The action by P&O Ferries in illegally dismissing 786 hard-working and dedicated maritime professionals was a dark day for the UK maritime industry. By their actions, P&O Ferries has severely damaged this nation’s maritime strategy, Maritime 2050. In the words of former Maritime Minister Nusrat Ghani: “This decision by P&O Ferries has the devastating potential to turn our talented young people off a career at sea.

There must be strong action to ensure P&O Ferries is held fully accountable for its flouting of the law, and we must rebuild trust in Maritime 2050 and the actions and the strategies that the industry has developed to deliver this vision for the maritime sector in the UK.

Of course, the government must also act to ensure that UK employment legislation offers meaningful protection to all workers – good, sustainable businesses have demonstrated they want that too. Employers cannot be allowed to buy their way out of complying with the law. But P&O Ferries has shone a light on many aspects of the shipping industry that have long needed to be addressed to ensure that our industry is fit for the future and meets the aspirations of our talented young people.

The actions of P&O Ferries have exacerbated the ongoing race to the bottom, not least in the ferry sector. Destructive competition like this must be arrested if we are to attract talent to maritime, if we are to provide hope to our coastal communities and demonstrate to our young people, that there are training opportunities, good jobs and career fulfilment in shipping and the wider maritime industry.

To that end, Nautilus has been working with other industry stakeholders to develop a Fair Ferries Framework Agreement as part of ongoing work for a shipping industry based on fairness and opportunity for all. This agreement, developed in response to the Secretary of State’s nine-point package of measures to address the fallout from the P&O Ferries sackings, would create a sustainable ferry industry based on a genuine level playing field, one that encourages a race

to the top in terms of standards not a continuation of the disastrous race to the bottom.

Our Fair Ferries strategy would invite companies to work with Nautilus to ensure decent pay and conditions for all crew regardless of nationality, codifying social conditions and employment standards that reflect local conditions, more appropriate to UK and Intra-European ferry routes, and not international minimums of the kind introduced by too many operators – not least Irish Ferries and now P&O Ferries.

This will prevent exploitation, eradicate social dumping, and create the opportunity for local jobs.

The maritime profession is highly skilled, and seafarers deserve to be treated with respect and dignity. The ambition to ensure seafarers receive fair pay and decent conditions needs to be matched with equal ambition in the transition to cleaner, more renewable technology in building a sustainable maritime industry fit for the future. The maritime professionals of today will need to be reskilled and supported to continuously upgrade their professional capabilities so that they are ready to respond to the challenges of the future.

The government’s ‘Clean Maritime Growth Plan’ charts an ambitious course for the UK to lead the way in green maritime innovation, this is an admirable ambition. It is our view that businesses must show their commitment to training as a prerequisite for receiving government funding. To support jobs, it is necessary that government ensures businesses and innovators are incentivised to re-train and employ British seafarers. We cannot innovate and be a world leader in maritime technology without the people to operate modern systems.

Maritime 2050 sets out an ambitious roadmap for the future of our industry, but the government and industry, including social partners, must push forward to make these ambitions a reality and create a future that our maritime professionals can believe in.

Mark Dickinson General Secretary *Nautilus International*

Table 5: GVA impact of the Maritime Sector by industry activity, £ million, 2019

GVA in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	18,698	18,984	11,255	48,938
Shipping	6,560	7,479	3,519	17,557
Ports	2,195	1,807	1,417	5,420
Leisure marine	1,226	1,103	806	3,135
Marine engineering and scientific	5,703	6,475	4,223	16,401
Maritime Business Services	3,015	2,120	1,290	6,425

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table 6 below presents, in each year, the direct contribution to GVA from the Maritime Sector, alongside our indicative estimate of the aggregate GVA that applies to the entire industry. Note that just like for Table 4, the aggregate impacts timeseries is an indicative estimate. The total GVA impact has increased by 39.2% from £35.1 billion in 2010 to £48.9 billion in 2019. This is just over the total UK GVA growth over the same period, which increased by 38.9%, per ONS data.

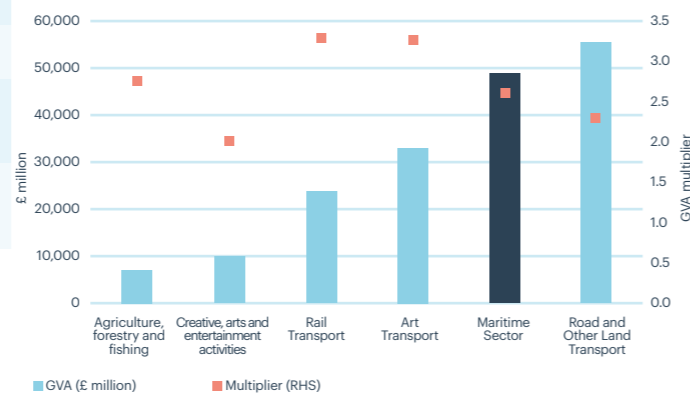
Table 6: Direct and total GVA impact of the Maritime Sector, £ million, 2010 to 2019

	Direct Impact	Composite GVA multiplier	Aggregate Impact
2010	13,411	2.62	35,151
2011	13,740		35,985
2012	15,237		40,009
2013	14,709		38,585
2014	15,876		41,547
2015	15,938		41,941
2016	16,809		44,064
2017	17,456		45,670
2018	16,903		44,046
2019	18,698		48,938

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

To place these results in context, Figure 15 below compares the total GVA impact of the Maritime Sector against the comparable activities identified in the previous section. In addition, the GVA multipliers associated with each activity are also presented.

Figure 15: The aggregate GVA impact and GVA multiplier of the Maritime Sector against comparable industries, 2019



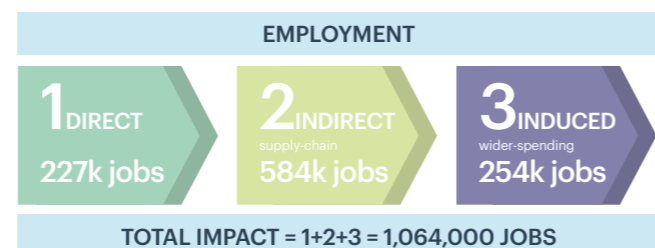
Source: ADS, ONS, Cebr analysis

The total GVA impact of the Maritime Sector in 2019 exceeded that of all of the comparative sectors except Road and Other Land Transport. However, the GVA multiplier of the Maritime Sector in 2019 (2.57) was greater than that of the Creative arts and entertainment activities (2.01) and Road and Other Land Transport (2.31).

3.3 The aggregate economic impacts through employment

Figure 16 illustrates the aggregate employment impacts for the Maritime Sector, in 2019.

Figure 16: Employment multiplier impacts of the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

In addition to the 227,000 jobs directly provided by the Maritime Sector, a cumulative 837,000 are supported

by the indirect and induced effects. Notably this means that the Maritime Sector supports over 1 million jobs, when considering the direct and multiplier effects. Additionally, for every job directly provided by the Maritime Sector in 2019, a further 3.69 jobs were supported through its associated supply chains (indirect impacts) and wider employee spending (induced impacts) in the UK economy.

Table 7 below shows the estimated aggregate employment impacts from the individual industries when taken in isolation. Just like the previous study, the highest employment multiplier is found in the shipping industry. However, as mentioned in the methodology section earlier in the report we have refined our input-output modelling process, resulting in a lower employment multiplier for this industry. Further detail is available in Section 1.3. The high employment multiplier (10.66) associated with the shipping industry in the UK drives the aggregate employment impact across the sector.

Table 7: UK Employment impact of the Maritime Sector by industry activity, thousands of jobs, 2019

Employment in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	227	584	254	1,064
Shipping	61	417	168	646
Ports	30	17	10	58
Leisure marine	32	20	10	62
Marine engineering and scientific	80	90	46	217
Maritime Business Services	24	38	19	81

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table 8 below presents in each year the direct employment from the Maritime Sector, alongside the domestic employment multiplier that applies to the entire sector.

Table 8: Direct and aggregate UK employment impact of the Maritime Sector, thousands of jobs, 2019

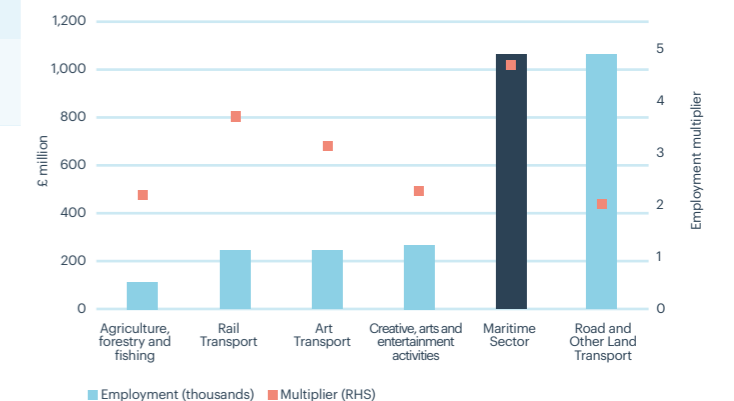
	Direct Impact	Composite Employment multiplier	Aggregate Impact
2010	192	4.69	901
2011	199		931
2012	203		953
2013	209		976
2014	211		986
2015	214		1,005
2016	217		1,021
2017	221		1,054
2018	232		1,084
2019	227		1,064

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

The total employment impact has grown from around 901,000 jobs in 2010 to 1,064,000 jobs in 2019, an increase of 18%. The composite multiplier has fluctuated slightly over the period, however as of 2019 it is marginally higher than in 2010. This compares favourably to an increase in UK employment of 13% over the same period, per the ONS.

To place these results in context, Figure 17 compares the total employment impact of the Maritime Sector in 2019 to the comparable sectors identified in the previous section. In addition, the employment multipliers associated with each activity are also presented.

Figure 17: The aggregate employment impact and employment multiplier of the Maritime Sector against other industries, 2019



Source: ADS, ONS, Cebr analysis

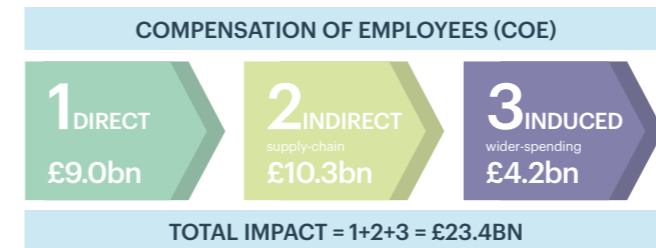


In 2019 the Maritime Sector had the second largest employment impact at 1.06 million jobs, just behind Road and Other Land Transport which supported close to 1.07 million jobs. In terms of the employment multiplier, the Maritime Sector in 2019 had highest value (4.69) across the categories mentioned, followed by Rail Transport (3.66).

3.4 The aggregate economic impacts through the compensation of employees

In this final subsection we consider the aggregate economic impact of the Maritime Sector through the compensation of employees. Figure 18 illustrates the direct, indirect and induced impacts of employee compensation associated with the sector.

Figure 18: Multiplier impacts for the compensation of employees for the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

In addition to the £9.0 billion in direct employee compensation provided, £10.3 billion in employee compensation is supported in the supply-chains of the Maritime Sector, and £4.2 billion due to wider employee spending. Overall, the Maritime Sector supports a total of £23.4 billion in employee compensation. For every £1 directly raised in the compensation of employees in 2019, a further of £1.61 in employee compensation was supported through the associated supply chain effects and wider employee spending in the UK economy.

Table 9 below shows the direct and aggregate impact through the compensation of employees across each industry. Of the £23.4 billion aggregate economic impact for the Maritime Sector, the largest impact (£8.6 billion) was supported by the shipping industry.

Table 9: Impact through the compensation of employees of the Maritime Sector by industry activity, £ million, 2019

Compensation of Employees in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	8,978	10,268	4,196	23,442
Shipping	2,397	4,651	1,534	8,582
Ports	1,063	707	386	2,156
Leisure marine	1,038	743	388	2,170
Marine engineering and scientific	3,105	2,937	1,319	7,360
Maritime Business Services	1,376	1,229	569	3,174

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Finally, Table 10 below shows the trend in the direct impact and aggregate support from the Maritime Sector, from 2010 to 2019. Our indicative estimate of the aggregate impact through the compensation of employees has grown from £16.8 billion in 2010 to £23.4 billion in 2019. This has been driven by an increasing direct impact, with the size of the composite multiplier relatively stable over the period.

Table 10: Direct and aggregate impact through the compensation of employees of the Maritime Sector, £ million, 2010 to 2019

	Direct Impact	Composite Employee Compensation multiplier	Aggregate Impact
2010	6,616	2.61	17,452
2011	6,769		17,801
2012	7,541		19,709
2013	7,735		20,190
2014	8,155		21,216
2015	8,513		22,153
2016	8,496		22,290
2017	8,405		22,059
2018	8,701		22,838
2019	8,978		23,442

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

16 Note that we are applying our multipliers as calculated using our latest input-output model, to the figures for the whole decade. So we are in effect assuming the multipliers calculated based on the 2019 direct impacts also apply back to 2010.

Industry Insight

Mersey Maritime optimistic as it drives forward

With a long track record of driving job creation, business growth and strong representation for the maritime industry since its founding in 2002, Mersey Maritime is looking forward with optimism to its ongoing work in the Liverpool City Region – and is buoyed by the latest ‘State of the Maritime Region’ report findings. The importance of regional clusters and the organisations who run them has never been more central to the future of the local, regional and national economy than now as we emerge from the challenge of the COVID-19 pandemic and look towards the opportunities that a post-Brexit environment presents.

Growth and progress within the industry at a regional level is clearly illustrated within the latest Cebr analysis and all the signs are that it looks set to continue in the next period too. Standout headlines show that maritime is now worth £5billion to the LCR economy (up nearly a £billion since the last report), supports around 50,000 jobs and for every single job generated by the sector in 2019, a further 4.65 jobs are supported in the wider economy. But perhaps most importantly, these aren’t just any jobs, they are high quality and well paid with productivity amongst LCR maritime worker at £93,301 compared to the UK economy average of £56,670. The sector is also predicted to grow by 7.2% between 2021-25, having weathered the storm of the pandemic and powering on through the other side.

There’s an appetite and recognition from Government and from industry that regional bodies like Mersey Maritime, with their ear to the ground amongst businesses and organisations within the sector, have a vital role to play in driving forward future opportunities as we respond to the big and systemic challenges of our time: from the drive towards decarbonisation to pushing forward international trade opportunities right across the globe. And its no surprise that Mersey Maritime is now responsible for delivering key projects both within its own region and on a national scale as the Department for Transport and other government bodies look towards the cluster organisation to deliver agreed strategies and sector priorities.

Coastal communities, and the strength of their regional economy, are often heavily bound together with the maritime sector, not least as it offers good quality jobs, skills and career opportunities for people looking to get involved in a range of diverse subsectors. Mersey Maritime sits at the heart of this work in the Liverpool City Region with a driving ambition to be a catalyst for growth, have a direct impact on policy and help drive change for the good of the sector. It has come a long way in twenty years and has worked hard to build a genuine ecosystem which champions and supports one of the most diverse regions in the United Kingdom.

Central to the work of Mersey Maritime is its support for the delivery of the key strategic document, Maritime 2050, into which it had direct input when drafted and launched in 2019 and which has driven all aspects of its ongoing work ever since. As the first long-term strategy for the sector, and having been developed in close partnership with industry, the collaborative opportunity it represents is a strong set of principles and objectives that any regional cluster organisation can get behind. Mersey Maritime is fully committed to its ongoing success.

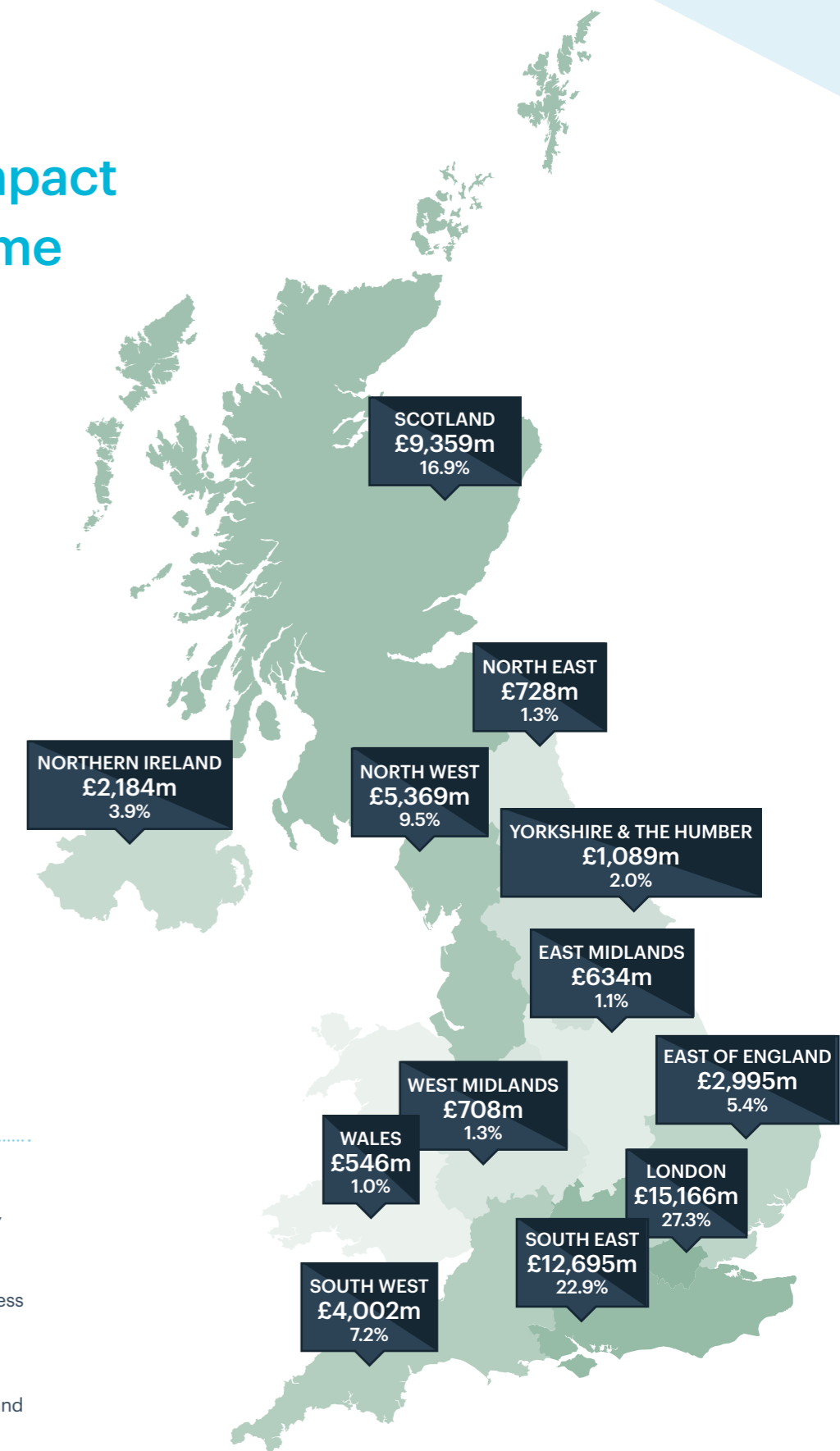
This isn’t a case of lofty theoretical principles. The essential nature of its work has been very apparent during the COVID-19 pandemic with Mersey Maritime businesses playing a critical role in keeping the country fed, fuelled and supplied, in spite of the wider challenge the UK’s departure from the European Union which was also rumbling on for much of 2020. Organisations such as Mersey Maritime have a crucial role to play in translating a specific regional context to a national level and helping to make sure that policy drivers fully understand the needs of individual companies within an area.

Mersey Maritime will continue to be fully committed to being at the forefront of the future delivery of many aspects of Maritime 2050; the future truly is optimistic for the sector across the whole country.

Simon Eardley Head of Partnerships and Policy *Mersey Maritime*

4

The regional economic impact of the Maritime Sector



4.1 The direct economic impact of the Maritime Sector by UK region

Figure 19: Regional breakdown of turnover directly contributed by the Maritime Sector, £ million, 2019

The highest concentrations of business turnover directly generated in 2019 were in London (£15.2 billion, 27.3%), the South East (£12.7 billion, 22.9%) and Scotland (£9.4 billion, 16.9%).

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Figure 20: Regional breakdown of GVA directly contributed by the Maritime Sector, £ million, 2019

An inspection of the regional breakdown of GVA yields similar results, with London, Scotland and the South East making the largest direct contributions to GVA in 2019.

Combined, the three regions contribute 69% of total UK GVA.

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

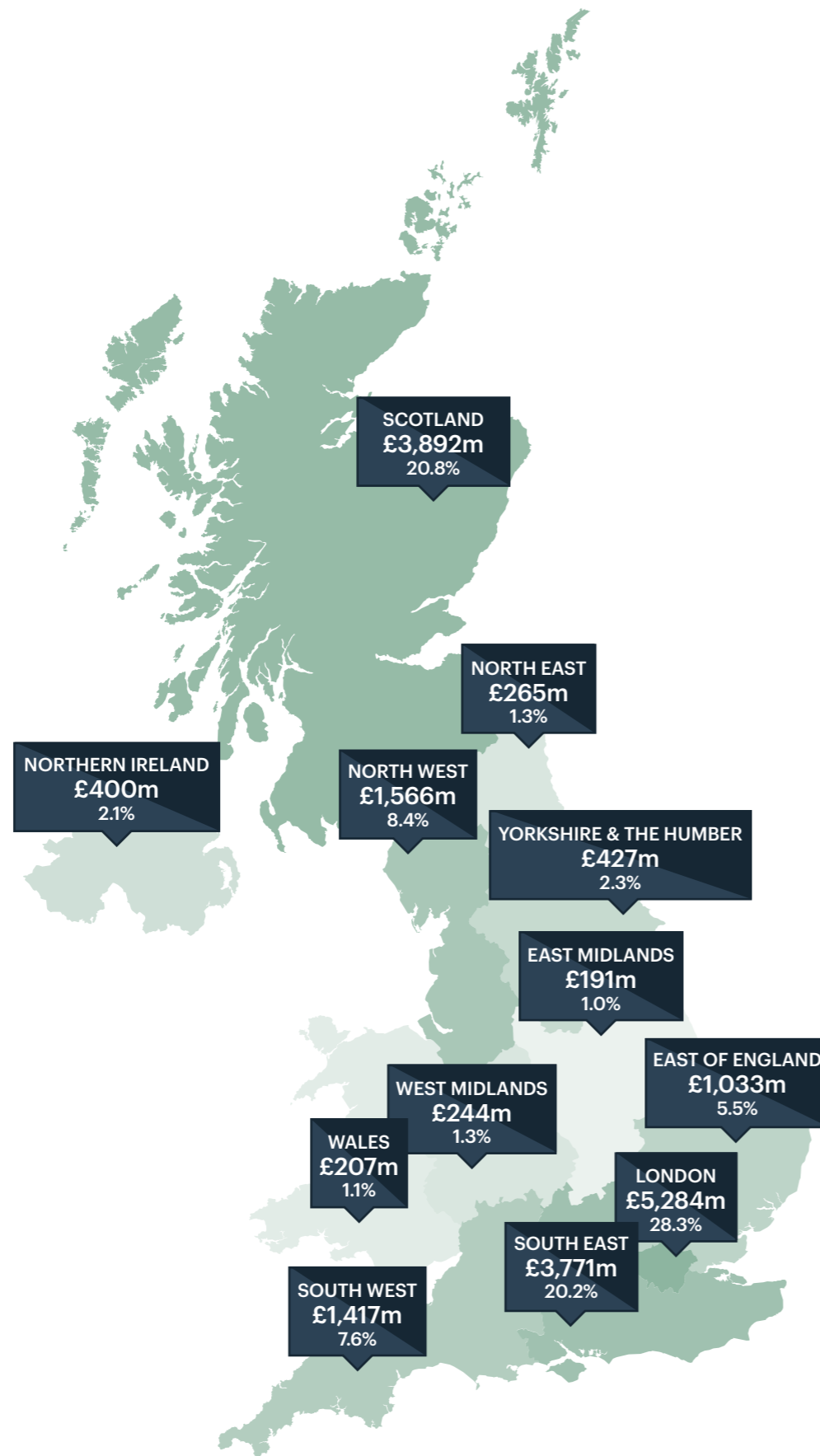


Figure 21: Regional breakdown of employment directly contributed by the Maritime Sector, 2019

Once again, the majority of the direct employment is concentrated in Scotland, London and the South East, although the distribution is slightly different. London's share of employment (20%) is lower than for GVA (28%), with the three regions all contributing similar amounts.

The South West and North West also contribute significantly, with 12.8% and 10.5% respectively.

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

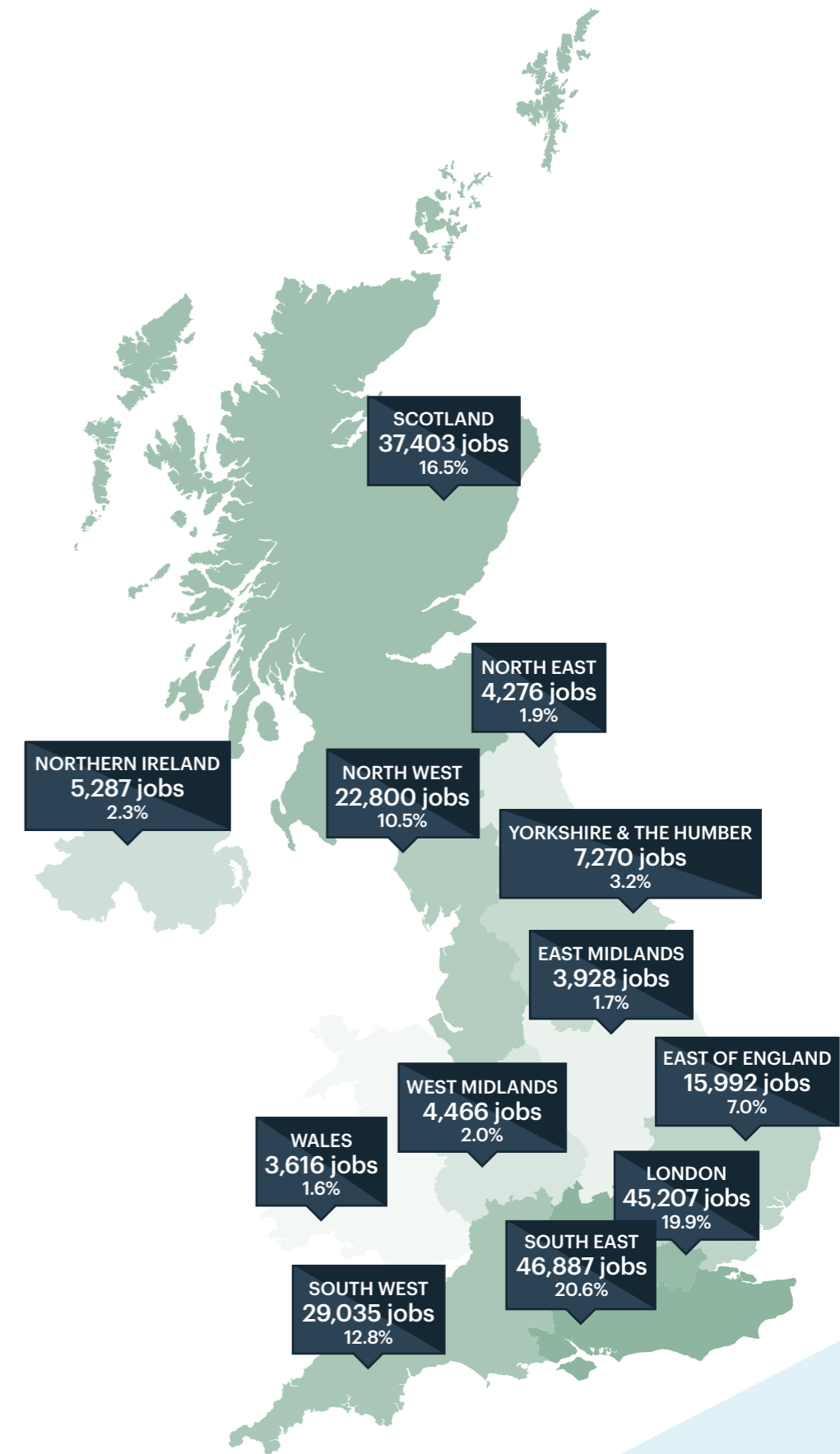
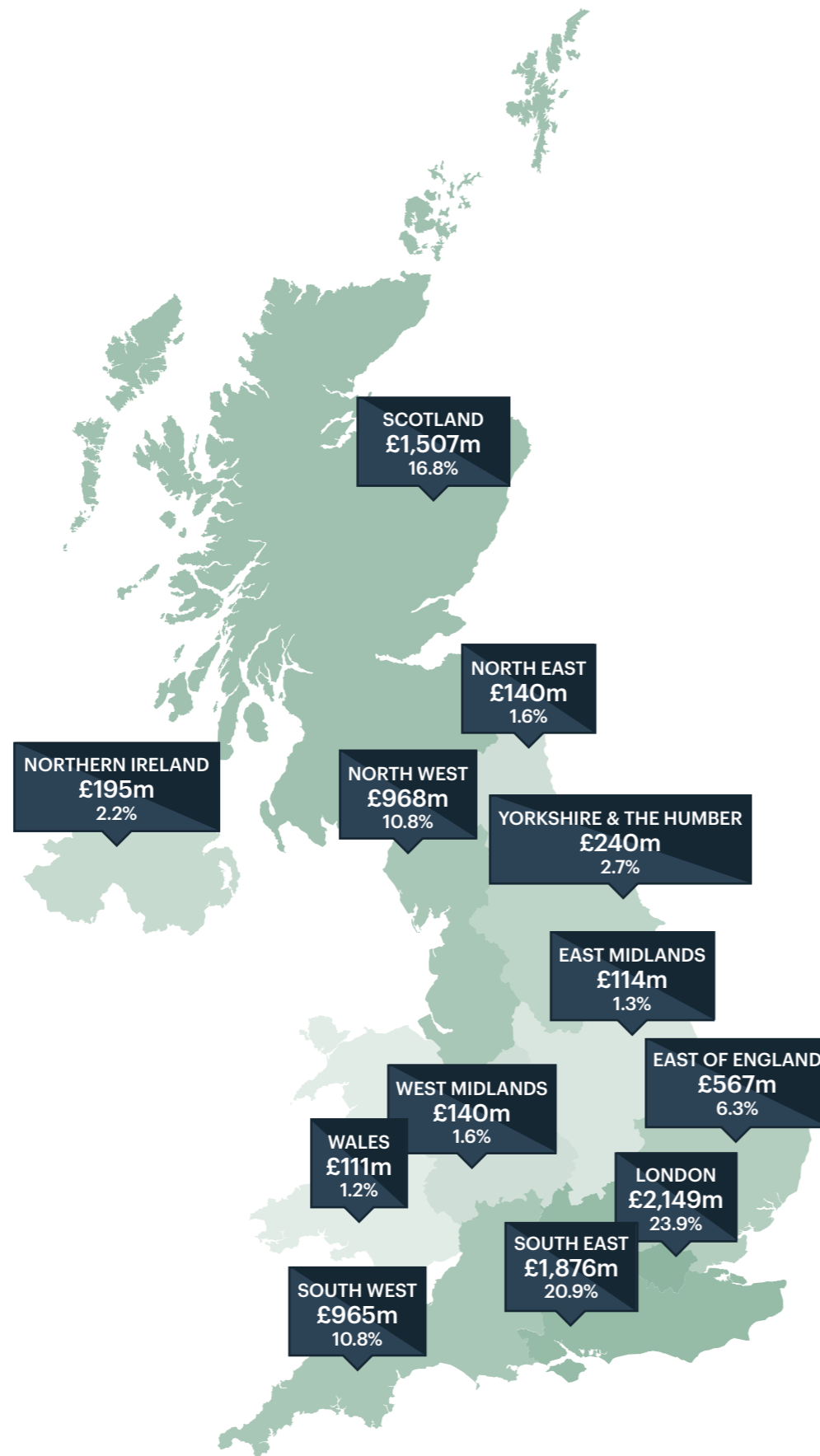


Figure 22: Regional breakdown of the COE directly contributed by the Maritime Sector, £ million, 2019

Driven by a high proportion of employment and higher average wages and salaries than most other UK regions, London directly contributes the highest proportion of the total compensation paid to employees (£2.1 billion in 2019, or 23.9% of the sector total). Part of this can be attributed to the offshore sector.

After London, the South East had the second largest contribution (£1.9 billion, or 20.8%).

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis



4.2 The aggregate economic impact of the Maritime Sector by UK region

This final subsection examines the aggregate economic impact of the Maritime Sector across each region for the four macroeconomic indicators covered in the previous subsections.

In order to estimate the aggregate economic impact of the sector at a regional level, the direct economic impacts as already estimated were combined with Cebr's regional economic impact models, within which the activities of the Maritime Sector were separately identified and isolated. It should be noted that the economic impact multipliers as estimated for each region are necessarily lower than the equivalent multiplier for the sector as a whole, reflecting the leakage of impacts when the activity of the sector in a particular region imports inputs from elsewhere in the UK outside that region.

The aggregate economic impacts for business turnover and GVA by region

Per Sections 2 and 3, it is estimated that a total of £55 billion in turnover and £19 billion in GVA was directly contributed by the Maritime Sector in 2019, and £114 billion and £48 billion respectively supported in aggregate across the UK regions. Table 11 shows the breakdown of direct and aggregate economic impacts for business turnover and GVA in 2019, alongside the sector multiplier for each region. For GVA, the highest multipliers are associated with the South West, the South East, and Scotland.

Table 11: Regional breakdown of business turnover and GVA supported by the Maritime Sector, £ million, 2019

Turnover			
Region	Direct Impact	Sector Multiplier	Aggregate Impact
Scotland	9,359	2.19	20,473
Wales	546	1.90	1,039
Northern Ireland	2,184	1.79	3,900
East of England	2,995	1.97	5,904
East Midlands	634	2.03	1,288
London	15,166	1.80	27,271
North East	728	1.93	1,404
North West	5,369	1.91	10,245
South East	12,695	1.85	23,497
South West	4,002	1.90	7,599
West Midlands	708	1.82	1,286
Yorkshire and the Humber	1,089	1.96	2,135

GVA			
Region	Direct Impact	Sector Multiplier	Aggregate Impact
Scotland	3,892	3.37	13,104
Wales	207	2.32	480
Northern Ireland	400	2.40	961
East of England	1,033	2.39	2,474
East Midlands	191	2.27	434
London	5,284	2.21	11,681
North East	265	2.20	583
North West	1,566	2.45	3,842
South East	3,771	2.49	9,377
South West	1,417	2.51	3,562
West Midlands	244	2.10	514
Yorkshire and the Humber	427	2.30	984

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

For both turnover and GVA, the highest level of direct support is generated in Scotland, London and the South East. Given the relatively higher variance in direct impact size compared to multiplier size, the highest levels of aggregate support are also in these three regions. Just considering the multipliers, the highest turnover and GVA multiplier is in Scotland. For contextual purposes, by comparing the aggregate impacts with regional GVA data from ONS, we can estimate the percentage of economic activity in a region that is supported by the Maritime Sector. This is estimated to be highest in Scotland, where 4.9% of total GVA is supported by the Maritime Sector. In second and third place are London and South East, with 2.8% and 2.7% respectively.

The aggregate economic impacts for employment and the compensation of employees by region

Finally, Table 12 shows the breakdown of direct and aggregate economic impacts for employment and the compensation of employees in 2019, alongside the respective multipliers for each region.

Table 12: Regional breakdown of employment and employee compensation supported by the Maritime Sector, 2019

Employment (thousands of jobs)			
Region	Direct Impact	Sector Multiplier Impact	Aggregate Impact
Scotland	37	3.07	115
Wales	4	2.15	8
Northern Ireland	5	2.95	16
East of England	16	2.35	38
East Midlands	4	2.08	8
London	45	2.97	134
North East	4	2.20	9
North West	24	2.59	62
South East	47	2.78	130
South West	29	2.18	63
West Midlands	4	2.22	10
Yorkshire and the Humber	7	2.30	17

Compensation of Employees (£ million)			
Region	Direct Impact	Sector Multiplier Impact	Aggregate Impact
Scotland	1,507	2.72	4,102
Wales	111	2.05	228
Northern Ireland	195	2.62	512
East of England	567	2.26	1,280
East Midlands	114	1.87	213
London	2,149	2.33	4,997
North East	140	2.06	287
North West	968	2.38	2,302
South East	1,876	2.61	4,897
South West	965	2.10	2,024
West Midlands	140	1.99	279
Yorkshire and the Humber	245	2.08	511

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

In 2019, London was the region with the largest aggregate impacts through employment with 134,000 jobs, as well as the region with the greatest employee compensation at £5 billion. As for the multipliers, the highest employee compensation multiplier was in the North West, London, and Scotland where it was 2.72 in 2019. Scotland was also the region with the highest employment multiplier at 3.07, thereby making a significant contribution to the aggregate impact, despite a lower direct impact than the South East.

As for GVA, we can estimate the percentage of total regional employment that is supported by the Maritime Sector. This is highest in the North East, with 6.7% of all employment supported by the Maritime Sector. In Wales, the East Midlands, and Yorkshire and the Humber, the Maritime Sector also makes notable employment contributions, with 5.6%, 3.4%, and 3.0% of all employment supported by this sector, respectively.

Industry Insight

Maritime industry ready to play its part in fighting climate crisis

Throughout the history of industry, every so often there comes a moment in time when a development, either through ingenious invention or simply by accident, results in a change so seismic it alters the way we all live and work.

Consider some of the creations of the industrial revolution, the steam engine, the typewriter and the internal combustion engine, each of them fundamentally changing the way in which the world around them operated. More recent advancements such as the internet or the smartphone have done exactly the same.

We now stand at another moment in time, on this occasion brought about by an urgent requirement to respond to the climate emergency through decarbonisation and the driving down of CO2 emissions.

For the maritime sector, not just here in the UK but across the globe, it is arguably the greatest challenge we have or will ever encounter. Getting the response right is not just our responsibility however, but rests on the shoulders of society as a whole.

The pledge earlier this year from government of £206 million to support the transition to net zero, announced as part of its updated shipbuilding strategy was therefore hugely welcome.

If we are to make the move to a net zero world, and maritime is to play its part, it is vital there is yet greater investment in both R&D and infrastructure projects. Alternative forms of transport like cars and trains have been subsidised by public provision of roads and tracks.

Maritime can increasingly be part of the multimodal solution for decarbonising not only the movement of goods but also public transport in our cities, and lifeline services in our coastal communities.

To make this happen the UK's new unit for reducing shipping emissions, UK SHORE, must match the commitment shown in

road and railways with a nationwide roll out of zero emission vessels and related infrastructure.

This year we're launching the first of our new class zero-emission vessels from our R&D and manufacturing hub in Belfast.

Development of the world's first commercially viable electric foiling fast ferry is also well under way with a pilot water taxi scheme set to commence in 2024. The project is being carried out with our partners in the Belfast Maritime Consortium, which has benefited from more than £33m in government grant aid. That has allowed us to capitalise on the tremendous strength in Northern Ireland, paving the way for the creation of hundreds of jobs and laying the foundations for future commercial opportunities and countless development pathways.

The choice of the city as our base is an obvious one, given the rich shipbuilding heritage of this place and Northern Ireland's incredible depth of talent in the spheres of aerospace and composite manufacturing – key requirements in the development of what is essentially a 'flying boat'.

Combined with our knowhow in advanced yacht design, gained at the very height of competitive sailing as sister company to the Artemis Racing team, there is a huge opportunity for this part of the world to harness those capabilities and make a global impact.

I believe the boats we'll create, alongside the growing emergence of electric vehicles and the increasing adoption of renewable energy, is the latest seismic change that will impact all of our lives.

Governments and policy makers here and across the globe must ensure industry receives the financial support it needs to create these zero emission solutions, and that infrastructure is made ready as we build the vessels required for a green transport system of the future.

Dr Iain Percy OBE *Belfast Maritime Consortium*

5

The UK Maritime Sector: A forward look

In this final section of the report we present projections for the Maritime economy for the period 2021-2025. The section starts off by discussing the key trends and themes that will be shaping the future of the Maritime Sector in the UK and in the rest of the world. We then describe the conceptual approach that we have developed to produce projections of the direct economic impacts after 2019, including (but not exclusively) the effects of COVID-19. Finally, we present our forecasts of Maritime turnover and GVA over the period 2021-2025.

Maritime worldwide trends and key themes shaping the future UK Maritime economy

This section provides a summary of the trends and events set to shape the future of the Maritime Sector in the UK and in the rest of the world. A number of policy documents underpin this section, in particular the UNCTAD's 'Review of Maritime Transport 2021'¹⁷ and the Department for Transport's 'Maritime 2050: Navigating the Future'¹⁸ papers. These relate to the global maritime sector's Covid recovery as well as long term policy trends.

The main factor driving our forecasts is the recovery from the pandemic. Domestically, we have so far seen a quick recovery. Following the successful rollout of the UK vaccination programme and the lifting of public health restrictions, the UK's economic output reached pre-pandemic levels in November 2021. However, we have seen that the economic recovery and the reopening associated with the pandemic have not been linear. The latest wave resulting from the newer Omicron variant is associated with milder symptoms, and is unlikely to impact the economic activity in the UK and elsewhere as severely as previous waves. But it is not certain that potential future variants would be as seemingly mild

as Omicron. A strong rebound globally resulting in growth in seaborne trade would be good news for the UK Maritime Sector as it is a facilitator of global trade, from shipping to the world leading maritime business services it provides.

Below we highlight the other worldwide trends that will influence the evolution of the Maritime Sector:

- Despite the initial downturn suffered as a result of Covid, the outlook for global seaborne trade is positive for the next few years, and as such this forecasted growth in trade is likely to represent the main opportunity, facilitating a favourable outlook for the Maritime Sector. The volume of goods transported by ships and demand for maritime services has grown strongly and steadily in the decade preceding the COVID-19 pandemic. The growth is set to match or exceed 2019 levels in 2021-22, with containerized and dry bulk commodities expected to experience the strongest growth.
- Strong economic and population growth in Africa and Asia is likely to shift trading patterns opening new opportunities for the UK. On the other hand, an ageing population in many developed countries might lead to decreasing demand for some products and create challenges for the UK workforce. This trend has not changed considerably with respect to our previous study, and remains of interest and relevance.
- The world's economic centre is moving eastwards with Asia's middle class forecast to grow 153% by 2030 adding 2 billion additional consumers. Implications for the Maritime Sector include the need for UK ports to stay ahead of the curve in terms of efficiency and for suppliers to the manufacturing sector to position themselves well to meet future demand. In the context of Covid, this may become increasingly more relevant, as the efficient handling and economic recovery in Asia seen in 2020 and early 2021 may have helped make it leap further ahead. However, developments in late 2021 and early 2022 have called this possibility into question, as China has struggled with containing the spread of Covid and has some cities in total lockdown as a result of its zero-Covid policy.

- Climate change and significant climatic events are likely to change the patterns of trade while amplifying the need to protect the marine ecosystem. Aside from massive economic impacts through a variety of channels, increasing sea levels are likely to have direct disruptive consequences on port operations. This consideration has become even more relevant since the previous Cebr study was released in 2019, and the UK Government has since published a detailed policy document outlining its commitment to a Net Zero strategy.

Alongside these trends, like in our previous study we focus on the key development areas within Maritime in the UK, drawing particular emphasis on the objectives and initiatives set out by the government and the industry as part of the Maritime 2050 Strategy document. The below section provides a summary of these themes as key drivers of the UK Maritime Sector.

- A key objective for the sector will be retaining its competitive advantage. It is the UK government's intention to work alongside the Maritime Sector to retain the best possible fiscal regime as already demonstrated by the introduction of the Tonnage Tax in 2000. Further to this, the successful implementation of the stated policy goals in the UK Government's Maritime 2050 strategy will prove key in retaining and enhancing the competitive advantage of the UK as a maritime nation. To this end, the Government is developing proposals for a new Merchant Shipping Act 1995, which previously consolidated and streamlined much of the UK's maritime legislation, some of which dated back to the end of the 19th century. The UK is aiming to be one of the top ten shipping registers, which is another example of how the country is building its competitiveness. With this objective in mind, the UK Ship Register (UKSR) has already opened up the flag considerably and now accepts ship owners from Commonwealth countries and 20 other nations.
- Technology will act as a driver of change within all Maritime industries. Technological advancements will

directly drive the output of the MES industry, but also act as an enabler or a driver for other key themes within the 2050 strategy. We have already observed this in the past with respect to the emergence of autonomous vessels and we expect technology to become all the more necessary in the future. We note, for instance, that the aim to reduce emissions by 50% by 2050 and the movement towards 'Smart Ports' can only be successfully achieved if technology enables it.

- The UK is a major hub for maritime education as demonstrated by its leading maritime training programmes and apprenticeships. This is an area that the government, alongside the industry, want to boost by 2050. Skills are vitally important in the Maritime Sector and, with the emergence of international competitors such as Singapore, it is increasingly important to retain the UK's skill advantage. This is the rationale behind the various initiatives launched by the sector, amongst which we note the £30m a year invested via SMarT plus training since 2018.
- A number of initiatives in the UK and worldwide have been launched to reduce the economy's environmental impact, with some directly targeting the Maritime Sector. The primary target will be the reduction in carbon emissions worldwide by at least 50% by 2050, although recent UK government policy has gone further in calling for a 100% reduction by 2050. Accordingly, the IMO Strategy on reduction of Greenhouse gas (GHG) emissions from ships aims to bring emissions down at least 50% by 2050 compared to 2008. Other IMO's initiatives include the 2020 sulphur regulation, which entered into force on 1 January 2020, and imposes a 0.50% sulphur limit for marine fuels in use on ships operating outside sulphur emissions control area. The UK government is committed to increasing public and private R&D spending to 2.4% of GDP. As noted above, the key to a cleaner industry will be technological advancement.
- The Maritime Sector is the main facilitator of trade, borne out in the fact that 95% of UK internationally traded goods are transported via ships. Seaborne trade provides 25% of the country's energy supply and 48% of the

food supply. We note that shipping has experienced a stronger performance over the period 2010-2015 amongst the other Maritime industries. As such, the evolution of the Maritime Sector will heavily depend on trade prospects. Although trade reliance on shipping may decline somewhat as a result of new technologies such as 3D printing and other modes of transport expanding, the Maritime Sector will still be the primary mode of transport for international trade in the foreseeable future. Furthermore, the UK's need to establish a post-Brexit trading framework with the rest of the world is also becoming increasingly important. Indeed, since Cebr published the previous study, there has been progress made on this front, such as the trade deals signed with Japan and Australia, the ongoing negotiations to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the recent launch of trade talks between the UK and India. Linking this is the emergence of Africa and Asia, where there will likely be large opportunities to expand trade beyond the already established trading partners. Government and industry are already committed to fostering UK exports through a number of short-, medium- and long-term initiatives that have been detailed in a Trade Route Map.¹⁹ In the short-term, the government has committed to conducting an industry competitiveness study, considering the case for free ports, creating a network of UK Export Champions, starting engagement for establishing new shipping routes in the Arctic and seeking continuity for the existing EU FTAs.

- Investment in infrastructure will be needed in conjunction with technological advancements to begin establishing 'Smart Ports' throughout the UK and in order to open new opportunities such as boosted offshore wind generation.
- The industry and government aim to maintain the security and resilience of UK waters and overseas territories while also investing in the technology to tackle the emerging threat of cybercrime. This is

increasingly important when considering the Royal Navy has responsibility for all UK and Red Ensign Group Vessels globally.²⁰

The Maritime Sector Forecast (2021-2025)

Modelling approach

Cebr additionally investigated the relationship between the maritime economy and a number of economic variables through an econometric approach. Our findings show that the UK Maritime Sector is primarily linked to national GDP and energy (oil and gas) production. After having established Maritime economy's elasticities to GDP and energy production, we project these historical relationships forward to produce a forecast of Maritime turnover and GVA. The output of this model constitutes our baseline forecast.

For our forecast model we rely on Cebr's in-house macroeconomic model of the UK economy, which contains projections for macroeconomic variables such as GDP and inflation. We build up on this as the baseline forecast and introduce more sector- and industry-specific assumptions which are used to adjust the relationships between the maritime sector and some of the key drivers (or factors) identified which influence its evolution.

To identify the sector-specific assumptions, we drew on the trends and key themes identified in the previous subsection. Each assumption has been assigned a specific weight reflecting its relevance to the wider Maritime Sector and a set of adjustment factors have been produced.

Applying the adjustments to the baseline forecast, we obtain our central forecast of the Maritime Sector turnover and GVA over the period 2021-2025. It should also be noted that our historical analysis of maritime ends in 2019. This requires us to produce a "now-cast" for the first year (2020) for which we know the actual value of the

Industry Insight

Do we really have a recruitment crisis?

I remember asking a fleet manager if he'd ever not sailed because he was short of crew. "Of course not", he said; "if I hear there's a problem I get on to our crewing agency and a guy flies in from Poland".

If there was an absolute shortage of crew at sea we'd hear stories of ships that couldn't sail because operators couldn't find people to sail them. But we know that doesn't happen. All round the world operators find people to sail their ships, and they find people who meet IMO standards.

What companies often mean when they talk about recruitment problems, at sea or ashore, is that they can't find the trained people they want willing to work for the terms and conditions they are offering. That's very different from an absolute shortage where the skilled people you want just aren't out there.

Consider the Wright Brothers in 1903, putting an ad in the Kitty Hawk Gazette for an "Aircraft Mechanic; must have at least 5 years' experience". There was no one Earth in 1903 who met those criteria. That's an absolute shortage, and when the Wright brothers got round to building a team they had to grow their own talent.

Now think about the Maritime and Coastguard Agency recruiting surveyors. I heard the previous Chief Executive, Sir Alan Massey, tell a Parliamentary group in 2018 that the Agency struggled to recruit them. Six months later, I heard one of his colleagues say that they'd solved the problem... by sorting-out surveyors' terms and conditions.

"We've had 300 applications for the vacancy we've just advertised", he told us. When a sceptic asked how many of the 300 were employable, the answer was "all of them".

What does that mean? It means that quite unlike the

Wright brothers in 1903, there were 300 qualified marine surveyors out there who had previously chosen not to work for one particular employer; some internal action changed their behaviour. That's a very different problem from an absolute shortage. And tackling that very different problem required a very different solution.

When many companies talk about the skills issues they face, all they're really saying is that some of their people will be retiring or leaving for other reasons over the next few years. That's not a crisis either; it's a reason to plan.

And it's a reason to plan carefully because recruitment is a competitive business. In many parts of the sector, like seafaring, companies need to put in real effort to attract the talented people who in the past would have come knocking anyway. Seafaring is less visible than it was when my grandfather went to sea, and there are many appealing alternatives – just as there are many appealing alternatives to marine engineering or maritime law. That's a challenge, but it's not a crisis.

I'm not saying there aren't recruitment issues which need attention. Of course there are – and if you happen to know of skilled carpenters who can reach the high standards required by our superyacht builders, I'd be happy to introduce them to someone who'd be keen to meet them.

But next time you hear anyone in the sector talk about a recruitment crisis, challenge them. Ask them to spell out exactly what problem they're trying to solve. If it's an absolute shortage because a company is at the cutting edge of innovation, that's one thing. If it's that talented people have made a rational decision to turn their back on you, that's very different. Unless we define the problems correctly we stand very little chance of getting the solutions right.

Iain Mackinnon *Maritime Skills Commission*

drivers but not of Maritime turnover and GVA and a forecast for the following period. Note that it is not possible for us to produce a similar "now-cast" for 2021 due to the data lags associated with several of the maritime sector-specific inputs into our model, such as freight and sea passenger data.

Modelling Assumptions

UK GDP

Cebr's Forecasting and Thought Leadership team produces regular forecasts of key economic indicators for the UK national and regional economies which can directly inform our analysis. We therefore rely on our own forecast of UK national GDP. Cebr expects UK GDP to grow at a strong Compounded Annual Growth rate (CAGR) of 2.4% over 2021-2025. This compares to a lower CAGR of 1.9% over the five years preceding the global pandemic (2015-2019). Despite the so far successful vaccine rollouts across most of the developed world, the potential development of new variants as well as the risks to global supply chains being halted due to the low vaccination rates in much of the developing world, though the link between vaccination rates and economic disruption has weakened due to the rise of the Omicron variant. Nevertheless, a certain level of uncertainty characterises the forecast; and so the effects of the ongoing COVID-19 pandemic could shift the projections.

Seaborne trade

As previously outlined, seaborne trade represents the main opportunity for the Maritime Sector over the near term. We consider both worldwide and UK-specific trade projections within our modelling framework, which naturally includes the effects of the pandemic on global maritime trade.

The COVID-19 pandemic has disrupted global maritime transport. However, it has in large part performed better than expected and the full extent of this impact has been less damaging than for other sectors of the global economy. Following the economic downturn suffered during 2020, UNCTAD projects shipping volumes increased by 4.3% in

2021, to exceed their 2019 levels.²¹ After this initial recovery, worldwide trends indicate a period of moderate growth in trade. Per UNCTAD projections, over the 2022-2026 period, total maritime trade is expected to have a compound annual growth rate (CAGR) of 2.4% – which is below the 2.9% observed over the previous two decades.

The IMF expects global sea trade to moderate along with GDP,²² which aligns with the rest of the literature; according to the OECD, a 1% increase in GDP is expected to correspond to a 1.1% growth in seaborne trade.²³

Production of energy: Oil & Gas

We rely upon the Oil and Gas Authority (OGA)'s latest projections, which show a constant decline in oil and gas production for the period up to 2035. Energy production has an ambiguous effect on the Maritime Sector. While it contributes to its direct economic impact through what we have defined as "Marine Engineering and Scientific", it can negatively affect trade. An increase in domestic production leads the country to rely less on imported energy, hence implying a reduction in total UK trade. The fact that 25% of the country's energy supply is imported by ship, explains the negative relationship between the Maritime economy and energy production.

Sea passengers

The Maritime Sector also plays a key role in tourism and leisure, and this is something that has been particularly affected by Covid. In 2019 over 2.1 million cruise passengers passed through UK ports, but this figure is estimated to have decreased to 107,000 (a decrease of 95%) in 2020. However, this massive downturn was not felt as strongly in the more general sea transportation of passengers. In 2019, over 18.4 million international ferry passengers and almost 42 million domestic sea passengers travelled on UK short sea routes. In 2020 it is estimated that these decreased by 63% and 51%, respectively (to 6.9 and 20.6 million passengers).

High investment

The Maritime 2050 strategy document outlines a large

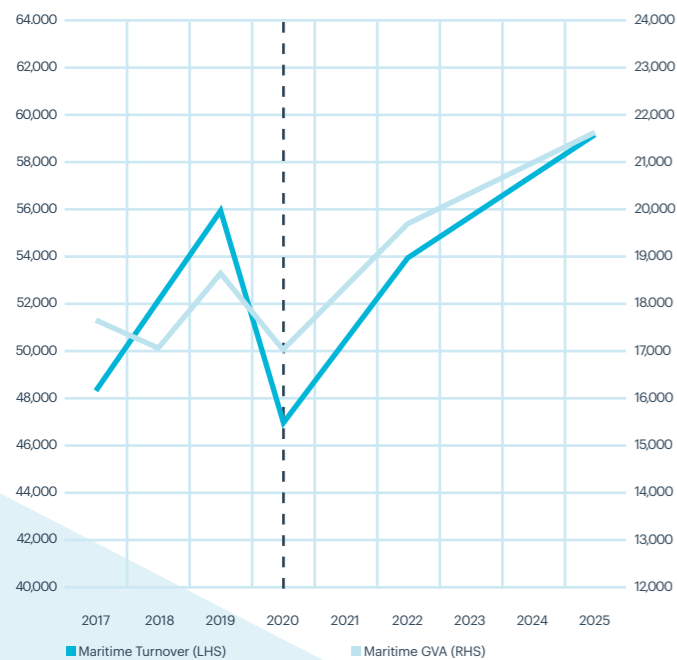
number of recent or planned investments in infrastructure, technology and education as well as ambitious environmental targets. We expect the UK Maritime Sector to experience major improvements over the longer term thanks to greater level of efficiency and productivity, however higher short-term costs might weigh on growth trends.

The 2021-2025 forecast

Figure 23 shows the Maritime Sector experiencing steady growth over the five year horizon. Our forecast indicates that maritime turnover and GVA are set to grow at a Compounded Annual Growth rate (CAGR) of 3.9% over the considered period. This translates into cumulative growth of 16.6% for 2021-2025, which is in a comparable range to the trajectory experienced over recent years.

In line with the rest of the analysis, turnover and GVA have been projected in nominal terms. When the forecast is considered alongside projected inflation, cumulative growth is about 4.2%.

Figure 23: Maritime Sector turnover and GVA trends and projections, £ million, 2017 to 2025



Source: UKCoS, British Marine, PwC, FAME, ONS, Oil and Gas Authority, DfT, Cebr analysis

17 United Nations Conference on Trade and Development. (2021). 'Review of Marine Transport 2021'.

18 Department for Transport. (2019). 'Maritime 2050: Navigating the Future'.

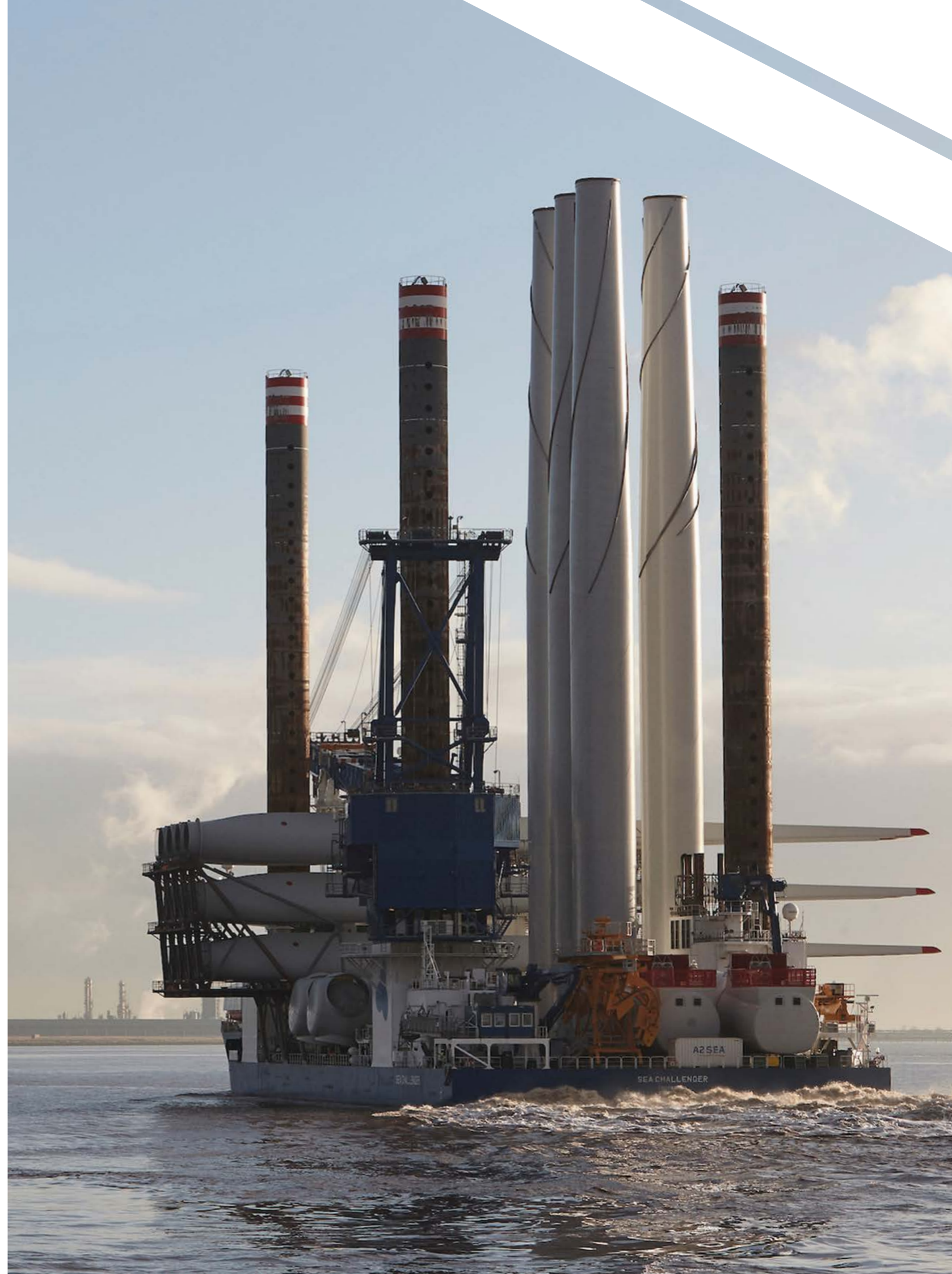
19 Department for Transport. (2019). 'Maritime 2050: Trade Route Map'.

20 The Red Ensign Group (REG) is a group of British shipping registers. The registers are operated by the UK, the Crown Dependencies (Isle of Man, Guernsey and Jersey) and UK Overseas Territories (Anguilla, Bermuda, British Virgin Islands; Cayman Islands, Falkland Islands, Gibraltar; Montserrat, St Helena, Turks & Caicos Islands).

21 United Nations Conference on Trade and Development. (2021). 'Review of Marine Transport 2021'.

22 IMF (2021). 'World Economic Outlook: Managing Divergent Recoveries'.

23 OECD. (2018). 'Growth prospects, challenges and uncertainties for selected ocean industries'.



Annex A: Full set of direct economic impacts by region

Table A.1: Direct economic impact of the Maritime Sector through turnover, £ million, 2010 to 2019

Turnover	2010	2011	2012	2013	2014
England	26,222	27,392	29,392	29,576	31,430
Scotland	7,690	8,164	8,476	9,661	10,421
Wales	1,016	1,336	1,073	1,164	719
Northern Ireland	929	979	858	925	931
East of England	2,212	2,692	2,593	2,577	2,563
East Midlands	442	387	457	450	1,490
London	6,643	10,070	10,300	9,864	10,361
North East	724	813	747	943	1,116
North West	1,870	2,459	2,484	2,755	2,977
South East	5,569	6,128	7,961	7,460	7,893
South West	6,979	2,748	3,155	3,921	3,373
West Midlands	443	380	373	464	658
Yorkshire and the Humber	1,342	1,715	1,321	1,141	1,000

Table A.2: Direct economic impact of the Maritime Sector through GVA, £ million, 2010 to 2019

GVA	2010	2011	2012	2013	2014
England	9,490	10,054	11,086	10,660	11,757
Scotland	3,346	2,962	3,509	3,444	3,515
Wales	341	432	377	364	364
Northern Ireland	234	291	265	240	239
East of England	913	897	984	930	991
East Midlands	198	147	183	193	373
London	3,663	3,964	3,887	3,768	4,464
North East	304	319	327	361	431
North West	748	844	877	1,016	1,107
South East	1,868	2,106	2,849	2,378	2,507
South West	922	935	1,235	1,362	1,215
West Midlands	214	138	166	159	232
Yorkshire and the Humber	661	704	577	493	437

Turnover	2010	2011	2012	2013	2014
England	31,015	34,357	37,119	39,510	43,386
Scotland	9,640	8,575	8,688	9,330	9,359
Wales	1,376	949	775	849	546
Northern Ireland	1,221	1,831	1,774	1,767	2,184
East of England	2,341	3,292	2,852	3,275	2,995
East Midlands	529	557	535	593	634
London	12,888	11,584	12,186	12,490	15,166
North East	887	769	827	787	728
North West	2,797	3,386	5,150	6,281	5,369
South East	6,426	9,288	10,473	10,208	12,695
South West	3,556	3,629	3,402	3,730	4,002
West Midlands	495	623	453	887	708
Yorkshire and the Humber	1,096	1,229	1,241	1,258	1,089

GVA	2010	2011	2012	2013	2014
England	11,501	12,529	13,080	12,713	14,199
Scotland	3,734	3,435	3,718	3,543	3,892
Wales	406	439	281	295	207
Northern Ireland	297	406	376	353	400
East of England	879	1,191	1,050	1,069	1,033
East Midlands	195	169	178	169	191
London	4,608	4,432	4,418	4,186	5,284
North East	330	281	304	284	265
North West	1,170	1,287	1,263	1,301	1,566
South East	2,276	3,062	3,619	3,535	3,771
South West	1,326	1,281	1,537	1,431	1,417
West Midlands	202	229	165	234	244
Yorkshire and the Humber	515	597	545	504	427

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table A.3: Direct economic impact of the Maritime Sector through employment, jobs, 2010 to 2019

Employees	2010	2011	2012	2013	2014
England	143,792	149,003	154,435	158,146	155,823
Scotland	36,913	37,378	38,170	39,315	44,991
Wales	7,255	8,401	6,163	6,985	6,049
Northern Ireland	4,017	4,695	4,170	4,165	3,713
East of England	16,788	16,142	15,708	15,917	15,825
East Midlands	3,854	3,169	3,766	3,764	6,182
London	32,905	37,376	36,959	36,631	38,357
North East	6,424	6,668	6,148	7,691	8,257
North West	14,176	15,059	15,078	17,825	17,492
South East	30,743	33,258	39,720	35,432	34,500
South West	23,147	21,842	24,174	28,507	24,268
West Midlands	4,395	3,214	3,425	3,489	4,011
Yorkshire and the Humber	11,360	12,274	9,457	8,890	6,930

Employees	2015	2016	2017	2018	2019
England	162,119	166,398	171,774	181,666	180,829
Scotland	41,124	38,496	39,761	40,394	37,403
Wales	6,704	6,451	4,308	4,857	3,610
Northern Ireland	4,453	5,410	5,128	5,413	5,287
East of England	14,584	17,846	16,033	18,103	15,992
East Midlands	3,985	3,455	3,880	4,136	3,928
London	44,475	39,524	39,629	41,052	45,207
North East	6,509	5,781	4,939	4,976	4,276
North West	19,226	20,351	19,977	22,225	23,800
South East	33,847	39,546	44,033	46,786	46,887
South West	26,200	26,024	29,880	30,298	29,024
West Midlands	4,320	4,110	3,297	4,895	4,466
Yorkshire and the Humber	8,973	9,761	10,106	9,197	7,250

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table A.4: Direct economic impact of the Maritime Sector through the compensation of employees, £ million, 2010 to 2019

Comp. of Employees	2010	2011	2012	2013	2014
England	5,208	5,245	5,975	6,015	6,250
Scotland	1,017	987	1,207	1,344	1,617
Wales	190	346	192	226	152
Northern Ireland	200	191	168	151	137
East of England	504	535	580	586	568
East Midlands	91	76	98	123	218
London	1,460	1,661	1,691	1,697	1,786
North East	191	193	142	232	272
North West	533	544	570	597	695
South East	1,355	1,122	1,676	1,379	1,373
South West	622	636	786	1,008	944
West Midlands	105	86	111	111	158
Yorkshire and the Humber	348	392	321	281	237

Comp. of Employees	2010	2011	2012	2013	2014
England	6,245	6,335	6,630	6,853	7,165
Scotland	1,874	1,705	1,446	1,511	1,507
Wales	208	206	132	143	111
Northern Ireland	186	250	198	194	195
East of England	507	666	562	622	567
East Midlands	126	108	106	110	114
London	2,045	1,830	1,866	1,855	2,149
North East	218	178	194	158	140
North West	726	706	769	915	968
South East	1,220	1,500	1,714	1,714	1,876
South West	970	901	1,005	1,034	965
West Midlands	149	145	114	157	140
Yorkshire and the Humber	283	302	301	288	245

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Industry Insight

A Decade of Innovation

London International Shipping Week (LISW) is, beyond question, one of the most important international shipping and maritime events in the world. Having grown consistently – and rapidly – since its first edition in September 2013, LISW is set to become an even bigger event in 2023, when the shipping world is able to meet again in person and in earnest.

Now, after five editions spanning a decade, LISW has already witnessed tumultuous change and innovation in the industry. But this pace of change and scale of innovation will only accelerate over the next ten years.

In the beginning, LISW focused on how shipping was recovering from the impact of the 2008 global financial crisis. From the standpoint of today, we are now facing another set of equally critical global economic and political challenges. Without doubt, shipping will once again show its resilience, and how it charts the next stage in its history will be fully and fruitfully discussed at LISW23.

Last September, LISW21 provided living proof that the event is now a world-beater, having overcome the severe hindrance of COVID-19 and all the travel bans and networking restrictions that the pandemic created. It attracted thousands of shipping professionals to London to attend the Headline Conference at the headquarters of the International Maritime Organization (IMO), the Gala Dinner at the Royal Maritime Museum in Greenwich, the Opening Ceremony at the London Stock Exchange, and a wide range of exciting in-person gatherings at some of the most iconic buildings in London.

But it also featured a long list and wide variety of online and hybrid events, aimed at international attendees unable to be there in person. And rather than detract from the overall LISW experience, the many online events organised during the week served to attract many more international attendees than might normally have been expected. And because of that success, online and hybrid events will in future become a standard feature of LISW, complementing

the immensely popular in-person conferences, seminars, forums, and round tables.

Plans are already well underway for the next edition, LISW23, from 12-16 September 2023. The UK Government, led by the Department for Transport, Maritime UK, some 100 Supporting Organisations and dozens of sponsors are already 100% committed to making LISW23 bigger and better than ever. The Gala Dinner is moving back to the 1,200 capacity Grosvenor House Hotel on Park Lane and negotiations are underway to host the Headline Conference once again at the IMO, but between now and September 2023, a host of announcements will be made as new sponsors and supporting organisations come on board and a string of new and exciting events are added to the ever-expanding LISW calendar.

LISW23 will play host to the maritime world next September, with hundreds of events attracting thousands of international industry decision makers into London during the week. The variety of in-person events will be the broadest yet, while the competition is already heating up among sponsors eager to organise the most attractive networking events at the most glamorous venues in London.

As with all five previous editions, LISW23 will be very much an inclusive effort, led by an Executive Team and a Steering Group, overseen by a Board of Advisors comprising some of the most experienced and influential leaders in shipping.

LISW is organised by Shipping Innovation, an independent joint venture company that brings together two of the most creative, energetic, and well-connected media companies in the maritime, transport and energy industries: PR and publishing company Elaborate Communications and global publishing, training, and events organiser, Petrosport.

LISW23 is next year's 'must-attend' global shipping event. Get it into your calendar now!

Llewellyn Bankes-Hughes CEO *Shipping Innovation*

Annex B: Supplementary results of aggregate economic impact analysis

This section sets out the Maritime Sector's aggregate economic impact, calculated utilising an updated methodology. The difference with the figures presented in Section 3 relates to the multipliers and the underlying input-output modelling.

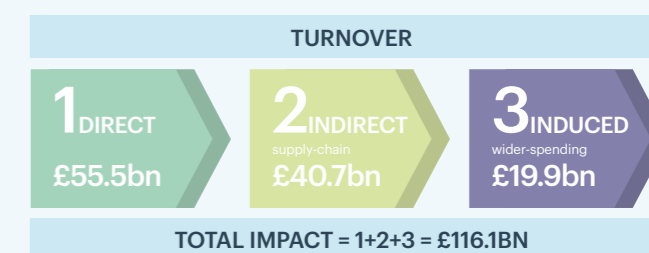
Since our 2019 study, we have adjusted our modelling for the shipping industry specifically. Due to the methodology underpinning the calculation of the direct impact of the shipping industry, the ONS' input-output analytical tables provide data for SIC 50 (Water Transport, which constitutes the shipping industry), which did not align with our own findings on the industry. We have further refined how this is reflected within the input-output models, adjusting our modelling accordingly and we believe it now represents a more robust and precise picture of the aggregate impact of the shipping industry. Given that the modelling for the shipping industry is based on the associated structure of the industry, this has led to a change in the multipliers for the sector and the industry. More specifically, it has led to a decrease in the type I and type II employment multipliers and an increase in the type I and type II compensation of employees multipliers for the shipping industry and, by extension, for the maritime sector.

While the new methodology makes these bespoke adjustments to the shipping industry specifically such that its operational structure – as indicated by the findings of our direct impact analysis – is a better representation of the actual industry, Cebr understands the benefits of having comparable figures using a similar methodology across different years and reports. As such, in consultation with Maritime UK, we provide both sets of aggregate impact figures within the report, one using the previous methodology and here the other, utilising the updated methodology.

The aggregate economic impacts through turnover

Figure A.1 below illustrates the turnover multipliers for the Maritime Sector within the UK. Combined, the shipping, ports, leisure marine, marine engineering and scientific and Maritime Business Services industries contributed £55.5 billion in direct turnover. However, considering the turnover supported in the industries' supply chains (indirect impact) and when employees (and supply chain employees) spend their earnings (induced impact), a total aggregate turnover footprint of £116.1 billion is supported. Nearly £40 billion of this is due to the indirect impact, and £20 billion due to the induced impact.

Figure A.1: Turnover multiplier impacts of the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Another way of conceptualising this is the additional value of the turnover supported, for every pound earned in the Maritime Sector. Based on these figures, for every £1 of turnover initially generated by the Maritime Sector in 2019, a further turnover of £1.09 was supported through its indirect and induced impacts in the UK economy.

Table A.5 shows the breakdown of this estimated aggregate turnover impact, by considering the impacts from the individual industries in the Maritime Sector.

Table A.5: Turnover impact of the Maritime Sector by industry, £ million, 2019

Turnover in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	55,475	40,644	19,965	116,084
Shipping	26,651	16,657	6,285	49,593
Ports	4,193	3,494	2,322	10,009
Leisure marine	3,411	2,870	1,801	8,083
Marine engineering and scientific	14,498	13,106	7,073	34,676
Maritime Business Services	6,722	4,517	2,484	13,722

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Within this aggregate economic contribution, the activities of the shipping industry supported the largest turnover impact, with £49.6 billion in 2019. After shipping, the MES industry supported the most in aggregate turnover, with £34.7 billion in 2019. The ports and marine engineering & scientific industries had the highest aggregate multiplier, with every £1 of direct turnover supporting a total aggregate turnover footprint of £2.39 in the UK economy.

Table A.6 below presents in each year the direct contribution to turnover from the Maritime Sector, alongside our estimate of the composite turnover multiplier that applies to the entire sector, together with some indicative estimates for the aggregate impact. Our estimates indicate a composite turnover multiplier value of 2.09, with the direct impact rising from £35.9 billion in 2010 to £55.5 billion in 2019.

Table A.6: Direct and total turnover impact of the Maritime Sector, £ million, 2010 to 2019

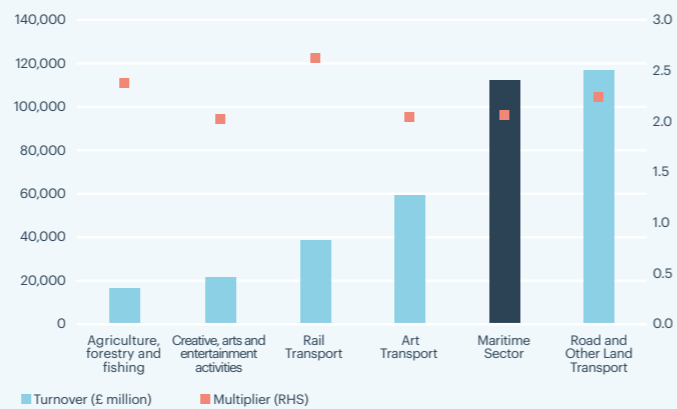
	Direct Impact	Composite Turnover multiplier	Aggregate Impact
2010	35,858	2.09	76,889
2011	37,871		81,120
2012	39,800		85,230
2013	41,327		8,532
2014	43,501		93,333
2015	43,252		92,297
2016	45,712		96,615

2017	48,356		101,976
2018	51,458		107,972
2019	55,475		116,084

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

To place these results in context, Figure A.2 below compares the total turnover impact of the Maritime Sector against the comparable sectors identified in the previous section. In addition, the turnover multipliers associated with each activity are also presented.

Figure A.6: The aggregate employment impact and employment multiplier of the Maritime Sector against other industries, 2019

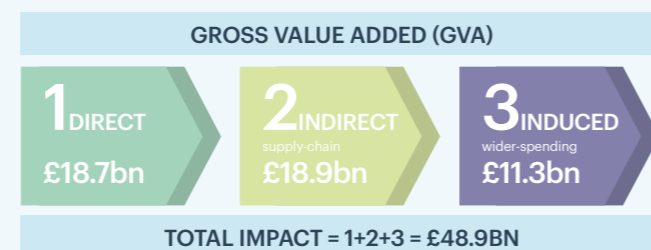


Source: ADS, ONS, Cebr analysis

The aggregate economic impacts through GVA

Figure A.3 below illustrates the GVA multipliers for the Maritime Sector within the UK. As for turnover, the direct impact is augmented by the indirect (supply-chain) and induced (wider employee spending) impacts, to estimate the aggregate economic footprint of the sector.

Figure A.3: GVA multiplier impacts of the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

The Maritime Sector directly contributed £18.7 billion in GVA in 2019, and once the indirect and induced economic channels are taken into consideration the sector supported £48.9 billion in GVA. Therefore, for every £1 of GVA directly generated by the Maritime Sector in 2019, a further GVA impact of £1.62 was supported through its associated supply chains and wider spending impacts in the UK economy.

Table A.6 below shows the estimated direct and total GVA impacts from the individual industry activities when taken in isolation. Within the aggregate economic contribution of £48.9 billion, the shipping, then MES industries made the largest aggregate contributions, with £17.6 billion and £16.4 billion respectively in 2019.

Table A.6: GVA impact of the Maritime Sector by industry activity, £ million, 2019

GVA in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	18,698	18,984	11,255	48,938
Shipping	6,560	7,479	3,519	17,557
Ports	2,195	1,807	1,417	5,420
Leisure marine	1,226	1,103	806	3,135
Marine engineering and scientific	5,703	6,475	4,223	16,401
Maritime Business Services	3,015	2,120	1,290	6,425

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table A.7 below presents, in each year, the direct contribution to GVA from the Maritime Sector, alongside our indicative estimate of the aggregate GVA that applies to the entire industry. Note that just like for Table 4, the aggregate impacts timeseries is an indicative estimate. The total GVA impact has increased by 38.9% from £35.2 billion in 2010 to £48.9 billion in 2019. This matches the UK GVA growth over the same period, which also increased by 38.9%, per ONS data.

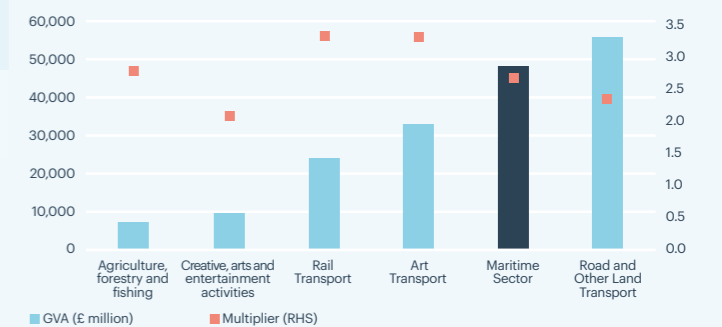
Table A.7: Direct and total GVA impact of the Maritime Sector, £ million, 2010 to 2019

	Direct Impact	Composite GVA multiplier	Aggregate Impact
2010	13,411	2.62	35,151
2011	13,740		35,985
2012	15,237		40,009
2013	14,709		38,585
2014	15,876		41,547
2015	15,938		41,941
2016	16,809		44,064
2017	17,456	45,670	
2018	16,903	44,046	
2019	18,698	48,938	

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

To place these results in context, Figure A.4 below compares the total GVA impact of the Maritime Sector against the comparable activities identified in the previous section. In addition, the GVA multipliers associated with each activity are also presented.

Figure A.4: The aggregate GVA impact and GVA multiplier of the Maritime Sector against comparable industries, 2019



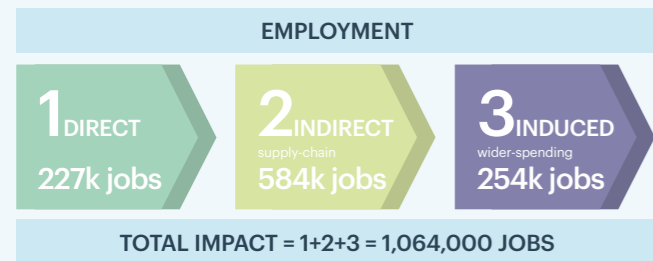
Source: ADS, ONS, Cebr analysis

The total GVA impact of the Maritime Sector in 2019 exceeded that of all of the comparative sectors except Road and Other Land Transport. However, the GVA multiplier of the Maritime Sector in 2019 (2.55) was only greater than that of the Creative arts and entertainment activities (2.01) and Road and Other Land Transport (2.31).

The aggregate economic impacts through employment

Figure A.5 illustrates the aggregate employment impacts for the Maritime Sector, in 2019.

Figure A.5: Employment multiplier impacts of the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

In addition to the 227,000 jobs directly provided by the Maritime Sector, a cumulative 838,000 are supported by the indirect and induced effects. Notably this means that the Maritime Sector supports over 1 million jobs, when considering the direct and multiplier effects. Additionally, for every job directly provided by the Maritime Sector in 2019, a further 3.69 jobs were supported through its associated supply chains (indirect impacts) and wider employee spending (induced impacts) in the UK economy.

Table A.8 below shows the estimated aggregate employment impacts from the individual industries when taken in isolation. Just like the previous study, the highest employment multiplier is found in the shipping industry. However, as mentioned in the methodology section earlier in the report we have refined our input-output modelling process, resulting in a lower employment multiplier for this industry. Further detail is available in Section 1.3. The shipping and MES industry have the largest aggregate impacts, however the magnitude of the shipping industry's impact is nearly three times as much as that of MES.

Table A.8: UK Employment impact of the Maritime Sector by industry activity, thousands of jobs, 2019

Employment in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	227	584	254	1,064
Shipping	61	417	168	646
Ports	30	17	10	58
Leisure marine	32	20	10	62
Marine engineering and scientific	80	90	46	217
Maritime Business Services	24	38	19	81

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table A.9 below presents in each year the direct employment from the Maritime Sector, alongside the domestic employment multiplier that applies to the entire sector.

Table A.9: Direct and aggregate UK employment impact of the Maritime Sector, thousands of jobs, 2019

	Direct Impact	Composite Employment multiplier	Aggregate Impact
2010	192	4.69	901
2011	199		931
2012	203		953
2013	209		976
2014	211		986
2015	214		1,005
2016	217		1,021
2017	221		1,054
2018	232		1,084
2019	227		1,064

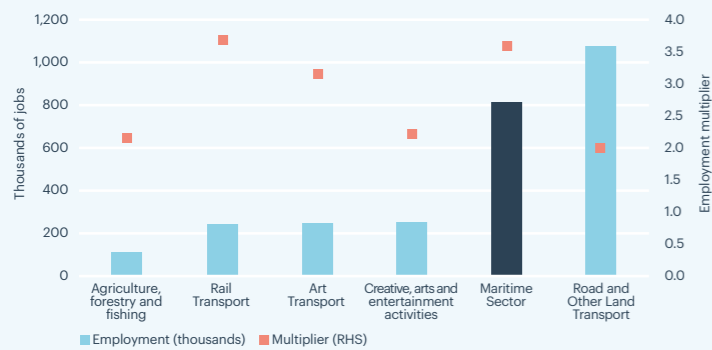
Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

The total employment impact has grown from around 901,000 jobs in 2010 to 1,064,000 jobs in 2019, an increase of 18%. This compares favourably to an increase in UK employment of 13% over the same period, per the ONS.



To place these results in context, Figure A.6 compares the total employment impact of the Maritime Sector in 2019 to the comparable sectors identified in the previous section. In addition, the employment multipliers associated with each activity are also presented.

Figure A.6: The aggregate employment impact and employment multiplier of the Maritime Sector against other industries, 2019



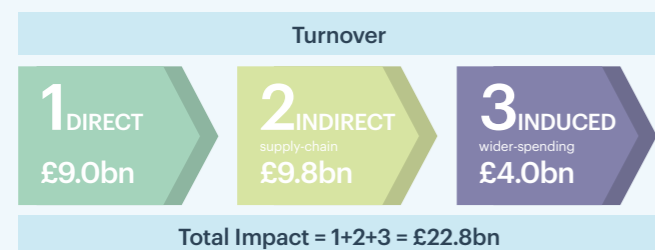
Source: ADS, ONS, Cebr analysis

In 2019 the Maritime Sector had the second largest employment impact at 809,000 jobs, behind Road and Other Land Transport which supported close to 1.07 million jobs. In terms of the employment multiplier, the Maritime Sector in 2019 again had the second highest value (3.56) across the categories mentioned, closely following that of Rail Transport (3.66).

The aggregate economic impacts through the compensation of employees

In this final subsection we consider the aggregate economic impact of the Maritime Sector through the compensation of employees. Figure A.7 illustrates the direct, indirect and induced impacts of employee compensation associated with the sector.

Figure A.7: Multiplier impacts for the compensation of employees for the UK Maritime Sector, 2019



Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

In addition to the £9 billion in direct employee compensation provided, £10.3 billion in employee compensation is supported in the supply-chains of the Maritime Sector, and £4.2 billion due to wider employee spending. Overall, the Maritime Sector supports a total of £23.4 billion in employee compensation. For every £1 directly raised in the compensation of employees in 2019, a further of £1.61 in employee compensation was supported through the associated supply chain effects and wider employee spending in the UK economy.

Table A.10 below shows the direct and aggregate impact through the compensation of employees across each industry. Of the £23.4 billion aggregate economic impact for the Maritime Sector, the largest impact (£8.6 billion) was supported by the shipping industry.

Table A.10: Impact through the compensation of employees of the Maritime Sector by industry activity, £ million, 2019

Compensation of Employees in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	8,978	10,268	4,196	23,442
Shipping	2,397	4,651	1,534	8,582
Ports	1,063	707	386	2,156
Leisure marine	1,038	743	388	2,170
Marine engineering and scientific	3,105	2,937	1,319	7,360
Maritime Business Services	1,376	1,229	569	3,174

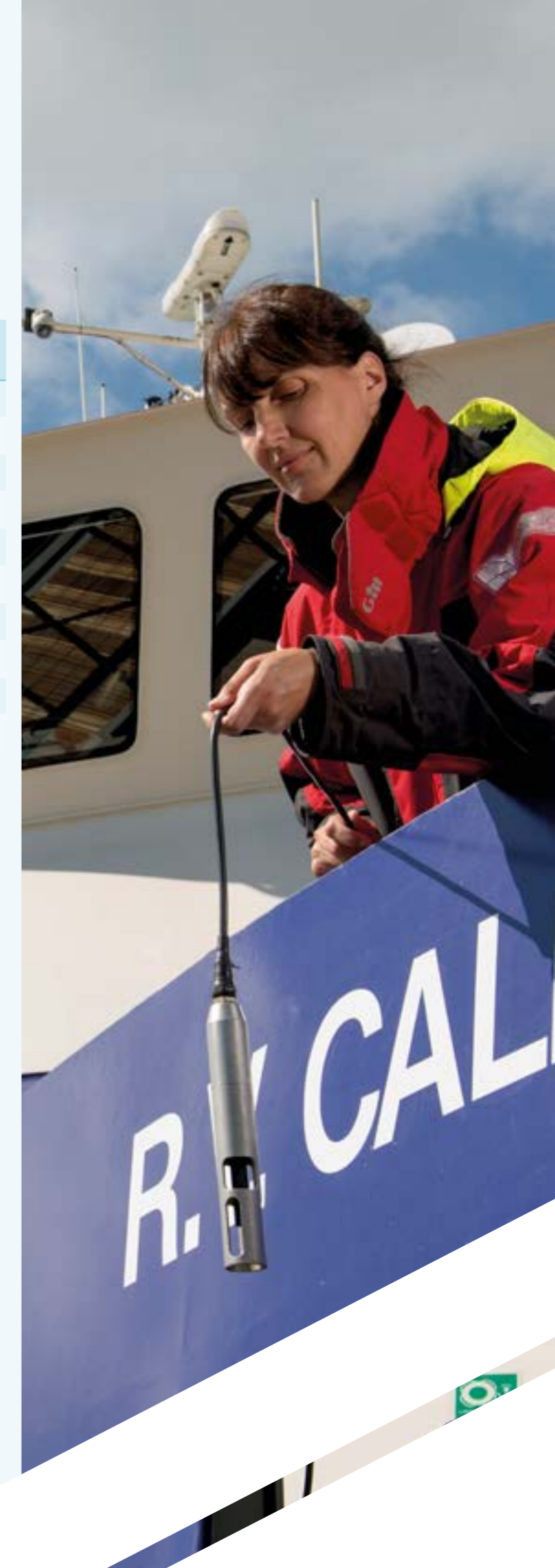
Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Finally, Table A.11 below shows the trend in the direct impact and aggregate support from the Maritime Sector, from 2010 to 2019. Our indicative estimate of the aggregate impact through the compensation of employees has grown from £17.4 billion in 2010 to £23.4 billion in 2019. This has been driven by an increasing direct impact, with the size of the composite multiplier relatively stable over the period.

Table A.11 Direct and aggregate impact through the compensation of employees of the Maritime Sector, £ million, 2010 to 2019

	Direct Impact	Composite Employee Compensation multiplier	Aggregate Impact
2010	6,616	2.61	17,452
2011	6,769		17,801
2012	7,541		19,709
2013	7,735		20,190
2014	8,155		21,216
2015	8,513		22,153
2016	8,496		22,290
2017	8,405		22,059
2018	8,701		22,838
2019	8,978		23,442

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis





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