VOLUME 19

THE IRISH MARITIME TRANSPORT ECONOMIST

Irish Maritime Development Office

The Irish Maritime Development Office

The Irish Maritime Development Office (IMDO) is Ireland's dedicated national development, promotional and marketing agency for the shipping and shipping services sector.

The IMDO Is the Irish government agency that provides support to national and international maritime businesses in Ireland. It is the aim of the IMDO to be the focal point for maritime business in Ireland. The IMDO provides the government and industry with a range of information and reporting across the sector and works with international businesses to help them set-up or expand in Ireland. The IMDO is also Ireland's designated Shortsea Shipping Agency and provides independent advice and guidance on EU funding initiatives.

The IMDO was establishing by the Fisheries (Amendment) Act 1999, as part of the Marine Institute, under an amendment to the Marine Institute Act 1991 in December 1999. The IMDO commenced operations in July 2000. After a subsequent amendment in the Harbours (Amendment) Act 2009, its legislative mandate includes the following functions:

1. To promote and assist the development of Irish shipping and shipping services, and seafarer training.
2. To liaise, with, support and market the shipping and shipping services sector.
3. To advise the Minister for Transport on the development and co-ordination of policy in the shipping and shipping services sector so as to protect and create employment.
4. To carry out policy as may be specified by the Minister for Transport relating to the shipping and shipping services sector and seafarer training.
5. To advise the Minister for Transport on the development and co-ordination of policy and to carry out policy, as may be specified by that Minister, relating to ports and the ports services sector.
6. And additional functions relating to the shipping and shipping services sector conferred on the Institute under section 4(4) of this Act.

Shipping services is defined as; sea routes, ship management, technical management, commercial management, crew management, ship finance and mortgages, marine insurance, maritime legal services, shipbroking and ship chartering.

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Volume 19
May, 2022
ISSN 1649-5228

The Irish Maritime Transport Economist

Published by:

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How to cite this publication: Irish Maritime Development Office (2021) *Irish Maritime Transport Economist: Vol. 19,* Dublin: Irish Maritime Development Office.

Contents

Contents

Ministerial Foreword

I am pleased to provide the foreword for this, the 19th edition of the Irish Maritime Transport Economist, which reports on the performance of Ireland's maritime industry for 2021. This publication has built up an invaluable time series that allows volumes and trends in the Irish maritime industry to be monitored and analysed. The value of this work, which is carried out by the Irish Maritime Development Office (IMDO), was brought into focus in both 2020 and 2021, as my Department continued to deal with the impacts that the COVID-19 pandemic and Brexit had on the maritime industry. This publication, and the rigorous research behind it, provides a reliable evidence base on which to develop policy responses and served us well in addressing the challenges of the past year.

The year under review was defined by a resurgence in port traffic across many cargo modes, as the COVID-19 related restrictions introduced by the Government in the interest of public health were gradually reduced throughout the year. The IMDO's iShip Index, which is an aggregate measure of port volumes, rose by 6% in 2021, the fastest rate of growth since 2015. Port traffic rose steadily throughout the year, reflective of the momentum built up by Ireland's vaccination and booster vaccination programmes.

2021 saw a surge in demand for direct EU capacity, which was driven in large part by a moving away from use of the UK landbridge, as many importers and exporters chose to avoid the impacts of new customs arrangements required for goods traded between Great Britain and the EU Single Market. As a result, the volume of RoRo traffic on direct routes between Irish and mainland European ports rose by 94% this year and RoRo traffic on routes between Ireland and ports in Great Britain declined by 22%. Direct RoRo traffic to EU ports now represents one third of all RoRo volume, a significant shift in the makeup of Ireland's supply chains.

This major shift in traffic was made possible due to the preparation, innovation and adaptability of the shipping operators in the RoRo and LoLo sectors. By late 2020, new routes were opened, existing services were expanded and additional capacity was added across all shipping modes. In the RoRo market, the number of weekly sailings to mainland European ports rose from 30 sailings per week to more than 60 at different points throughout the year. There were also two new entrants, increasing capacity in what is a dynamic and competitive market. I commend all stakeholders who contributed to the Brexit response and would like to express my appreciation for their efforts in maintaining Ireland's connectivity to both GB and European markets.

The year 2021 began with restrictions on social and economic activity as our country tackled a new variant of COVID-19. By the end of the year, a successful vaccination campaign, record freight activity in many sectors, and robust economic growth had all been achieved. In addition, almost all COVID-19 related restrictions have been lifted. Ireland's maritime industry was instrumental in maintaining a strong, connected economy throughout the monumental challenges of Brexit and COVID-19. I would like to acknowledge the efforts of the ports and shipping sectors and express my thanks for the invaluable services they provide.

As we enter the spring of 2022, our attentions now turn to the challenges ahead. The Russian invasion of Ukraine is first and foremost a humanitarian tragedy, and the priorities of Government will be to support those affected. There will, however, be many global economic consequences which will also affect Ireland. There have already been significant increases in the price of fuel and food items, such as grains, on world markets. Energy and cost of living increases are expected for the coming year. Our maritime transport sector has proven its ability to overcome significant difficulties in the recent past, and I am confident that it can do so again.

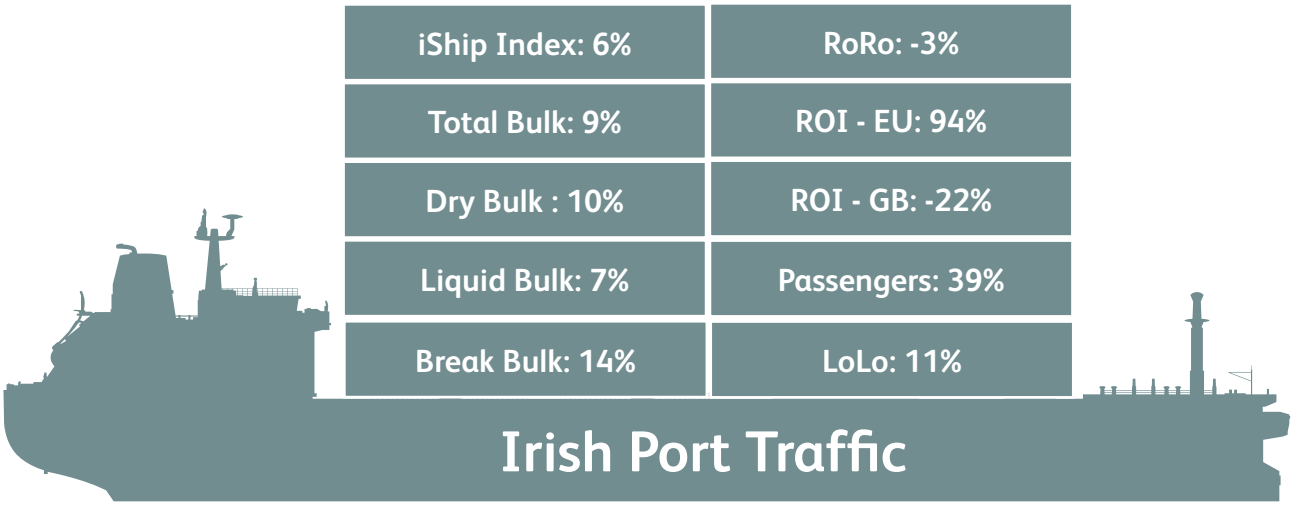
I applaud the industry for its resolve and professionalism in overcoming the formidable challenges we faced in 2021 and I thank the IMDO who supported this extraordinary effort.

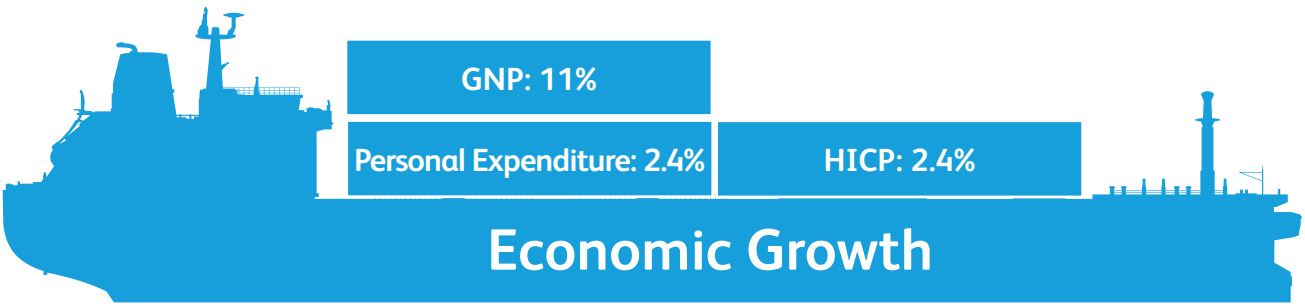
I am pleased to commend this publication to all industry stakeholders and to anyone who has an interest in maritime affairs.

Hildegarde Naughton T.D
Minister of State for International and Road Transport and Logistics

Foreword

2021 Key Statistics:





Welcome to the 19th edition of the Irish Maritime Transport Economist, in which we report on 2021, a year marked by the reorganisation of Irish supply chains following the end of the Brexit transition period, and a rebounding of demand in port traffic as COVID-19 restrictions were gradually eased.

The year under review was one of significant change in the RoRo freight market. December31st 2020 marked the end of the Brexit transition period. Irish importers and exporters are now required to submit declarations to Irish customs when trading with Great Britain, and Pre-Boarding Notifications are required when using RoRo ferry services. These new obligations drove a surge in the demand for services on direct routes between Irish ports and mainland European ports. RoRo traffic on these services rose by 94% compared to 2020. This demand was driven largely by a reduction in the use of the UK Landbridge, a route to market that connects Irish importers and exporters to international markets via the UK road and ports network. RoRo traffic to ports in Great Britain declined by 22% as a result. Direct EU traffic now represents one third of all RoRo volume, compared to 17% in recent years. In addition, LoLo traffic, the majority of which operates on direct routes to mainland Europe, recorded record volumes. Traffic on LoLo services grew by 11% to just under 1.2m TEU's.

This reorganisation of Irish freight volume would not have been possible without the proactive preparation and investment by both RoRo and LoLo shipping operators in late 2020, and the facilitation of these shipping companies by Irish ports. Incumbent operators offering direct services in both markets announced that they would expand capacity and add new services in the weeks leading up to December 31st. In addition, two new entrants arrived into the RoRo market in 2021. There are now six shipping operators offering thirteen different direct RoRo services to mainland EU ports, a remarkable increase in one year. I would like to commend all those in the maritime industry for their swift and proactive response to changes in demand posed by Brexit. The unitised freight market in Ireland is dynamic and competitive, and Ireland's connectivity to international markets has been maintained throughout due to the professionalism of the stakeholders involved.

2021 was also a year of resurgent demand for Irish port traffic, as COVID-19 restrictions were gradually lifted and economic activity began its return towards pre-pandemic levels. Break bulk traffic, made up largely of construction materials, rose significantly as Ireland's construction industry regained momentum. Liquid bulk volumes increased gradually throughout the year and by the fourth quarter of the year, were back at 2019 volumes. In the RoRo passenger sector, numbers began to rise rapidly following the introduction of the EU's Digital COVID Certificate which faciliatated a return to international travel. No sector in the Irish shipping market recorded pandemic related declines as deep or as long lasting as those experienced in the passenger market. Passenger numbers rose by 39% in 2021, but remained more than 60% below 2019 levels.

Looking ahead, there are many reasons to be positive about the future of the Irish shipping industry. Demand is expected to rise further in 2022 as the effect of COVID-19 dissipates, and the period of greatest Brexit related uncertainty has now passed. However, many new challenges lie ahead. The Russian invasion of Ukraine is a humanitarian tragedy and the focus should be on the safety of those affected. There will be economic impacts on the Irish shipping market, which include rising fuel prices and uncertainty surrounding global supplies of grains and fertilizers, and other commodities for which Russia and Ukraine are major producers. At present, the situation is highly uncertain and the full economic impacts are unclear. The IMDO will continue to monitor these events closely and report on the impacts for the Irish shipping industry.

The IMTE is a collaborative production that relies on the support and confidence of industry stakeholders for the work undertaken by the IMDO to monitor and interpret the performance of the maritime industry. Our work would not be possible without industry participation or without the collaboration of colleagues throughout the Department of Transport. I would like to express my gratitude to all who have contributed to this edition of the IMTE and in particular to our economic analysts Daniel Fallen Bailey and Darragh Treacy, who brought the publication to fruition.

In conclusion, may I take this opportunity to wish all those involved in the maritime transport sector success in the vitally important work they do in maintaining and expanding Ireland's trade links with the rest of the world and in driving growth, efficiency and competitiveness in our economy. May I also thank all those who continue to support this publication through their readership and by providing the information on which the IMTE database is constructed.

Liam Lacey.

Liam Lacey
Director
Irish Maritime Development Office

Section 1. **The Irish Shipping Market in 2021**

Introduction

Section 1 of this report is divided into 5 sections. Section 1.1 details the performance of the all-island bulk market, which comprises three cargo modes: liquid bulk, dry bulk and break bulk. Sections 1.2 and 1.3 deal with the unitised freight sector of the Irish shipping industry, which includes the Roll-on / Roll-off (RoRo) and Lift-on / Lift-off (LoLo) cargo modes. The unitised sector is largely made up of perishable food & retail items further along the value chain. Sections 1.4 describes the performance of the tourist passenger markets, which continued to face significant challenges in 2021 due to COVID-19. Section 1.5 illustrates the performance of the iShip index in 2021, which is a quarterly weighted indicator that outlines trends within the Republic of Ireland's shipping industry.

1.1 Bulk Market

Bulk Port traffic refers to three market segments of port and shipping activity: Liquid bulk, Dry bulk and Break Bulk. Liquid bulk ranges from fuel for domestic transport and aviation, to crude oil or liquefied natural gas. Dry bulk refers to raw materials for industrial or agricultural purposes, such as fertiliser, animal feeds and iron ores. Lastly, break bulk is largely made up of non-containerised project and construction materials such as timber, steel and machinery.

Table 1 below provides a summary of bulk tonnage through ports on the island of Ireland in 2021. Overall, combined bulk traffic handled at ports in the Republic of Ireland (ROI) increased by 9% in 2021, or roughly 2.4 million tonnes.

Almost two thirds of this increase was driven by dry bulk tonnage. Dry bulk tonnage grew by 10%, mainly driven by increases in coal imports from The Russian Federation in 2021. In the liquid bulk market, growth of 7% was driven by oil imports, Ireland's largest source of domestic energy. Imports of petroleum rose in all three of Ireland's Tier 1 ports in 2021 as demand for domestic and aviation fuel rose in line with the lifting of COVID-19 restrictions. Lastly, break bulk traffic across Irish ports rose significantly in 2021, increasing by 14%. This was driven by the return to construction activity in domestic and international markets after severe restrictions within the sector throughout 2020. In Northern Ireland, bulk traffic grew by 13%, or 1.4 million tonnes. Over 90% of this increase was driven by dry bulk traffic.

The following sections provide detail on the performance of each market segment in 2021. For more detail on the quarterly volume of each bulk sector, see Appendices.

Table 1: All-Island Bulk Traffic 2021

	Dry Bulk		Liquid Bulk		Break Bulk		Combined Bulk	
	Tonnes	Growth (%)	Tonnes	Growth (%)	Tonnes	Growth (%)	Tonnes	Growth (%)
ROI	16,791,306	10%	10,719,066	7%	1,638,100	14%	29,148,471	9%
NI	8,926,431	17%	2,783,413	-2%	841,398	29%	12,551,242	13%

Source: *IMDO*

1.1A Dry Bulk

In 2021, the volume of dry bulk traffic through ports in the Republic of Ireland grew by 10% when compared to 2020, representing growth of 1.5m tonnes. Dry bulk traffic, which accounts for 30% of all Irish port traffic, now stands at 16.8m tonnes. This is the highest volume since 2017, when dry imports surged as a result of a national fodder crisis.

Table 2 provides an overview of annual dry bulk tonnage across Irish and Northern Irish ports in 2021. Ireland's Tier 1 ports - Dublin, Cork and Shannon Foynes – make up three quarters of the dry bulk market in the Republic of Ireland.

Table 2: All-Island Dry Bulk Volumes

	2020		2021		Year-on-Year Change	
	Tonnes	% Share	Tonnes	% Share	%	Tonnes
Cork	1,424,613	9%	1,409,379	8%	-1%	-15,234
Drogheda	969,510	6%	904,856	5%	-7%	-64,654
Dublin	1,957,532	13%	1,973,622	12%	1%	16,090
Dundalk	54,694	0%	70,122	0%	28%	15,428
Galway	184,781	1%	182,207	1%	-1%	-2,574
Greenore	953,744	6%	1,131,145	7%	19%	177,401
New Ross	278,631	2%	266,857	2%	-4%	-11,774
Shannon-Foynes	8,104,810	53%	9,379,260	56%	16%	1,274,450
Waterford	1,349,095	9%	1,473,857	9%	9%	124,762
Wicklow	6,621	0%	0	0%	-100%	-6,621
Total ROI	**15,284,032**	**67%**	**16,791,306**	**65%**	**10%**	**1,507,274**
Belfast	6,241,139	82%	7,308,375	82%	17%	1,067,236
Foyle	973,002	13%	1,105,860	12%	14%	132,858
Larne	29,259	0%	56,903	1%	94%	27,644
Warrenpoint	408,944	5%	455,293	5%	11%	46,349
Total NI	**7,652,344**	**33%**	**8,926,431**	**35%**	**17%**	**1,274,087**
Total All-Island	**22,936,376**		**25,717,737**		**12%**	**2,781,361**

Source: *IMDO*

In 2021, the increase in dry bulk traffic in Ireland was almost entirely driven by coal. Imports of coal through Shannon Foynes Port Company rose significantly, from approximately 72,000 tonnes per year in 2019 and 2020, to over 1.3m tonnes in 2021. The context for such growth can be found in the composition of Ireland's energy requirements for the year. As stated in the Sustainable Energy Authority of Ireland's (SEAI) annual report;

"2021 has so far been a "low wind" year, with electricity generated from wind during the first ten months of the year down 18% on the same period in 2020 … Annual electricity generated from coal fell by 86% between 2015 and 2020, but for the first ten months of 2021 it was back to 2017 levels."

Energy in Ireland 2021 Report, SEAI, pg. 17

The increase in coal imports at Shannon Foynes accounted for 82% of the overall increase in dry bulk traffic in 2021. Dry bulk traffic through Shannon Foynes rose by 16% as a result, with the port accounting for 56% of all dry bulk commodities in the Republic of Ireland.

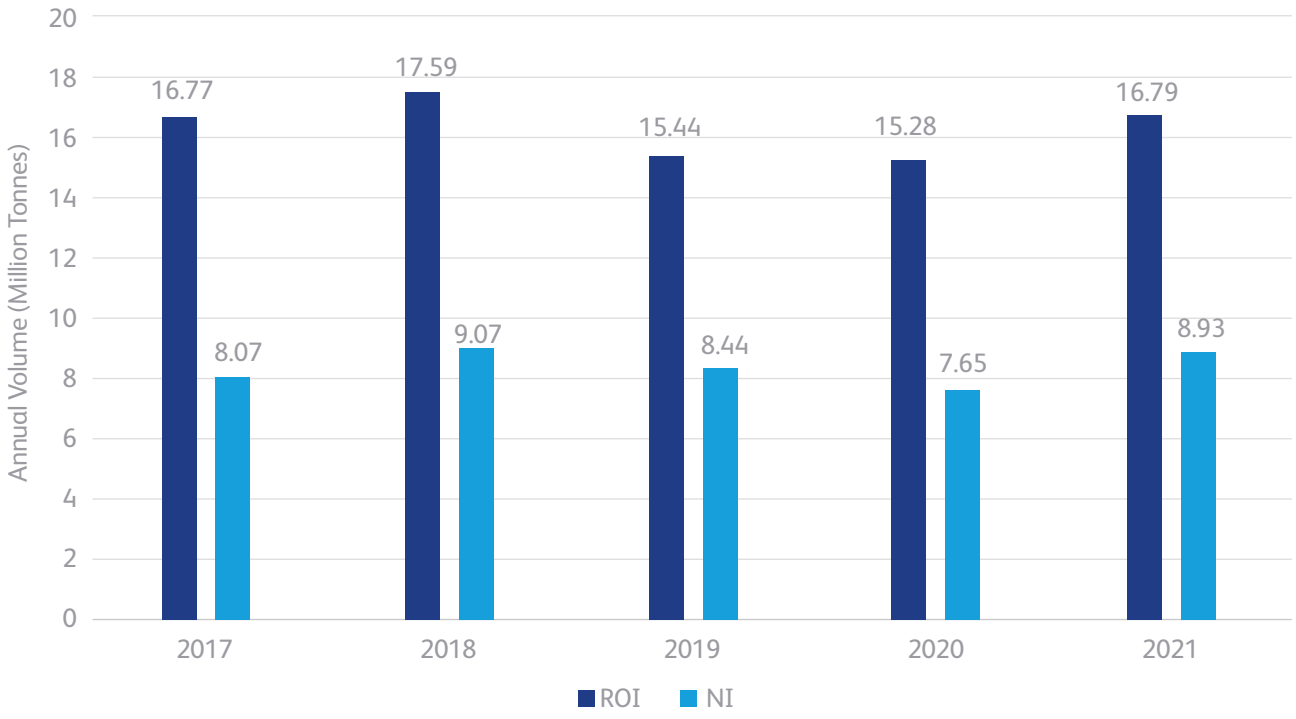
The ports of Waterford and Greenore also recorded robust growth in dry bulk traffic in 2021. When combined, both ports added approximately 300,000 tonnes to the total volume of dry bulk traffic. At Greenore, dry bulk volumes grew by 19%, and surpassed 1m tonnes for the first time. Growth in 2021 was driven by imports of animal feed and gypsum rock, a material used in the construction sector. At Waterford, growth of 9% was recorded, and was almost entirely driven by imports of cement and cement clinker – reflective of the significant increase in construction activity in Ireland when compared to 2020.

At Dublin and Cork, Ireland's other Tier 1 ports, volumes were stable when compared to 2020.

In Northern Ireland, dry bulk volumes rose by 17%, following a 9% decline in 2020. In all, 1.27m additional tonnes of dry bulk traffic was handled, the vast majority of which occurred at Belfast Harbour. All four ports recorded robust increases in dry bulk traffic. At 8.9m tonnes, this is the highest volume through Northern Irish ports since 2018.

Figure 1 below illustrates the annual volume of dry bulk tonnage through Ireland and Northern Ireland from 2017 to 2021.

Figure 1: All-Island Dry Bulk Volumes, 2017 - 2021



Source: *IMDO*

1.1B Liquid Bulk

In 2021, the volume of liquid bulk traffic in the Republic of Ireland rose by 7%, from 10m tonnes to 10.7m tonnes. Between the five-year period from 2015 – 2019, Irish ports averaged approximately 11.3m tonnes per year in liquid bulk traffic.

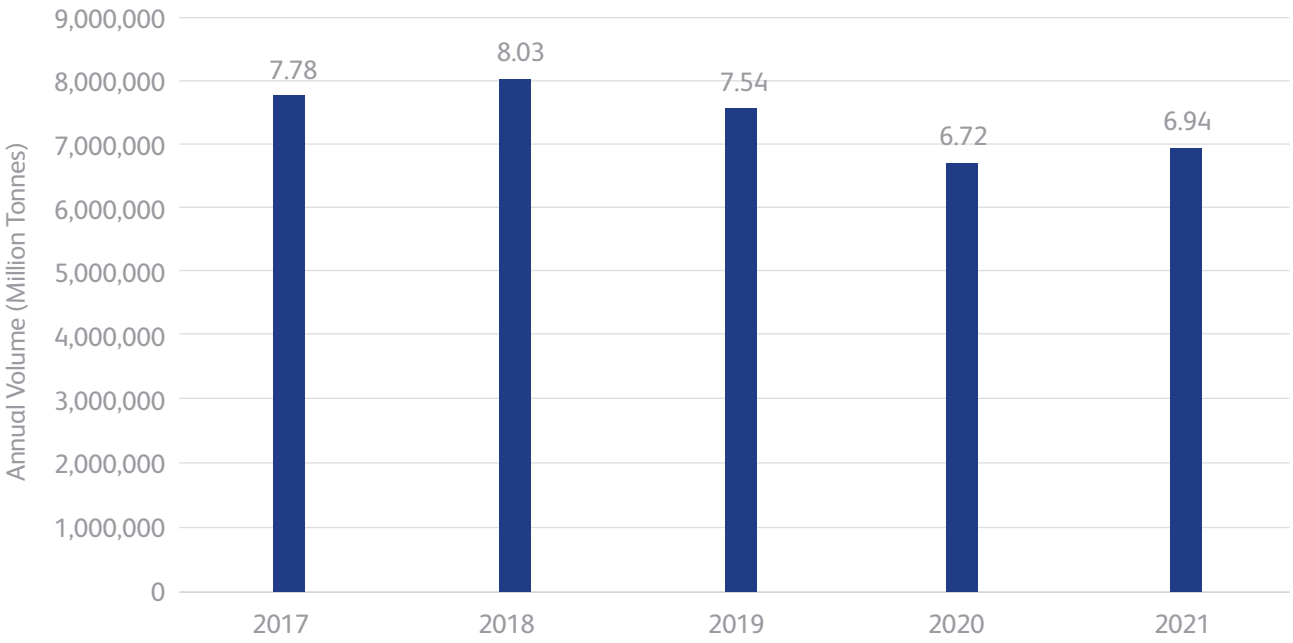
In 2020, liquid bulk traffic declined by 9% compared to 2019, and recorded its lowest annual volume since 2007. Restrictions on domestic and international travel caused by the COVID-19 pandemic led to a significant decline in the demand for domestic and aviation transport fuels, both of which have a large impact on liquid bulk volume. The suppressive effect of COVID-19 restrictions continued in the first three months of 2021, as much of the Irish economy remained shut. Imports of liquid bulk traffic declined by 18% in Q1 2021 when compared to the same period in 2020. These volumes recovered over the next 6 months as the Irish economy reopened, and by Q4 2021, were back at 2019 levels at approximately 2.5m tonnes.

Ireland's core ports make up the majority of the liquid bulk market. Dublin Port and the Port of Cork account for 87%, while Shannon Foynes holds a 10% share.

Since 2013, imports have represented an average of 82% of all liquid bulk traffic through Irish ports, while liquid bulk exports hold a share of 18% on average. Over 95% of liquid bulk exports leave from the Port of Cork, originating from the Whitegate oil refinery where crude oil is processed into products such as petroleum, diesel and kerosene. In 2021, Liquid bulk exports from Cork rose by 11%, or approximately 185,000 tonnes. This represented 27% of the overall increase in Liquid Bulk traffic at Irish ports in 2021.

When focusing on liquid bulk imports only, petroleum or fuel oil related products make up the majority of this traffic. The COVID-19 pandemic had a significant and negative effect on this traffic. Figure 2 illustrates the volume of petroleum imports at Ireland's Tier 1 ports over the past five years. After a 6% decline in 2019, petroleum imports declined by 11% in 2020. Volumes grew by 3% in 2021, but are still more than 10% below levels recorded in the latter half of the last decade.

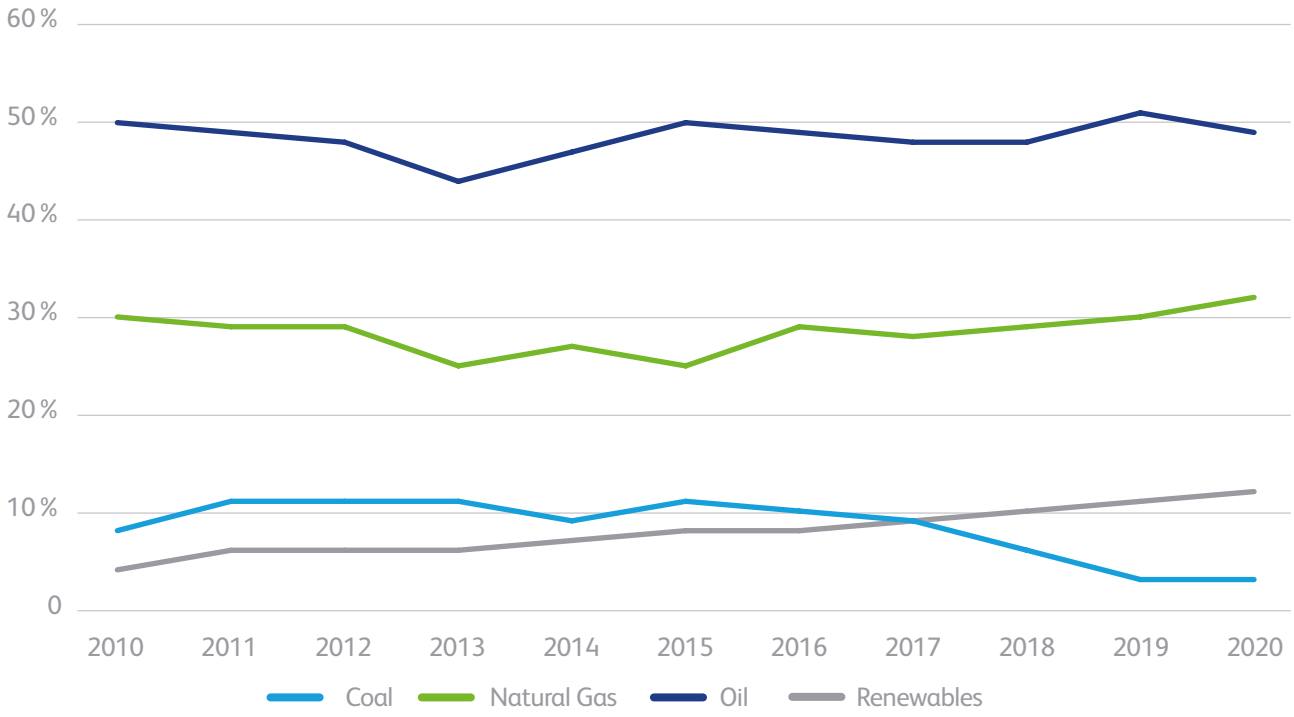
Figure 2: Petroleum Imports, Tier 1 Ports, 2017 – 2021



Source: *IMDO*

The COVID-19 pandemic may however, have accelerated an established trend in Irish port traffic. A declining, or stable volume of petroleum imports is reflective of the changing composition of Ireland's primary energy. Figure 3 is adapted from information gathered by The Sustainable Energy Authority of Ireland (SEAI), and shows the declining share of oil and coal within Ireland's annual energy usage (measured in GWh). In the last decade, Ireland has made increasing use of natural gas and renewable energy to satisfy annual energy requirements. The decline in imports of coal and petroleum has a significant effect on overall port volumes, particularly at Ireland's core ports.

Figure 3: Share of Annual GWh by Fuel, 2010 – 2020



Source: *SEAI, 2021*

In Northern Ireland, liquid bulk traffic has been stable for the past five years, ranging between 2.7m and 2.9m tonnes per year. There are little to no liquid bulk exports from Northern Irish ports. Belfast consistently accounts for 75 – 80% of liquid bulk traffic in Northern Ireland, with Foyle accounting for 20 – 25%.

In 2021, liquid bulk traffic in Northern Ireland declined by 2%, or 60,000 tonnes. This is the lowest volume of liquid bulk in Northern Ireland since 2014. However, the decline in this traffic over the course of the COVID-19 pandemic was not as steep as the decline recorded at ports in the Republic of Ireland.

Table 3 below provides a summary of the volume of liquid bulk handled at ports on the island of Ireland in 2020 and 2021.

Table 3: All-Island Liquid Bulk Volumes

	2020		2021		Year-on-Year Change	
	Tonnes	% Share	Tonnes	% Share	%	Tonnes
Cork	4,822,110	48%	5,222,218	49%	8%	400,108
Drogheda	28,261	0%	26,538	0%	-6%	-1,723
Dublin	3,871,000	39%	3,937,734	37%	2%	66,734
Galway	264,431	3%	290,863	3%	10%	26,432
Shannon Foynes	1,050,924	10%	1,241,713	12%	18%	190,789
Total ROI	**10,036,726**	**78%**	**10,719,066**	**79%**	**7%**	**682,340**
Belfast	2,187,134	77%	2,091,822	75%	-4%	-95,312
Foyle	622,534	22%	643,428	23%	3%	20,894
Larne	5,607	0%	5,667	0%	1%	60
Warrenpoint	28,419	1%	42,496	2%	50%	14,077
Total NI	**2,843,694**	**22%**	**2,783,413**	**21%**	**-2%**	**-60,281**
Total All-Island	**12,880,420**		**13,502,479**		**5%**	**622,059**

Source: *IMDO*

1.1C Break Bulk

In 2021, the volume of break bulk traffic at ports in the Republic of Ireland grew by 14%. This was equivalent to an additional 204,000 tonnes in volume. At 1.64m tonnes, this is the largest annual volume of break bulk traffic handled since 2008. It is also the fastest annual rate of growth since 2014, and represents a response to the suppressive effect of the COVID-19 pandemic in 2020, wherein an annual decline of 10% was recorded compared to 2019. The decline in 2020 was equivalent to 162,000 tonnes, meaning all of this tonnage was recovered in 2021.

2021 therefore represents a return to growth in break bulk traffic, after a decade of steady and robust annual increases in tonnage that was interrupted by the pandemic. Break bulk traffic has now reached 80% of its former peak level of 2m tonnes, a level recorded in 2007, before the financial crash.

Table 4 below presents the total break bulk tonnage handled by each port in Ireland and Northern Ireland in 2021.

Table 4: All-Island Break Bulk Volumes

	2020		2021		Year-on-Year Change	
	Tonnes	% Share	Tonnes	% Share	%	Tonnes
Cork	340,484	24%	374,858	23%	10%	34,374
Drogheda	288,091	20%	295,697	18%	3%	7,606
Dublin	32,714	2%	69,549	4%	113%	36,835
Dundalk	38,613	3%	15,663	1%	-59%	-22,950
Greenore	130,471	9%	177,929	11%	36%	47,458
Shannon-Foynes	302,598	21%	352,857	22%	17%	50,259
Waterford	142,051	10%	183,818	11%	29%	41,766
Wicklow	144,885	10%	151,467	9%	5%	6,582
Youghal	13,241	1%	16,263	1%	23%	3,022
Total ROI	**1,433,147**	**69%**	**1,638,100**	**66%**	**14%**	**204,953**
Belfast	260,077	40%	358,513	43%	38%	98,436
Foyle	115,254	18%	81,485	10%	-29%	-33,769
Warrenpoint	278,061	43%	401,400	48%	44%	123,339
Total NI	**653,391**	**31%**	**841,398**	**34%**	**29%**	**188,007**
Total All-Island	**2,086,539**		**2,479,498**		**19%**	**392,959**

Source: *IMDO*

Exports represented 38% of all break bulk traffic in the Republic of Ireland in 2021. The average share held by exports was 47% between 2013 and 2020. The decline in export share in 2021 is reflective of the significant increase recorded in break bulk imports this year, driven largely by the reopening of domestic construction and agricultural sectors.

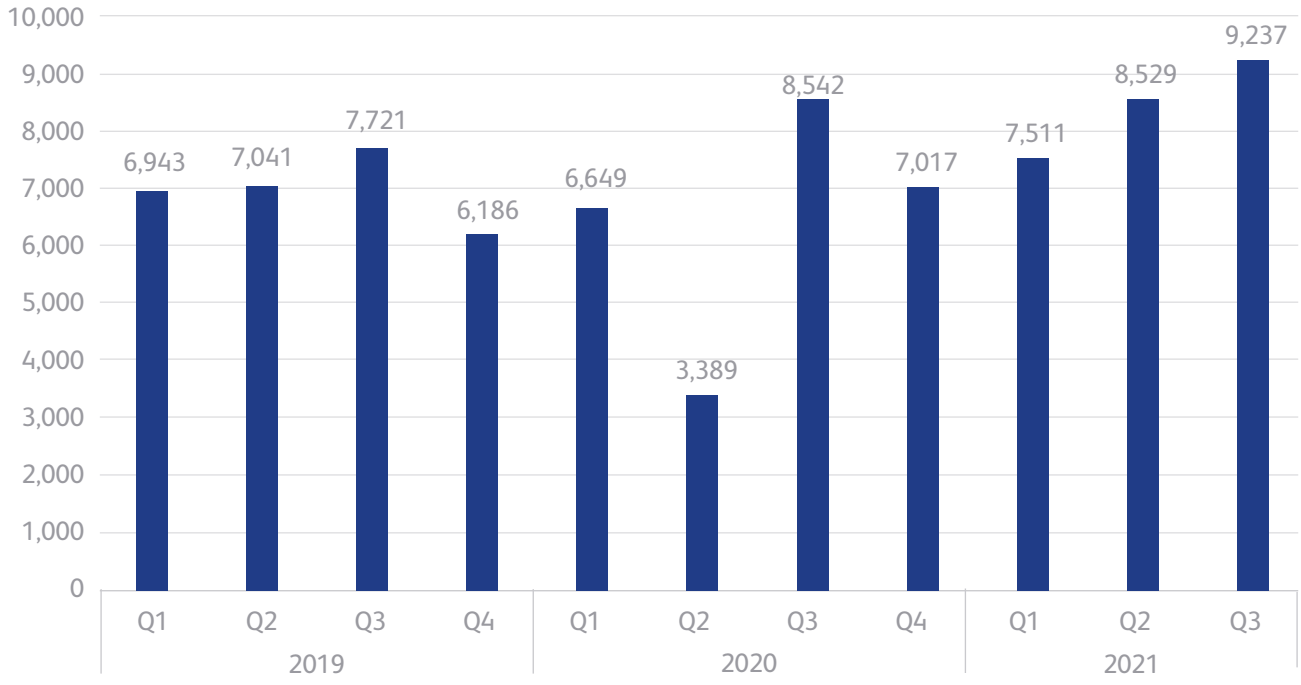
Break bulk exports fell by 1% in 2021, to 624,000 tonnes. The average volume of this traffic over the past five years has been approximately 660,000 tonnes. Break bulk exports are concentrated at the ports of Cork and Shannon Foynes, which hold a 67% share of this traffic, when combined. Common exports of this traffic include; metals and metal scrap, machinery, refuse-derived fuel (RDF) and wood pulp. The ports of Drogheda, Waterford and Wicklow also handle break bulk exports, and hold a 30% share on a combined basis.

The volume of break bulk imports increased in 2021 by 26%, to just over 1m tonnes. This increase was equivalent to an additional 211,000 tonnes. This is the first time this traffic has surpassed 1m tonnes since before the financial crash beginning in 2008. Imports of break bulk declined by 10% in 2020, as the COVID-19 pandemic interrupted a period of robust annual growth between 2014 and 2019. The ports of Cork, Drogheda and Greenore represent approximately 60% of break bulk imports. The ports of Shannon Foynes, Wicklow and Waterford account for roughly 10% each.

Break bulk imports into the Port of Cork rose significantly in 2021, by 48%, or 68,000 tonnes. This was driven almost entirely by imports of timber which represented one third of the overall increase in break bulk imports this year. At Waterford, imports rose by 88%, equivalent to 53,000 tonnes, while at Greenore, imports rose by 36%, or 47,000 tonnes. At both ports, growth in 2021 was driven by imports of steel. A notable increase in the importation of machinery and general industrial equipment imports was also recorded at Dublin Port. Volumes rose by 27,000 tonnes compared to 2020.

The significant increase in the import of products which are central to the construction and industrial sector, such as steel and timber, is often consistent with a rise in such activity in the Irish economy. Figure 4 below shows the number of planning permissions granted for all types of construction up to the third quarter of 2021.

Figure 4: No. of Planning Permissions Granted, All types of Construction, Quarterly, Q1 2019 – Q3 2021.[1]



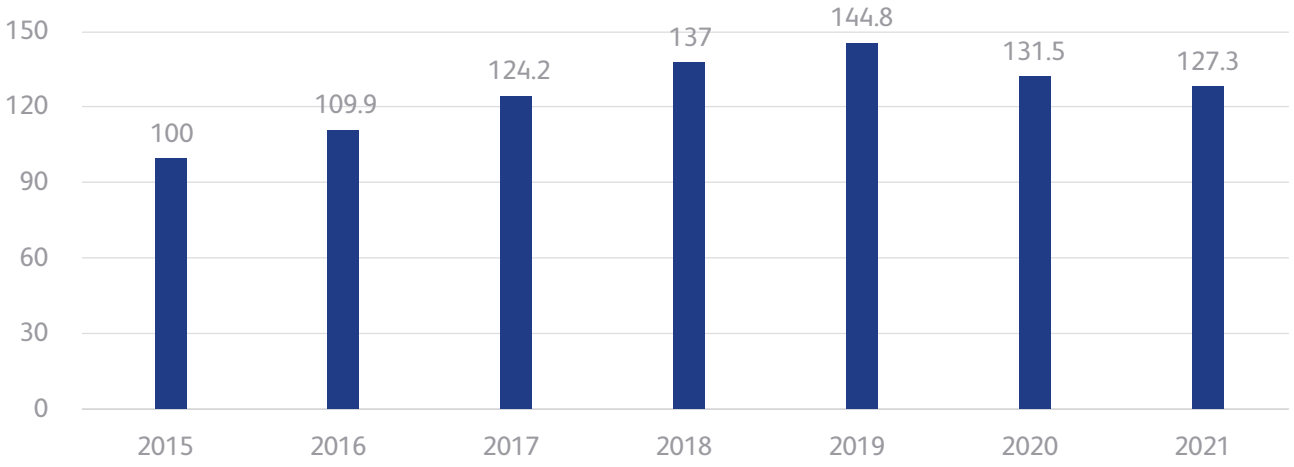
Source: *CSO*

[1] Planning Permissions, CSO

A consistent rise in the quarterly volume of planning permissions granted is evident from late 2020 onwards. As break bulk traffic is comprised of non-containerised project cargo that is driven in large part by the construction sector, a greater number of planning permissions requires a greater volume of such products, e.g. machinery and raw materials, to satisfy such demand.

However, despite the rise in break bulk imports, and the increase in granted planning permissions, the volume of construction, as measured by the CSO's Production Index in Building and Construction, declined in 2021 by 3% (See Figure 5 below).

Figure 5: CSO Volume of Production Index in Building and Construction (Base 2015 = 100)



Source: *CSO*

Due to the significant disruption of COVID-19 restrictions in early 2021, many projects may have fallen into 2022. As such, the increase in break bulk imports into the Republic of Ireland may be utilized for projects to be completed in 2022.

In Northern Ireland, break bulk traffic also rose significantly. Volumes increased by 29%, equivalent to an additional 188,000 tonnes. Break bulk traffic is concentrated at the ports of Belfast and Warrenpoint, which hold a 90% share of this traffic when combined. As with ports in the Republic of Ireland, steel and timber drove the increase in break bulk tonnage at Warrenpoint. As highlighted by the Northern Ireland Statistics and Research Agency (NISRA);

"Construction output is 2.6% above the pre-Coronavirus pandemic level seen in Quarter 4 2019"

NISRA Quarterly Construction Bulletin, January 2022[2]

[2] NISRA Quarterly Construction Bulletin, January 2022

1.2 RoRo

Introduction

Section 1.2A will illustrate the annual performance of RoRo traffic at Irish and Northern Irish ports. The main causes of fluctuation in 2021 traffic will be detailed, and volumes will be compared with those of recent years.

Section 1.2B will analyse the changes in the composition of RoRo traffic on the island of Ireland, broken down by regional route. The routes assessed will be Republic of Ireland to Great Britain (ROI – GB), Republic of Ireland to mainland Europe (ROI – EU), and Northern Ireland to Great Britain (NI – GB). The market shares of each of these routes have been significantly altered in 2021, driven by the end of the Brexit transition period on January 1st 2021.

Section 1.2C will outline changes in the Three C's of the RoRo freight market; Capacity, Connectivity and Competition. The new Brexit trading arrangements in 2021 brought about substantial changes in each area in 2021.

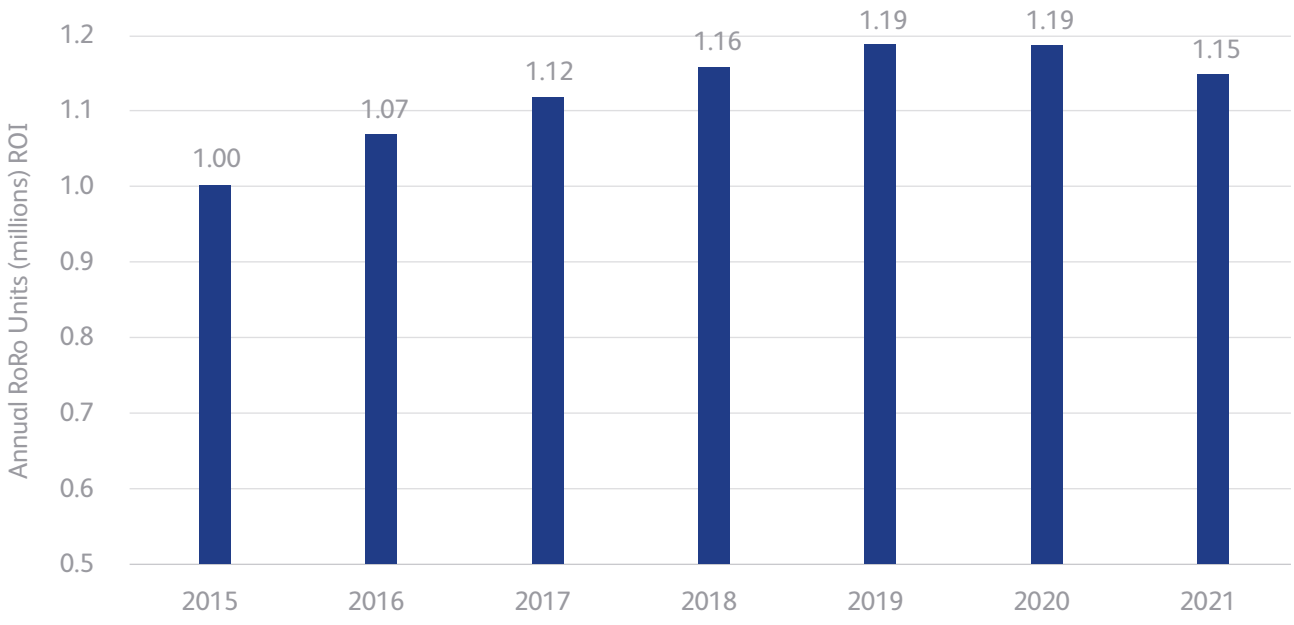
Section 1.2D will provide an update on an emerging trend in the Irish RoRo freight market, which is the rising share of unaccompanied RoRo traffic as a share of total volume. This has been analysed consistently in IMDO quarterly and annual reports, beginning in 2019.

Lastly, concluding remarks will be provided for the Irish RoRo freight market in 2021.

1.2A Annual Traffic

In 2021, RoRo volumes in the Republic of Ireland declined by 3%, equivalent to 33,830 fewer RoRo units. This is the first annual decline in RoRo traffic since 2012[3]. In 2021, 1.15m RoRo units were handled at Dublin, Cork and Rosslare Europort, the lowest annual volume since 2017. However, traffic remains above the 1m units mark which was first achieved in the latter half of the last decade (See Figure 6 below).

Figure 6: Annual RoRo Volume, Republic of Ireland, million units



Source: *IMDO*

[3] In 2020, RoRo traffic declined slightly, by 0.1% when compared to 2019.

Table 6 presents the volume of traffic handled at each RoRo port on the island of Ireland and recognises significant differences in performance. In Dublin Port, volumes declined by 9%, equivalent to 100,000 fewer RoRo units. At 961,000 units, this is the first time Dublin Port has dipped below the 1m mark since 2017.

At Rosslare Europort, RoRo traffic surged in 2021, rising by 49% and adding over 60,000 units year on year. At 183,338 RoRo units, this is the largest annual total for Rosslare Europort recorded by the IMDO. At The Port of Cork, RoRo volumes also rose to the highest level on record. In 2021, RoRo traffic in Cork was 24% higher than in 2019. 2019 is a better benchmark due to significant fluctuation in port traffic in 2020 at this port. The increase compared to 2019 was equivalent to an additional 1,348 RoRo units.

Table 6: Table 5: All-Island RoRo Units, 2019 - 2021

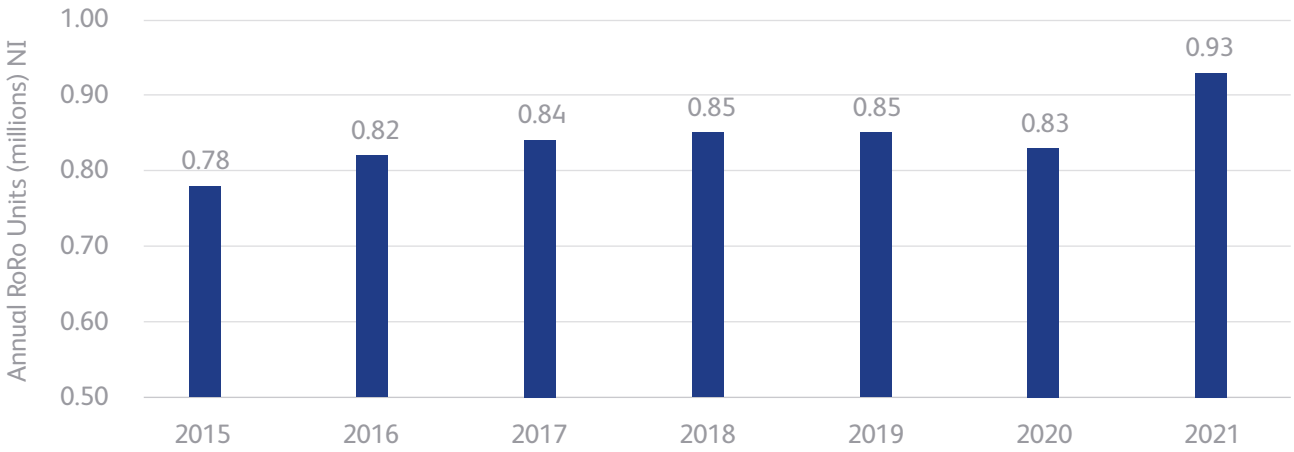
Full Year	2019	2020	2021	Growth Vs 2020	Diff Vs 2020
	RoRo Units	RoRo Units	RoRo Units	(%)	RoRo Units
Cork	5,569	1,527	6,917	353%	5,390
Dublin	1,059,103	1,060,979	961,384	-9%	-99,595
Rosslare	122,095	122,700	183,338	49%	60,638
Total ROI	**1,186,767**	**1,185,206**	**1,151,639**	**-3%**	**-33,567**
Total NI	**851,940**	**827,521**	**929,032**	**12%**	**101,511**
Total All-Island	**2,038,707**	**2,012,727**	**2,080,408**	**3%**	**67,681**

Source: *IMDO*

In 2021, RoRo traffic in Northern Ireland reached unprecedented levels. Volumes rose by 12% compared to 2020, equivalent to an additional 100,000 RoRo units. The average annual volume of RoRo traffic through Northern Irish ports was 827,000 units between 2015 – 2020 (See Figure 7).

Northern Ireland's RoRo ports consist of Belfast Harbour, Warrenpoint Harbour and The Port of Larne. All three ports recorded annual growth greater than 10% in 2021. Belfast Harbour grew at the fastest rate, with an annual increase of 13% in RoRo traffic.

Figure 7: Annual RoRo Volume, Northern Ireland



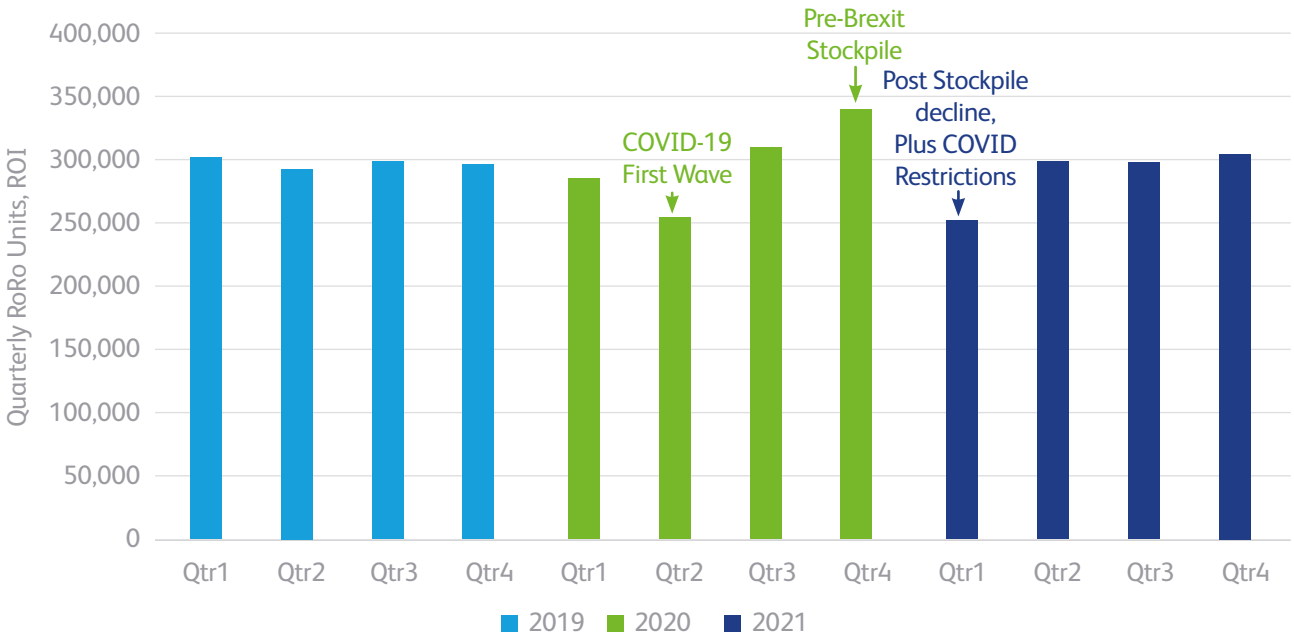
Source: *IMDO*

Slow Start to 2021

As highlighted above, RoRo traffic through Republic of Ireland ports recorded its first annual decline for almost ten years. This decline was driven almost entirely by a significant fall in traffic during the first quarter of the year. This decline in Q1 2021 was caused by two factors; a significant stockpiling of merchandise goods ahead of the end of the Brexit transition period on 31st December 2020, and, severe restrictions on economic activity due to the COVID-19 pandemic. Both of these factors are outlined in detail below.

Figure 8 illustrates the scale of the decline in Q1 2021. At 252,000 units, this was the lowest quarterly volume recorded since Q1 2016, and was lower than the worst period of the COVID-19 pandemic in the second quarter of 2020. When compared to Q1 2020, the decline was 11%.

Figure 8: Quarterly RoRo Volume 2021, Republic of Ireland



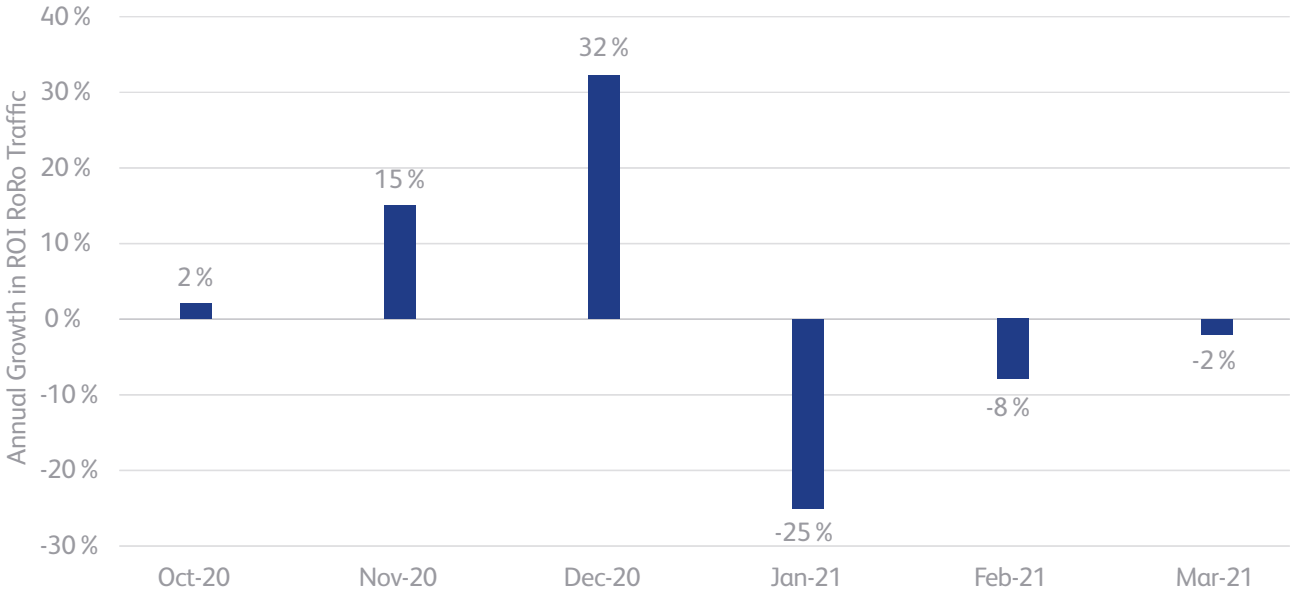
Source: *IMDO*

Stockpile & Trial

A major stockpiling of merchandise goods in late 2020 had a significant and negative impact on Q1 2021 RoRo volumes.

Beginning in October 2020, preparations were made by companies in Ireland and in the UK ahead of customs regulations that would come into force on January 1st 2021. Figure 9 below shows the year-on-year, unadjusted increase in RoRo volumes for each month between October 2020 and March 2021.

Figure 9: Annual Growth in RoRo Traffic, Republic of Ireland, October 2020 – March 2021



Source: *IMDO*

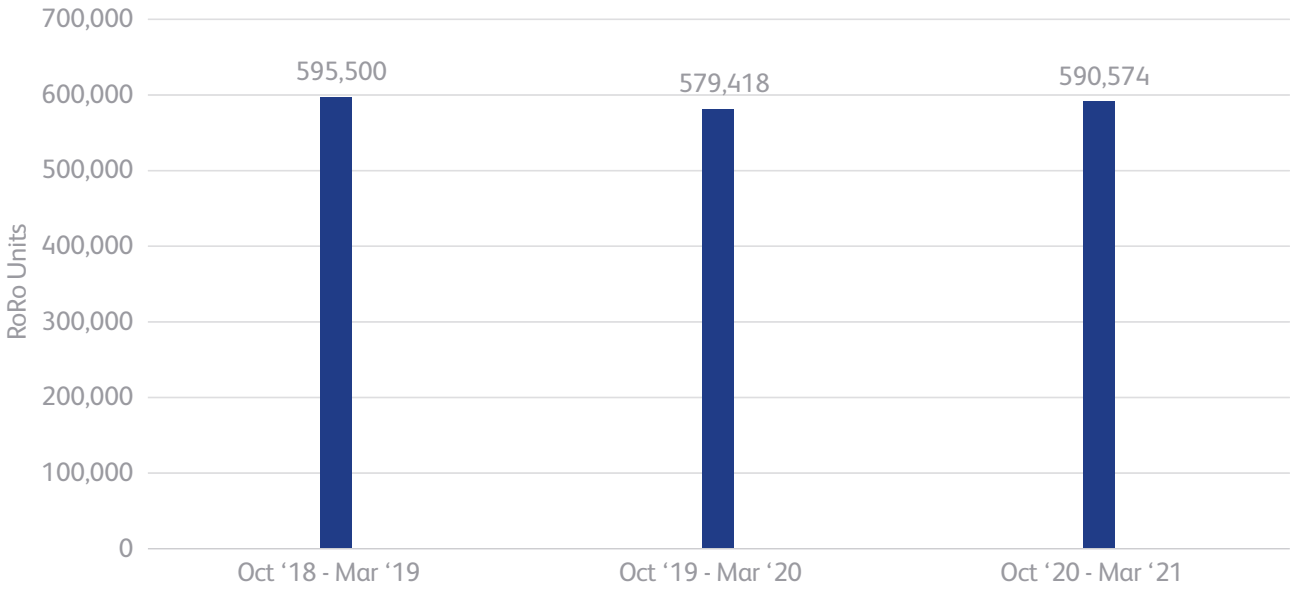
As illustrated in Figure 9, there was a surge in RoRo volumes in the final quarter of 2020, particularly in November and December. Q4 was the busiest quarter for RoRo traffic on record, with 338,000 units handled at Dublin, Cork and Rosslare Europort. The average quarterly volume for RoRo traffic in 2019 was 295,000 units. The increase occurred predominantly on UK routes, however, the volume of EU traffic in these months was also unprecedentedly high.

Overall, more than 40,000 RoRo units were added in Q4 2020 compared to Q4 2019. Substantial COVID-19 restrictions on economic activity were still in place in Ireland for most of this period. In addition, December is one of the quietest months for RoRo traffic, with volumes approximately 8 % below average. The increases recorded during this quarter are therefore understood to be driven by advance preparations on the part of Irish importers and exporters for the UK's formal withdrawal from the European Union on January 1st 2021.

The IMDO consults regularly with stakeholders in the Irish shipping industry, and also prepares a weekly monitor of shipping volumes, which began in March 2020. Consultations during this period of heightened uncertainty reaffirmed these conclusions. Concerns about delays and disruption at Irish and UK ports were central to the decisions of both Irish and UK companies to stockpile merchandise goods.

This stockpile of merchandise goods was gradually depleted over the first three months of 2021. Figure 10 below compares the volumes over the six-month period from October to March in 2020 / 2021 with previous years. As evident in this graph, RoRo volumes during this period were in line with the same six-month period in 2018 and 2019. As a result, the stockpile of goods in late 2020 should be noted in explaining the significant decline in RoRo volume in Q1 2021.

Figure 10: RoRo Volumes, Republic of Ireland, October – March, 2018-2021



Source: *IMDO*

COVID-19 Restrictions on Economic Activity

Beginning in late December 2020, severe economic restrictions were introduced in Ireland, the UK and continental Europe in order to address a new wave of the COVID-19 pandemic. These restrictions were maintained in Ireland until a phased reopening was announced in April 2021.

At Irish ports, the imposition of 'Level 5' restrictions in March 2020 and again in October 2020 were followed on both occasions by a downturn in RoRo volumes. In both cases, the impact of such restrictions on the shipping sector was immediate, and affected all segments of the market. As such, it is understood that the reintroduction of such measures in early 2021 had a similarly suppressive impact on the market.

However, given its scale, the merchandise stockpile in late 2020 had a greater impact on the decline in Q1 2021 RoRo traffic when compared to COVID-19 economic restrictions. The economic restrictions therefore served to exacerbate a period of suppressed traffic for Irish ports.

1.2B Composition of RoRo Traffic

(i) ROI – GB Traffic

Table 7 details the volume of RoRo freight units carried on ferry routes between ports in the Republic of Ireland and Great Britain (ROI – GB).

Table 7: ROI – GB RoRo Units, 2019 – 2021

	2019	2020	2021	Growth Vs 2020	Diff Vs 2020
	RoRo Units	RoRo Units	RoRo Units	(%)	No.
Dublin - GB	897,478	889,824	703,603	-21%	-186,221
Rosslare - GB	101,472	97,250	64,332	-34%	-32,918
Total ROI - GB	**998,950**	**987,074**	**767,935**	**-22%**	**-219,139**

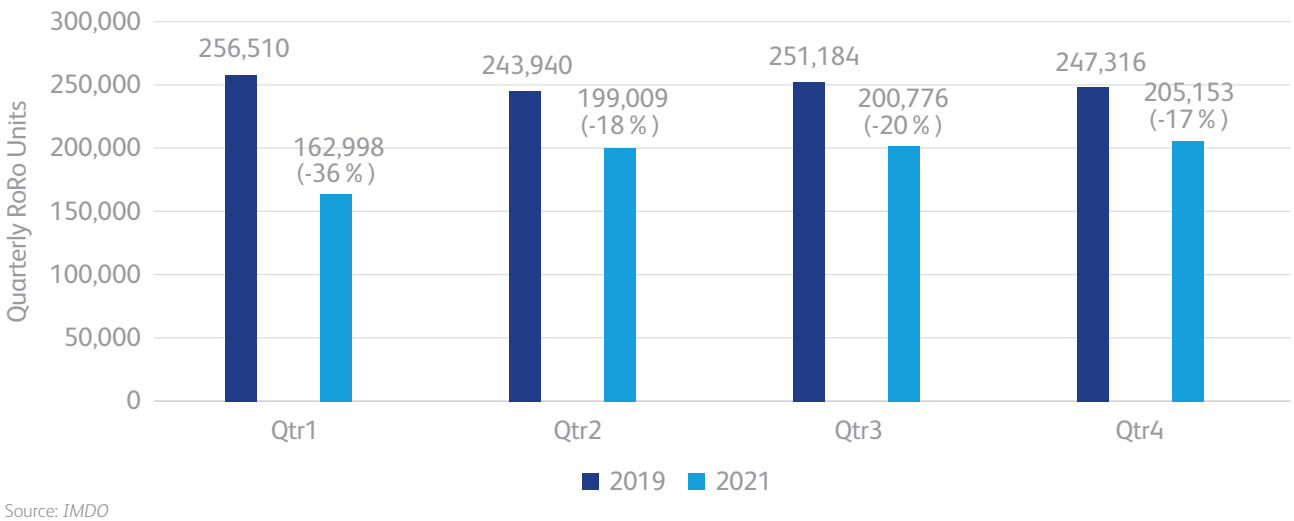
Source: *IMDO*

The volume of ROI – GB RoRo traffic declined significantly in 2021. Volumes in 2021 were 22% below those of 2020, a reduction of 220,000 RoRo units. This is the steepest annual decline in GB RoRo traffic on record.

In the first quarter of 2021, 162,998 units were handled on these routes, the lowest volume ever recorded by the IMDO. The predominant driver of this Q1 decline was the pre-Brexit stockpile in late 2020, which is described in detail in Section 1.2A. The impact of this stockpile, coupled with strict COVID-19 restrictions between January and March, was so significant that the decline in ROI – GB traffic resulting solely from the end of the Brexit transition period could not be accurately isolated.

As the stockpile effect passed, and as parts of the Irish economy re-opened, ROI – GB traffic rebounded in Q2 2021, with volumes increasing by 29% on a seasonally adjusted basis between Q1 & Q2 2021. Figure 11 below illustrates the quarterly volumes of RoRo traffic in 2021 compared to the same periods in 2019.[4]

Figure 11: ROI – GB Quarterly RoRo Traffic, 2019 and 2021[5]



Source: *IMDO*

[4] Due to the COVID-19 pandemic and the pre-Brexit stockpiling effect, 2020 represents a year of uncharacteristically high fluctuation in RoRo traffic for Irish ports. 2019 is a more reliable benchmark as it represents the highest annual volume of RoRo traffic recorded through ROI ports.

[5] Percentage declines in parentheses represent year-on-year difference between 2019 and 2021 quarters.

Between Q2 and Q4, traffic on ROI – GB routes plateaued, recording an average of 200,000 units in each quarter. This is 20% below the average volume of 250,000 units per quarter that was recorded between 2018 and 2020. Consequently, no significant recovery in ROI – GB traffic emerged after the second quarter of this year.

UK Landbridge

The substantial decline in ROI – GB traffic in 2021 was caused primarily by reductions in the use of the UK Landbridge.

The UK Landbridge is a term used to describe a route to market that connects Irish importers and exporters to international markets via the UK road and ports network. It is a strategically important means of access to the single market that has been favoured by traders in high value or time sensitive goods because it offers significantly faster transit times than alternative routes. The reintroduction of customs controls as a consequence of Brexit increases transit times and places additional costs on Irish businesses that reduces their competitiveness in accessing international markets. A report[6] published in 2018 by the IMDO estimated that the volume of goods transported via the UK Landbridge was 3 million tonnes, equivalent to approximately 150,000 HGV's per year. Speed and frequency were cited as key factors driving the choice of the UK Landbridge.

Prior to 2021, concern about delays and disruption on the UK Landbridge due to new customs controls created significant uncertainty for Irish importers and exporters, and this drove the stockpile of merchandise goods outlined above. It is clear that in 2021, many more importers and exporters have moved to alternatives to the UK Landbridge in order to access the EU single market. These alternatives include direct EU RoRo services from Irish ports to mainland EU ports, or Lift-on / Lift off (LoLo) container services, which operate predominantly between Ireland and large EU ports such as Rotterdam and Antwerp.

In all, the decline in the use of the Landbridge in 2021 drove unprecedented increases in both ROI – EU RoRo volumes and LoLo container volumes. Throughout 2021, the IMDO has monitored RoRo volumes closely, using weekly traffic reports and frequent consultations with stakeholders. Since the post-Brexit stockpile effect passed, there has been no clear recovery in ROI – GB RoRo volumes to pre-Brexit volumes. Traffic on ROI – GB routes has stabilized at approximately 200,000 units per quarter between March and December 2021, 20% below pre-Brexit volumes. The stabilization in ROI – GB traffic indicates that there is no rapid return in UK Landbridge traffic currently underway. However, ROI – GB have steadily improved throughout 2021, albeit slowely. In all, both Brexit and the COVID-19 pandemic has showed that the Irish RoRo freight market is responsive, dynamic and highly competitive. As such, these conclusions may be altered in 2022 and beyond.

Impact on Irish Ports

As highlighted throughout the year in the IMDO's quarterly traffic reports, the decline in ROI – GB traffic has not been equally shared between Ireland's two GB ports; Dublin Port & Rosslare Europort.

The fall in ROI – GB traffic has been steeper at Rosslare Europort, in proportional terms. At Rosslare Europort, GB traffic declined by 34% when compared to 2020. At Dublin Port, the decline in GB traffic was 21% versus 2020 (See Table 7 above).

The overall decline in ROI – GB traffic in 2021 amounted to 219,139 RoRo units. The decline in GB traffic at Rosslare Europort accounted for 15% of this total, despite Rosslare representing a 10% share of GB traffic in recent years.

The decline in ROI – GB traffic in 2021 has therefore been shared disproportionately between Dublin Port and Rosslare Europort, with the latter now representing a smaller share of this traffic. This trend emerged early in 2021, and has been consistent throughout the year.

[6] 'The Implications of Brexit on the Use of the Landbridge' – IMDO, 2018

(ii) ROI – EU traffic

Table 8 details the volume of RoRo freight units carried on ferry routes between ports in the Republic of Ireland and mainland Europe (ROI – EU).

Table 8: ROI – EU RoRo Units, 2019 – 2021

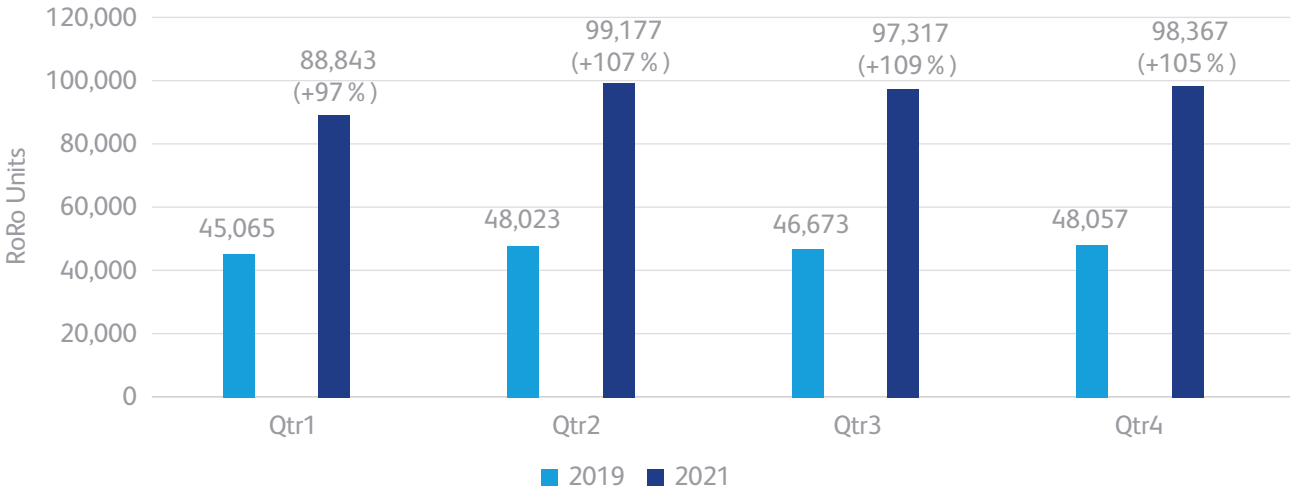
	2019	2020	2021	Growth Vs 2020	Diff Vs 2020
	RoRo Units	RoRo Units	RoRo Units	(%)	No.
Cork - EU	5,569	1,527	6,917	353%	5,390
Dublin - EU	161,625	171,155	257,781	51%	86,626
Rosslare - EU	20,623	25,450	119,006	368%	93,556
Total ROI - EU	**187,817**	**198,132**	**383,704**	**94%**	**185,572**

Source: *IMDO*

The volume of RoRo units carried on ROI – EU routes in 2021 reached unprecedented levels, doubling in number when compared to either 2019 or 2020. In total, 383,704 RoRo units were carried on these routes this year, the highest on record by a considerable margin.

Figure 12 below illustrates the quarterly volumes of direct EU RoRo traffic in 2021 compared to the same periods in 2019.[7]

Figure 12: ROI – EU Quarterly RoRo Traffic, 2019 and 2021[8]



Source: *IMDO*

[7] See footnote No. 4

[8] Percentage declines in parentheses represent year-on-year difference between 2019 and 2021 quarters.

As with traffic on GB routes, ROI – EU traffic was subject to the same suppressive effects of the pre-Brexit stockpile in late 2020, and the COVID-19 restrictions on economic activity in early 2021 (See Section 1.2A). As a result, volumes carried on ROI – EU routes in Q1 2021 were roughly 10,000 units lower than each of Q2, Q3 and Q4, as is evident in Figure 12.

The pre-Brexit stockpile in late 2020 predominantly occurred on GB routes, however, EU volumes during this period were also unprecedentedly high. The increase in EU traffic coincided with a campaign led by the IMDO and Department of Transport encouraging importers and exporters to 'Be Prepared' and to 'ACT Now'[9] by **A**ssessing current supply chains, **C**ommunicating future demand to shipping companies, and **T**rialling alternative routes, such as direct sailings from ROI to the continent.

In the second quarter of 2021, ROI – EU traffic would reach 99,000 units. Volumes would then stabilize at roughly this level for the remainder of the year. Between 2015 and 2020, ROI – EU traffic averaged 46,000 units per quarter. In 2021, average quarterly volume on these routes is now just under 96,000 units.

As mentioned in part (i), the surge in EU traffic has occurred in parallel to the substantial declines recorded in ROI – GB traffic. Since early January 2021, it has been clear that the vast majority of this new continental traffic had previously been making use of the UK Landbridge prior to 2021, and therefore transiting on ROI – GB short sea routes. ROI – EU services have therefore benefitted greatly from the desire of importers and exporters to avoid customs regulations at British ports, and instead access mainland EU markets directly.

It should be noted however, that RoRo traffic on the UK Landbridge represents trade between Ireland and the European Union that is captured within ROI – GB freight statistics. Importantly, increases in ROI – EU traffic do not automatically imply greater Ireland – EU trade, but rather, a reconfiguration of the supply chains of Ireland's importers and exporters. Competition between shipping companies operating on direct EU services, and those operating on the UK Landbridge, has greatly increased since the introduction of the Brexit trading arrangements. The IMDO continues to monitor these trends closely.

Impact on Irish Ports

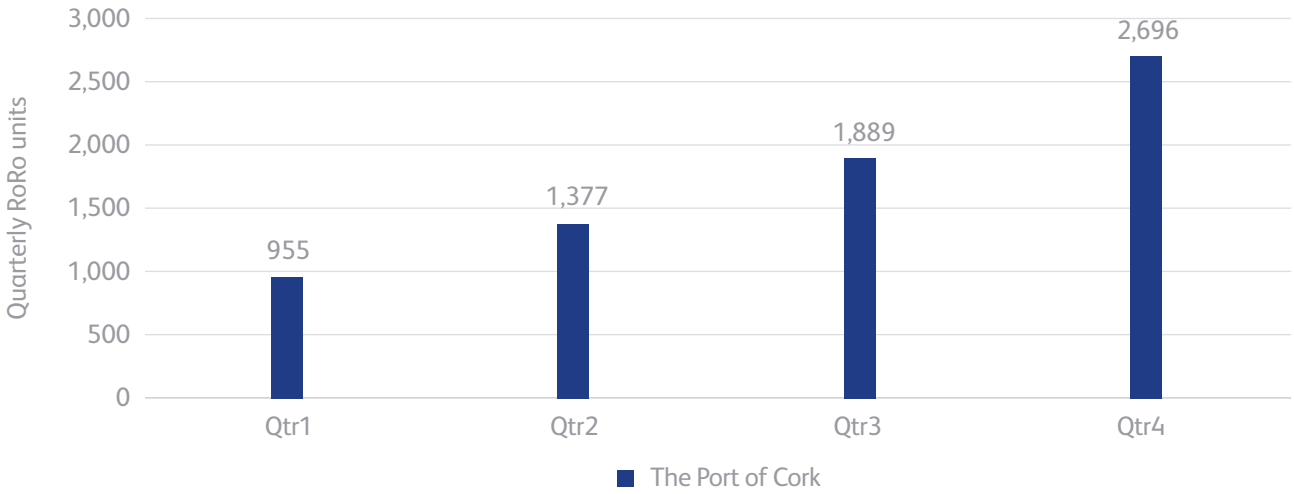
As with the decline in GB RoRo traffic, the increase in ROI – EU traffic has not been equally shared between Ireland's three RoRo ports; Dublin Port, Rosslare Europort and The Port of Cork. Instead, Rosslare Europort has captured most of this volume, in proportional terms.

Of the 185,000 additional RoRo units carried on EU routes in 2021, 50% travelled through Rosslare Europort, while 47% travelled through Dublin Port. The Port of Cork, where all RoRo traffic is with mainland European ports, handled the remaining 3%.

Since 2015, Rosslare Europort has represented approximately 14% of all ROI – EU traffic, but captured half of the additional EU traffic handled in 2021. Similarly, The Port of Cork has averaged a share of 1% of EU RoRo volume since 2015, but accounted for 2% in 2021. Notably, RoRo volumes in Cork rose steadily throughout the year. By Q4 2021, Cork had handled its highest quarterly volume of RoRo units ever recorded by the IMDO, driving its share of EU traffic to 3%. Figure 13 below illustrates the rise in RoRo traffic at Cork throughout 2021.

[9] Be Prepared for Brexit: ACT and Prepare to Switch

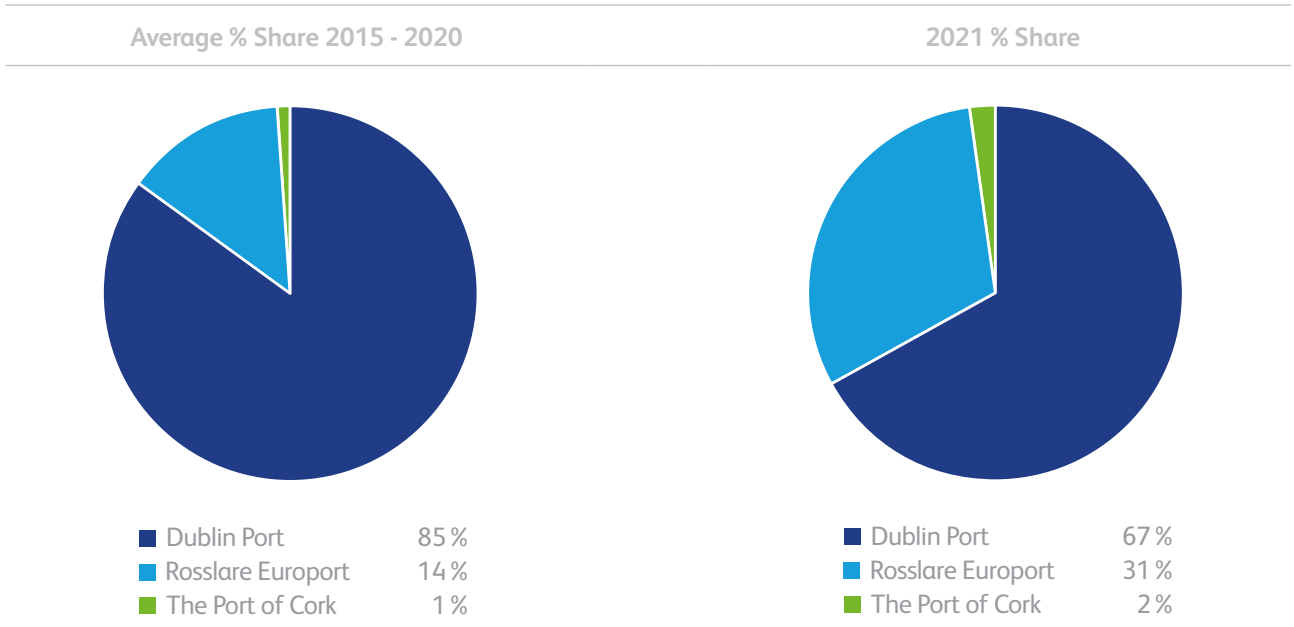
Figure 13: Quarterly RoRo Traffic, The Port of Cork, 2021



Source: *IMDO*

Since 2015, Dublin Port represented approximately 85 % of all EU RoRo traffic, but captured just 47 % of the additional EU traffic. Rosslare Europort and the the Port of Cork therefore captured a disproportionately high amount of the additional EU traffic in 2021. As a result, Rosslare now accounts for 31 % of all ROI – EU RoRo traffic, more than double its previous share. The Port of Cork now holds a 2 % share. Dublin Port remains the largest port for EU traffic, representing 67 % of this volume in 2021. Figure 14 below illustrates the changes in market shares in 2021 compared to the average held between 2015 and 2020.

Figure 14: Share of ROI – EU RoRo Traffic



Source: *IMDO*

Table 9 details the volume of RoRo freight units carried on ferry routes between ports in Northern Ireland and Great Britain (NI – GB)[10].

Table 9: NI – GB RoRo Units, 2019 – 2021

	2019	2020	2021	Growth Vs 2020	Diff Vs 2020
	RoRo Units	RoRo Units	RoRo Units	(%)	No.
Belfast	555,410	541,350	609,155	13%	67,805
Larne	192,678	185,274	207,804	12%	22,530
Warrenpoint	103,852	100,897	112,073	11%	11,176
Total NI	**851,940**	**827,521**	**929,032**	**12%**	**101,511**

Source: *IMDO*

As highlighted in Section 1.2A, unprecedented volumes of RoRo traffic were recorded through RoRo ports in Northern Ireland in 2021. As shown in table 9, over 100,000 additional units were handled at Belfast, Larne and Warrenpoint, with all three ports recording significant annual growth.

The Ports of Larne, Belfast, Warrenpoint, Dublin Port and Rosslare Europort all offer RoRo services to Great Britain. Several shipping companies operate out of ports on both sides of the border on the island of Ireland. In addition, many haulage companies on the island of Ireland make use of RoRo routes on either side of the border. For example, many Northern Irish hauliers make significant use of the frequent short sea RoRo services between Dublin Port and ports such as Holyhead.

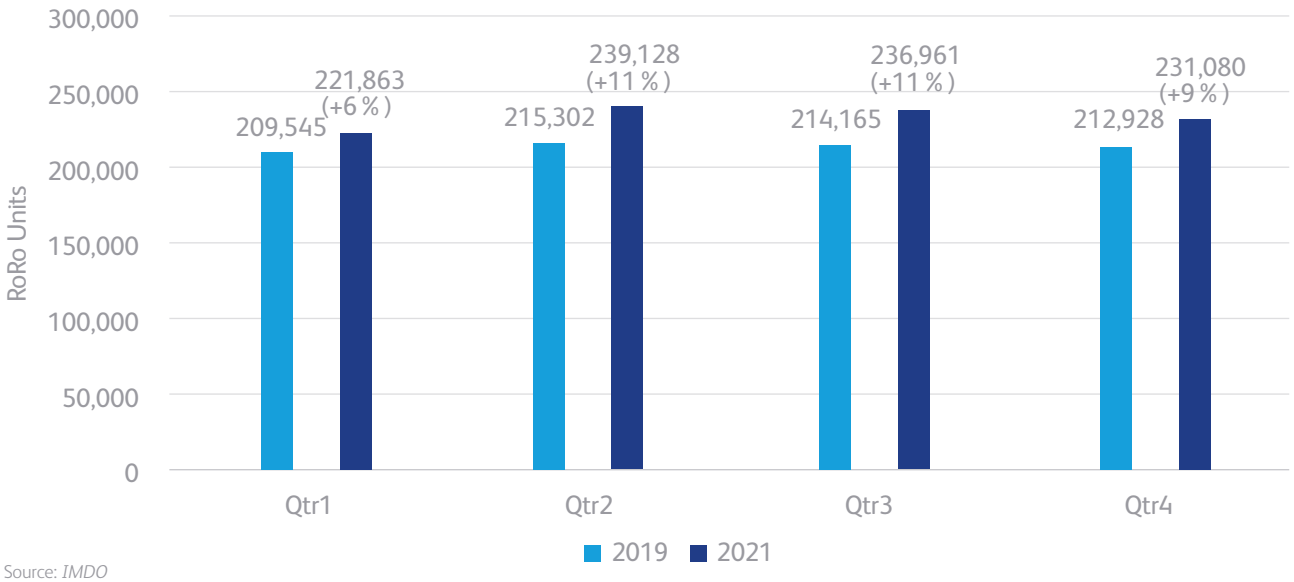
Through consultations with stakeholders and through detailed analysis of time series trends of RoRo traffic on the island of Ireland, it is clear that haulage companies based in Northern Ireland, have transferred significant volumes of traffic away from RoRo services in the Republic of Ireland in 2021.

The preponderance of this transferred traffic from ROI – GB back to NI – GB was from Dublin Port. Fewer Northern Irish haulage companies employing Dublin Port to access GB markets explains much of the significant decline in Dublin Port's ROI – GB volumes in 2021. Dublin has been the port of choice for many Northern Irish hauliers wishing to access markets in the midlands and southeast of England. Dublin Port is therefore exposed to these trade shifts as a result of Brexit.

From early 2021, it was clear that this transfer of traffic was driving the increase in RoRo traffic through Northern Irish ports. Figure 15 below illustrates the quarterly volumes of RoRo traffic through Northern Irish ports in 2021 compared to the same periods in 2019.[11]

[10] There are currently no direct RoRo ferry services between ports in Northern Ireland and mainland European ports.
[11] See footnote No. 4

Figure 15: NI – GB Quarterly RoRo Traffic, 2019 and 2021[12]



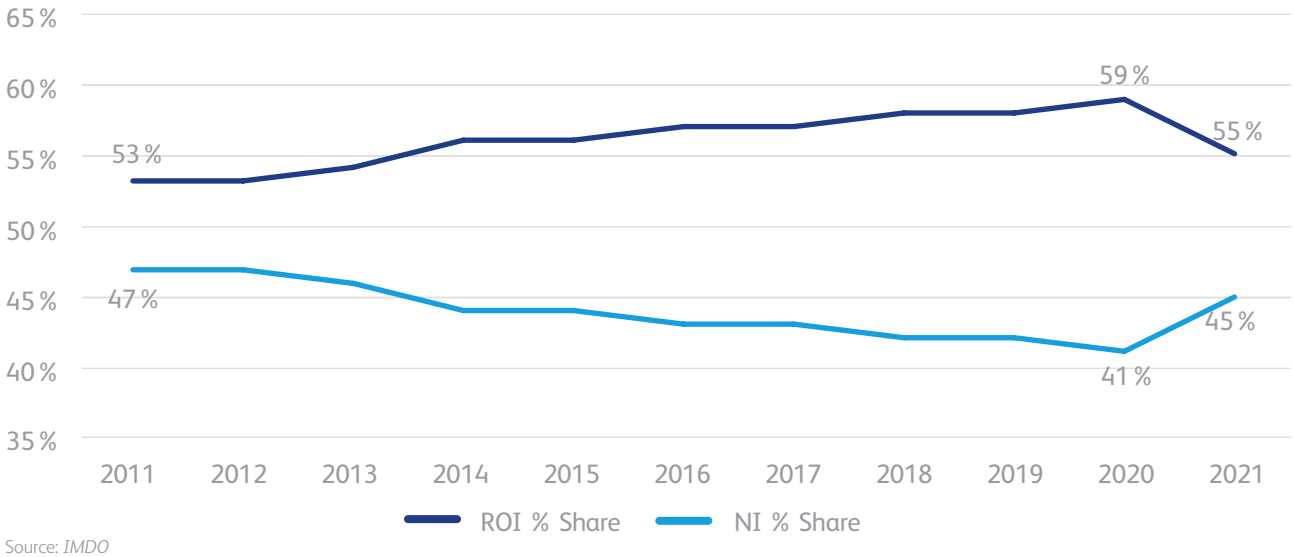
Source: *IMDO*

Impact on Northern Irish Ports

The shares of RoRo traffic held by each of Belfast, Larne and Warrenpoint ports did not change significantly in 2021. Of the additional 100,000 RoRo units handled in Northern Ireland in 2021, 67% transited through Belfast, 22% through Larne and the remaining 11% through Warrenrpoint. This breakdown is broadly consistent with market shares held by each port in recent years.

As a result of the rise in RoRo traffic at the aforementioned ports this year, the share of all-island RoRo traffic held by Northern Ireland has increased significantly. Figure 16 illustrates the annual share of all-island RoRo traffic when ROI and NI traffic are compared for the past decade. 2021 has reversed a consistent trend of a rising share of all-island RoRo traffic held by ROI ports.

Figure 16: Share of All-Island RoRo Traffic, 2011 – 2021



Source: *IMDO*

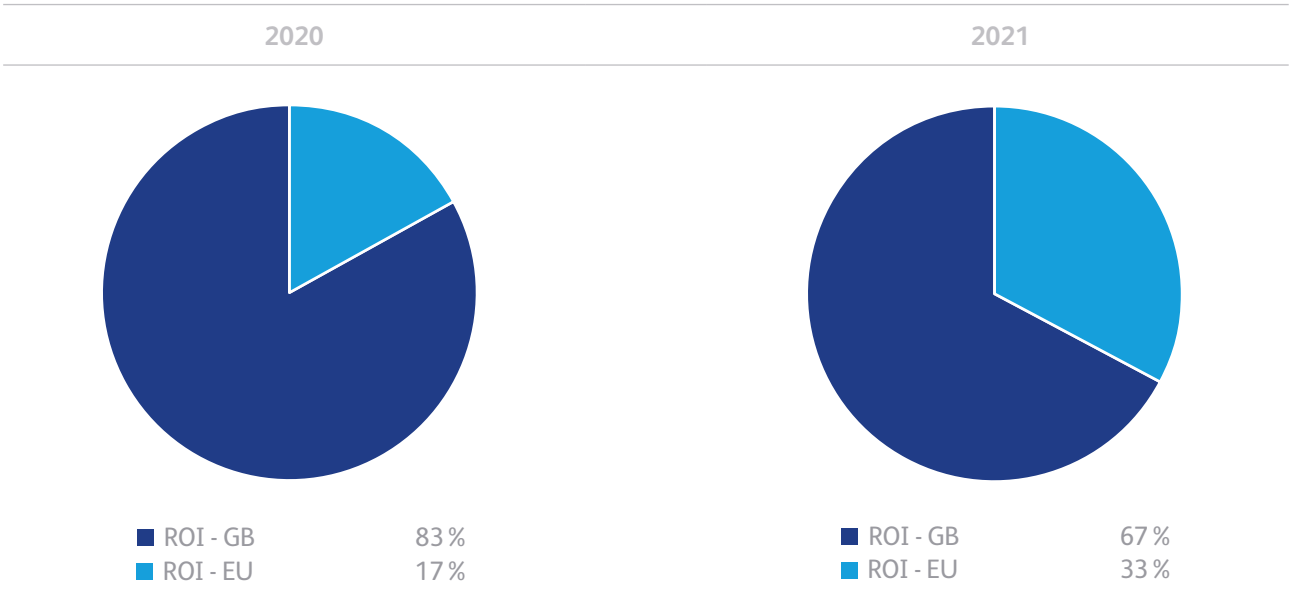
[12] Percentage declines in parentheses represent year-on-year difference between 2019 and 2021 quarters.

1.2C Changes in Capacity, Connectivity, Competition

Three characteristics that are vital to a functioning maritime freight market in Ireland are; **Capacity, Connectivity** and **Competition**. When sufficient provision is made for each characteristic, the end users of the Irish maritime freight industry, importers and exporters, receive a resilient, adaptable and efficient service that is a prerequisite for growth in the Irish economy.

Caused by the end of the Brexit transition period, and thus the UK's withdrawal from the EU Single Market, Irish supply chains were significantly altered over a short period of time. In 2020, EU traffic represented 17% of all RoRo traffic handled at Ireland's three RoRo ports; Dublin Port, Rosslare Europort and The Port of Cork. This share was broadly in line with previous years, and amounted to approximately 190,000 RoRo units per year. In 2021 alone, this volume doubled to over 380,000 units and drove the share of direct EU traffic to 33%. This significant shift is illustrated in Figure 17 below.

Figure 17: Share of Republic of Ireland RoRo Traffic, by route, 2020 Vs 2021



Source: *IMDO*

For this substantial reorganization of Irish RoRo freight to occur in such a short period of time, a response was required from the Irish shipping market in order to provide the capacity and connectivity necessary to satisfy an additional 185,000 units of demand for direct EU services. The response that came from shipping operators in the Irish freight market was unprecedented in terms of its scale and speed of implementation.

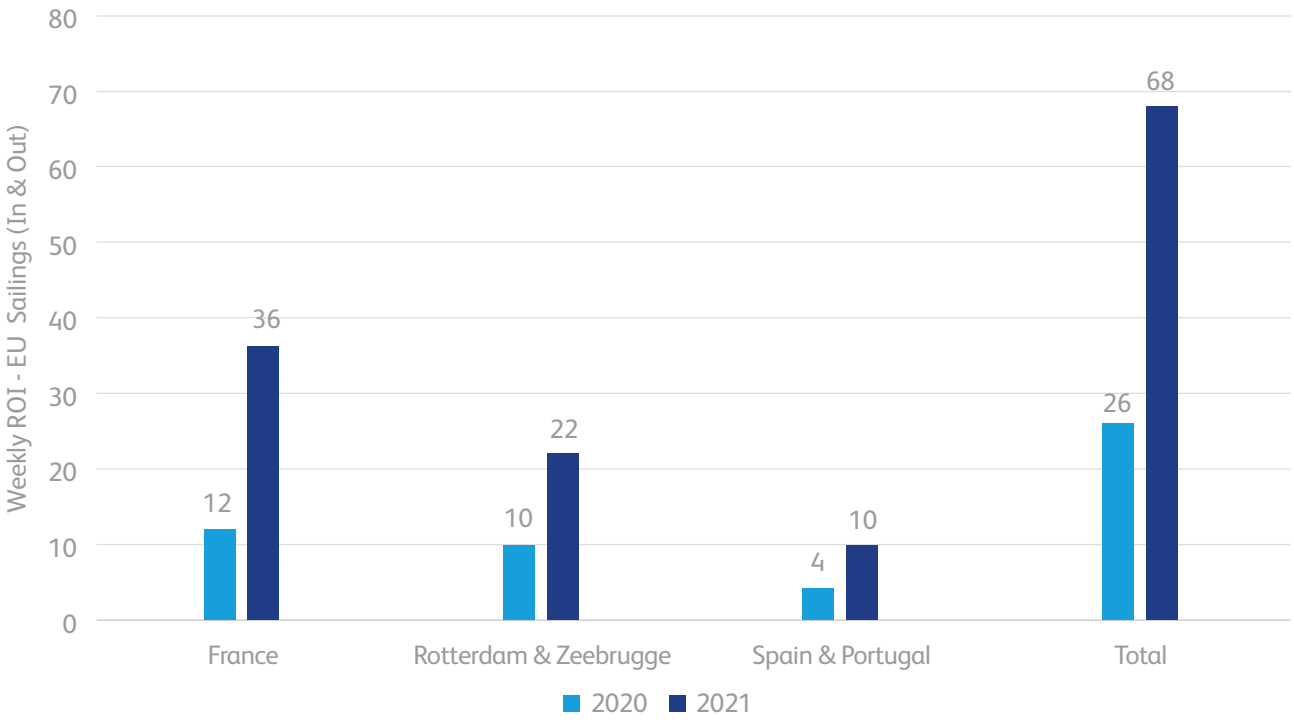
Firstly, in late 2020, all four incumbent shipping operators offering ROI – EU services (Stena Line, Irish Ferries, CLdN and Brittany Ferries) announced additional capacity on direct services for 2021, either in the form of larger vessels or more intense sailing schedules.

Secondly, two new entrants arrived into the Irish RoRo market in 2021. DFDS began operating a route between Rosslare Europort and Dunkirk in the first week of the year. At the time of writing, this service currently provides five departures per week. In April, it was announced that Grimaldi would commence a service between Cork and Antwerp.[13]

Lastly, new connections were added to the suite of ROI – EU RoRo routes available to Irish importers and exporters. New destinations in 2021 include; Porto, Dunkirk, Antwerp and Le Harve.[14]

The combined effect of these actions has been to double available capacity on direct RoRo services to continental Europe. There are currently six shipping operators offering thirteen different direct RoRo services to ports in mainland Europe. This has provided more than sixty weekly sailings to and from mainland European ports. [15] Prior to 2021, there were five direct RoRo services on ROI – EU routes, offering approximately 30 sailings per week. Figure 18 below illustrates the changes in sailing frequency between 2020 and 2021.

Figure 18: Weekly RoRo Sailings between Republic of Ireland and Mainland European Ports



Source: *IMDO*

[13] In August 2021, this service was updated. It is, at the time of writing, a triangular service between Cork, Antwerp and Zeebrugge.
[14] Some of these ports may have been serviced by RoRo operators at different stages in previous years.
[15] Schedules and service offerings for direct EU RoRo services have frequently been altered throughout 2021. In addition, capacity will fluctuate depending on the time of year in question. The above statement is true at the time of publication

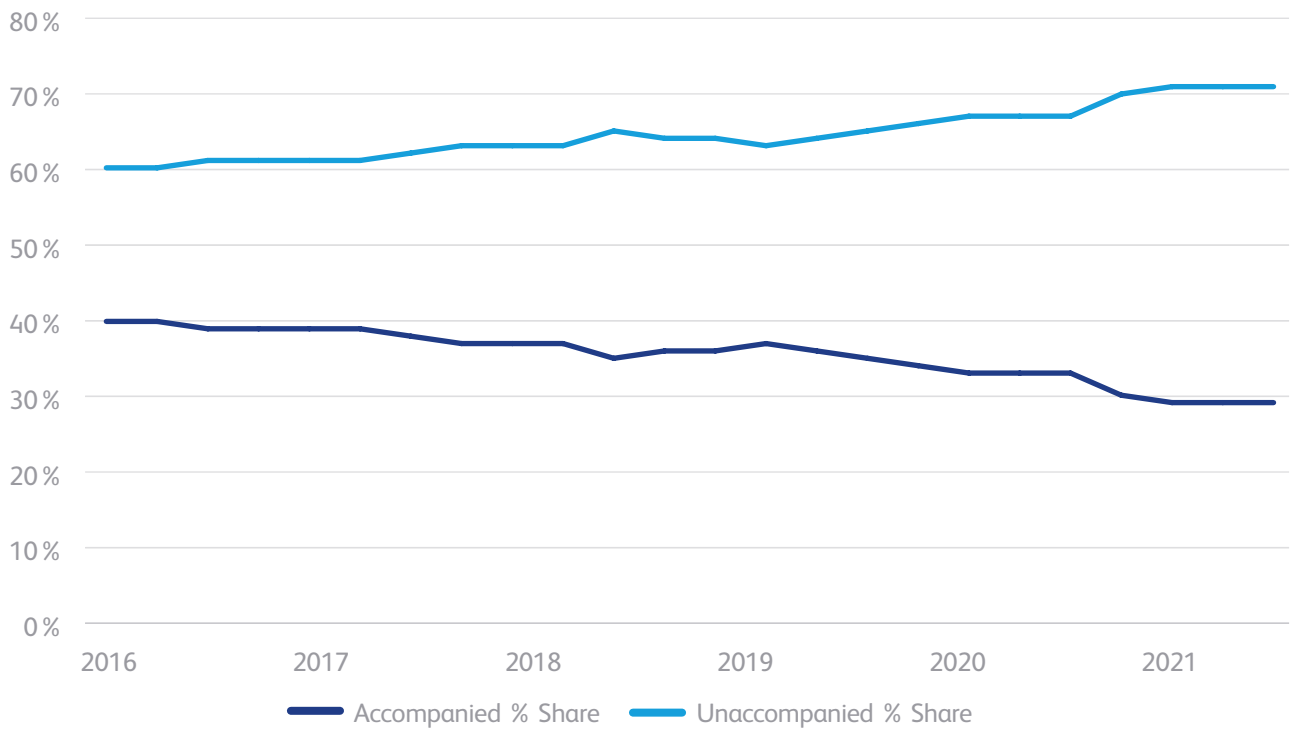
In all, the Irish RoRo freight market in 2021 is more connected, more competitive, and has significantly more capacity available to mainland Europe. Brexit presented a major challenge to this industry, particularly in the wake of the COVID-19 pandemic, which heavily suppressed volumes of both freight and passengers. The response in 2021 has shown this sector of the Irish economy to be dynamic, adaptable and resilient.

1.2D Unaccompanied RoRo Traffic

In the 18th edition of this report, it was highlighted that the share of unaccompanied RoRo traffic in the Republic of Ireland has been increasing, and that this trend has been a persistent feature of the RoRo market for at least five years. By employing a greater surface area of port terminals, increases in unaccompanied traffic have knock-on effects for the long term capacity calculations for Ireland's RoRo ports.

Beginning in January 2021, this trend has accelerated. The widening gap between the shares of accompanied and unaccompanied RoRo traffic is illustrated in Figure 19 below. The share of unaccompanied RoRo has risen from 60% to 71% since 2016. Between 2020 and 2021 alone, the share of unaccompanied traffic rose from 67% to 71%.

Figure 19: Share of ROI RoRo Market, % Accompanied Vs % Unaccompanied



Source: *IMDO*

As highlighted in previous IMDO reports, there are two main drivers of this modal shift.

Firstly, the onset of the COVID-19 pandemic accelerated the growth in the share of unaccompanied RoRo. Health & safety issues alongside restrictions on the travel of international freight drivers meant that unaccompanied traffic recorded shallower declines and a faster recovery during the first wave of the pandemic.

Secondly, the rise in direct EU volume will naturally be followed by a rise in unaccompanied volume. Traffic on ROI – EU routes makes disproportionate use of the unaccompanied mode due to, among other things, the significantly longer journey times on direct routes. The increase in ROI – EU RoRo traffic has been the most significant driver of unaccompanied RoRo traffic in 2021.

Conclusions

This section began by detailing the performance of the RoRo freight market on the island of Ireland in 2021. This was followed by an analysis of the changing composition of RoRo freight, when broken down by the following regional routes; ROI – GB, ROI – EU and NI – GB.

The significant changes that occurred to RoRo capacity, connectivity and competition were then illustrated. Lastly, an update was provided on the share of RoRo traffic held by the unaccompanied shipping mode.

In all, 2021 was a year of change and reorganisation for the Irish RoRo market.

Irish RoRo volumes recorded an annual decline for the first time since 2012. Furthermore, the composition of RoRo freight was significantly altered. Direct EU traffic now represents one third of Irish RoRo traffic, compared to 17% in recent years. The volume of direct EU traffic doubled, from an average of 190,000 units in recent years, to over 380,000 units in 2021.

The surge in volumes was driven by a transferring of traffic away from the UK Landbridge, in order to avoid customs regulations that form part of the new trading relationship between the United Kingdom and the European Single Market. The decline in the use of the UK Landbridge caused marked declines in RoRo traffic on routes between Ireland and Great Britain. These volumes are now 20% below pre-Brexit levels.

Northern Irish RoRo traffic rose to record levels in 2021. Prior to 2021, ROI – GB RoRo routes from Dublin Port and Rosslare Europort were popular among Northern Irish hauliers wishing to access markets in the midlands and southeast of England. In 2021, many of these companies transferred this traffic to ports in Northern Ireland in order to avoid customs declarations and regulations on ROI – GB routes.

The surge in demand for direct EU RoRo routes prompted an unprecedented response from the Irish shipping market. All shipping companies already offering direct EU services increased capacity on such routes. New connections were announced, to destinations such as Dunkirk, Antwerp and Porto. In addition, two new entrants began operating in the market, increasing competition within the sector.

All stakeholders in the Irish RoRo freight industry should be commended for overcoming the combined challenges of the COVID-19 pandemic and the end of the Brexit transition period. Both issues created considerable uncertainty for Irish importers and exporters. Despite this, Irish external trade has continued to flow efficiently, facilitating growth in the Irish economy.

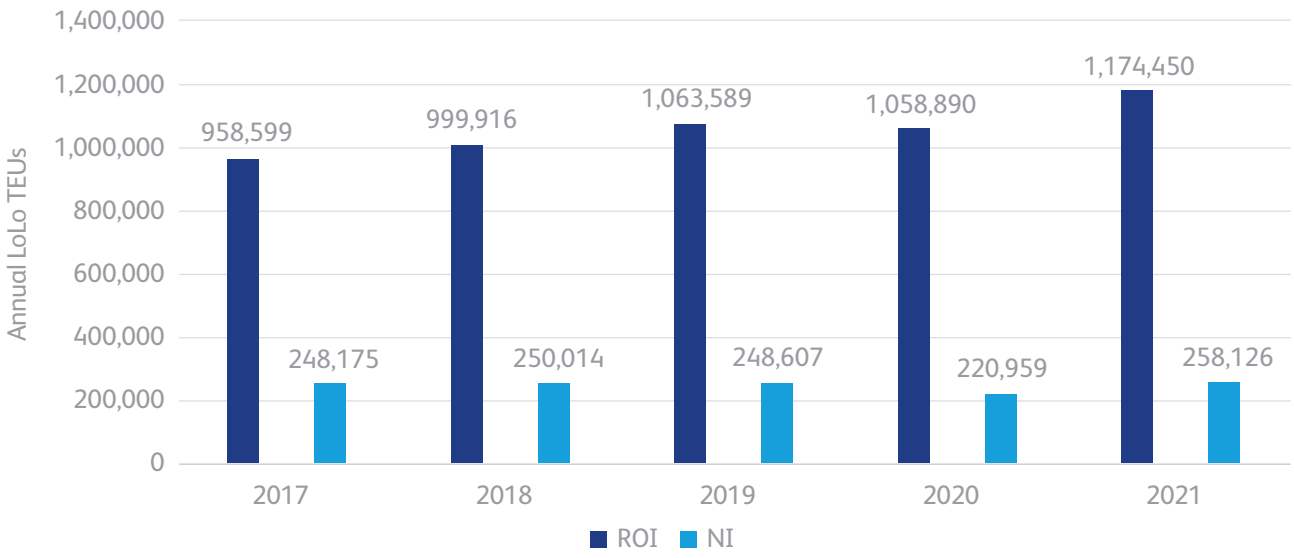
1.3 LoLo

In 2021, LoLo volumes in the Republic of Ireland reached a record total of 1.17m twenty-foot equivalent units (TEUs). This represents growth of 11% compared to 2020, equivalent to an additional 115,560 TEU's. This is the fastest annual rate of growth since 2008, before the financial crash. LoLo freight traffic has now surpassed 1m TEUs for three consecutive years, a milestone reached in 2019 for the first time in over a decade. Overall, LoLo volumes in the Republic of Ireland are robust, consistently growing and achieving record volumes.

A similar trend has emerged within Northern Ireland LoLo volumes. In 2021, 258,126 TEUs were recorded at Belfast and Warrenpoint, equivalent to growth of 37,000 TEUs. This is the highest annual total for over a decade in Northern Ireland, and represents a rise of 17% compared to 2020. In 2020, the suppressive effect of COVID-19 on freight traffic drove Northern Ireland LoLo volumes to decline by 11%, or 28,000 TEUs. The growth in 2021 has therefore recovered all of this loss and returned Northern Irish LoLo traffic to a period of growth.

Figure 20 below illustrates the volume of LoLo traffic on the island of Ireland for the last five years.

Figure 20: All-Island LoLo Volumes, TEUs, 2017 – 2021



Source: *IMDO*

Table 10 below details the volume of LoLo traffic handled at each port on the island of Ireland.

Table 10: All-Island LoLo TEUs, Laden & Unladen

	2019	2020	2021	Growth Vs 2020	Diff Vs 2020
	TEUs	TEUs	TEUs	(%)	TEUs
Cork	240,186	250,324	281,815	13%	31,491
Dublin	774,056	757,722	842,897	11%	85,175
Waterford	49,348	50,845	49,739	-2%	-1,106
Total ROI	**1,063,589**	**1,058,890**	**1,174,450**	**11%**	**115,560**
Belfast	231,407	203,889	238,287	17%	34,398
Warrenpoint	17,200	17,070	19,839	16%	2,769
Total NI	**248,607**	**220,959**	**258,126**	**17%**	**37,167**
Total All-Island	**1,312,196**	**1,279,849**	**1,432,576**	**12%**	**152,727**

Source: *IMDO*

As is evident from Table 10, Dublin Port and the Port of Cork recorded significant increases in LoLo traffic in 2021.

Dublin recorded a record total of 842,897 TEUs, surpassing pre financial crash volumes through the port. In 2021, volumes rose by 11%, equivalent to an additional 85,175 TEUs. This is the largest one-year increase in TEUs at Dublin port in over a decade. Of the additional 115,560 TEUs handled at Irish ports this year, Dublin Port captured 74% of this growth, which is slightly above its average market share of 72% held in recent years. Q2 2021 was the strongest quarter for LoLo traffic in Dublin, driven by a bounce in economic activity after the lifting of COVID-19 restrictions in Q1. This post-restriction increase in port traffic has been a feature of the Irish unitised freight market since the beginning of the pandemic.

The Port of Cork also recorded a record total of LoLo traffic in 2021, with 281,815 TEUs. TEU Volumes rose by 13%, equivalent to an additional 31,491 TEUs. Like Dublin Port, this is the largest one-year increase in over a decade. Of the additional 115,560 TEUs handled at Irish ports this year, Cork captured 27% of this growth, which is above its average market share of 23% held in recent years.

The Port of Waterford was the only Irish port to record a decline in LoLo traffic in 2021. Volumes fell slightly, by 2%, equivalent to 1,106 fewer TEUs. Volumes improved steadily throughout the year however, with Q4 2021 recorded 16% growth compared to the same period in 2020.

In Northern Ireland, over 90% of LoLo traffic passes through Belfast Harbour. The volume of LoLo traffic at Belfast in 2021 was the highest recorded since before the financial crash of 2008. Growth of 17% was achieved, equivalent to an additional 37,167 TEUs. Consistent with the trend at ports in the Republic of Ireland, this is also the largest one-year increase in LoLo traffic at Belfast in over a decade. Of the total growth in Northern Irish LoLo traffic, Belfast captured 93%, in line with its market share from previous years.

At Warrenpoint, LoLo traffic grew by 16%, or 2,769 TEUs. Between 2012 and 2018, LoLo volumes at this port averaged over 35,000 TEUs per year. Since that point, a concentration of LoLo traffic around Belfast has emerged. Warrenpoint has held a market share of approximately 7% since 2018.

Surging 'Direct Demand'

The vast majority of LoLo services on the island of Ireland are direct to continental EU ports. From here, many goods are transferred to much larger vessels and continue on to countries outside the European Union, such as the USA and China. LoLo traffic from the island of Ireland therefore also operates as a feeder service into large European maritime hubs.

The factors that have driven a surge in ROI – EU RoRo traffic are applicable to the Irish LoLo market. Shipping services offered by both sectors can be effective substitutes for one another, providing access to central European markets and shipping hubs. Shipping operators in the RoRo and LoLo markets therefore compete for similar business. Like RoRo operators, LoLo operators have benefitted from the demand from Irish importers and exporters to access EU ports directly, without the need to adhere to new customs requirements at UK ports.

The pre-brexit stockpiling of merchandise goods that occurred in late 2020 was described in detail in Section 1.2A. Like the RoRo market, LoLo traffic also recorded a surge in volume during this period. This signaled the beginning of a reorganisation of supply chains towards direct EU shipping services, within which LoLo services would be an important part.

A volume of 281,949 TEUs was achieved in Q4 2020, the busiest quarter on record until that point. In Q1 2021, another 281,355 TEUs was recorded by the IMDO, an incredibly robust performance given the economic restrictions imposed during that period in Ireland and much of Europe.

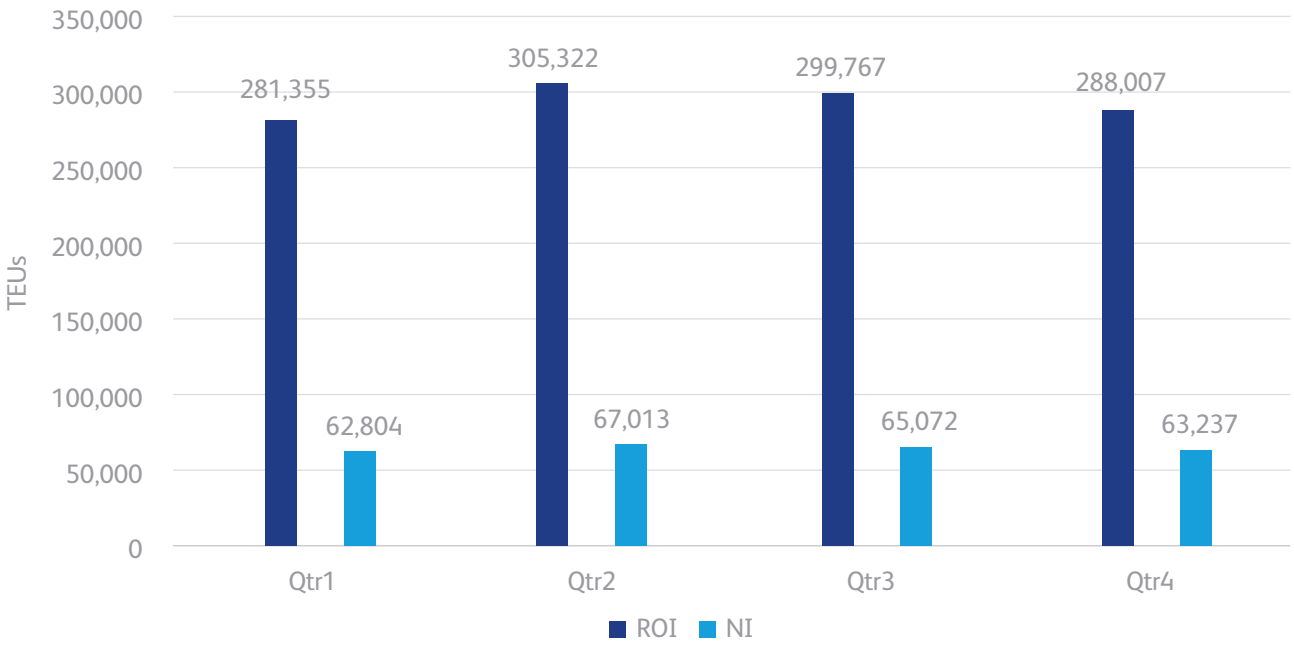
In the second quarter of 2021, the LoLo market benefitted from the reopening of certain sectors of the Irish and European economy. In Q2 2021, LoLo traffic surpassed 300,000 TEUs in a single quarter for the first time. For the next two quarters, LoLo traffic stabilized at approximately 290,000 TEUs.

The same factors that drove unprecedented increases in ROI – EU RoRo traffic also underscored the growth in LoLo volume in 2021, and brought LoLo volumes in the Republic of Ireland to record levels. The impact of Brexit has been the reorganisation Irish maritime freight, increasing its concentration on direct traffic into mainland Europe and reducing its reliance on ports in Great Britain. Furthermore, it is clear that the substitutability between accompanied RoRo, unaccompanied RoRo and LoLo services has become significantly more pronounced in 2021, with increased competition and dynamic capacity evident in each market.

Increasing Costs

As mentioned above, LoLo volumes reached a peak in Q2 2021. In the latter half of 2021, traffic plateaued at approximately 290,000 TEUs per quarter. Figure 21 illustrates the quarterly volumes of LoLo traffic on the island of Ireland in 2021.

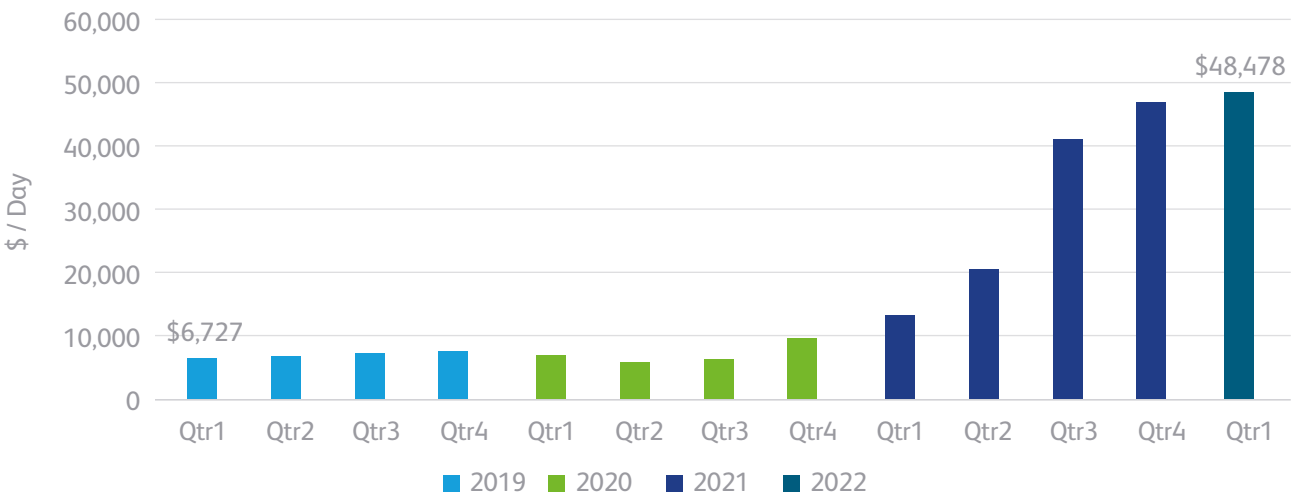
Figure 21: All-Island Quarterly LoLo Volumes, TEUs, 2021



Source: *IMDO*

The volumes recorded in the second half of 2021 were extremely robust in both the Republic of Ireland and Northern Ireland. However, some momentum was lost from the early parts of the year. During this latter half of the year, containership operators faced an unprecedented rise in freight rates, and this contributed to a loss of momentum in LoLo volumes. Below is the average daily charter rate for feeder containership vessels ranging from 350 TEUs to 2,750 TEUs. This range of vessel sizes would be common to Irish LoLo ports.

Figure 22: Average Daily Charter Rate, 6 – 12 Months, Feeder Containerships 350 TEU – 2,750 TEU



Source: *Clarkson's Research*

As evident in Figure 22, the charter rates for feeder containership vessels rose by a factor of six between Q1 2019 and Q1 2022. Such dramatic increases in freight rates were caused by changes in global consumption patterns since the beginning of the COVID-19 pandemic. In short, with the service industry largely restricted in large global economies, the demand for physical merchandise goods soared, particularly for goods manufactured in China. This tied up much of the world's containership capacity, right at a point when the supply of such vessels had been interrupted by COVID-19 restrictions on economic activity. This disequilibrium between the demand for and supply of containerships drove their charter rates to record levels. This issue is explained in greater detail in Section 4.3.

Conclusions

The end of the Brexit transition period on January 1st 2021 had a substantial effect on the volume of LoLo traffic handled on the island of Ireland. Both Republic of Ireland and Northern Ireland LoLo traffic achieved record levels. These volumes were also achieved in difficult trading conditions, with freight rates recording dramatic increases in the last twelve months.

The motivation of importers and exporters to avoid customs requirements at UK ports has stimulated demand for direct services, which the majority of LoLo services in Ireland provide. As mentioned above, it is clear that the substitutability between accompanied RoRo, unaccompanied RoRo and LoLo services has become significantly more pronounced in 2021, with increased competition and dynamic capacity evident in each market.

1.4 Passengers

Table 11 details the volume of passengers[16] that travelled through Irish and Northern Irish ports between 2019 and 2021.

Table 11: All-Island Tourist Passenger Numbers

	2019	2020	2021	Growth Vs 2020	Diff Vs 2020
Cork	113,346	9,083	22,273	145%	13,190
Dublin	1,770,049	513,118	672,142	31%	159,024
Rosslare	581,613	150,405	243,256	62%	92,851
Total ROI	**2,465,008**	**672,606**	**937,671**	**39%**	**265,065**
Belfast	1,417,586	680,502	1,256,313	85%	575,811
Larne	357,174	132,390	395,648	199%	263,258
Total NI	**1,774,760**	**812,892**	**1,651,961**	**103%**	**839,069**
Total All-Island	**4,239,768**	**1,485,498**	**2,589,632**	**74%**	**1,104,134**

Source: *IMDO*

In 2021, many shipping companies continued to face marked declines in passenger numbers compared to pre-pandemic levels. In the Republic of Ireland, 938,001 passengers passed through the ports of Cork, Dublin and Rosslare Europort. This is 62% below the 2.5 million that passed through the same ports in 2019. In all, Irish ports carried approximately 1.5 million fewer passengers in 2021 compared to 2019.

Proportionally, the Port of Cork recorded the steepest decline when compared to pre-pandemic levels. Passenger numbers in 2021 were 80% below 2019. Dublin Port and Rosslare Europort recorded declines of 62% and 58% respectively, again compared to 2019.

Passengers numbers in the Republic of Ireland are however, much improved when compared to 2020, a year which encompassed the most prolonged and severe restrictions on international travel associated with the COVID-19 pandemic. When compared to 2020, passenger numbers in the Republic of Ireland grew by 39%, equivalent to an additional 265,065 passengers.

Dublin Port recorded an additional 159,024 passengers, while Rosslare Europort and the Port of Cork recording an additional 92,851 and 13,190 passengers respectively.

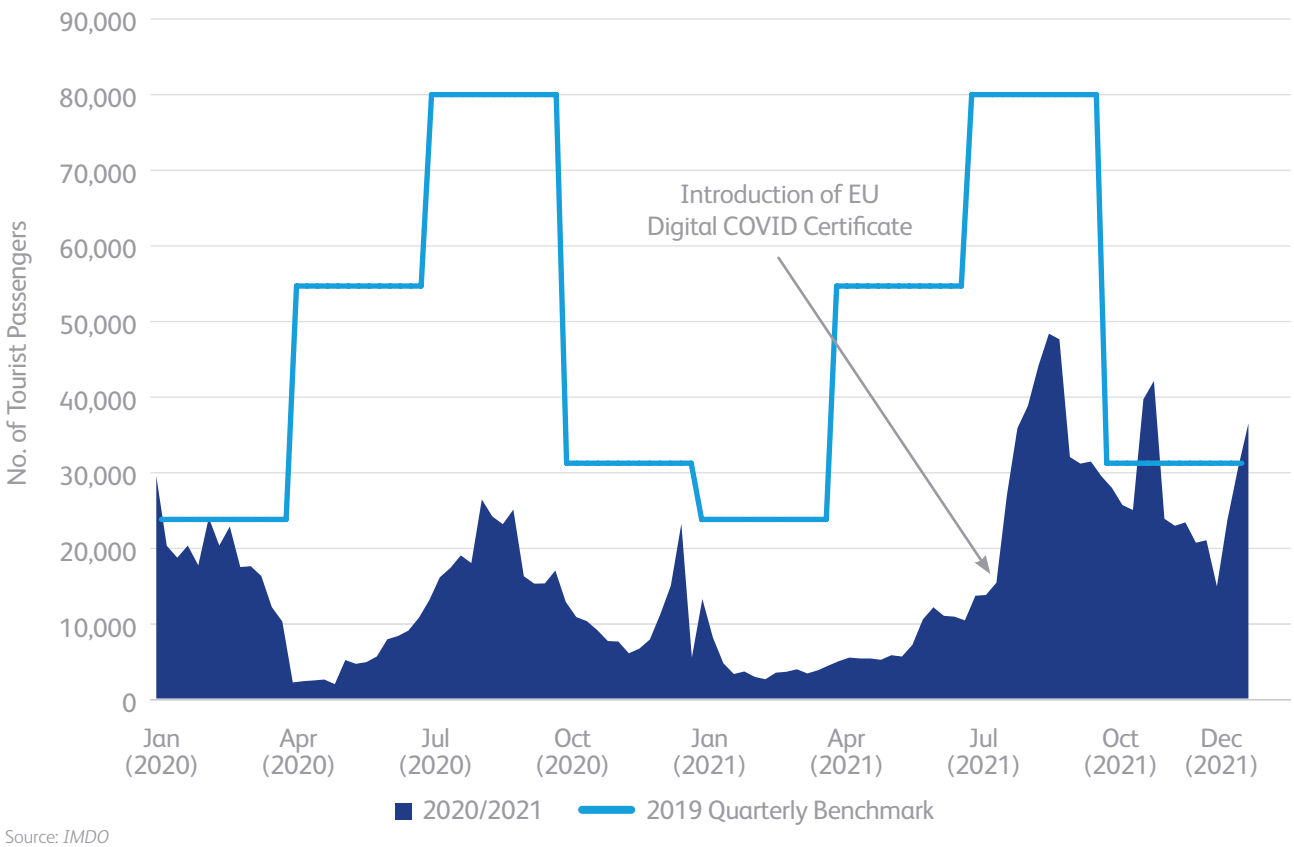
[16] In order separate the volume of tourist passengers from commercial passengers (such as drivers, crew etc), some estimates are included in Table 11. These figures may be subject to revision in later IMDO reports

Turning Point

Following the introduction of the EU Digital COVID Certificate in July 2021, the volume of passengers on maritime services in the Republic of Ireland rose significantly. Tourism / passenger numbers in the Republic of Ireland increased by 86% in Q3 2021 when compared to Q3 2020. In the summer of 2020, many international travel restrictions were still in place, both in the Republic of Ireland and across Europe. As a result, passenger volumes throughout 2020 were severely depressed. When compared to Q3 2019, passenger numbers in Q3 2021 declined by 57%. Since the initial wave of the pandemic in Ireland, this was the first indication of a slow return towards pre-pandemic passenger numbers.

Figure 23 presents the weekly volume of passengers that transited through ROI ports in 2020 and 2021, and compares this to a 2019 quarterly benchmark. Figure 23 illustrates the significant impact that the EU Digital COVID Certificate had in July 2021.

Figure 23: Weekly Tourist Passenger Numbers, Republic of Ireland, 2020 & 2021 Vs 2019 Benchmark

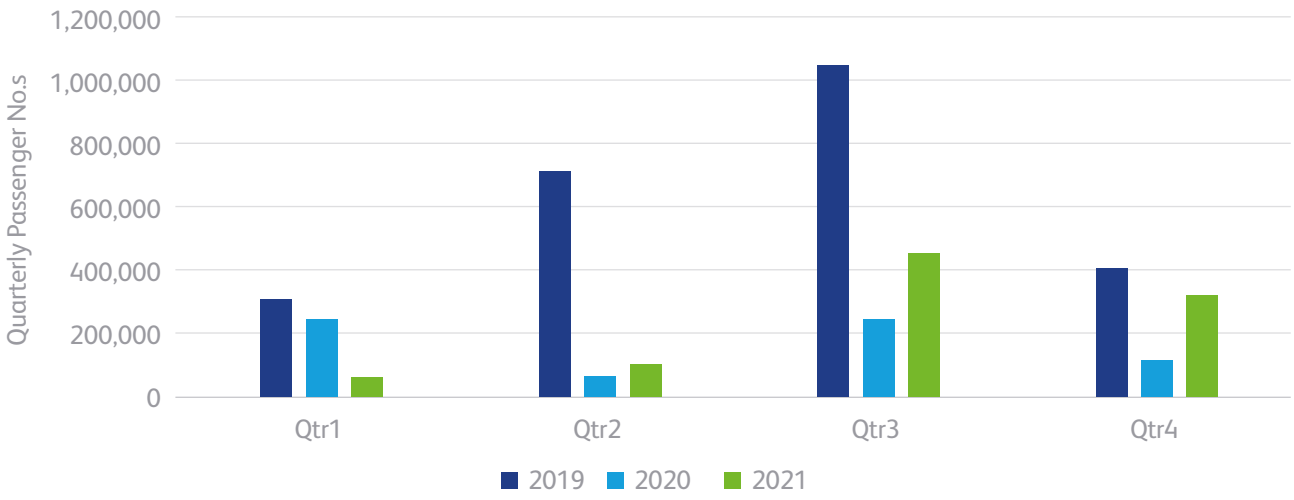


Source: *IMDO*

Figure 24 below details the quarterly volume of passenger numbers at Dublin, Cork and Rosslare Europort between 2019 and 2021.

The improvement in passengers that followed the introduction of the EU Digital COVID Certificate in July continued for the remainder of 2021. Passenger numbers in Q4 2021 were 21% below the same period in Q4 2019, equivalent to 86,251 fewer passengers. The last few months of 2021 are therefore the closest the industry has come to returning to pre-pandemic passenger levels.

Figure 24: Quarterly Passenger Numbers, Republic of Ireland, 2019 – 2021.



Source: *IMDO*

Northern Ireland

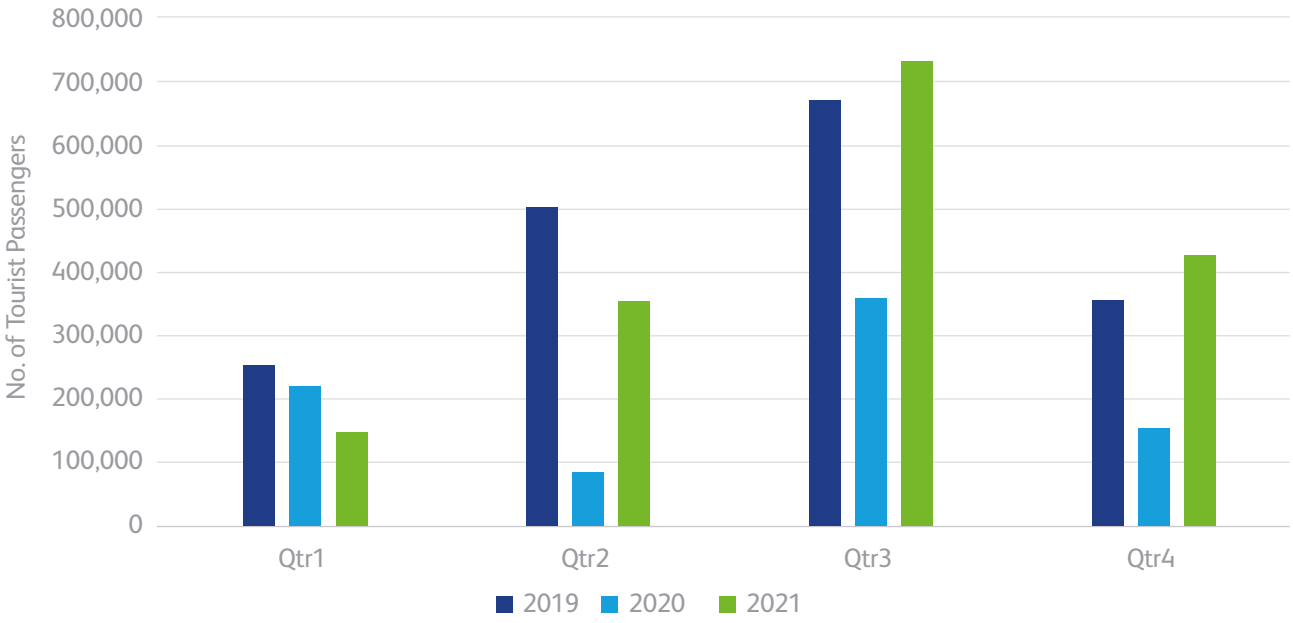
In the Northern Irish ports of Belfast Harbour and The Port of Larne, passenger numbers are just 7% below pre-pandemic levels (See Table 11).

In Belfast, passenger numbers in 2021 were 11% below 2019. Conversely, passenger numbers through Larne were 11% above 2019. In all, these two ports handled just 122,799 fewer passengers than before the COVID-19 pandemic.

Fewer restrictions on intra-UK travel since the beginning of the COVID-19 have driven a faster return to pre-pandemic passenger levels in Northern Ireland ports, when compared to Republic of Ireland ports. Once a phased reopening of travel and economic activity began across the United Kingdom, passenger numbers in Northern Ireland began to return swiftly.

Passenger volumes in 2021 were twice that of 2020, equivalent to 839,069 additional passengers through Belfast and Larne. Figure 25 below illustrates the quarterly volume of passenger numbers at Belfast and Larne between 2019 and 2021.

Figure 25: Quarterly Passenger Numbers, Northern Ireland, 2019 – 2021.



Source: *IMDO*

As evident in Figure 25, in the first half of 2021, passenger numbers in Northern Ireland were still 34% below the first half of 2019. Severe restrictions across both the UK and the EU in the early part of 2021 drove this continued suppression of passenger numbers. A phased reopening in the UK, coupled with the introduction of the EU digital certificate, meant that volumes in the second half of 2021 were 13% above the same six-month period in 2019. Passenger numbers throughout the busy summer and Christmas periods in 2021 outperformed those of 2019.

Conclusions

Overall, passenger volumes in the Republic of Ireland are significantly above those of 2020, but remain almost two thirds below 2019 levels. However, following the introduction of the EU Digital COVID Certificate in July, and a phased reopening of economic activity across both the UK and the EU, passenger numbers have begun to quickly return to pre-pandemic volumes. Q4 2021 was the closest the industry has come to achieving a 'normal' volume of passengers.

Considerable challenges still face RoPax operators in the Republic of Ireland. Consistently low passenger volumes expose the RoPax model to long term vulnerability, as well as being detrimental to the domestic tourism market. The recent increases in passenger numbers are surely welcome, and the IMDO will continue to monitor the performance of this industry sector compared to pre-pandemic passenger markets.

In Northern Ireland, the second half of 2021 saw passenger numbers outperform 2019 levels. A lack of restrictions on intra-UK travel, coupled with the introduction of the EU digital COVID certificate have underpinned this return to normal tourist patterns.

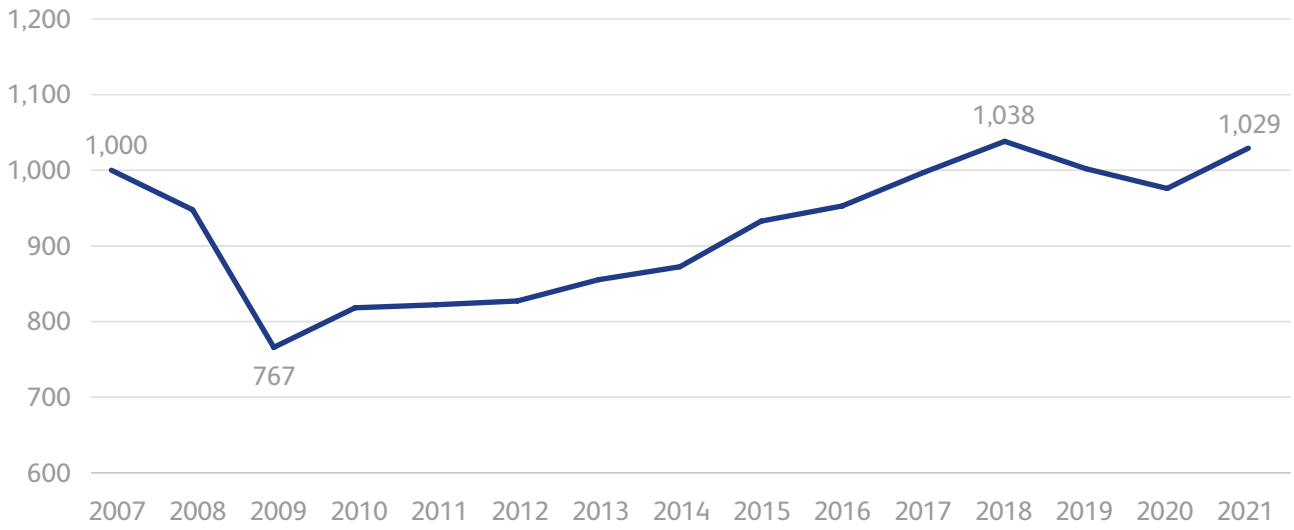
1.5 iShip Index

1.5A iShip Index – Combined Sectors

Since 2007 the IMDO has produced the iShip Index, a quarterly weighted indicator that outlines trends within Ireland's[17] shipping industry, and as a result, the wider economy. The index accounts for five separate market segments, representing the main maritime traffic modes moving through ports in Ireland. Unitised traffic includes Lift-on/Lift-off (LoLo)[18] and Roll-on/ Roll-of (RoRo), while Bulk traffic includes Break Bulk, Dry Bulk and Liquid Bulk. All three of the bulk segments are measured in tonnes. In order to establish a common denominator, the LoLo and RoRo volumes are expressed in tonnage terms within the index, whereby 1 Twenty-Foot Equivalent Unit (TEU) = 10 tonnes, and 1 RoRo Freight Unit = 14 tonnes. The base period is Quarter 1 2007 at which point, all indices were set at 1,000.

Figure 26 below illustrates the performance of the iShip index since its inception in 2007.

Figure 26: IMDO iShip Index, 2007 – 2021 (Q1 2007 = 100)



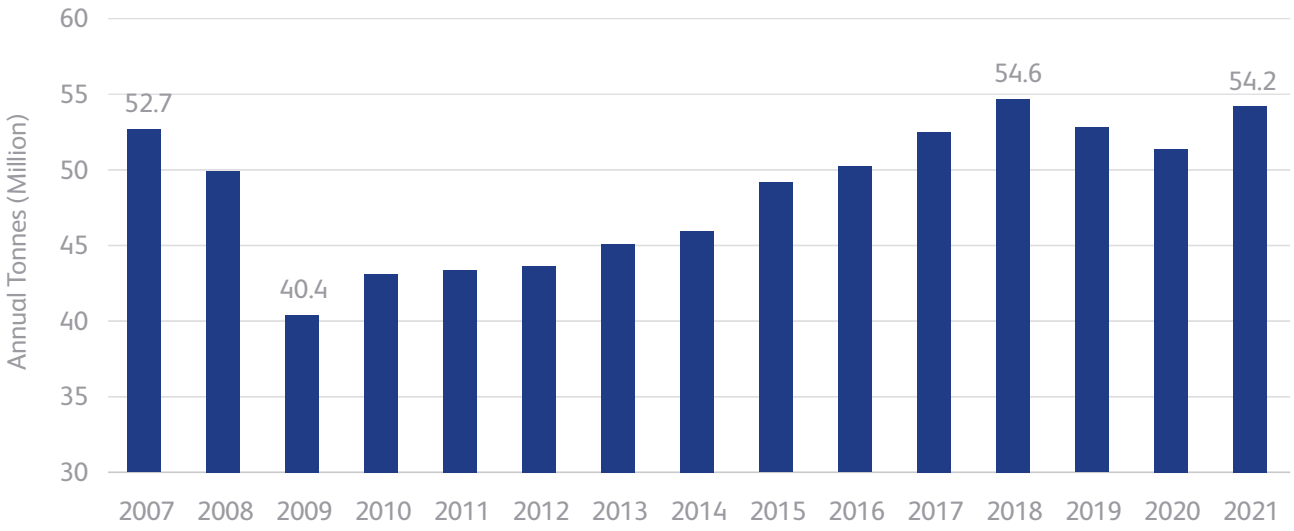
Source: *IMDO*

In 2021, the iShip index rose by 6% compared to 2020. This is the fastest rate of growth in the index since 2015, and represents a return to the volumes of freight handled in 2018 and 2019 after the suppressive effect of the COVID-19 on port traffic. In all, 54.2 million tonnes of freight were handled at Irish ports in 2021, a 2.8 million-ton increase compared to 2020.

[17] The iShip index does not include ports in Northern Ireland.
[18] The iShip index does not include unladen, or empty Lift/on – Lift-off containers

Figure 27 below illustrates the annual volume of tonnage handled across all five market sectors at Republic of Ireland ports since 2007.

Figure 27: Tonnage Volume, Republic of Ireland Ports, 2007 - 2021



Source: *IMDO*

Between 2017 and 2019, import tonnage was significantly impacted by a national fodder crisis that necessitated agricultural stockpiling. Traffic spiked in 2018 and underwent a correction in 2019. Following this, the COVID-19 pandemic severely suppressed tonnage volumes throughout 2020. Significant declines were recorded in the volume of domestic and aviation fuels, construction materials, as well as finished products carried mainly by the unitised freight markets (RoRo & LoLo). A large pre-Brexit stockpile offset some of these tonnage losses from the first waves of the pandemic.

Port traffic did not avoid further disruption in 2021. In the first three months of the year, volumes were suppressed by restrictions on economic activity in response to a new wave of the COVID-19 pandemic. This was offset by a surge in coal imports, particularly through Shannon Foynes Port Company. Over 1m additional tonnes of coal were imported in 2021 in response to lower than average wind energy generation, according to the SEAI. This is described in detail in Section 1.1A.

Overall, a robust total of over 54 million tonnes was handled at Irish ports in 2021, with certain sectors returning quickly to pre-pandemic levels. However, underlying demand for merchandise goods remains unclear. Rising fuel costs, surging freight rates and the outbreak of conflict in Ukraine in early 2022 all serve to heighten uncertainty in global trade. These global market indicators are discussed in more detail in Section 4.

1.5B iShip Index – Unitised Traffic

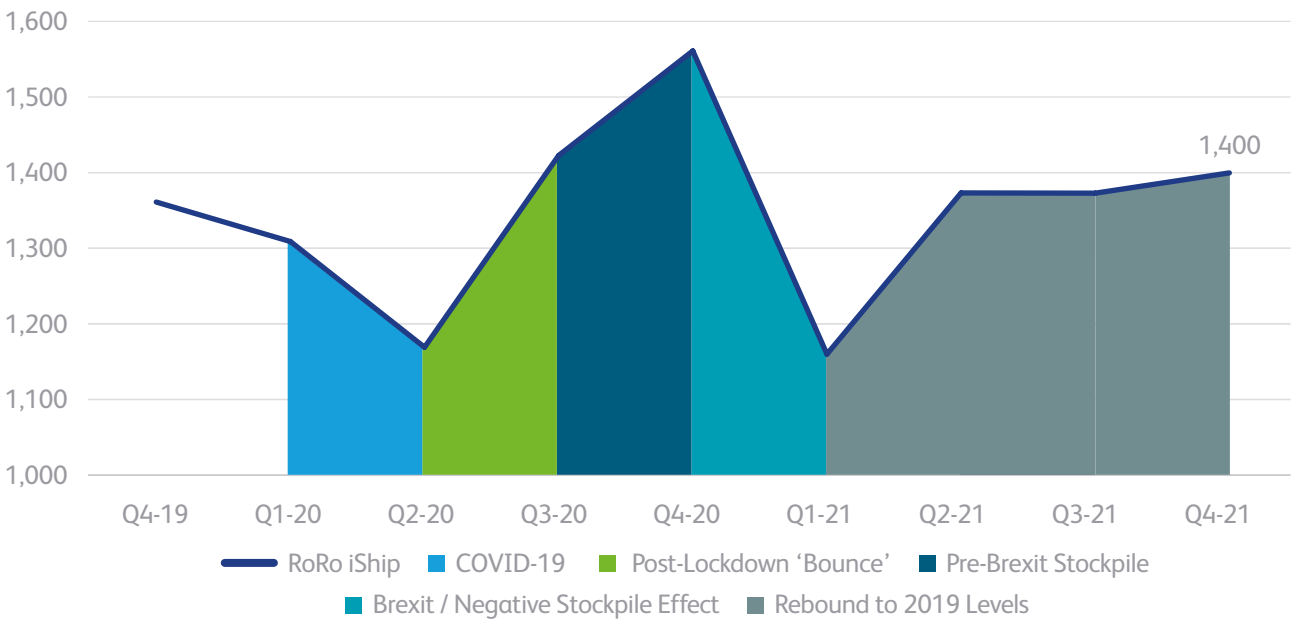
Roll-on / Roll-off (RoRo)

In 2021, the RoRo iShip index declined by 3%. Figure 28 below illustrates the quarterly iShip index for RoRo traffic from Q4 2019 to Q4 2021.

Of the five maritime sectors of the iShip index, the RoRo freight market has recorded the most significant levels of fluctuation as a result of the overlapping events of COVID-19 and the end of the Brexit transition period. At the end of the 2021 however, the RoRo iShip index is above the level recorded at the end of 2019.

In Figure 28, the shaded areas denote the predominant drivers of disruptions in 2020 and 2021. This began with the onset of the first wave of COVID-19 in Ireland in Q2 2020, followed by a post-lockdown 'bounce' in demand due to sectoral reopening's in Q3. Attention then turned to the pre-Brexit stockpile of goods that was built up in Q4 2020 to combat the uncertainty surrounding new customs procedures at Irish and UK ports from January 1st 2021. In Q1 2021, the combined impact of lockdown measures and the stockpiling of goods brought RoRo traffic to its lowest point since 2015. For the remainder of 2021, a post-lockdown, and post-stockpile bounce in demand was recorded, returning RoRo traffic to 2019 levels. This progress continued into Q4 2021, wherein RoRo traffic was 3% above the same period in 2019.

Figure 28: RoRo iShip Index, Q4 2019 – Q4 2021 (Q1 2007 = 1000)



Source: *IMDO*

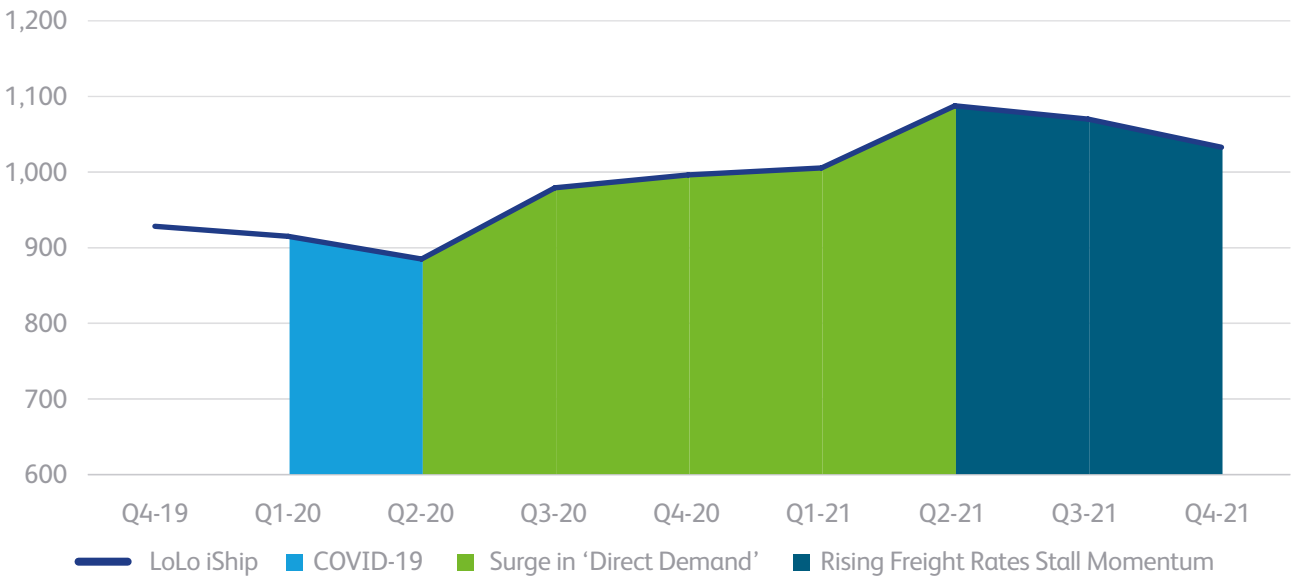
Lift-on / Lift-off (LoLo)

In 2021, the LoLo iShip index grew by 11 %[19], surpassing 1,000 for the first time since 2007.

Figure 29 presents the LoLo iShip index for the period between Q4 2019 and Q4 2021. Following the initial wave of the COVID-19 pandemic in Ireland in Q2 2020, the LoLo freight market has been defined by consistent growth that has seen the volume of TEUs handled at Irish ports reach unprecedented levels. These trends are denoted by the shaded areas in Figure 29.

This sector benefitted from a surge in 'direct demand', a reference to the demand from Irish importers and exporters to bypass the UK Landbridge and access mainland EU markets directly. This is described in detail in Section 1.3.

Figure 29: LoLo iShip Index (Q1 2007 = 1000)

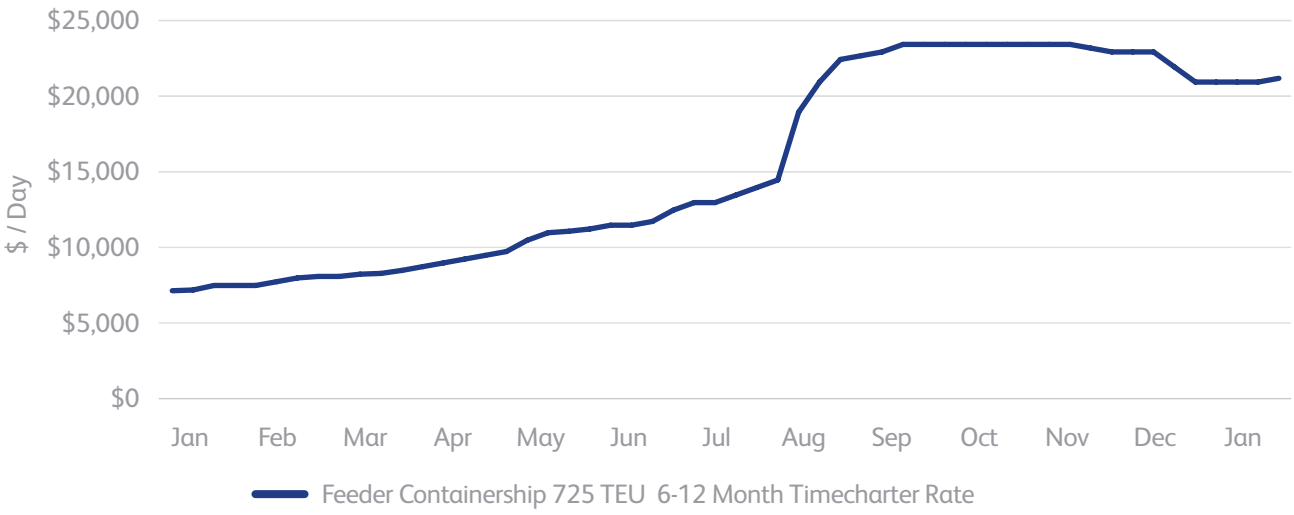


Source: *IMDO*

In the latter half of 2021, some momentum was lost in LoLo traffic growth. Throughout 2021, time charter rates for containership vessels of all sizes rose dramatically. Figure 30 below shows the price of a 6 – 12 months' charter for a 725 TEU containership vessel throughout 2021. This vessel would be of an appropriate size to the Irish market.

[19] The LoLo iShip index tracks only laden containers, excluding unladen containers.

Figure 30: Feeder Containership 725 TEU 6 – 12 month Timecharter Rate, Weekly, 2021



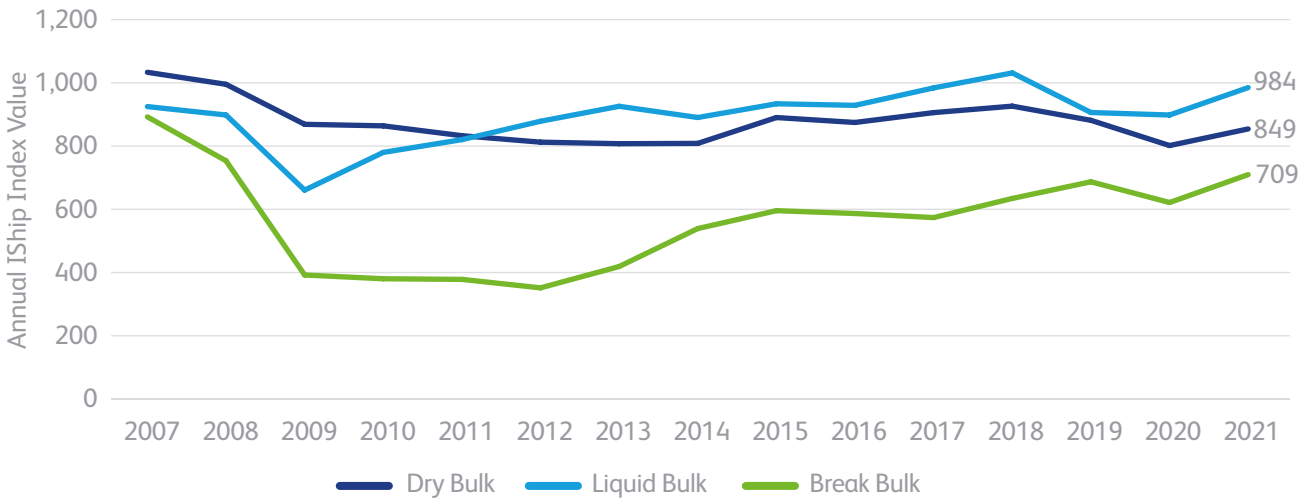
Source: *Clarkson's Research*

Inequities between the supply of containership capacity and the demand for containership space has spurred these exceptional increases. This is described in detail in Section 4.3. Despite these difficult trading conditions, the Irish LoLo market still achieved its busiest year on record.

1.5C iShip Index – Bulk Traffic

Figure 31 below illustrates the iShip index for the three sectors that make up the bulk market at Irish ports; Dry Bulk, Liquid Bulk and Break Bulk.

Figure 31: Bulk iShip Index; Dry Bulk, Liquid Bulk & Break Bulk, (Q1 2007 = 1,000)



Source: *IMDO*

Total bulk traffic in 2021 is at roughly the same level as it was before the financial crash in 2007 / 2008. 29 million tonnes of bulk traffic was handled at Irish ports this year, compared to approximately 30 million in 2007. All three bulk sectors recorded steep declines in the wake of the aforementioned economic downturn. Following this, Dry bulk and Break bulk traffic underwent a period of recovery midway through the last decade, in line with the recovery of the Irish economy.

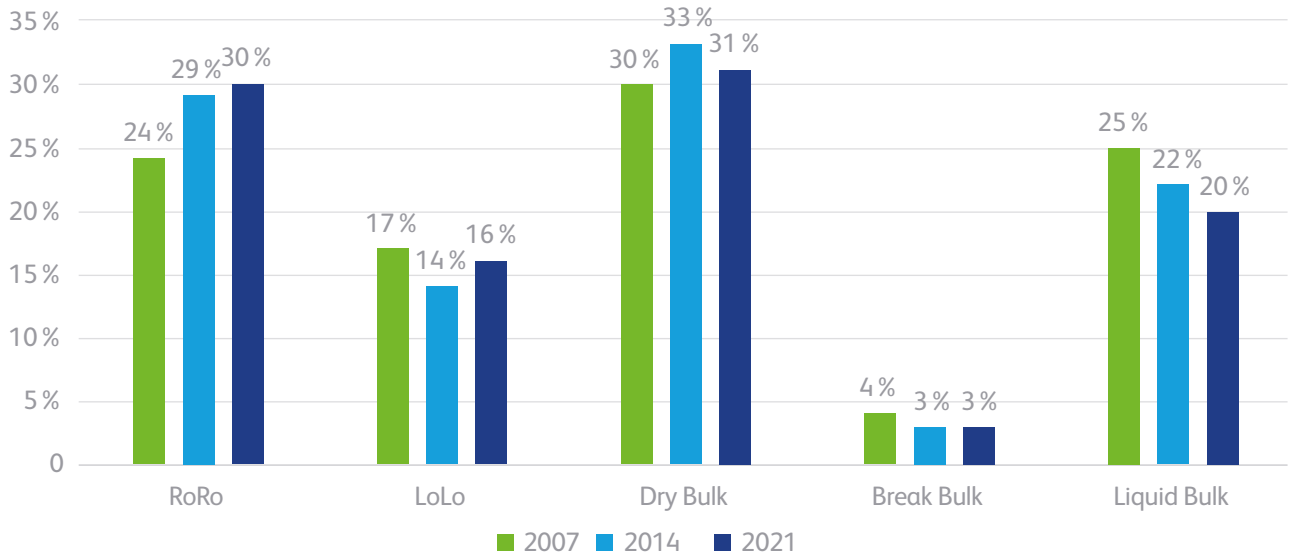
Both liquid bulk and break bulk tonnage are significantly lower in 2021 compared to 2007. 2.3 million fewer tonnes of liquid bulk were handled this year compared to 2007, a decline of 18%. This is reflective of Ireland's reduced reliance on coal and oil for energy production over the past decade, with increased use of natural gas and wind energy. Approximately 450,000 fewer tonnes of break bulk were handled this year compared to 2007, a decline of 22%. This is reflective of the high level of construction activity in the years leading up to 2007. In the Dry bulk sector, 1 million additional tonnes were handled in 2021 compared to 2007, an increase of 7%. This has been driven in part by the increase in Ireland's population, which according to the CSO, is estimated to have increased by 15% between 2007 and 2021. A larger population will increase the country's need for essential raw materials in the dry bulk market, such as grains and fertilizer for food production.

1.5D iShip Index – Market Shares

Over 54 million tonnes of maritime traffic was handled at Irish ports in 2021, the second largest annual volume recorded by the IMDO since 2007. This is 3% higher than in 2007, and 18% higher than in 2014. As the Irish economy begins to move past the turbulent trading periods of Brexit and COVID-19, it is interesting to note how the composition of maritime traffic has changes since the beginning of the iShip index in 2007.

Figure 32 illustrates the share of the iShip index held by each market segment at three intervals; 2007, 2014 and 2021.

Figure 32: Share of IMDO iShip Index, 2007, 2014, 2021



Source: *IMDO*

As evident in Figure 32, certain areas of Irish maritime traffic have changed significantly between 2007 and 2021.

In 2021, unitised traffic, which is made up predominantly of finished products for sectors such as retail and supermarkets, represents 46% of all maritime traffic, compared to 41% in 2007. Dry and break bulk traffic have maintained an approximate share of 30% and 3% respectively. Liquid bulk has declined from 25% of all Irish maritime traffic in 2007 to 20% in 2021. As mentioned above, this is reflective of the changing composition of Irish energy in the intervening period.

Conclusions

In all, Irish maritime tonnage volumes in 2021 are strong. This sector is resilient, dynamic and essential to the maintenance of Irish economic growth. The iShip index is a useful tool to monitor and compare the performance of individual cargo sectors, as well as understand the changing composition of Irish trade. With the worst effects of the COVID-19 pandemic and Brexit having passed, the Irish maritime sector is in a strong position entering into the next decade. However, emerging challenges will test the sector once again. Sharp rises in freight rates and fuel prices provide difficulties for transport companies as well as Irish importers and exporters. In addition, the outbreak of conflict in Ukraine has the potential to further escalate prices of raw materials such as grain, fuel and other commodities such as metals.

Section 2: **Irish Merchandise Trade Review**

2.1 Irish Merchandise Imports

2.1A Tonnage

(i) Import Tonnage by Annual Volume

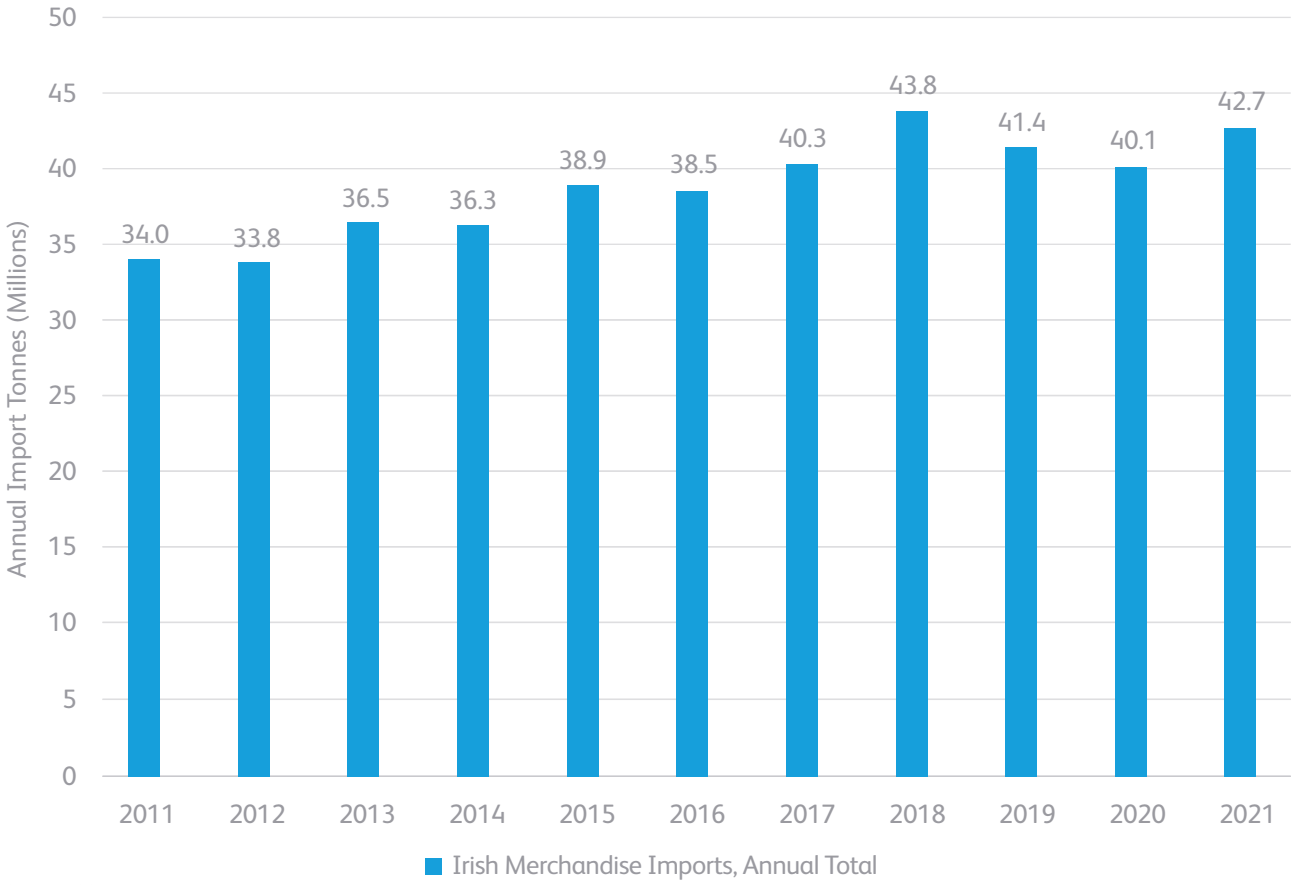
In 2021, 42.7m tonnes of merchandise goods were imported into Ireland, approximately 90% of which was handled by Irish ports. Irish merchandise imports rose by 6% compared to 2020, equivalent to an additional 2.6m tonnes. After a 3% fall in 2020 that was driven by the COVID-19 pandemic, all of this decline was recovered in 2021. Import volumes are now at their highest point since 2018.

The volume of Irish merchandise imports has fluctuated in recent years. In 2018, Import volumes rose to record levels, due mainly to a national fodder crisis that necessitated agricultural stockpiling of bulk products such as animal feed. In 2019, volumes underwent a correction and declined by 5%.

Further growth in import volumes was then interrupted by the COVID-19 pandemic in 2020, wherein the demand for energy products such as petroleum and natural gas fell sharply. The year 2021 can be viewed as another year of correction, as growth in import volume was driven predominantly by the return in demand for the aforementioned energy products. Furthermore, an additional 1m tonnes of coal imports in 2021 had a significant influence on import growth , reversing a trend in recent years of a declining share of coal used for domestic energy production.

Figure 33 below illustrates the annual volume of Irish merchandise imports for the last decade. In 2021, import volumes are 3% above 2019, or pre-pandemic levels, and 26% higher than a decade ago.

Figure 33: Irish Merchandise Import Volumes, 2011 - 2021



Source: *CSO*

(ii) Import Tonnage by Product Grouping

Figure 33 above illustrates the volume of merchandise imports into Ireland each year. In terms of what products were imported and how this changed in 2021, the following section analyses Irish imports when broken down into Standard International Trade Classification (SITC) categories. In Table 12, Irish imports in 2020 and 2021 are organised using these SITC groupings.

In line with previous years, the top three import categories in terms of tonnage were Mineral Fuels, Crude Materials and Food & Live Animals, which made up over 70% of all imported Irish tonnage in 2021.

Table 12 : Irish Imported Tonnes by SITC Grouping

	2020	2021	Growth	Diff
SITC Product Grouping	Tonnes	Tonnes	(%)	Tonnes
Mineral fuels	10,978,083	13,265,161	21%	2,287,078
Crude Materials	8,255,955	8,625,710	4%	369,755
Food & Live Animals	9,067,924	8,326,773	-8%	-741,151
Manufactured goods	3,933,605	4,757,249	21%	823,644
Chemicals & related products	4,323,409	4,207,621	-3%	-115,788
Machinery & Transport Equipment	1,244,917	1,265,074	2%	20,157
Miscellaneous Manufactured Articles	992,448	1,046,087	5%	53,639
Beverages & Tobacco	982,459	918,523	-7%	-63,935
Animal & Vegetable oils, fats & waxes	360,223	323,422	-10%	-36,801
All Other Commodities	2,727	9,464	247%	6,737
Total	**40,141,750**	**42,745,083**	**6%**	**2,603,333**

Source: *CSO*

Mineral Fuels

Since 2017, the mineral fuel SITC category has represented approximately 30% of Ireland's total merchandise import volume. This category is made up of fossil fuels, mainly coal, oil and gas products which are imported from outside of the Republic of Ireland. 97% of Ireland's imported natural gas came from Great Britain in 2021, which is supplied mainly through an interconnector (pipeline) from Scotland. This category does not include indigenous gas supply (for example, Corrib gas) which rose substantially in recent years.

Only coal and oil products therefore, are handled at Irish ports, the majority of which would make use of bulk shipping services. Petroleum will be transported predominantly in tanker vessels, while coal products will make use of dry bulk carriers[20].

In 2021, the volume of mineral fuel imports rose by 21%, or roughly 2.3m tonnes. This significant annual increase represents 88% of the total 2.6m additional tonnes of Irish merchandise imports in 2021.

An increase in mineral fuel imports in 2021 is not surprising. Imports in this category declined sharply in 2020, by 11%, equivalent to 1.4m fewer tonnes compared to 2019. This was driven by the COVID-19 pandemic and its suppressive effect on both domestic and international travel. As noted by the SEAI in its latest Energy in Ireland report[21];

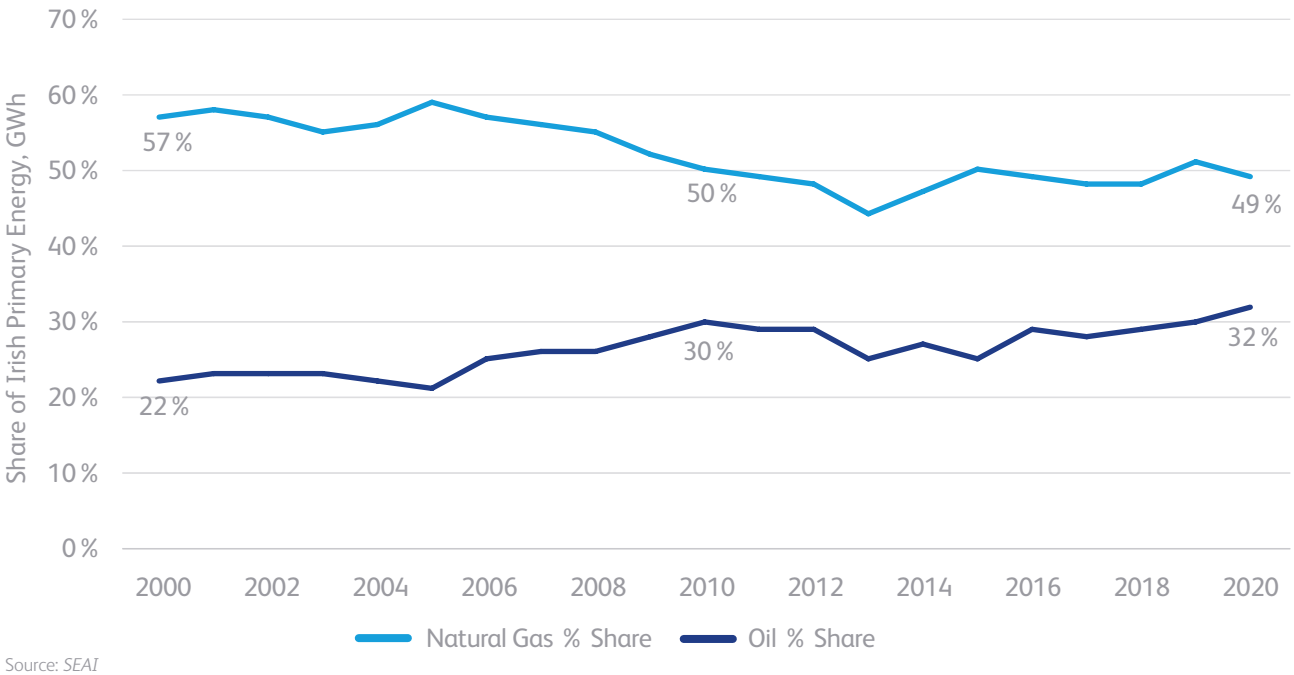
[20] The market for dry and liquid bulk vessels is detailed in Section 4.
[21] Energy in Ireland, 2021 Report

"Demand for fossil fuels fell by 10.5 % in 2020, largely driven by reduced oil consumption in the transport sector, due to public health travel restrictions."

Energy in Ireland 2021 Report, SEAI pg. 33

Petroleum imports rose by 8 %, or 570,000 tonnes, to an overall total of just under 8m tonnes. This is still slightly below pre-pandemic levels, which averaged 8.4m tonnes between 2017 and 2019. Natural gas imports rose by 20 %, equivalent to 620,000 tonnes, to an overall total of 3.7m tonnes. This is 4.4 % above average for the years between 2017 and 2019. Faster growth in natural gas import volume is illustrative of a trend in the composition of Irish primary energy supply. Since 2000, natural gas has made up an increasing share of Irish primary energy[22]. This is presented in Figure 34 below.

Figure 34: Oil and Natural Gas as a share of Irish Primary Energy (GWh), 2000 – 2020



Source: *SEAI*

As mentioned above, a return in the volume petroleum and natural gas imports to close to pre-pandemic levels was to be expected, given the increase in domestic and international transport relative to 2020. As noted by the SEAI in 2021;

"Practically all of the reduction in energy use occurred in the transport sector because of reduced mobility during the COVID-19 pandemic."

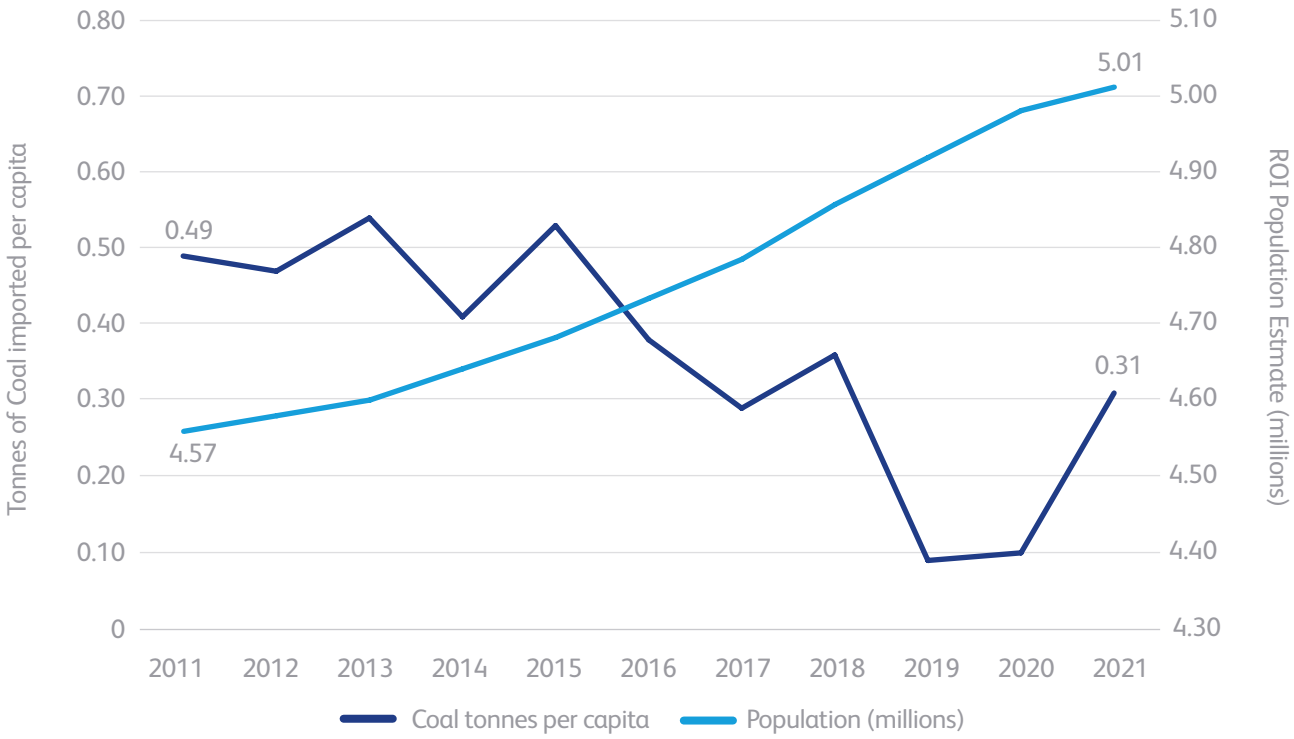
Energy in Ireland 2021 Report, SEAI pg. 3

However, a surge in coal imports in 2021 was more unexpected. Coal imports, which had declined by three quarters in 2019, returned to levels consistent with 2017. Approximately 450,000 tonnes of coal was imported in 2019 and 2020. This rose to 1.5m tonnes in 2021. This increase of 1m tonnes accounted for almost half of the total growth in mineral fuel imports this year.

Imports of coal had been falling consistently for the last decade, and this decline accelerated in 2019. Figure 35 presents the volume of coal imports per capita in Ireland, alongside estimates of the Irish population. As shown in Figure 35, the increase in coal imports in 2021 reverses a trend that had been consistent within Irish energy for a decade.

[22] It should be highlighted once more, that imports of natural gas arrive predominantly through pipeline infrastructure, and therefore do not make use of Irish port infrastructure.

Figure 35: Coal imports per capita Vs Estimate of Irish Population, 2011 – 2021



Source: *CSO, SEAI*

The increase in coal imports this year was necessitated by the reduced contribution of wind to Irish primary energy supplies. This situation was summarized by the SEAI in its 2021 report;

"2021 has so far been a "low wind" year, with electricity generated from wind during the first ten months of the year down 18% on the same period in 2020. Wind generation is highly seasonal, with high levels of generation over the winter months, so the annual total may recover somewhat over November and December"

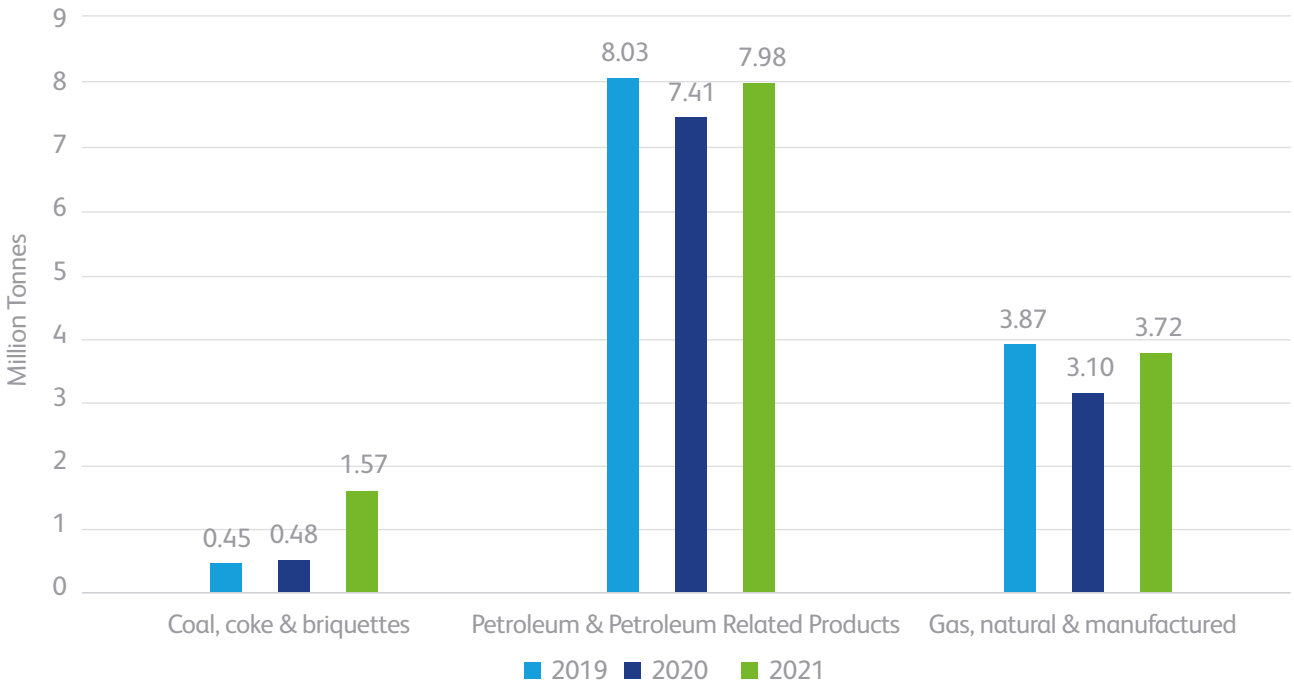
Energy in Ireland 2021 Report, SEAI pg. 16

The decline in coal imports in recent years led to a sharp reduction in operation at the ESB's coal-burning generator plant in Moneypoint at the Shannon estuary. The reversal in coal imports in 2021, necessitated by intermittent wind generation, highlights a continued flexibility in Irish primary energy production. In February 2022, it was noted by the Irish government that the Moneypoint facility will not be decommissioned until the ability to replace this energy with renewable supply is secured[23].

In Figure 36 below, the volume of petroleum, natural gas and coal imports between 2019 and 2021 is presented.

[23] ESB floats wind power manufacturing plant for Moneypoint, Irish Times, February 24th 2022

Figure 36: Imports of Petroleum, Natural Gas and Coal, 2019 - 2021

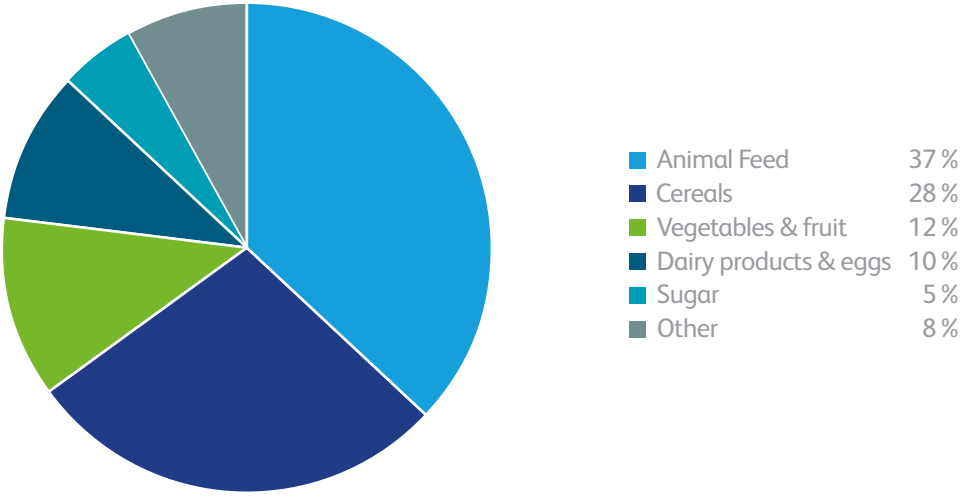


Source: *CSO*

Food & Live Animals

In the Food & Live Animals category, five products consistently make up 90% of the overall grouping; Animal Feeds, Cereals, Vegetables & Fruit, Dairy products & Eggs, and Sugar products. Figure 37 illustrates the average share held by each product between 2017 and 2021.

Figure 37: Share of Food & Live Animals Category, 2017 – 2021



Source: *CSO*

In 2021, imports in this grouping declined by 8 %, equivalent to 740,000 fewer tonnes. The largest decline was in cereals, which fell by 13 %, or 313,000 tonnes. Imports of vegetables and fruit fell by 9 %, or 100,000 tonnes, while imports of dairy products and eggs fell by 15 %, or 140,000 tonnes. When combined, these three products accounted for 75 % of the overall decline in this category in 2021.

In all, this is the lowest volume of food and live animal imports since 2016. Much of this decline was driven by fewer imports of these products from Great Britain in 2021. The changes in imports between Ireland's trading partners is discussed in detail in Section 2.2.

Manufactured Goods

In the Manufactured Goods category, four products make up roughly 85 % of the overall grouping; Non-metallic mineral manufactures, Iron & Steel, Paper Products, and Manufactures of Metals. In 2021, the volume of Manufactured Goods imports rose by 21 %, equivalent to an additional 824,000 tonnes. Items in this category would make predominant use of break bulk and dry bulk shipping services. Break bulk would be the most common choice for loose, non-containerised cargo stowed directly into a ship's hold.

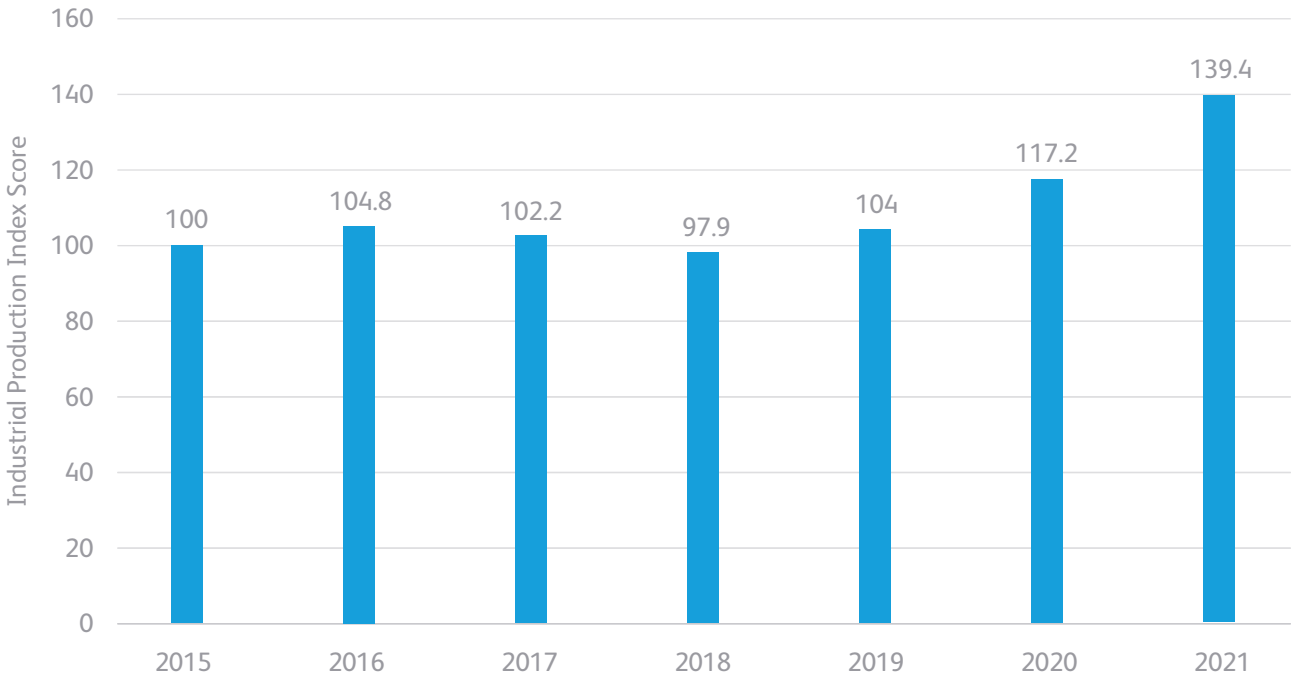
Of the four product groupings listed above, three increased substantially in 2021. Iron and Steel imports grew by 18 %, to 970,000 tonnes overall. This is almost exactly equivalent to its 2019 volume. Non-metallic mineral manufactures rose by 26 %, to 1.35m tonnes overall. This is 40 % higher than pre-pandemic import volumes for this product grouping. Lastly, the volume of manufactures of metals[24] almost tripled when compared to 2020. 400,000 tonnes of these products were imported in 2020, compared to approximately 1.2m in 2021. As a result, manufactures of metals accounted for almost one quarter of the Manufactured Goods category in 2021, up from 10 % in 2020.

The increase in Manufactured Goods imports was offset by a 37 % decline in imports of Paper and related products. This was equivalent to a decline of 370,000 tonnes.

[24] Eurostat defines Manufactures of Metals as follows; activities of smelting and/or refining ferrous and non-ferrous metals from ore, pig or scrap, using electrometallurgic and other process metallurgic techniques.

In all, the sharp increase in manufactured goods imports in 2021 is reflected in the CSO's industrial production index. Figure 38 shows the annual value of the industrial production index for 'Manufacturing Industries[25]' only. The majority of the products listed above are also within this classification of economic activity. As shown in Figure 38, the industrial index for this sector grew by 19% in 2021. This highlights that the imports of manufactured goods into Ireland's ports throughout the year facilitated tangible industrial production, and in turn, facilitated a return to economic growth in Ireland after the disruptive period of the COVID-19 pandemic.

Figure 38: CSO Industrial Production Index, Manufacturing Industries, 2015 – 2021 (Base = 2015)



Source: *CSO*

[25] Manufacturing Industries - Statistical Classification of Economic Activities in the European Community, Rev. 2 (2008)

2.1B Value

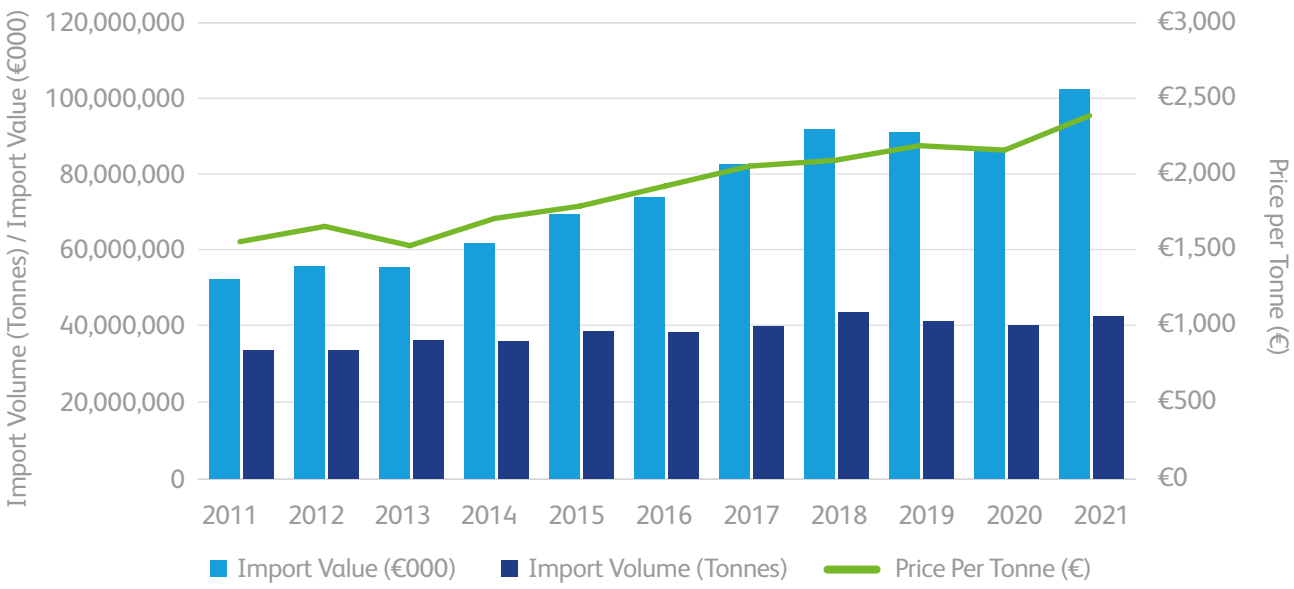
(i) Import Value by Annual Volume

In 2021, the value of Irish imports surpassed €100bn for the first time. Irish import value was €102.5bn this year, compared to €87bn in 2020. This represents an increase of 18% in the cost of Irish merchandise imports.

As detailed in Section 2.1A, Ireland imported 42.7m tonnes of merchandise in 2021. The price per tonne of Irish imports in 2021 is therefore equal to €2,399. This is 11% higher than in 2020, and 9% higher than 2019. The increase in import costs highlights the significant inflationary pressures recorded in the world's largest economies in 2021.

Figure 39 below illustrates the annual volume and value of Irish merchandise imports, alongside the price per tonne of these imports. Between 2014 and 2018, the value of Irish imports rose by an average of 11% per year. Over the same period, the average volume of Irish imports rose by just 4%. The trend of rising per tonne cost of Irish imports has been consistent since 2013, interrupted only by the COVID-19 pandemic. This trend returned in 2021 as surging post-pandemic demand, coupled with global supply chain disruptions, placed upward pressure on prices. The impact of rising global demand and prices on Irish merchandise imports is detailed further in Section 2.3.

Figure 39: Republic of Ireland Import Volume, Import Value, & Price per Tonne, 2011 - 2021



Source: *CSO*

(ii) Import Value by Product Grouping

Figure 39 above illustrates the value of merchandise imports into Ireland each year. In terms of what products were imported and how this changed in 2021, this section analyses Irish imports when broken down into Standard International Trade Classification (SITC) categories. In Table 13, the value of Irish imports in 2020 and 2021 are organised using these SITC groupings.

In line with previous years, the top three categories in terms of import value were; Machinery & Transport Equipment (39% share), Chemicals & Related Products (25% share), and Miscellaneous Manufactured Articles (12% share). When combined, these three categories consistently represent approximately three quarters of the value of all Irish merchandise imports.

Table 13: Irish Imported Value by SITC Grouping

	2020	2021	Growth	Diff
SITC PRODUCT GROUPING	€000	€000	(%)	Tonnes
Machinery & Transport Equipment	33,494,738	40,221,821	20%	6,727,083
Chemicals & related products	21,506,384	25,839,774	20%	4,333,390
Miscellaneous Manufactured Articles	10,285,351	12,047,577	17%	1,762,226
Food & Live Animals	7,957,936	7,292,734	-8%	-665,202
Manufactured goods	5,805,616	6,791,786	17%	986,169
Mineral fuels, lubricants and related products	3,333,029	6,171,338	85%	2,838,309
All Other Commodities	2,258,473	1,769,594	-22%	-488,879
Beverages & Tobacco	1,082,318	1,001,956	-7%	-80,361
Crude Materials	952,676	1,044,471	10%	91,795
Animal & Vegetable oils, fats & waxes	296,653	355,252	20%	58,600
Total	**86,973,174**	**102,536,304**	**18%**	**15,563,130**

Source: *CSO*

Machinery & Transport Equipment

This category is dominated by the SITC subdivision of 'Other Transport Equipment', which includes the industry for the leasing of aircraft. Between 2017 and 2019, the total value of Machinery & Transport Equipment averaged €39bn per year, of which 55% was represented by 'Other Transport Equipment'. In 2020, the impact of the COVID-19 pandemic on air travel led to a sharp reduction in the value of this subdivision, falling from roughly €22bn in 2019 to €14bn in 2020. In 2021, its value rose by just 4%, to €14.4bn. This is reflective of the slow return to international air and maritime tourist travel this year.

Overall, the value of Machinery & Transport Equipment imports rose by 20% this year, equivalent to €6.7bn. Almost 70% of this growth is attributable to the subdivision of 'Electrical machinery, apparatus & appliances.' Items in this category include everyday appliances such as refrigerators and washing machines. It also includes industrial equipment such as wires, batteries and other apparatus. These items, which are predominantly finished goods, will therefore make significant use of unitised shipping services, such as RoRo and LoLo services. Finished goods will have a higher value to weight ratio when compared to raw materials such as iron, steel or energy products, which rely on bulk shipping services.

The value of the subdivision 'Electrical machinery, apparatus & appliances' rose by 136% in 2021, from €3.4bn in 2020 to €8.1bn this year. The volume of these imports however, rose by just 67%, or 130,000 tonnes. Consequently, the price per tonne of these products rose significantly, by 41% from roughly €17,000 per tonne to €24,000.

Chemicals & Related Products

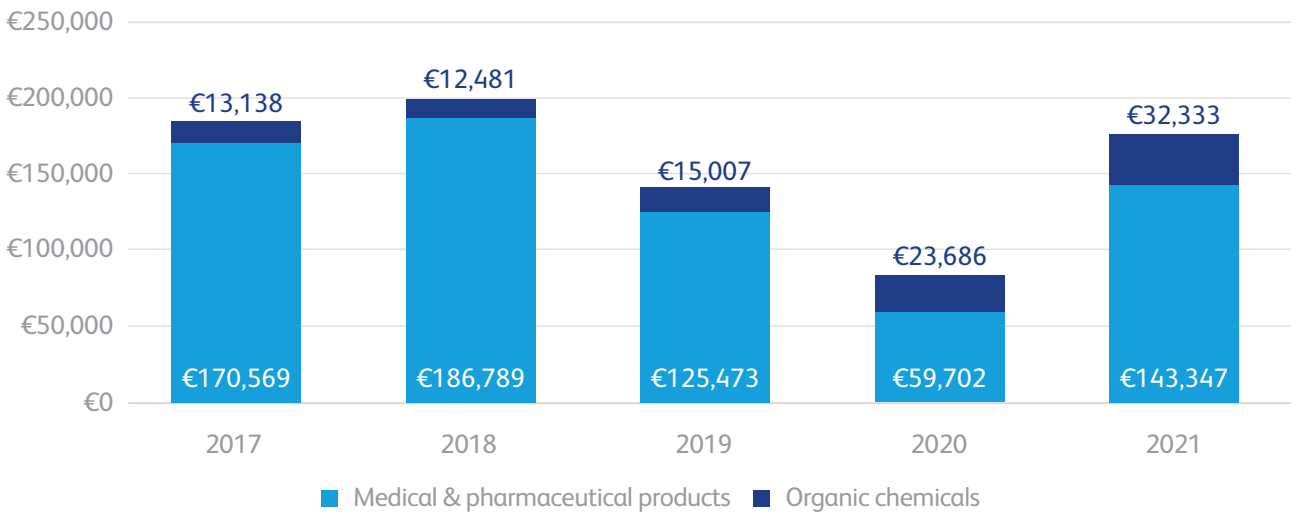
In 2021, the value of imports in this category rose by 20%, equivalent to an additional €4.3bn in value. In all, this category represents one quarter of all Irish merchandise import value, reflective of the significant role the chemical and pharmaceutical industry plays in the Irish economy.

Over the past five years, two subdivisions, 'Organic Chemicals' and 'Medical & Pharmaceutical Products', make up three quarters of the value of this SITC category. In 2021, the value of these imports rose by 29% and 13% respectively, adding €3.4bn in value when combined.

When the subdivision of 'Other Transport Equipment' is excluded, 'Organic Chemicals' and 'Medical & Pharmaceutical Products' are the most expensive category of imports in Irish trade. When combined, they represent 19% of all Irish merchandise import value in 2020 and 2021. The influence of these two subdivisions is even greater among Irish exports. When combined, they account for approximately 55% of the value of all Irish exports[26].

Figure 40 illustrates the price per tonne of each of these subdivisions between 2017 and 2021. The price per tonne of 'Organic Chemicals' rose by 37% in 2021 to €32,333. For 'Medical & Pharmaceutical Products', the price per tonne has fluctuated considerably. The pandemic in 2020 necessitated the sharp increase in the volume of medical and pharmaceutical products as Ireland's health service dealt with increased service demand. This lowered the unit price of import in this category. In 2021, the price per tonne of imports in this category were €143,347, 14% higher than in 2019.

Figure 40: Chemical & Related Products Subdivision, Import Price per Tonne 2017 - 2021



Source: *CSO*

[26] For more detail on Irish exports, see Section 3

Miscellaneous Manufactured Articles

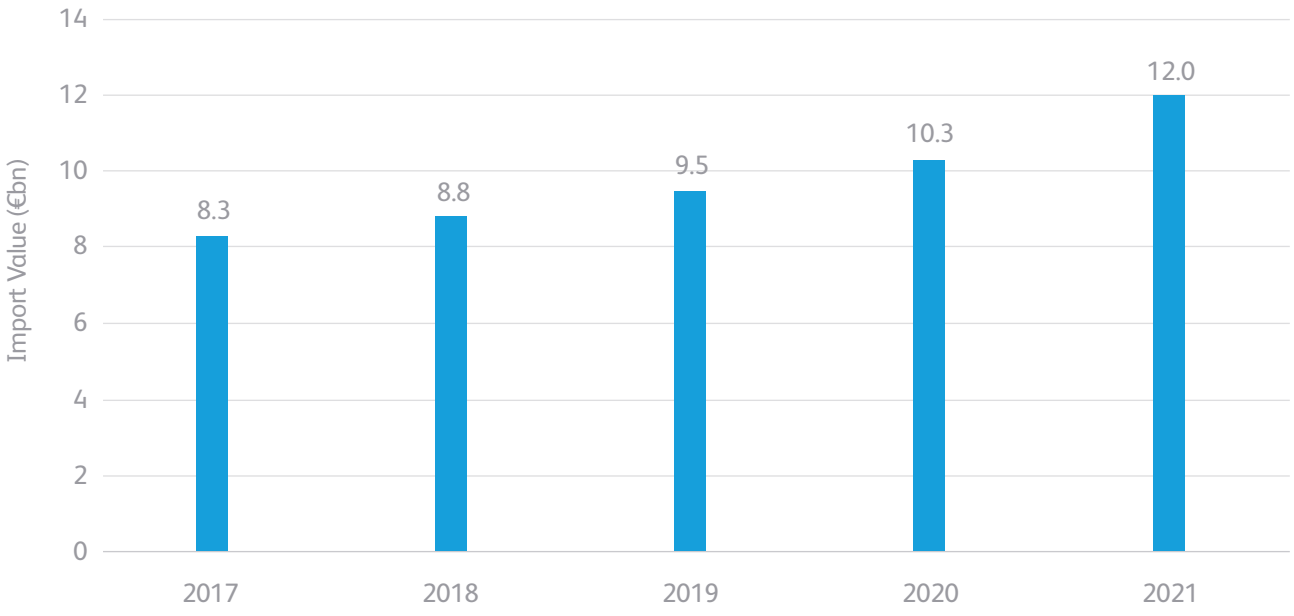
This SITC category is made up of everyday retail items such as furniture, footwear and clothing. As these are finished goods, they will make predominant use of containerized shipping services such as RoRo and LoLo services.

In 2021, the value of imports in this category rose by 17%, from €10.3bn to €12bn. 57% of this growth came from a subdivision also labelled as 'Miscellaneous manufactured articles.' This is reflective of the fact that finished goods in almost all categories were impacted by the global inflationary pressures in 2021. Everyday items, such as toys, stationery and jewellery are all included in this broad subdivision.

In 2020, imports of physical merchandise such as these did not experience sharp declines in volume, despite the significant contraction in the Irish economy. The closure of the service economy drove a surge in demand for everyday household items, as incomes that were unaffected by the pandemic were redirected. This trend was evident in many large economies and contributed to the sharp rising of shipping freight rates as demand for space on vessels increased.

Figure 41 below shows that the pandemic in 2020 did not interrupt the annual growth in the value of imports in this SITC category, and that inflationary pressures accelerated this trend in 2021.

Figure 41: Miscellaneous Manufactured Articles SITC Category, Import Value, 2017 – 2021



Source: *CSO*

2.2 Ireland's Import Trading Partners

2.2A Tonnage

(i) Non – Energy Goods

Table 14 presents Ireland's largest import trading partners in goods other than those related to energy and crude materials (hereafter referred to as non-energy goods). Among the goods excluded are energy products such as oil, coal and natural gas, and crude materials such as fertilizers and scrap metal. The majority of these products are high volume, raw materials that are employed as inputs in the production process. The focus in Table 14 is therefore on manufactured goods (e.g. machinery, retail products etc.), but also includes food, beverages and live animals.

The non-energy goods in Table 14 represented 49% of Ireland's total tonnage imports in 2021. Imports of non-energy goods into Ireland have been flat for the past three years, at approximately 21m tonnes per year since 2019.

The following sections will detail how Brexit has impacted upon where Ireland sources it's roughly 21 million tonnes of non-energy imports. The end of the Brexit transition period has coincided with significant changes to the regional composition of these imports in 2021.

Table 14: Ireland's Top Merchandise Import Partners in Volume terms, Excluding Energy & Raw Materials[27]

	2020	2021	Growth	Diff
Country	Tonnes	Tonnes	(%)	Tonnes
Great Britain	5,544,763	3,228,253	-42%	-2,316,510
Northern Ireland	2,283,047	2,855,060	25%	572,013
Netherlands	1,122,726	1,522,378	36%	399,652
Germany	1,408,604	1,234,948	-12%	-173,656
Spain	796,464	1,722,906	116%	926,441
United States	970,412	1,122,822	16%	152,411
France	992,072	961,796	-3%	-30,276
Belgium	819,889	775,053	-5%	-44,836
Argentina	795,805	726,337	-9%	-69,468
China	561,136	782,008	39%	220,872
Canada	547,494	608,299	11%	60,805
Russia Federation	565,987	579,445	2%	13,458
Turkey	297,050	496,213	67%	199,162
Ukraine	447,565	239,453	-46%	-208,112
Italy	332,923	344,205	3%	11,282
Other	3,421,775	3,655,038	7%	233,263
Total Non - Energy Imports	**20,907,712**	**20,854,213**	**0%**	**-53,499**

Source: *CSO*

[27] SITC categories **excluded** are: category 2 (Crude materials, inedible, except fuels), & category 3 (Mineral fuels, lubricants and related products)

Breaking Down the Brexit Impact

As highlighted above, Ireland has imported an identical volume of non-energy goods for the past three years. However, the end of the Brexit transition period in 2021 meant trade with Ireland's largest import partner, Great Britain, was much less straightforward. From 1st January 2021, Irish importers were legally obliged to submit an electronic import declaration to Irish customs. In addition, there is a legal requirement to submit an electronic customs Safety and Security (S and S) declaration in advance of the good arriving in Ireland. This declaration is called an Entry Summary Declaration (ENS) and must be submitted to Irish customs in advance of the goods leaving Great Britain. [28]Furthermore, if goods are arriving into Ireland from Great Britain by way of RoRo ferry services, a Pre-Boarding Notification (PBN) must be submitted in advance of the goods departure. The importer is responsible for the information on the PBN, while the haulier is responsible for its submission.

If Irish importers wish to make use of the UK Landbridge[29], the exporter of the goods in the other EU country must submit an electronic transit declaration. This must be closed (discharged) by the importer after arrival in Ireland. Before departure from the other EU country, the exporter (also referred to as the 'responsible operator') must submit the transit declaration along with an exit summary declaration. The submission of these documents generates a Master Reference Number (MRN), which will allow the haulier to enter Great Britain without the need for interaction with border control[30]. Once in Great Britain, the ENS and PBN documents outlined above are then required for entry into Ireland.

The imposition of these customs controls on trade between Great Britain and members of the EU Single Market constitute barriers to trade, making it more difficult for Ireland to trade with its largest importing partner. These barriers contributed to the significant decline in imports from Great Britain in 2021. In relation to the Landbridge, the imposition of these new trading arrangements has made direct ferry services between Irish and mainland EU ports more attractive. This has driven the increase in traffic on these routes as the UK Landbridge was frequently substituted for direct routes that required no customs regulation. This has simultaneously led to significant declines of RoRo traffic between ports in Ireland and Great Britain (See Section 1.2).

As a result of these trade barriers, Brexit has significantly altered the locations where Ireland's non-energy imports are sourced. Non-energy imports from Great Britain declined by 2.3m tonnes in 2021, a 42% fall. There is evidence that some of this decline has been replaced by increased imports from other countries. In Table 15 below, several examples of this substitution effect are presented, wherein significant annual declines in imports of specific products from Great Britain, are coupled with above average increases in imports from other countries.

[28] Revenue.ie, Bringing goods into Ireland from Great Britain

[29] The UK Landbridge is a term used to describe a route to market that connects Irish importers and exporters to international markets via the UK road and ports network. It is a strategically important means of access to the single market that has been favoured by traders in high value or time sensitive goods because it offers significantly faster transit times than alternative routes. The reintroduction of customs controls as a consequence of Brexit increases transit times and places additional costs on Irish businesses that undermines their competitiveness in accessing international markets

[30] Revenue.ie, Bringing goods into Ireland from an EU Member State through GB

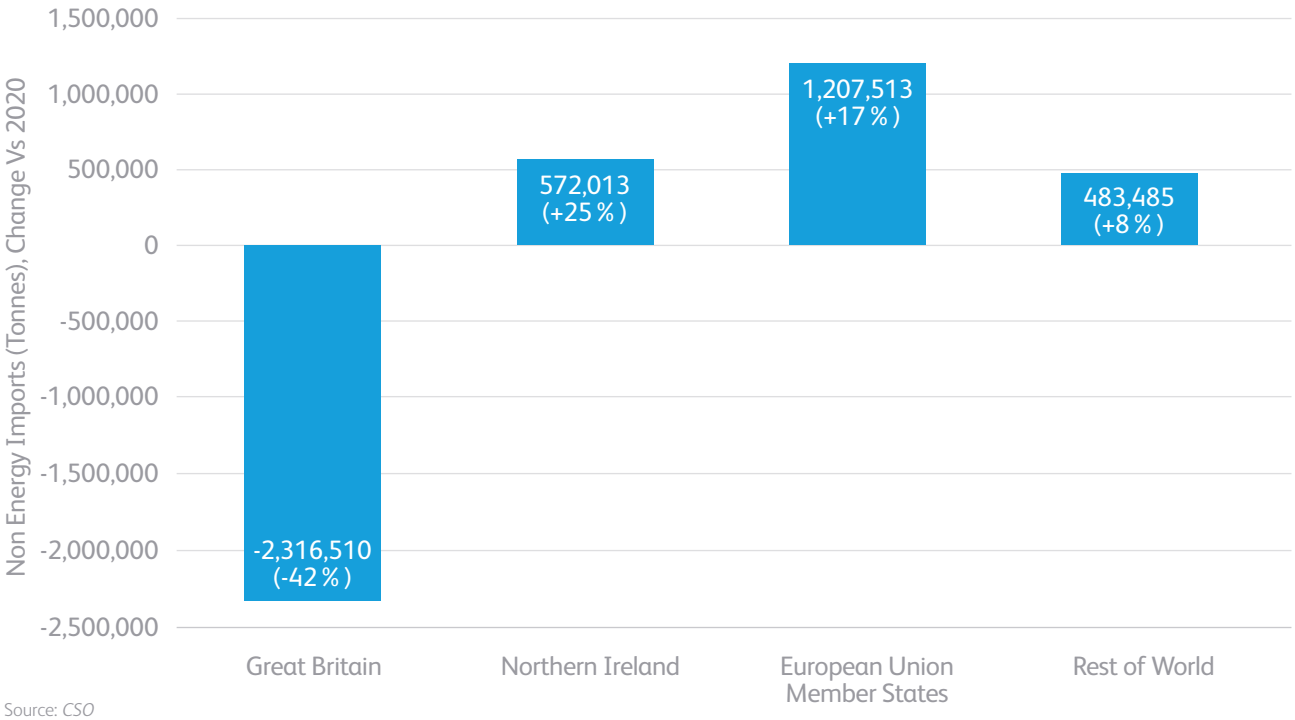
Table 15: Imports of Selected Products, 2020 Vs 2021

	2020	2021	Diff	Growth
	Tonnes	Tonnes	Tonnes	(%)
Imports of Cereals (SITC 04)				
Great Britain	636,299	407,639	-228,660	-36%
Canada	361,684	485,518	123,834	34%
Imports of Vegetables & Fruit (SITC 05)				
Great Britain	302,576	143,899	-158,677	-52%
Netherlands	113,988	161,447	47,459	42%
Imports of (non-agricultural) Fertilisers (SITC 57)				
Great Britain	74,666	31,736	-42,930	-57%
Netherlands	70,282	113,617	43,335	62%
Imports of Iron & steel (SITC 67)				
Great Britain	404,392	265,233	-139,158	-34%
Spain	78,335	163,202	84,867	108%
Miscellaneous manufactured articles (SITC 89)				
Great Britain	307,278	133,218	-174,061	-57%
China	62,356	95,372	33,016	53%
Germany	45,755	63,030	17,275	38%

Source: *CSO*

Overall, the decline of non-energy imports from Great Britain in 2021 coincided with increased imports from other regions, which explains why Ireland's overall non-energy import growth in 2021 was flat. This is illustrated in Figure 42, where the changes in non-energy imports between 2020 and 2021 from four regions are presented.

Figure 42: Regional Changes in Non-Energy Imports between 2020 and 2021 (Tonnes)



Source: *CSO*

Not all of the 'lost' imports from Great Britain were automatically substitutable from other countries. For example, imports of Dairy Products & Eggs (SITC 02) fell by over 140,000 tonnes, and imports of Road Vehicles (SITC 78) fell by a further 156,000 tonnes this year. Both of these products were not significantly offset by imports from other countries, as was the case for many products listed in Table 15 above.

Northern Ireland Protocol

Alongside the significant decline in imports from Great Britain, imports from Northern Ireland in 2021 rose at their fastest pace in more than a decade, rising by 25% or 572,000 tonnes. This raised the question as to whether some Irish imports from Great Britain were indirectly transiting through Northern Ireland, via Northern Irish ports.

Under the Northern Ireland protocol, goods entering Northern Ireland must continue to follow EU product standards, which means Northern Ireland effectively remains in the EU Single Market for goods. Goods arriving in Northern Ireland from Great Britain must submit declarations for those goods and pay an EU tariff / duty, if applicable.

However, whether or not that duty is payable by the importer in Northern Ireland is subject to some exceptions. The duty will not be payable (or will be at a reduced rate) on goods moving from Great Britain to Northern Ireland in the following circumstances[31];

- The importer is eligible for a waiver, subject to de-minimis State Aid limits. Depending on the industry, businesses in the UK have an allowance of state aid that can be claimed over a certain period. If the importer has not yet reached this limit, the waiver may be applicable. The is usually the case for once-off imports, or imports of small value.
- The goods imported are classed as 'not at risk', which means they will remain in Northern Ireland and will not continue on to another EU country. This is relevant when the good in question is already in free circulation in Great Britain.
- The goods in question meet rules of origin requirements under the UK-EU Trade and cooperation Agreement. In other words, if the importer can prove that the good originated in Great Britain, a reduced duty may be available[32].
- The good in question is eligible for relief. Many goods are eligible for relief of duties, such as pharmaceutical products, sea produce, educational products or medical equipment[33].

The EU-UK Joint Committee, which was set up under the Withdrawal Agreement, agreed in December 2020 to some temporary relaxation of the requirements on Northern Irish imports from Great Britain. These are known as 'Grace Periods'[34],. Specifically, for goods arriving from Great Britain into Northern Ireland, a temporary relaxation of rules was agreed for supermarket agri-food products, where the EU's full Sanitary & Phytosanitary (SPS) regime would not apply for a period of three months. Chilled meats and medicines were also granted grace periods for checks and declarations[35].

The significant decline in import volume from Great Britain, in parallel with the rise in import volume from Northern Ireland, implies some amount of Ireland's imports from Great Britain were imported indirectly through Northern Ireland. This would align with the surge in RoRo traffic recorded at Northern Irish ports, as detailed in Section 1.2B. However, indirect imports from Great Britain via Northern Ireland would be categorized as 'At Risk', and therefore subject to the same duty as would be applied at a port in the Republic of Ireland.

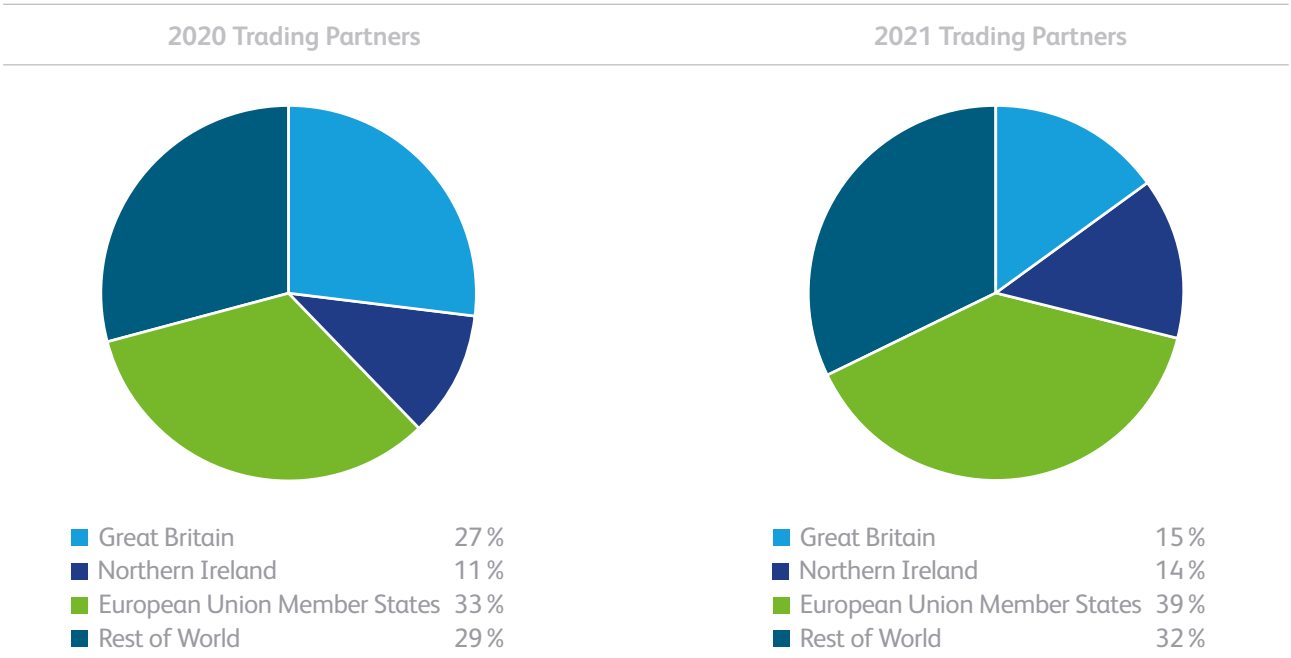
Whether some Irish imports from Great Britain were indirectly transferred through Northern Irish ports in 2021 is unclear. However, this should not diminish the existence of organic post-Brexit growth in trade between Ireland and Northern Ireland. Many Irish importers will have found effective substitutes for their imports within the Northern Ireland economy in order to avoid the newly imposed customs controls between Ireland and Great Britain. The existence of both phenomena – the use of Northern Irish ports as an alternative entry point for imports from Great Britain, and growth in North/South trade on the island of Ireland – is possible.

Shifts in Regional Trade

As highlighted above, the makeup of Ireland's trading partners for non-energy imports has been significantly altered in 2021. Figure 43 below illustrates the significant changes in market shares held by various countries/regions between 2020 and 2021.

[31] UK Government: "Check if you can bring your goods into Northern Ireland from Great Britain without paying duty"
[32] As per The UK Government; "To be considered originating and qualify for a reduced rate of Customs Duty, products must be sufficiently worked or processed within the countries in the agreement." Find more information on Rules of origin under the Trade and Cooperation Agreement
[33] For the full list of goods subject to relied, see here.
[34] Northern Ireland Protocol: Implementation, grace periods and EU-UK discussions (2021- 22), pg 16.
[35] These Grace Periods were unilaterally extended by the UK Government in Sept 2021, see here.

Figure 43: Share of Non-Energy Import Tonnage by Region, 2020 Vs 2021



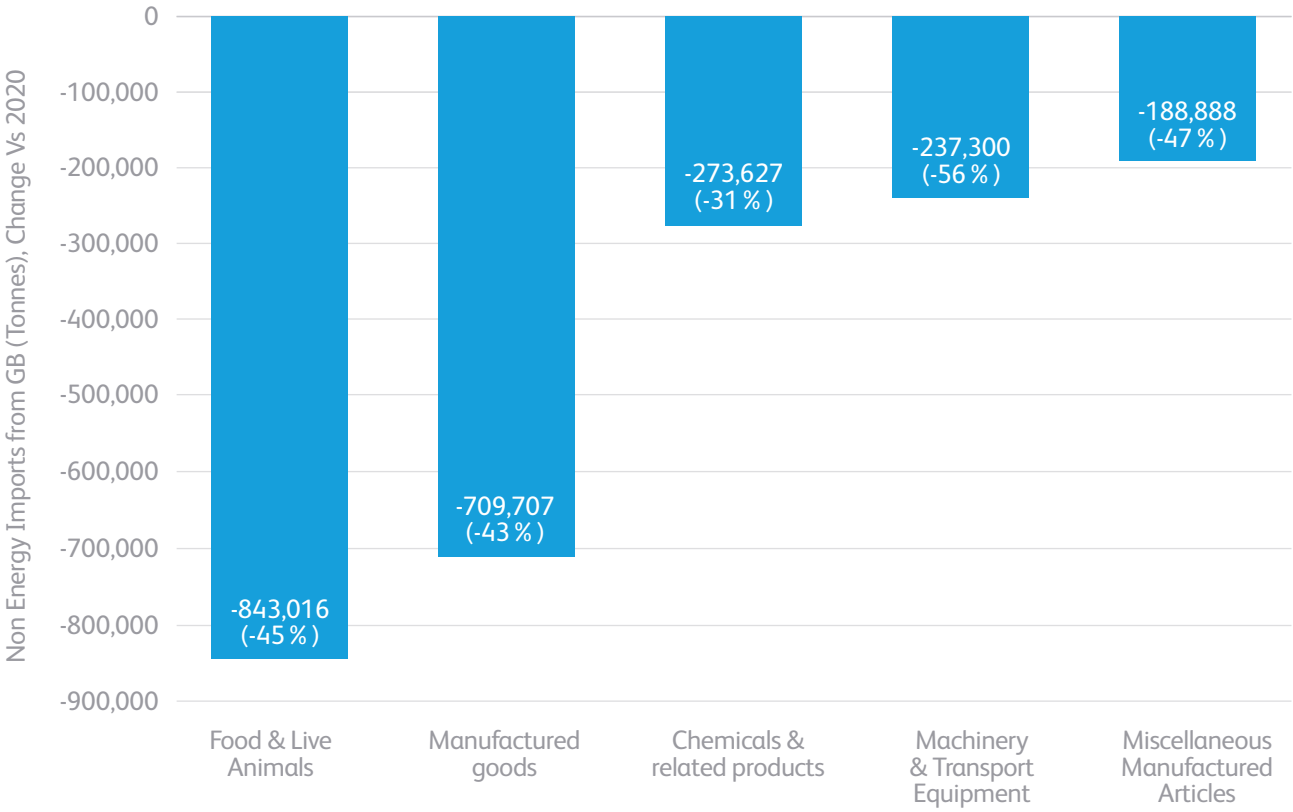
Source: *CSO*

In the following paragraphs, an analysis of these shifts in trade is presented by focusing on SITC product categories from the regions in Figure 43.

Great Britain

Figure 44 highlights the categories where the decline in imports from Great Britain was most concentrated. Of the 2.3m tonne decline in non-energy imports from Great Britain, 36% came from the Food & Live Animals category. Imports of dairy products, meat, agricultural cereals, and animal feeds all recorded significant declines. A further 31% came from the Manufactured Goods category, wherein imports of paper products, iron & steel and mineral manufactures recorded the steepest declines.

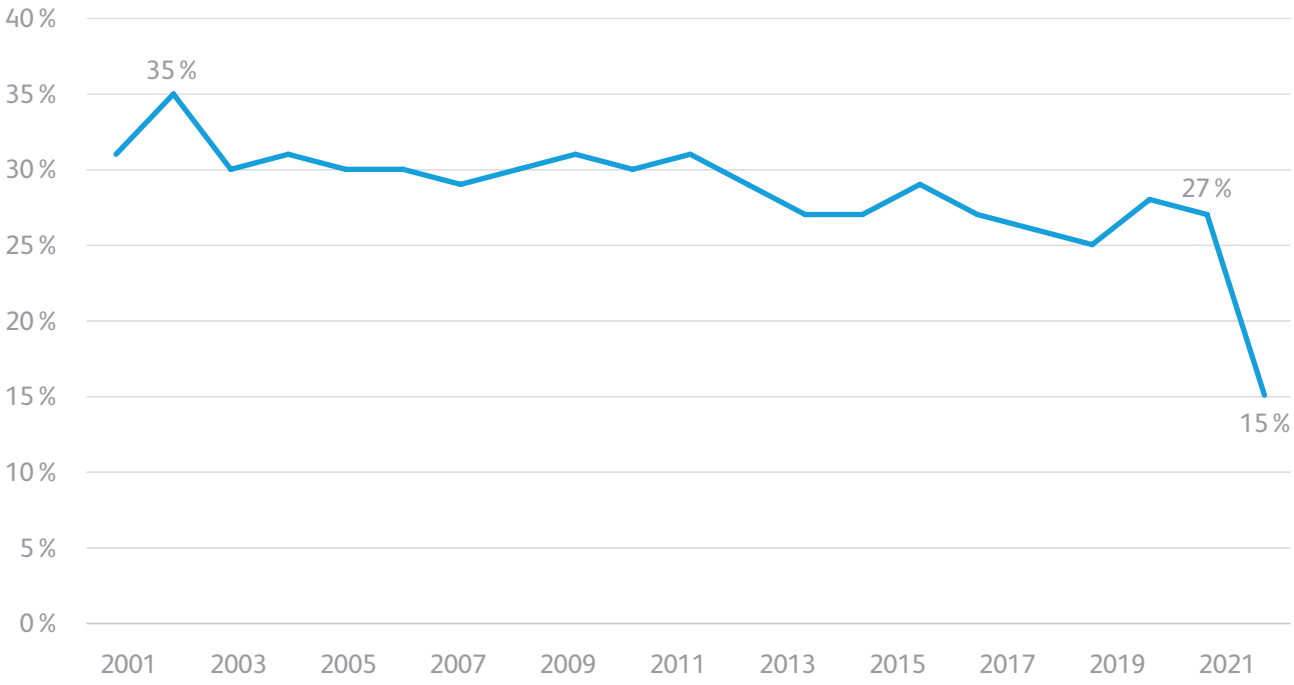
Figure 44: Changes in Non-Energy Imports from Great Britain between 2020 and 2021, by SITC Category



Source: *CSO*

The beginning of the post-Brexit trading environment in 2021 led to a sharp decrease in the share of Irish non-energy imports held by Great Britain. This is a trend that had been steadily emerging for the past two decades, and which has been accelerated in 2021. In Figure 45 below, the share of Irish non-energy imports held by Great Britain is shown between 2001 and 2021. Great Britain made up just 15 % of Irish non-energy imports in 2021, compared to 35 % in 2002.

Figure 45: Percentage Share of Irish Non-Energy Imports held by Great Britain, 2001 - 2021



Source: *CSO*

It is important to highlight the impact that the pre-Brexit stockpile will have had on non-energy imports from Great Britain in 2021. As detailed in Section 1.2A, a significant stockpile of merchandise goods began in late 2020 ahead of the end of the Brexit transition period on January 1st, and this led to record volumes of RoRo traffic being recorded on ROI – GB routes. RoRo short sea services are the shipping mode of choice between Ireland and Great Britain, particularly for non-energy finished goods such as those discussed in this section. As highlighted in Section 1.2A, this stockpile was gradually depleted over the first three months of 2021.

Consequently, some of the reduction in imports from Great Britain in 2021 is attributable to this pre-Brexit stockpile, which was driven by considerable uncertainty amid concerns of backlogs and delays at Irish and British ports.

Northern Ireland

Of the increase in non-energy imports from Northern Ireland, two thirds came from two SITC subdivisions; Non-metallic mineral manufactures and Iron & Steel. Both of these categories contain products that are chiefly employed in the construction sector such as cement, glass and mineral manufactures.

Outside of construction materials, imports of animal feed increased by 17 %, equivalent to an additional 97,000 tonnes.

European Union

Non-energy imports from Spain rose significantly in 2021, by almost 1m tonnes. This was equivalent to an annual increase of 116 % (see Table 14). This was driven predominantly by increases in imports of manufactured metal, which grew by over 700,000 tonnes. Imports from the Netherlands increased by 400,000 tonnes, much of which came from the Chemicals & Related Products category.

Rest of World

Chinese non-energy imports grew by 39% in 2021, equivalent to an additional 220,000 tonnes. Almost all of this increase came from manufactured goods. Imports of furniture, apparel and appliances all recorded strong growth. Mineral and metal manufactures make up the remaining areas of growth in Chinese imports.

Lastly, imports of non-energy products from the United States were driven predominantly by animal feed, which grew by over 160,000 tonnes.

(ii) Energy Goods Only

Table 16 presents Ireland's largest import trading partners in goods related only to energy and crude materials (hereafter referred to as energy goods). Among the goods included are energy products such as oil, coal and crude materials, such as fertilizers and scrap metal. The majority of these products are high volume, raw materials that are employed as inputs in the production process. Natural gas and electrical current imports are excluded as they do not make significantuse of port infrastructure[36].

The energy goods in Table 16 represented 43% of Ireland's total tonnage imports in 2021. When compared to 2020, energy imports grew by 13%, or just over 2m tonnes. Given the level of restrictions on domestic and international travel due to the COVID-19 pandemic in 2020, an increase in energy imports in 2021 was expected. Reduced oil consumption for domestic and international transport underpinned the decline in energy imports in 2020 (See Section 2.1A).

Table 16: Ireland's Top Merchandise Import Partners in Volume terms, Energy & Raw Materials Only[37]

	2020	2021	Growth	Diff
Country	Tonnes	Tonnes	(%)	Tonnes
Great Britain	3,148,855	2,544,830	-19%	-604,024
Guinea	3,162,455	2,961,705	-6%	-200,750
Northern Ireland	2,033,003	2,478,591	22%	445,588
United States	2,581,295	2,014,116	-22%	-567,179
Brazil	1,543,871	1,727,298	12%	183,427
Norway	559,420	851,463	52%	292,043
Russia Federation	522,839	1,578,463	202%	1,055,624
Spain	530,111	707,496	33%	177,386
Netherlands	399,735	619,254	55%	219,519
Colombia	166,416	157,101	-6%	-9,315
Other	1,489,847	2,535,210	70%	1,045,363
Total	**16,137,846**	**18,175,529**	**13%**	**2,037,683**

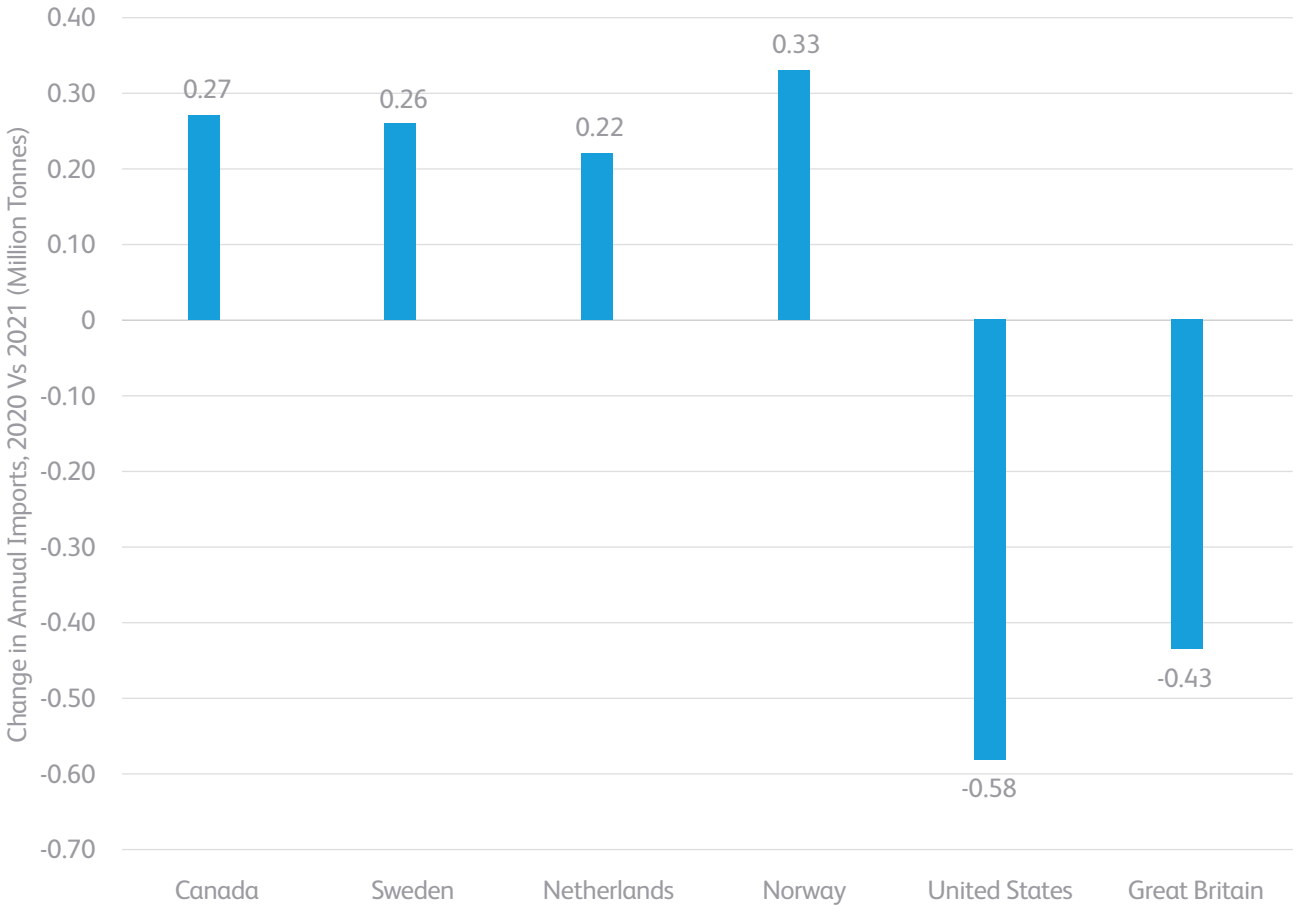
Source: *CSO*

[36] Over 98% of Ireland's non-indigenous imported natural gas comes from Great Britain, which is supplied through an interconnector from Scotland.
[37] Includes SITC category 2 (Crude materials, inedible, except fuels), & category 3 (Mineral fuels, lubricants and related products). Natural Gas (34) and Electrical Current (35) are excluded as they do not make predominant use of port infrastructure

Almost half of the growth in energy imports this year is attributable to an increase in coal imports from The Russian Federation. These imports increased by 950,000 tonnes in 2021 and were driven by lower than average wind energy production in Ireland this year. This necessitated additional fossil fuel imports to make up Ireland's primary energy requirements. This is discussed in detail in Section 1.1A.

Elsewhere, the composition of Ireland's import partners for petroleum products changed significantly in 2021. Petroleum and its related products are Ireland's largest category of merchandise imports by volume, with 8m tonnes imported each year, or roughly one fifth of all Irish imported tonnage. Imports of petroleum from Great Britain declined by 19%, while imports from the United States fell by 22%. When combined, this amounted to approximately 1m fewer tonnes of petroleum imports from both countries. This was replaced by increases in petroleum imports from several other countries, including Norway, The Netherlands, Sweden and Canada. Figure 46 illustrates this change in composition of Irish petroleum imports in 2021.

Figure 46: Change in Petroleum Imports, 2021 Vs 2020, Million Tonnes



Source: *CSO*

As for raw, or crude materials, imports from Spain rose significantly in 2021. This was driven predominantly by imports of crude fertilizers, which rose by almost 200,000 tonnes in 2021. When non-energy goods are included, imports from Spain rose considerably in 2021, by 83%. This was equivalent to an additional 1.1m tonnes of imported merchandise.

2.2B Value

Table 17 details Ireland's top trading partners in value terms, with all products, energy and non-energy, included. Unlike imported tonnage, the composition of Ireland's top import partners in value terms does not materially change when energy products are excluded. In value terms, non-energy goods consistently represent 93% of Irish import value, with the remaining import value represented by energy and raw material products such as those detailed in Section 2.2A.

As highlighted in Section 2.1B, the value of all Irish merchandise imports surpassed €100bn for the first time in 2021, representing an increase of 18% when compared to 2020. The price per tonne of Irish imports also rose by 11% compared to 2020. The increase in the price per tonne of Irish imports highlights the significant inflationary pressures recorded in the world's largest economies in 2021.

Table 17 presents Ireland's top import partners in value terms. In the following section, an analysis of the changes in import value this year is presented by focusing on several large import partners.

Table 17: Ireland's Top Merchandise Import Partners in Value terms, All Products Included

	2020	2021	Growth	Diff
	€000	€000	(%)	€000
Great Britain	17,738,167	15,367,181	-13%	-2,370,986
United States	13,478,146	17,834,779	32%	4,356,634
France	9,906,165	10,246,716	3%	340,550
China	6,546,680	8,341,548	27%	1,794,868
Germany	7,144,435	7,227,693	1%	83,258
Switzerland	4,139,764	5,123,166	24%	983,402
Netherlands	3,126,347	4,421,489	41%	1,295,142
Northern Ireland	2,399,677	3,955,801	65%	1,556,124
Belgium	1,917,953	2,240,361	17%	322,409
Italy	1,780,653	2,150,290	21%	369,638
Spain	1,707,803	1,749,219	2%	41,416
Other	17,087,385	23,878,060	40%	6,790,675
Total	**86,973,174**	**102,536,304**	**18%**	**15,563,130**

Source: *CSO*

Great Britain

As evident in Table 17, Great Britain was the only major import partner to record a decline in value in 2021. The value of imports from Great Britain fell by 13%, or approximately €2.4bn. As highlighted in Section 2.1, the decline in imports from Great Britain came predominantly from categories such as Food & Live Animals, and Manufactured Goods. Imports of Food & Live Animals from Great Britain fell by roughly €1.2bn, a decline of 36%.

The decline in import value from Great Britain was offset by a significant rise in natural gas imports in 2021. The value of natural gas imports from Great Britain rose by €1bn, an increase of 164% compared with 2020. As mentioned in Section 2.1A, natural gas imports from Great Britain are predominantly supplied through an interconnector from Scotland. When natural gas is excluded, the decline in import value from Great Britain rises to 20%.

As discussed in detail in Section 2.2A, the imposition of customs controls on trade between Great Britain and members of the EU Single Market underpinned the significant decline in imports from Great Britain in 2021. In addition, it is once more important to highlight the impact that the pre-Brexit stockpile will have had on imports from Great Britain this year. As detailed in Section 1.2A, a significant stockpile of merchandise goods began in late 2020 ahead of the end of the Brexit transition period, and this led to record volumes of RoRo traffic being recorded on ROI – GB routes. Consequently, some of the reduction in imports from Great Britain in 2021 is attributable to this period.

United States

Imports from the United States rose by almost one third in 2021, equivalent to €4.4bn in value terms. 44% of this growth is attributable to the subdivision 'Other Transport Equipment', which includes the industry for the leasing of aircraft. When this category is excluded, growth in US import falls to €2.4bn, or 25%.

Elsewhere, growth is US imports was spread across many products, most of which were within the category of manufactured goods destined for the retail sector. As an example, imports of 'Electrical machinery, apparatus & appliances' grew by over 200% this year, equivalent to a rise of €0.84bn.

European Union

The value of imports from the European Union rose by 13% in 2021, or roughly €4bn. One third of this is attributable to imports from The Netherlands alone. Import value from The Netherlands rose by 41%, or €1.3bn. This was predominantly driven by petroleum products, as well as organic chemicals and medical & pharmaceutical products. The latter two products are subdivisions of Chemical and Related Products and are commonly among Ireland's most valuable imported products. The increase in imports from Belgium in 2021 were also driven by these categories this year.

Import value from Italy was instead underscored by manufacturing products such as industrial and electrical machinery.

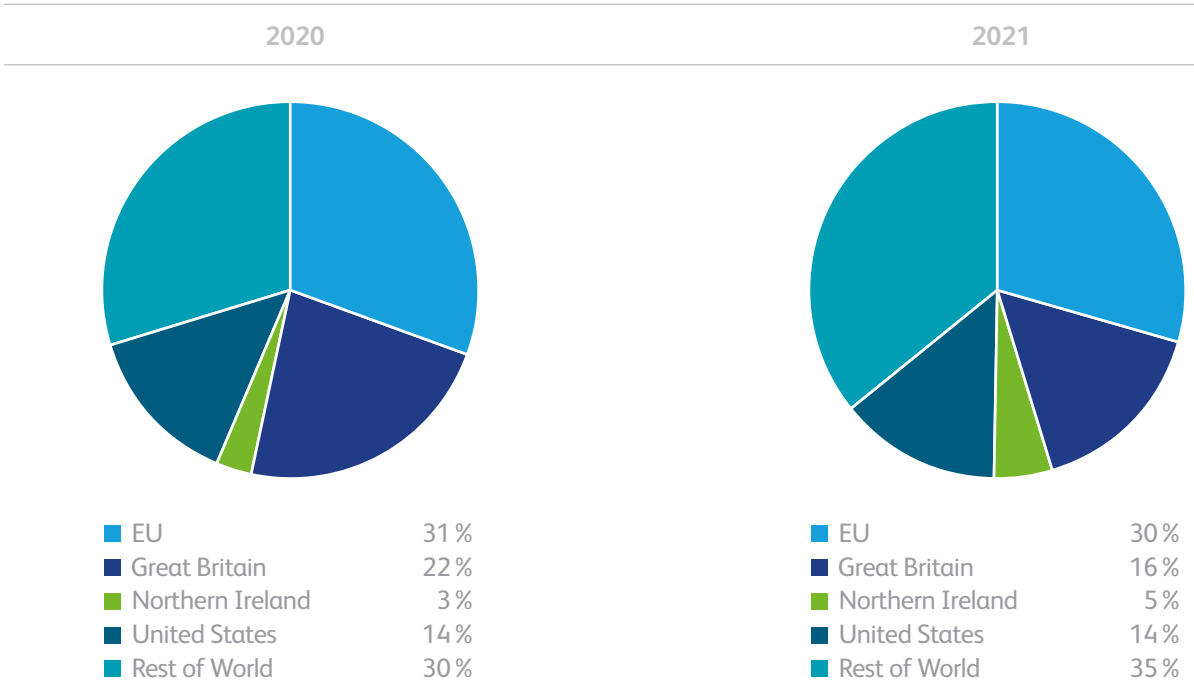
Northern Ireland

In value terms, imports from Northern Ireland rose considerably in 2021, by roughly €1.6bn, or 65%. The impact of the end of the Brexit transition period on imports from Northern Ireland is discussed in detail in Section 2.2A.

As for specific products, one third of the increase in Northern Ireland import value is attributable to medical and pharmaceutical products. Imports of these products rose from €0.16bn in 2020 to €0.67bn in 2021. Among other categories, imports of Food & Live Animals form Northern Ireland rose by 43% in value terms, or €0.3bn. This was predominantly driven by increases in imports of dairy products and eggs, animal feed and cereals.

In Figure 47 below, the shares held by Ireland's main import partners, by region and country, is presented. The subdivisions 'Other Transport Equipment' and 'Natural Gas Products' are excluded. As mentioned above, the former contains the industry for the leasing of aircraft and can be distorting when considering the import of physical merchandise goods. Regarding natural gas, as this is imported predominantly via pipelines and therefore does not make use of Ireland's port and shipping infrastructure, it is also less relevant to analysis' of merchandise imports.

Figure 47: Share of Irish Merchandise Import, in Value Terms[38]



Source: *CSO*

[38] Excluding 'Other Transport Equipment' (SITC No. 079) and Natural Gas Products (SITC 034)

2.3. Irish Merchandise Exports

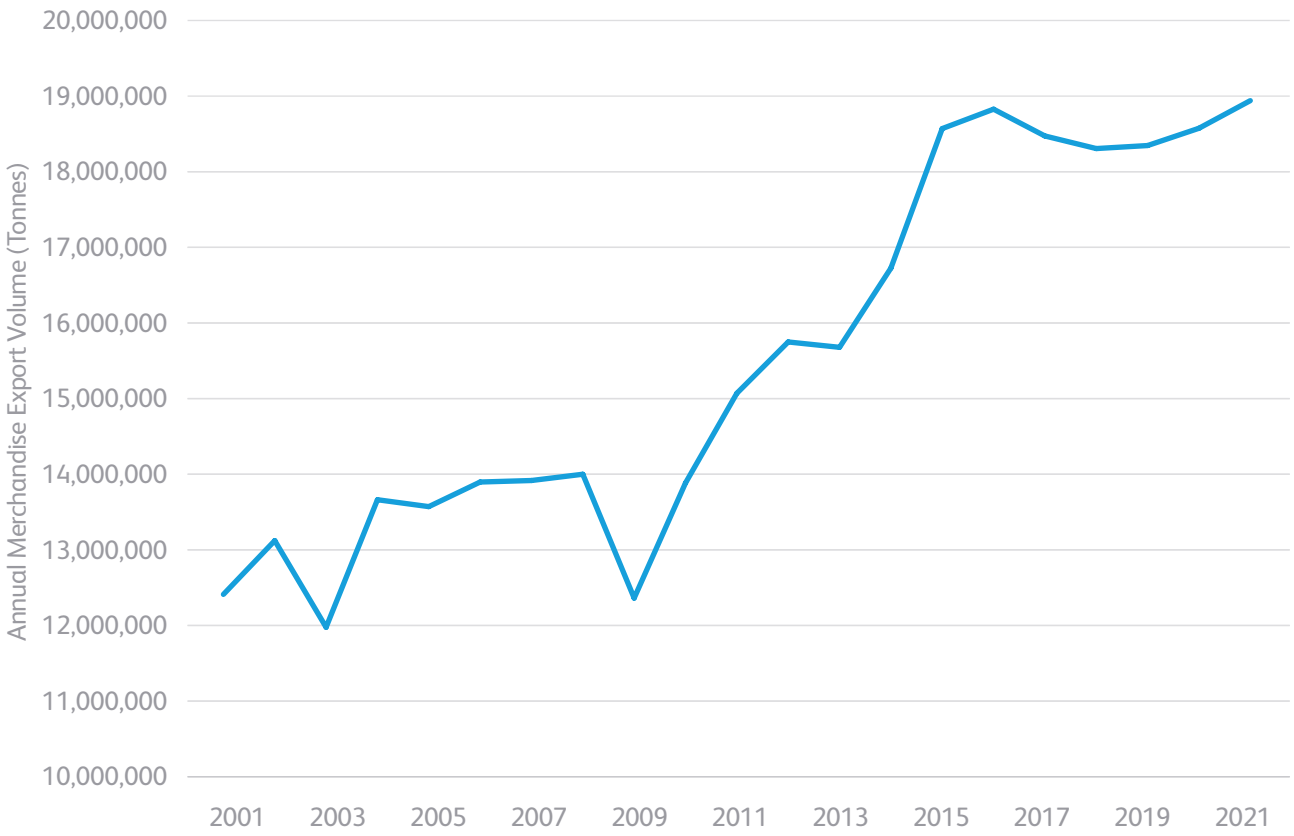
2.3A Tonnage

(i) Export Tonnage by Annual Volume

In 2021, Irish merchandise export tonnage grew by 2% to 18.9 million tonnes. This represents an increase of 364,000 tonnes over 2020. Overall, the trend in Irish merchandise exports over the past 2 decades has been upward, with Ireland exporting on average, an additional 300,000 tonnes per year during that time. This is illustrated below in Figure 48, which presents annual merchandise export volume between 2001 and 2021.

At 18.9m tonnes, 2021 represents Ireland's largest annual merchandise export volume on record. Approximately 90% of this volume will be exported by way of maritime transport.

Figure 48: Irish Merchandise Export Volumes, 2001 – 2021



Source: *CSO*

Annual export tonnage has remained relatively stable for the last five years, averaging 18.5 million tonnes per year between 2016 and 2021. 2021 is also the seventh consecutive year that Irish merchandise exports have been between 18m and 19m tonnes.

This stands in contrast to the period between 2010 and 2015. As evident in Figure 48, there was sharp growth in the volume of Irish merchandise exports as the Irish economy recovered from the 2008 financial crash. The increase in traffic between 2013 and 2015 was predominantly driven by increased exports of heavy industrial materials such as non-metallic minerals (sand, gravel, stone etc), petroleum products, and crude fertilisers. The gains made during this period have been maintained as Irish exported tonnage has remained steady for the last five years.

Despite the surge in some high volume exports, almost all categories of Irish merchandise exports began to increase during the last decade. High value finished goods including meat, dairy and beverages, all gained upward momentum in line with Irish economic growth.

Overall, Irish export tonnage in recent years is robust, remaining consistently above 18 million tonnes and exhibiting considerable resilience in the wake of both Brexit and the COVID-19 pandemic, which both posed significant challenges to Irish exporting companies.

(ii) Export Tonnage by Product Grouping

The performance of Irish merchandise exports in 2020 is better understood by analysing the Standard International Trade Classification (SITC) categories in detail. Table 18 provides further analysis of Irish exports in 2020 and 2021, with products organized using SITC groupings.

Table 18: Irish Exported Tonnes by SITC Grouping

	2020	2021	Growth	Diff
SITC Product Grouping	Tonnes	Tonnes	(%)	Tonnes
Crude Materials	4,337,138	4,721,811	9%	384,674
Food & Live Animals	4,618,824	4,549,080	-2%	-69,744
Manufactured Goods	3,578,919	4,080,527	14%	501,607
Mineral Fuels	3,034,436	2,299,790	-24%	-734,646
Chemicals & Related Products	1,261,755	1,328,096	5%	66,340
Beverages & Tobacco	869,610	864,949	-1%	-4,660
Machinery & Transport Equipment	419,626	423,905	1%	4,279
Misc Manufactured Articles	306,597	322,783	5%	16,186
All Other Commodities and Transactions	13,528	213,353	1477%	199,825
Animal & Vegetable oils	114,632	114,430	0%	-202
Total	**18,555,065**	**18,918,724**	***2%***	**363,659**

Source: *CSO*

In line with previous years, the top four export categories in volume terms were Food & Live Animals, Crude Materials, Manufactured goods and Mineral Fuels, which together made up 83% of all exported Irish tonnage in 2021. In the following sections, the changes in 2021 among these top four exporting categories are analysed.

Crude Materials

The Crude Materials SITC category includes products such as crude fertilisers and oilseeds - e.g. Rapeseed oil, which can yield up to 5 tonnes per hectare in Ireland. [39]Other crude materials relevant to the Irish export market are Cork & Wood, Waste Paper and Metalliferous ores & scrap metal.[40] Items in the Crude Materials category make predominant use of dry and break bulk shipping services. Bulk carrier vessels do not transport goods in containerized form such as RoRo or LoLo container vessels. Instead, the commodities are stored in the holds of vessels and loaded / unloaded using large quayside infrastructure such as powerful 'grabs.'

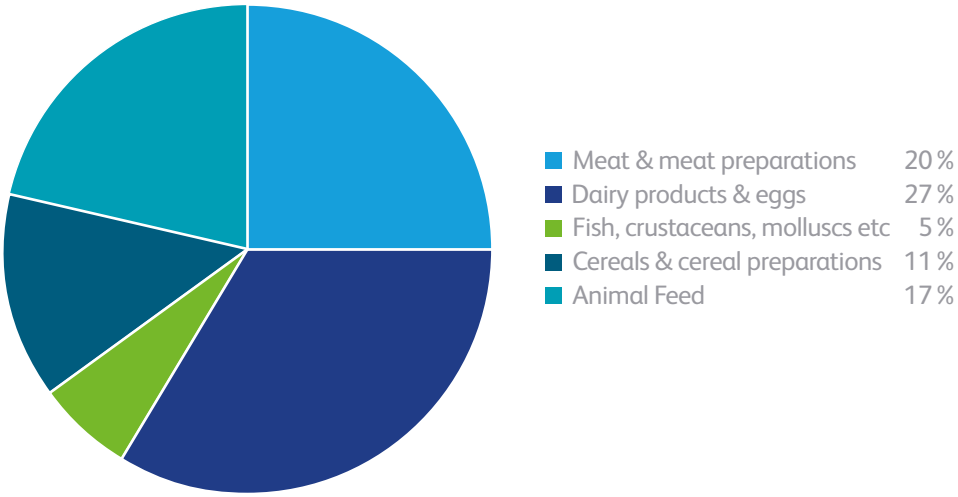
[39] Oilseed Rape, Teagasc
[40] For more information on the composition of Crude Materials (SITC Category No. 2), see SITC Description of Divisions

Metalliferous ores & scrap metal is one of Ireland's largest exports in volume terms, consistently representing 15% of all Irish exported tonnage over the past five years. Products in this subdivision include iron, copper, aluminium and nickel ores. In 2021, exports of this group rose by 19%, to 2.8m tonnes. This was equivalent to an additional 454,000 tonnes of export volume and accounted for all the growth in crude materials in 2021. This growth was offset only by a decline in exports of Cork & Wood, which declined by 22%, or 168,000 tonnes.

Food & Live Animals

Since 2019, exports of Food & Live Animals have been steady, recording similar volumes each year, at an average of 4.6m tonnes. Volumes in 2021 declined by 2%, to 4.55m tonnes. Figure 49 below illustrates the most dominant products in this category. The items listed in Figure 49 are not exhaustive , but when combined, they consistently represent between 75% and 80% of all Food & Live Animal exports in Ireland.

Figure 49: Main SITC subdivisions within Irish Food & Live Animal Export Volume



Source: *CSO*

In 2021, exports of Meat & Meat Preparations fell by 14%, equivalent to 141,000 tonnes. Great Britain is the largest consumer of these exports, receiving almost 40% of this subdivision between 2017 and 2020. In 2021, exports of these products to Great Britain fell by 29%.

Exports of Fish and its related products grew by 17%, adding 34,000 tonnes. This is the largest volume of these exports since 2017.

Manufactured Goods

In the Manufactured Goods SITC category, the subdivision of 'Non-metallic mineral manufactures' has accounted for approximately three quarters of this category since 2017. According to the European Commission;

"Non-metallic minerals comprise of the production of cement, ceramics, glass, and lime. These manufacturing sectors are characterised by the transformation of naturally occurring minerals such as limestone, silica, and clays through an energy-intensive process. The end products range from bricks and tiles to glass and tableware[41]."

European Commission, 2021

[41] European Commission, Non-metallic products and industries

In 2021, non-metallic mineral manufactures were Ireland's largest export in volume terms, with 3.1m tonnes exported this year. This is equivalent to 16% of all Irish exported tonnes in 2021. Non-metallic minerals make predominant use of break bulk and dry bulk shipping services.

In 2021, exports of non-metallic minerals increased by 19%, or 496,000 tonnes. This is the largest annual volume of exports of these products in the last two decades. Over 90% of these products are exported from Ireland to Northern Ireland and Great Britain.

Elsewhere in this category, exports of Iron & Steel rose by 39%, equivalent to 33,000 additional tonnes.

Mineral Fuels

This category is made up of fossil fuels such as coal (including coke & briquettes), oil products such as petroleum, and natural gas. Between 2015 and 2020, this category made up, on average, 14% of Irish export volume. In 2020, volumes rose significantly, by 31%, compared to 2019. This was driven by the sharp reduction in domestic demand for fossil fuels, particularly petroleum. The consumption of oil fell considerably in the domestic transport and aviation sectors due to COVID-19 restrictions on travel (See Section 2.1A). Exports of petroleum alone rose by 42%, worth over 500,000 tonnes. As detailed in Section 1.1B, the majority of petroleum exports leave from the Port of Cork.

In 2021, this trend reversed, and exports of mineral fuels declined by 24%, or 735,000 tonnes. Mineral fuel exports are now in line with 2019, or pre-pandemic levels. Two factors drove the reduction in mineral fuel exports in 2021. Firstly, the lifting of restriction on domestic transport, and the gradual lifting of restrictions on international travel, brought sharp increases in fossil fuel consumption. Secondly, and as discussed in detail in Section 2.1A, lower than average wind production necessitated increased consumption of coal for Ireland's primary energy production. Exports of coal fell by 31% this year, or 332,000 tonnes, as much of this was redirected to domestic primary energy production.

2.3B Value

(i) Export Value by Annual Volume

The annual value of Irish exports continued to rise in 2021, reaching a record high of €165.2bn, and adding €3.1bn in merchandise value compared to 2020.

Beginning in 2015, the nominal value of Irish merchandise exports began to rise sharply. Average annual growth in Irish export value was 9% between 2015 and 2021, equivalent to an additional €10bn per year. This is also the eighth consecutive year of growth in Irish export value. In 2021, Irish merchandise export value is almost 80% higher than in 2014.

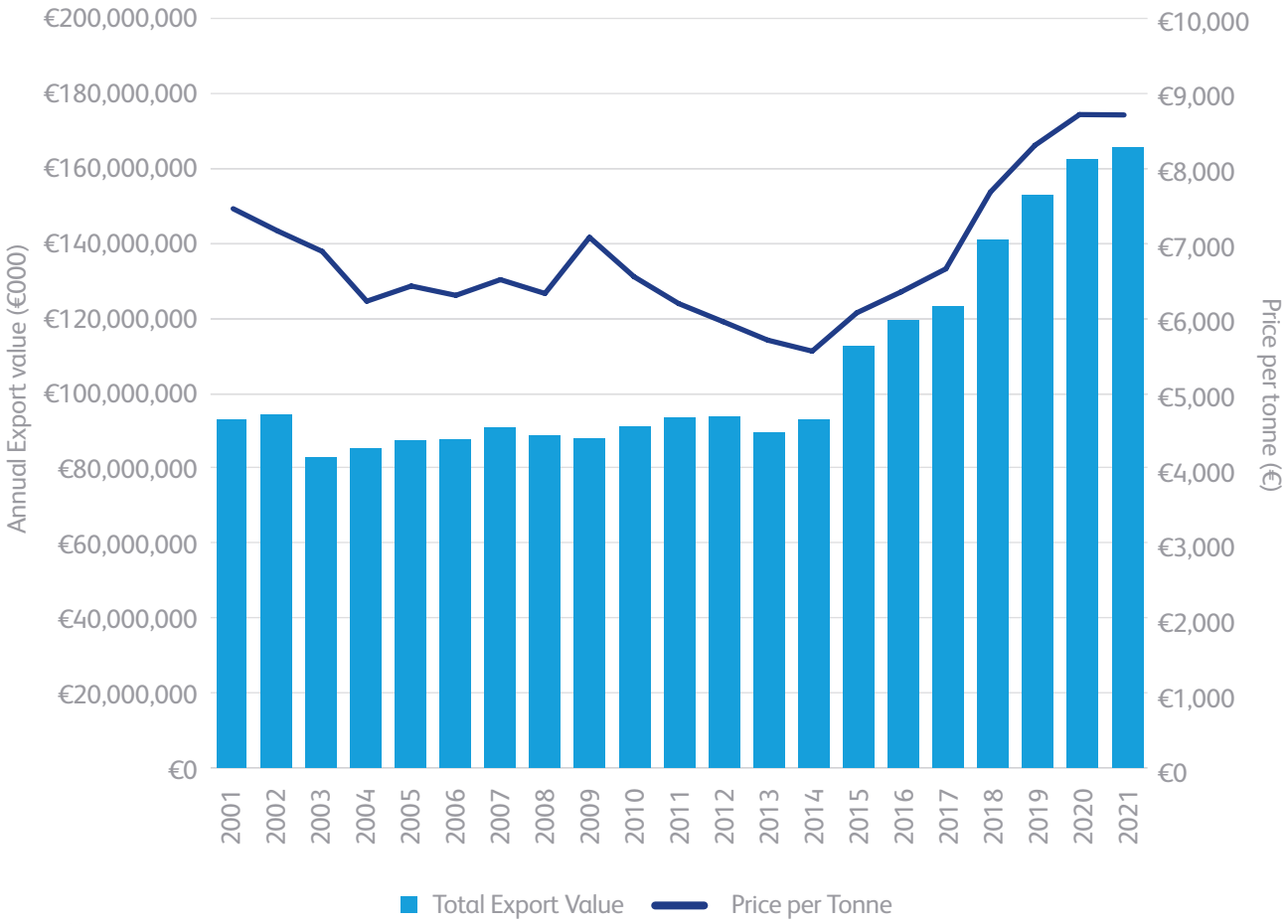
As outlined in Section 2.3A, Irish export tonnage has remained steady, at roughly 18.5 million tonnes per year, between 2015 and 2021. As a result of this sharp increase in value in the latter half of the decade, the nominal price per tonne of Irish exports has also risen significantly. The value per tonne of Irish exports in 2021 is 58% higher than in 2014, equivalent to an additional €3,192 per tonne in 2021.

The annual value of Irish merchandise exports, and price per exported tonne, is presented in Figure 50 below for the last two decades. Irish economic growth in the wake of the 2008 financial crash has been boosted by this strengthening of export value[42]. Exports of Pharmaceutical and ICT by Multinational Enterprises (MNE's) have driven much of this growth. In the following section, an analysis of the most valuable categories of Irish merchandise exports is provided.

Overall, Irish exports are strong, and continue to grow despite the challenges posed by Brexit and COVID-19. Irish exports are also heavily concentrated around medical and pharmaceutical products, which have recorded significant growth in recent years.

[42] Central Bank of Ireland, Quarterly Bulletin, QB2 April 2021

Figure 50: Irish Merchandise Export Value and Price per Tonne, 2001 – 2021



Source: *CSO*

(ii) Export Value by Product Grouping

Irish merchandise export value in 2021 is better understood once the Standard International Trade Classification (SITC) categories are analysed in detail. Table 19 provides further analysis of Irish exports in 2020 and 2021, with products organized using SITC groupings.

Table 19: Irish Merchandise Export Value by SITC Grouping

	2020	2021	Growth	Diff
	€000	€000	(%)	€000
Chemicals & Related Products	105,818,041	102,523,768	-3%	-3,294,273
Machinery & Transport Equipment	22,725,136	24,665,900	9%	1,940,764
Misc Manufactured Articles	14,925,121	17,394,824	17%	2,469,702
Food & Live Animals	11,665,888	12,146,503	4%	480,615
Manufactured Goods	2,327,114	2,782,967	20%	455,853
Crude Materials	1,422,753	2,061,588	45%	638,834
Beverages & Tobacco	1,457,804	1,753,046	20%	295,243
Mineral Fuels	779,467	939,781	21%	160,314
All Other Commodities and Transactions	924,737	830,618	-10%	-94,119
Animal & Vegetable oils	85,021	113,485	33%	28,465
Total	**162,131,082**	**165,212,479**	**2%**	**3,081,397**

Source: *CSO*

Chemicals & Related Products

As has been the case for the last decade, Irish export value is dominated by goods in the category of Chemicals & Related Products. In 2020, the value of these exports surpassed €100bn for the first time. In 2021, the value of this category fell by 3%, or €3.3bn. This is the first annual decline recorded since 2012. Despite this decline, these exports still represent 62% of all Irish export value in 2021.

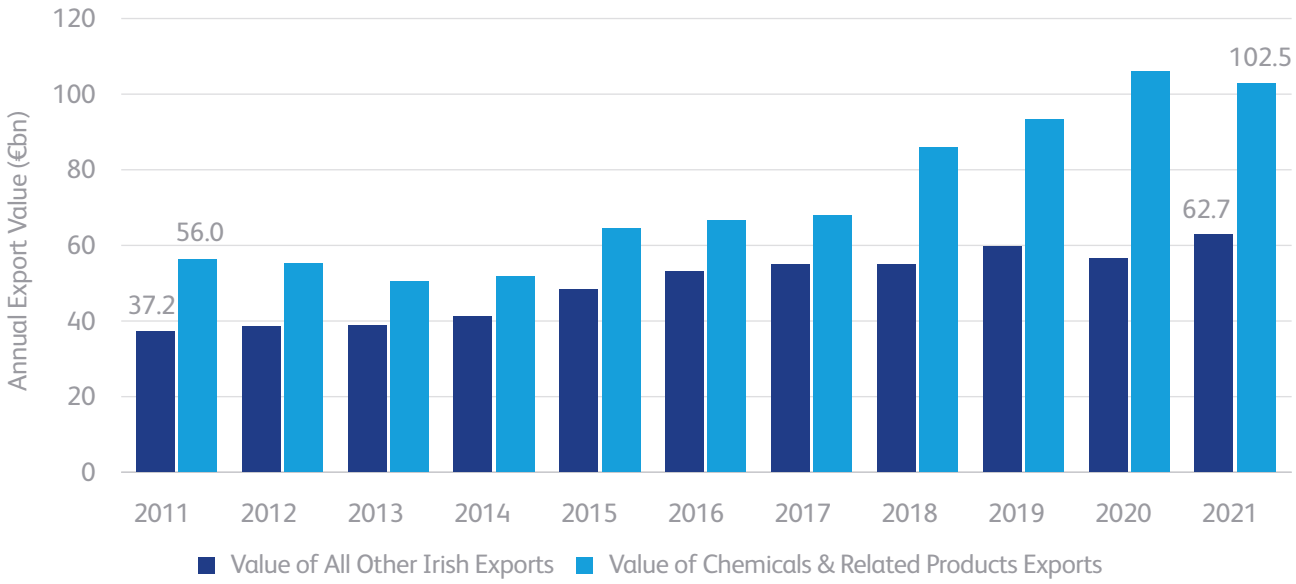
Growth in this category is dominated by the contribution made by two sub-divisions; Medical & Pharmaceutical products, and Organic Chemicals[43]. In 2021, Medical & Pharmaceutical exports were valued at €62.6bn, and Organic Chemical exports were valued at €25.9bn.

Over the past five years, Medical & Pharmaceutical products have represented, on average, one third of all Irish merchandise export value, while Organic Chemicals have represented 18%. No other subdivision holds a share similar in size to these two groups. The concentration of Irish merchandise exports around these product groupings was highlighted in Volume 18 of the Irish Maritime Transport Economist[44]. It was noted that export growth in a small number of products represents a risk to the Irish economic outlook, as a downturn in one industry could substantially affect the overall value of Irish exports.

Figure 51 below illustrates the value of Chemicals & Related Products export over the decade, alongside the value of all Irish exports, *excluding* this SITC category. In 2021, the value of exports in the Chemical & Related Products category were 64% higher than all other Irish exports combined.

[43] SITC Categories: Medical & Pharmaceutical products (54), and Organic Chemicals (51)
[44] Section 3.1B, Irish Maritime Transport Economist, Vol 18

Figure 51: Irish Export Value 2011 – 2021, Chemical & Related Products Vs All Other Exports



Source: *CSO*

Manufactured Goods

The European Commission defines a manufactured good as a good that is produced by way of the application labour and capital to raw materials[45]. These are the opposite to primary goods, or commodities, which are defined as goods sold in the same format in which they are found in nature[46]. Under the SITC system, the following sections are designated as the main categories of Manufactured Goods;

- Chemicals & Related Products
- Manufactured goods (classified chiefly by material)
- Machinery and Transport Equipment
- Miscellaneous Manufactured Articles

The rest of the SITC sections, all ten of which are listed in Table 19, come under the primary good or commodity definition.

The COVID-19 pandemic has brought about a change in the patterns of global consumption, wherein demand for manufactured or durable goods has surged, while demand for services has fallen significantly. The factors driving these issues were noted by the World Economic Forum in August of 2021;

"Covid restrictions can explain this difference. While restrictions curtailed the service sector, goods trade recovered fast as factory shutdowns were limited and there was a surge in demand for some durable goods (e.g. furniture, carpets and appliances)"

World Economic Forum, August 2021

[45] European Commission, Glossary: Manufactured good
[46] European Commission, Glossary: Primary good / Commodity

As many incomes were unaffected by the pandemic, the proportion of disposable income usually spent in the service industry was redirected towards physical merchandise in many circumstances. This was a consistent pattern across the world's largest economies, and it drove demand for shipping capacity to record levels,[47] particularly in the market for containerships. The logistical disruption caused by COVID-19 restrictions, coupled with the surge in demand for goods, was labelled as the "perfect storm" by Clarkson's Shipping Intelligence in 2021. [48]More detailed information on the impact of supply chain issues on the containership market is available in Section 3.

Overall, these supply chain issues drove the cost of shipping upward for many importers and exporters. Much of these increases in costs were passed onto consumers in the form of price rises for durable and manufactured goods. These supply chain issues have therefore been among the contributing factors to rising inflation levels in economies such as the US and European Union[49].

In the following paragraphs, examples of goods that have recorded significant increases in prices in 2021 are provided. The products discussed below are indicative of many everyday merchandise items that have recorded faster than normal price inflation in 2021. This has been driven in part by the supply chain disruption discussed above.

In Ireland, the subdivision entitled 'Electrical machinery, apparatus, appliances & parts' makes up almost half of the Machinery & Transport Equipment category. This group includes everyday appliances such as refrigerators and washing machines. It also includes industrial equipment such as wires, batteries and other apparatus. These items, which are predominantly finished goods, make significant use of unitised shipping services, such as RoRo and LoLo services.

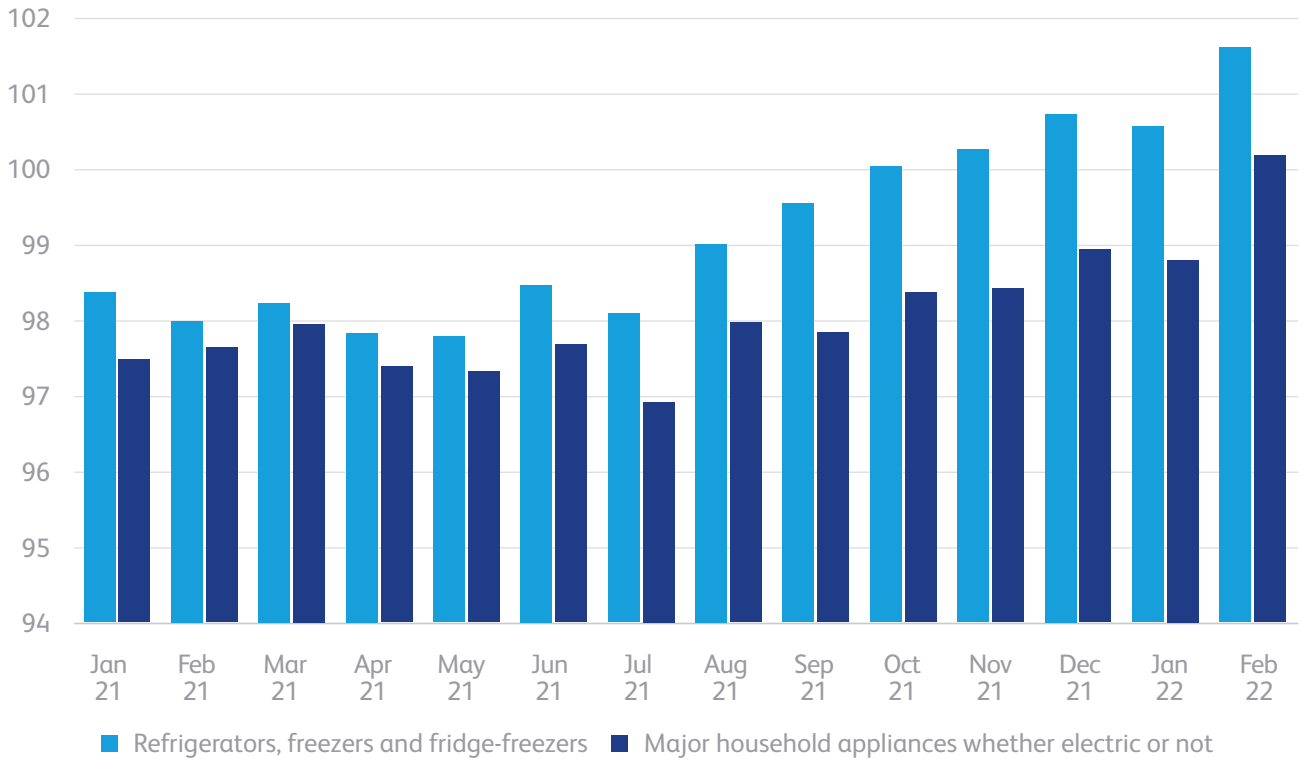
In 2021, the value of exports of this subdivision rose by 28% to €12bn, equivalent to an annual increase of €2.6bn. The value of these exports has grown significantly in recent years. However, in 2021, these products recorded price inflation that outpaced previous years. In Figure 52, Eurostat's Harmonised Index of Consumer Prices (HICP) is illustrated. Specifically, Figure 52 shows the HICP for household appliances and refrigerators across Euro Area countries between January 2021 and February 2022. Consistent upward momentum in the price level of everyday appliances is evident from mid-2021 and has continued into early 2022.

[47] As there is significant lead time to build new shipping vessels and bring them into operation, capacity supply in the global shipping market can be inelastic over the short run. See: "Here's how we can resolve the global supply chain crisis", World Economic Forum, 2022

[48] Container Intelligence Quarterly, First Quarter 2022

[49] What is supply chain inflation and why is it driving up consumer prices now? – Economics Observatory

Figure 52: Harmonised Index of Consumer Prices, Euro Area, Selected Products, Jan 2021 – Feb 2022 (2015 = 100)



Source: *Eurostat*

Another category of manufactured goods to record significant increase in prices this year was the subdivision of 'power generating machinery & equipment.' This group includes products such as motor engines, engine parts and water boilers. The value of these exports from Ireland rose by 85% in 2021, to €1.7bn. Similar to household appliances, the HICP for spare parts and accessories for transport equipment also shows that prices rose faster in 2021 than in previous years. Euro Area prices in February 2022 for these products were 4% higher than a year earlier, according to Eurostat's HICP[50].

[50] HICP - monthly data (index)

2.4 Ireland's Export Trading Partners

2.4A Tonnage

Table 20 presents Ireland's top 15 export trading partners in volume terms for 2020 and 2021. When combined, this group accounted for 85% of all Irish export tonnage in 2021. Seven of the countries below are members of the European Union, while Norway is part of the European Economic Area.

As mentioned in Section 2.3A, Irish export tonnage in recent years is robust, remaining consistently above 18 million tonnes and exhibiting considerable resilience in the wake of both Brexit and the COVID-19 pandemic, both of which posed significant challenges to Irish exporting companies. The end of the Brexit transition period in 2021 did however, have a significant impact on the destination of Ireland's export volume.

The following sections will detail how Brexit has impacted upon where Ireland's roughly 18.9 million tonnes of exports have been sent. In 2021, there were significant changes to the regional composition of these exports.

Table 20: Ireland's Top Merchandise Export Partners in Volume terms, All Products[51]

	2020	2021	Growth	Diff
Country	Tonnes	Tonnes	(%)	Tonnes
Great Britain	6,130,225	5,279,694	-14%	-850,531
Northern Ireland	3,558,165	4,536,487	27%	978,322
France	1,140,903	1,372,470	20%	231,568
Netherlands	1,277,050	1,100,374	-14%	-176,676
Belgium	713,963	476,865	-33%	-237,099
Russia Federation	415,324	542,696	31%	127,372
Germany	434,192	457,833	5%	23,641
United States	384,111	451,917	18%	67,805
Gibraltar	291,892	410,947	41%	119,055
Sweden	286,686	378,449	32%	91,763
China	287,782	267,409	-7%	-20,373
Spain	276,003	247,774	-10%	-28,228
Norway	286,674	132,318	-54%	-154,355
India	208,453	186,101	-11%	-22,352
Italy	210,097	184,280	-12%	-25,817
Other	2,653,545	2,893,110	9%	239,564
Grand Total	**18,555,065**	**18,918,724**	**2%**	**363,659**

Source: *CSO*

[51] All Standard International Trade Classification (SITC) groups are included in this table. When energy & raw material products (SITC Categories 2 & 3) are excluded, Russia, Norway, India and Gibraltar fall out of Ireland's top 15 export partners. Exports to these countries is dominated by metalliferous ores and scrap metal (SITC 28), as well as petroleum products (SITC 33). When energy products are excluded, Ireland exported 11.9m tonnes in 2021.

Breaking Down the Brexit Impact

As highlighted in Section 2.3A, Ireland's merchandise export volume has been between 18 million and 19 million tonnes per year for seven consecutive years. However, following the end of the Brexit transition period in 2021, trade with Ireland's largest export partner, Great Britain, was much less straightforward. Since January 1st 2021, Irish exporters moving goods to Great Britain are legally obliged to submit an export declaration to Irish customs. As is the case for imports from Great Britain, there is also a legal requirement for an electronic customs Safety and Security (S and S) declaration in advance of export, as well as a Pre-Boarding Notification (PBN) when making use of RoRo ferry services.

New regulations are also in place for Irish exporters who wish to make use of the UK Landbridge[52]. To use the UK Landbridge, Irish exporters are legally obliged to submit an electronic transit declaration to Irish customs. The S and S and PBN documents are also required for this form of export.

The imposition of customs controls on trade between Great Britain and members of the EU Single Market drove the significant decline in Irish exports to Great Britain in 2021. In relation to the Landbridge, the imposition of these new trading arrangements has made direct ferry services between Irish and mainland EU ports relatively more attractive. This has driven the surge in traffic on these routes as the UK Landbridge was frequently substituted for direct routes that required no customs regulation. This has simultaneously led to significant declines of RoRo traffic between ports in Ireland and Great Britain (See Section 1.2).

Preparing for Future Checks

As outlined above, exporting goods to Great Britain involves considerably more administration in 2021. However, the full suite of trading arrangements is yet to come into operation. In 2022, the UK will begin to implement import requirements on certain goods which were postponed in 2021 in order to smooth the process of trading with the European Union Single Market.

As of January 1st 2022, when exporting goods to Great Britain, export certificates, phytosanitary certificates, and IPAFFS[53] pre-notification are required for certain products, e.g. live animals, hatching eggs, wood products. This list of products is due to be extended in July 2022. For example, export certificates and phytosanitary certificates will be required for more products of animal origin, as well as plant products. In September and November, the requirement for these certificates will be extended to dairy products and eventually, all products of animal origin.

In addition to these certificate requirements, exports from Ireland arriving in Great Britain currently do not have to arrive through a Border Control Post (BCP). As for checks on goods, risk-based checks are currently in operation at destination ports. After July 2022, entry through a BCP is expected to be extended to a range of products, such as live animals and products of animal origin. Standardised checks will also be in place for a wider group of products[54].

Overall, exports to Great Britain in 2021 have entailed fewer administrative requirements when compared to imports from Great Britain. This is due to change in 2022, as additional challenges lie ahead for some Irish exporters with the introduction of new UK import requirements.

[52] The UK Landbridge is a term used to describe a route to market that connects Irish importers and exporters to international markets via the UK road and ports network. It is a strategically important means of access to the single market that has been favoured by traders in high value or time sensitive goods because it offers significantly faster transit times than alternative routes. The reintroduction of customs controls as a consequence of Brexit increases transit times and places additional costs on Irish businesses that undermines their competitiveness in accessing international markets

[53] Import of products, animals, food and feed system (IPAFFS)

[54] For a full list of the changes that are due to take place, see Revenue.ie: Preparing for changes to UK SPS controls

Offsetting Export Declines

Merchandise exports to Great Britain declined by 851,000 tonnes this year, a 14% fall. This is the largest annual decline in export tonnage to Great Britain in more than twenty years.

There is evidence however, that some of this decline has been offset by increased exports of similar products to Northern Ireland. Exports to Northern Ireland surged in 2021, rising by 978,000 tonnes, a 27% increase. This is the largest annual increase in export tonnage to Northern Ireland since before 2001.

In Table 21 below, several examples of this substitution effect are presented, wherein significant annual declines in exports of specific products to Great Britain, are matched with above average increases in exports to Northern Ireland.

Table 21: Imports of Selected Products, 2020 Vs 2021

	2020	2021	Diff	Growth
	Tonnes	Tonnes	Tonnes	(%)
Exports of Dairy products & eggs (SITC 02)				
Great Britain	243,423	124,907	-118,516	-49%
Northern Ireland	189,275	314,071	124,795	66%
Exports of Cereals (SITC 04)				
Great Britain	211,552	171,216	-40,336	-19%
Northern Ireland	264,415	310,187	45,772	17%
Miscellaneous manufactured articles (SITC 89)				
Great Britain	74,219	66,578	-7,641	-10%
Northern Ireland	20,897	30,661	9,764	47%
Chemical materials & products (SITC 59)				
Great Britain	43,565	33,074	-10,491	-24%
Northern Ireland	43,315	70,600	27,285	63%

Source: *CSO*

Overall, 67 different SITC subdivisions of merchandise products were exported to Great Britain in 2021. 48 of these, or 72%, declined to some extent. Conversely, 66 different SITC subdivisions of merchandise products were exported to Northern Ireland in 2021. 54 of these, or 82%, increased to some degree. Between these two destinations, the momentum in Irish exports was firmly with Northern Ireland in 2021.

However, as was the case for imports in Section 2.2A, not all of the 'lost' exports to Great Britain were automatically offset by exports to other countries, including Northern Ireland. For example, exports of Meat & Meat Preparations (SITC 01) to Great Britain fell to its lowest level since 2001. Volumes to Great Britain declined by 107,000 tonnes, equivalent to a 29% decline. This decrease was not immediately recovered by way of increased exports to other countries. In all, exports of Meat & Meat Preparations to all countries fell to its lowest level since 2013.

Northern Ireland Protocol

The juxtaposition between increasing exports to Northern Ireland and declining exports to Great Britain raised the question as to whether some Irish exports were being indirectly exported to Great Britain via Northern Irish ports.

For Irish exporters who wish to export goods to Great Britain via Northern Ireland, the following rules apply. Firstly, as with exports to Great Britain from Irish ports, there is a legal obligation to submit an export declaration to Irish customs. However, this will be submitted as an indirect export to Irish customs, with the point of exit (i.e. Belfast, Larne or Warrenpoint) listed on the declaration. In addition, a transit declaration is also required, similar to that required when using the UK Landbridge. S and S information is supplied with this transit declaration.

After this is supplied to Irish customs, the 'movement reference number' from the above export declaration must be submitted to HM Revenue & Customs (HMRC). After this is complete, the following guidance is provided from HMRC;

"You should provide the goods movement reference to the carrier at check-in. You do not need to provide HMRC with any more information unless requested. There will be an additional change to this guidance in the coming months to improve the indirect exports process further. We will send further communications to outline what this means for you closer to the time."

HMRC, July 2021[55]

For goods moving from Northern Ireland to Great Britain, most are referred to as 'qualifying goods.' Qualifying goods are those in free circulation in Northern Ireland already, and it is relevant to almost all goods in Northern Ireland. Qualifying goods require no customs procedures at all, and therefore have 'unfettered access' to Great Britain. Only in limited circumstances are goods not deemed as qualifying, such as for endangered species.[56]

Goods originating in Ireland, or any EU country, and entering Great Britain via Northern Ireland are not deemed qualifying goods. These are therefore subject to the customs procedures for Irish exports to Great Britain outlined above. As highlighted by HMRC;

"You cannot move goods through Northern Ireland to avoid the UK tariff or import processes. You may receive penalties if you move goods through Northern Ireland for an avoidance purpose."

HMRC, August 2021[57]

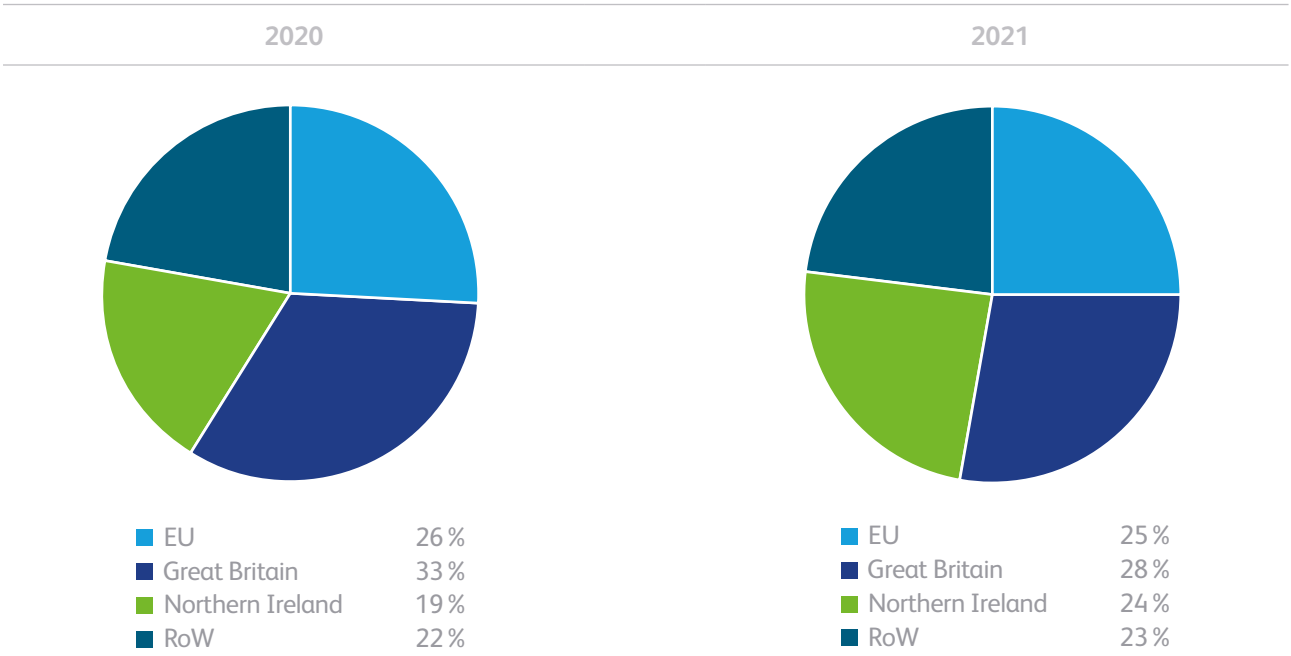
As highlighted in Section 2.2A, whether some Irish exports to Great Britain were indirectly transferred through Northern Irish ports in 2021 is unclear. However, this should not diminish the existence of organic post-Brexit growth in trade between Ireland and Northern Ireland. Many Irish exporters will have found effective substitutes within the Northern Ireland economy in order to avoid the newly imposed customs controls between Ireland and Great Britain. The existence of both phenomena – the use of Northern Irish ports as an alternative exit point for exports to Great Britain, and growth in North/South trade on the island of Ireland – is possible.

[55] Making an indirect export from Northern Ireland, HMRC
[56] For the full list of exceptions, see here
[57] If you move qualifying Northern Ireland goods, HMRC

Shifts in Regional Trade

Due to the decline in export tonnage to Great Britain, and the rise in export tonnage to Northern Ireland, there has been changes to the market shares held by both countries. In Figure 53 below, the share of Ireland's export volume held by Great Britain, Northern Ireland, the EU and the Rest of World (RoW) is illustrated.

Figure 53: Share of Irish Export Tonnage by Region, 2020 Vs 2021



Source: *CSO*

In the following paragraphs, further analysis of the changes in export volume in 2021 is presented by focusing on SITC product categories and the regions in Figure 53.

Great Britain

In the above section, it was noted that 67 different SITC subdivisions of merchandise products were exported to Great Britain in 2021. 48 of these, or 72 %, declined to some extent this year. Figure 54 below highlights the SITC subdivisions where the decline in exports to Great Britain was most concentrated[58].

As shown in Figure 54, exports of coal products to Great Britain fell substantially in 2021. This represented 46 % of the overall decline in tonnage exports to Great Britain. As highlighted in Section 2.3A part (ii), lower than average wind production necessitated increased consumption of coal for Ireland's primary energy production. As a result, much of Ireland's coal was redirected to domestic primary energy production, and this impacted upon export tonnage to Great Britain.

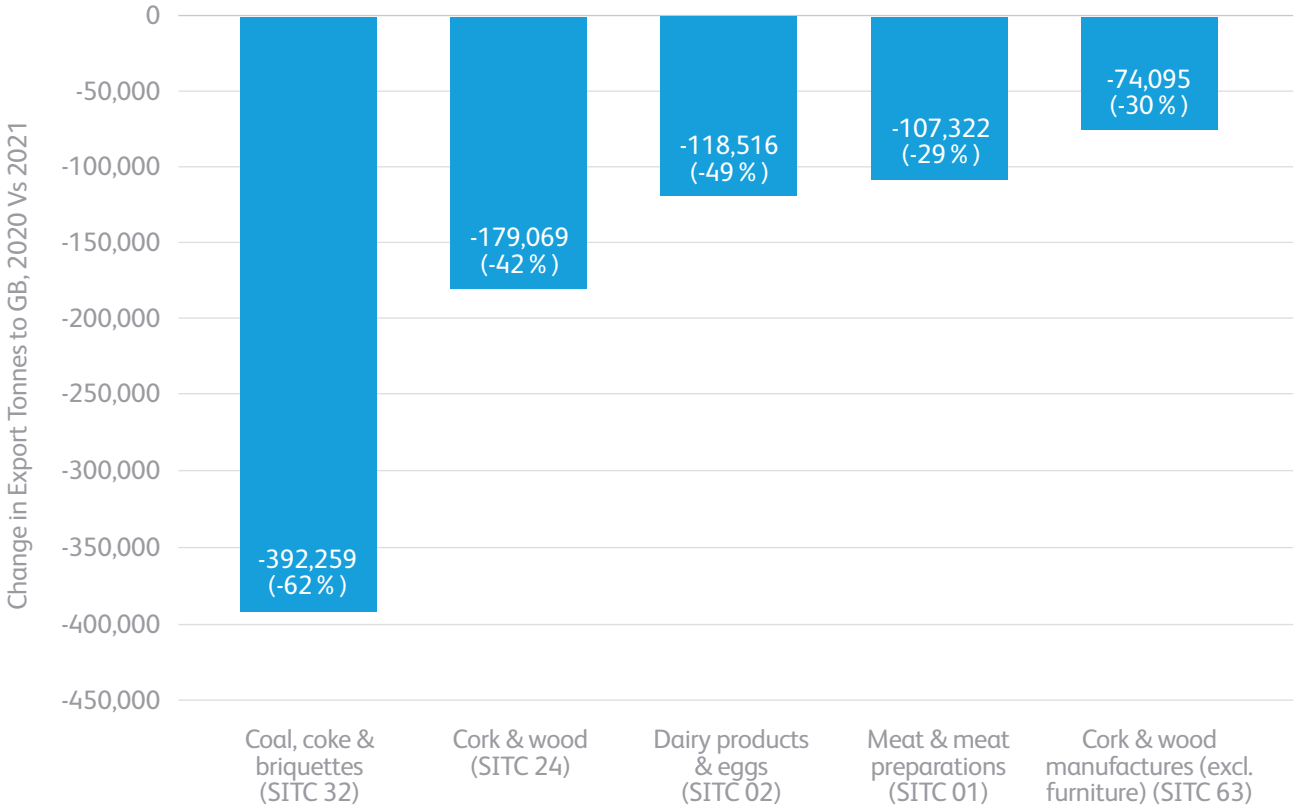
Two important export sectors for the Irish agricultural industry, Dairy Products & Eggs and Meat products, recorded significant declines in exports to Great Britain this year. Great Britain is the largest consumer of Ireland's meat exports, receiving almost 40 % of this subdivision between 2017 and 2020. In 2021, exports of these products to Great Britain fell to its lowest level since 2001.

[58] When combined, the decline across the products listed in Figure 54 is 871,261 tonnes, which is greater than the total decline in export volume to Great Britain this year. The decline in exports to GB in 2021 was offset by a significant increase in exports of Non-metallic mineral manufactures (SITC 66). For more information on this particular product, see Section 2.3A.

With regard to dairy products, Great Britain's share of these exports had been falling for much of the last decade. In 2012, 42% of these exports were sent to Great Britain. By 2016, this had fallen to 28%, and in 2021, it is now just 10%. However, much of this was replaced by exports of these products to Northern Ireland, as detailed in Table 21.

As for the two cork and wood products listed in Figure 54, Great Britain and Northern Ireland account for the vast majority of these exports from Ireland. The decline to Great Britain was offset by large increases to Northern Ireland, but not enough to avoid steep declines for 2021.

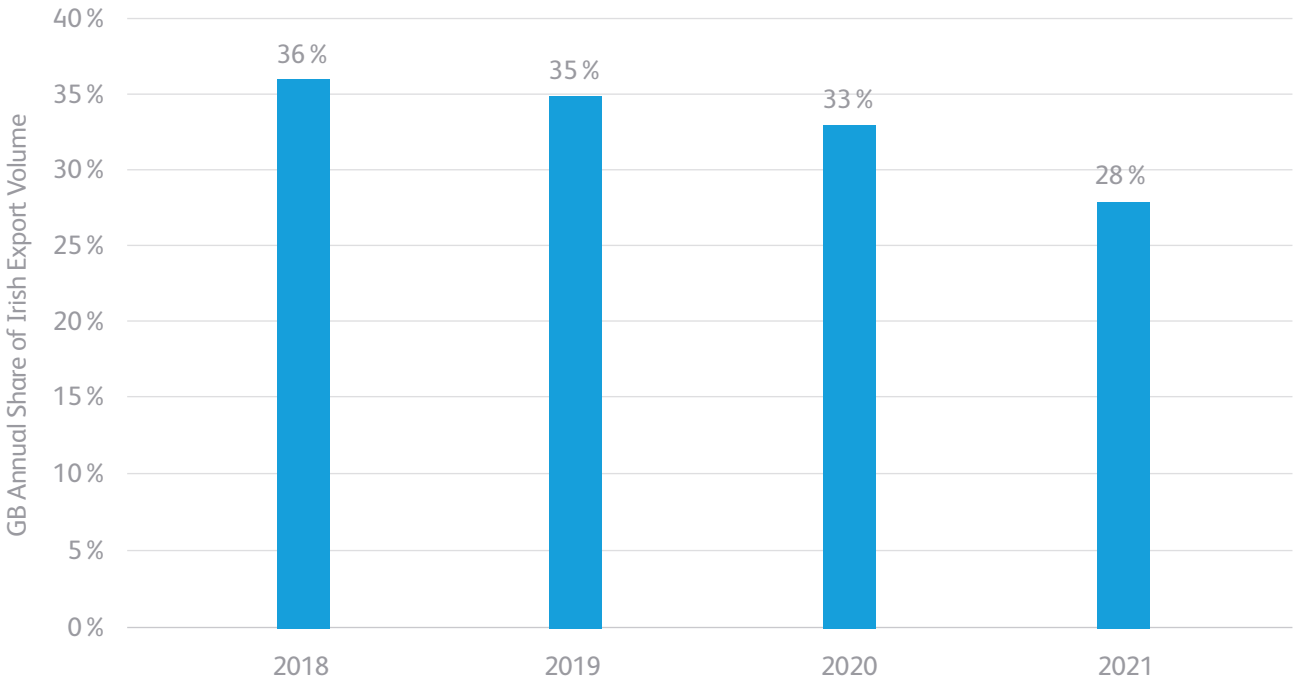
Figure 54: Changes in Exports to Great Britain between 2020 and 2021, by SITC Category



Source: *CSO*

Overall, for the past two decades, Great Britian's share of Irish export tonnage has remained relatively stable, fluctuating between 31% and 37% each year. In 2021, the share fell to 28%. In recent years however, the decline in this share has accelerated. Figure 55 shows the share of Irish export tonnage held by Great Britain between 2016 and 2021.

Figure 55: Share of Irish Export Tonnage held by Great Britain, 2016 – 2021



Source: *CSO*

As was the case in Section 2.2A, part (i), it is important to highlight the impact that the pre-Brexit stockpile will have had on export volume to Great Britain this year. As detailed in Section 1.2A, a significant stockpile of merchandise goods began in late 2020 ahead of the end of the Brexit transition period on January 1st 2021 and this led to record volumes of RoRo traffic being recorded on ROI – GB routes. This stockpile was gradually depleted over the first three months of 2021. Consequently, some of the reduction in exports to Great Britain in 2021 is attributable to this pre-Brexit stockpile, which was driven by considerable uncertainty amid concerns of backlogs and delays at Irish and British ports.

Northern Ireland

Exports to Northern Ireland rose by just under 1m tonnes in 2021, a 27 % increase compared to 2020. 22 % of this was from non-metallic mineral manufactures, which are raw materials used for products ranging from bricks and tiles to glass and tableware (See Section 2.3A). Exports of these products to Northern Ireland rose by 215,000 tonnes.

Exports of dairy products to Northern Ireland rose by 125,000 tonnes, offsetting the significant declines in this export to Great Britain. Elsewhere, exports of Iron & Steel to Northern Ireland rose by just under 60,000 tonnes, accounting for 6 % of the growth this year in Northern Irish exports.

European Union

As evident in Figure 53 above, the share of Ireland's export volumes held by EU Member States declined slightly in 2021 from 26 % to 25 %. Ireland exported 4.79m tonnes to the EU's other 26 Member States in 2021. This was 55,000 tonnes lower than in 2020, equivalent to a 1 % decline.

In 2021, roughly 80 % of Irish export tonnage to EU Member States is held by just five countries; France (29 %), Netherlands (23 %), Belgium (10 %), Germany (10 %) and Sweden (8 %).

Export volume to France rose by 20% and was driven predominantly by increased volumes of metalliferous ores and scrap metal (SITC 28). Similarly, exports to Sweden rose by 33% this year, driven by exports of the same products. Conversely, export volume to Belgium declined by 33%, driven entirely by a reduction in petroleum exports.

Rest of World

Exports to countries outside of the EU, Great Britain and Northern Ireland grew by 7% in 2021, equivalent to 291,000 additional tonnes.

Exports to the US grew by 18% in 2021, driven largely by Beverages (SITC 11). Exports of this product grew by 52%, worth 47,000 tonnes.

Exports to Russia rose significantly, by 31%, to over 540,000 tonnes. This is the largest annual export volume from Ireland to Russia on record and was driven entirely by exports of metalliferous ores and scrap metal (SITC 28).

Exports of petroleum products to Gibraltar, an overseas British territory, grew strongly again in 2021. Prior to 2020, less than 1,000 tonnes per year was exported to Gibraltar. In 2020, over 290,000 tonnes of petroleum products were exported to this British Overseas Territory. This grew to 410,000 tonnes in 2021.

2.4B Value

Table 22 presents Ireland's top export partners in value terms, with all product categories included. As detailed in Section 2.3B part (ii), the value of Irish exports achieved record levels in 2021, growing by 2% to reach €165.2bn. This was achieved despite the challenges posed by Brexit and COVID-19. However, also discussed in the aforementioned section is the inflationary pressure on manufactured goods that was present across the global economy in 2021. In short, the logistical disruption caused by COVID-19 restrictions, coupled with a surge in demand for physical merchandise goods, put pressure on shipping capacity and drove up transport costs for many international traders. This contributed to the rise in inflation in major economies, including the Euro Area. The average monthly inflation rate in the Euro Area in the latter half of 2021 was 3.5%, above the EU's target rate of at or below 2%[59].

Approximately 90% of Ireland's export value is from manufactured goods, rather than primary goods or commodities[60]. As such, the value of Irish exports was particularly exposed to global inflationary pressures. For example, the price per tonne of Irish exports to China rose by 15%, from €35,874 to €41,338[61]. Exports from Ireland to China make predominant use of deep sea LoLo containership services. The costs of these services, as measured by containership charter rates, rose substantially in 2021. This is described in detail in Section 3.

[59] Harmonised Index of Consumer Price, All Items (2015=100)., Eurostat

[60] SITC categories No. 5 – 8 are considered Manufacture Goods, with the rest classified as primary goods or commodities. In 2021, these four categories represented €147bn of Ireland's total export value.

[61] Tonnage exports to China declined by 7% in 2021

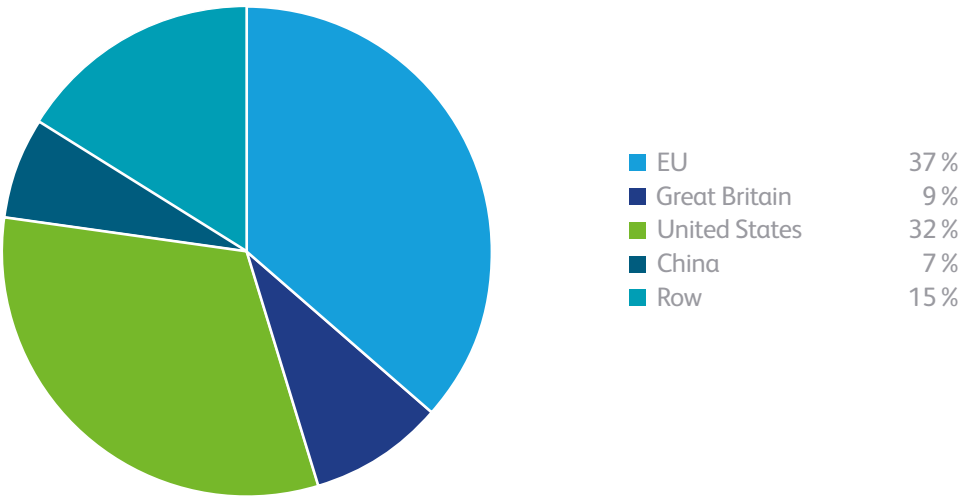
Table 22: Ireland's Top Merchandise Export Partners in Value terms, All Product Groupings

	2020	2021	Growth	Diff
Country	€000	€000	(%)	€000
United States	50,535,844	52,525,780	4%	1,989,936
Germany	17,578,152	17,756,429	1%	178,278
Belgium	17,882,653	13,515,442	-24%	-4,367,211
Great Britain	12,309,183	14,408,883	17%	2,099,700
China	10,323,925	11,054,107	7%	730,182
Netherlands	8,598,918	9,335,439	9%	736,520
France	5,444,284	5,303,911	-3%	-140,372
Italy	4,680,115	4,324,265	-8%	-355,850
Japan	3,472,929	2,689,016	-23%	-783,913
Northern Ireland	2,405,713	3,695,905	54%	1,290,192
Switzerland	3,221,235	2,813,166	-13%	-408,068
Spain	2,561,905	2,314,800	-10%	-247,105
Mexico	1,599,645	2,017,189	26%	417,544
Canada	1,853,042	1,322,001	-29%	-531,042
Greece	1,765,982	1,098,774	-38%	-667,208
Other	17,897,559	21,037,373	18%	3,139,814
Grand Total	**162,131,082**	**165,212,479**	**2%**	**3,081,397**

Source: *CSO*

In Figure 56 below, the share of Ireland's export value held by Great Britain, the EU, the United States, China and the Rest of World (RoW) is illustrated. The only significant change in these shares between 2020 and 2021 is the reduction in the share held by the EU from 40% to 37%.

Figure 56: Share of Irish Export Value by Country / Region, 2021



Source: *CSO*

United States

Overall, the United States is Ireland's largest merchandise export partner in value terms, holding a 32% share. This share has risen steadily in the last five years, driven almost entirely by exports of the subdivision 'Medical & Pharmaceutical Products.[62]' These products represent 53% of all export value to the United States in 2021. When the SITC category 'Chemicals and Related Products (No. 5), is excluded, the share of Irish export value held by the United States declines from 32% to 19% in 2021.

The value of 'Electrical machinery, apparatus & appliances[63]' to the United States more than doubled, from €1bn in 2020 to €2.2bn in 2021. This subdivision includes high-tech medical devices, a large and growing industry among Irish exports[64].

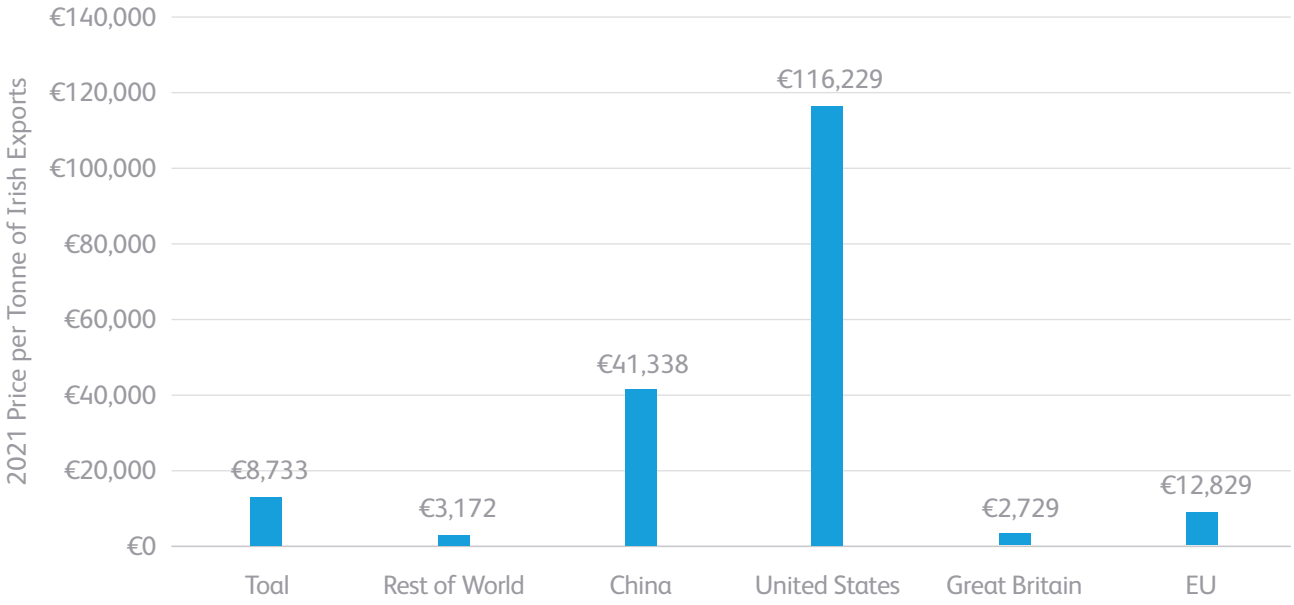
Great Britain

As shown in Section 2.4, Great Britain holds a 28% share of Irish export tonnage. Its share of export value is much lower, at 9% in 2021. The share of Irish export value held by Great Britain has been in steady decline for the past two decades. In 2001, the share held by Great Britain was 22%. By 2011, this share was 14%, and in 2021 has fallen to 9%.

The nominal value of exports to Great Britain has been stable in recent years however, averaging €13.5bn per year since 2017. The declining share held by Great Britain is driven more by the surge in the value of exports to the United States, which have risen from €22bn in 2011, to €52.5bn in 2021.

In addition, primary goods or commodities consistently represent 35% of the value of Irish exports to Great Britain. These goods are high in volume and relatively low in value, which suppresses the price per tonne of exports to Great Britain. In Figure 57 below, the price per tonne of Irish exports to several regions / country's is illustrated.

Figure 57: Price per tonne of Irish exports by Country / Region, 2021



Source: *CSO*

[62] SITC No. 54: Medical & Pharmaceutical Products
[63] SITC No. 77: Electrical machinery, apparatus & appliances & parts
[64] For more information on the Medical Device industry in Ireland, see report by Department of Business, Enterprise & Innovation from August 2020 here.

European Union

Irish export value to the EU declined in 2021 by 4%, or €2.8bn. This was primarily driven by a 24% decline in export value to Belgium, worth €4.4bn. This was entirely driven by a decline in two of the subdivisions; 'Medical & Pharmaceutical Products', and 'Organic Chemicals,' both of which form part of the 'Chemicals & Related Products' SITC category.

When this category is excluded, export value to the EU rose in 2021 by 13%, from €16.9bn to €19bn. Included in this growth was a rise in exports of 'Office machines & automatic data processing machines'[65] to Poland, which grew by 37%, or by €105m. In 2021, exports to Poland returned to pre-pandemic levels.

As shown in Table 22, European Union countries make up seven of Ireland's top 15 export partners in value terms. In 2021, five countries made up 82% of all Irish export value to the EU; Belgium, Germany Netherlands, France and Italy.

Overall, in 2021 Irish export value rose in 17 of the 26 other EU Member States. This represents two thirds of Ireland's EU export partners.

[65] SICT No. 75: Office machines & automatic data processing machines

2.5 Key Drivers of Irish Merchandise Trade

Introduction

In section 1, an analysis of the traffic handled at Irish ports across unitised and bulk shipping modes is provided. Section 2 provides a trade review of Irish imports and exports, and gives insight into the types of goods traded and the makeup of Ireland's main trading partners.

Underpinning these imports and exports are the prevailing economic conditions in the domestic economy and those of Ireland's trading partners. In this section, key economic indicators for the Irish economy are provided, such as domestic demand and the domestic price level. Following this, the same indicators are provided for Ireland's largest trading partners. This information provides further context for the volumes that passed through Irish ports in 2021.

2.5A Domestic Economy

Table 23 below is adapted from the Central Bank of Ireland's second quarterly bulletin of 2022[66], released on April 6th. The Russian invasion of Ukraine has changed the economic outlook for the global economy in 2022. The impact of inflation, particularly for energy products, is expected to slow economic growth across many countries, including Ireland. In addition, the outbreak of conflict in a region that is essential to the global food supply chain caused prices of certain food items, particularly wheat and soybeans, to rise rapidly in March 2022. This has exacerbated the inflationary environment that was evident prior to the outbreak of conflict. Overall, the Central Bank expects an inflation rate of 6.5% in Ireland in 2022. Modified domestic demand has also been downgraded to 4.8%.

Table 23 provides the Central Bank's most recent forecasts to date for Irish economic demand out to 2024.

Table 23: Key Economic Indicators for the Irish Economy

	2021e	2022f	2023f	2024f
Modified Domestic Demand	6.5%	4.8%	4.3%	3.9%
Gross Domestic Product (GDP)[67]	13.5%	6.1%	5.5%	5.9%
Personal Consumer Expenditure	5.7%	7.4%	4.7%	3.9%
Unemployment Rate	6.3%	6.0%	5.4%	5.0%
HarmonisedIndex of Consumer Prices (HICP)	2.4%	6.5%	2.8%	2.1%
HICP Excluding Energy	1.5%	4.3%	3.3%	2.4%

Source: *Central Bank of Ireland*

[66] Quarterly Bulletin, QB2, April 2022

[67] The rate of GDP in Ireland is heavily influenced by the presence of multinational enterprises. As a result, caution should be exercised when interpreting this metric. Gross National Product, which excludes net factor income from abroad, is often a more appropriate measure of Irish economic growth. In 2021, Ireland's GNP rose by 11.1% (CSO, current market prices)

2.5B Trading Partners' Economies

Through exports, the Irish economy satisfies surplus demand in foreign economies. Consequently, aggregate demand within those economies drives demand for Irish exports. As shown in Section 2.3B, Ireland's exports of high value goods, such as pharmaceutical products, are essential to Irish economic growth. The United States, Germany, Belgium and the United Kingdom are among Ireland's largest export partners in value terms. The economic performance of these economies is essential for Ireland's export sector.

Table 24 below is adapted from the European Commission's Winter Economic Forecast,[68] which was produced in February 2022. The table shows the rate of growth for the Gross Domestic Product of a selection of Ireland's largest trading partners. As this was produced prior to the Russian invasion of Ukraine, some forecasts of GDP are likely to be downgraded in the next publication of this report.

Table 24: Gross Domestic Product, Annual Rate of Growth 2021 – 2023

	(y-o-y % Change)		
Gross domestic product, volume, y-o-y % change	2021	2022	2023
European Union	5.3%	4.0%	2.8%
Euro Area	5.3%	4.0%	2.7%
Germany	2.8%	3.6%	2.6%
France	7.0%	3.6%	2.1%
Italy	6.5%	4.1%	2.3%
Spain	5.0%	5.6%	4.4%
Netherland	4.3%	3.0%	2.7%
Belgium	6.1%	2.7%	2.2%
Ireland	13.7%	5.5%	4.5%
United Kingdom[69]	7.4%	4.1%	1.6%
United States[70]	5.7%	3.7%	2.4%

Source: *European Commission, HMRC, OECD*

Across the European Union, the United Kingdom and the United States, economic growth in 2021 was reflective of the rebounding of demand after the highly disrupted period of 2020, wherein the worst economic impacts of the global pandemic were contained. 2021 was a period where significant 'pent-up' demand was satisfied, and this resulted in supply chain issues in the international shipping market (See Section 3). However, COVID-19 still had a suppressive effect, driven by the outbreak of several new strains of COVID-19, such as the Delta and Omicron variants.

Moving into 2022, the economic outlook is underpinned by expectations of high inflation, which has the potential to slow economic growth as it reduces the disposable spending power of households. Supply chain issues and COVID-19 restrictions may also still have a lingering effect in some economies. In Table 25, the inflation rates, as measured by the Harmonised Index of Consumer Prices (HICP), is provided for Ireland's main trading partners. Table 25 is adapted from the European Commission's Winter Economic Forecast. As this was produced prior to the Russian invasion of Ukraine, some forecasts of HICP are likely to be increased in the next publication of this report.

[68] European Economic Forecast, Winter 2022, European Commission

[69] The forecast for the United Kingdom is provided by a group of independent forecasters, and is taken from a report produced by HMRC. It represents GDP at constant prices, seasonally adjusted. See here.

[70] The forecast for the United States is provided by the OECD's economic snapshot, which was produced in December 2021. See here.

Table 25: Harmonised Index of Consumer Prices, Selected Economies, 2021 – 2023

	(y-o-y % Change)		
Harmonised index of consumer prices	2021	2022	2023
European Union	2.9%	3.9%	1.9%
Euro Area	2.6%	3.5%	1.7%
Germany	3.2%	3.7%	2.1%
France	2.1%	2.8%	1.7%
Italy	1.9%	3.8%	1.6%
Spain	3.0%	3.6%	1.1%
Netherland	2.8%	4.0%	1.4%
Belgium	3.2%	4.3%	1.3%
Ireland	2.4%	4.6%	2.5%
United Kingdom[71]	-	6.4%	2.4%

Source: *ECB, OECD, HMRC*

Exchange rates impact the relative affordability of imported and exported goods. An appreciation in the value of the Euro relative to another currency means its purchasing power increases in that market, making imports from that market relatively cheaper. As outlined in section 2.2, Great Britain and the United States represent a sizeable share of Irish import trade. Consequently, the Irish economy is particularly exposed to fluctuations in the pound sterling (GBP) and the US dollar (USD).

In Table 26, the exchange rates for a selection of the most commonly traded currencies are provided, alongside the interest rate on 10-year government bonds, and the EURIBOR rate, which is the rate at which European banks borrow from one another.

Table 26: Key Exchange Rate and Interest Rate Metrics, 2021 – 2023

Key Price Metrics	2021	2022	2023
USD/EUR exchange rate	$ 1.18	$ 1.13	$ 1.13
GBP/EUR exchange rate	£ 0.86	£ 0.84	£ 0.84
RMB/EUR exchange rate	¥ 7.63	¥ 7.19	¥ 7.18
JPY/EUR exchange rate	¥ 129.86	¥ 129.50	¥ 129.44
3-month EURIBOR (% per annum)	-0.5	-0.4	0
10-year government bond yields (% per annum)	-0.4	0	0.1

Source: *ECB*

[71] The forecast for the United Kingdom is provided by a group of independent forecasters, and is taken from a report produced by HMRC. See here.

Section 3 **- Global Shipping Market Review**

Introduction

Section 3 details the performance of key markets within the international shipping industry. Trends in this industry are driven by global economic indicators such as the demand for industrial commodities, food and energy. This demand, coupled with the direction of fleet supply, determines the cost of moving these essential seaborne goods around the world. Section 3.1 analyses the global oil market, focusing on global oil demand and supply, as well as oil and bunker prices. 3.2 summarises the key trends in the dry bulk market. Section 3.3 addresses the trends in the containership market, where freight rates rose to record highs in 2021. In each section, the earnings of different vessel classes, as measured by time charter rates, is also discussed. Lastly, Section 3.4 provides an update on an IMDO report on the feasibility of alternative fuel infrastructure at Irish ports, which was published in 2019.

3.1 Oil & Tanker Markets

Crude oil is a key input for global industrial production, domestic and international transport, as well as electricity production. It is traded globally, and regardless of type (e.g. Brent Crude, West Texas Intermediate), prices of crude oil tend to move together[72].

The prevailing price of oil, as well as expectations of future prices, are extremely important as they have the ability to stall global economic growth. As it is difficult for many countries to easily substitute to different forms of energy production, a rise in the price of oil increases the costs of industrial production, transport, and energy bills for everyday citizens. These inflationary pressures can reduce economic activity, leading to slower economic growth. In Ireland, oil represented 49% of the country's primary energy requirements in 2020, and 42% of household energy production. Over 90% of Ireland's transport industry is fueled by oil[73].

The price of oil is determined by the balance of supply and demand at a given point, as well as the level of inventories built up by major producers. It is also driven by expectations of future changes in supply and demand. Unexpected political and weather related disruptions can also impact upon oil prices significantly. In the following paragraphs, a summary of global oil demand, supply and prices is provided for 2021 and early 2022.

3.1A Oil Market

(i) Global Oil Demand

The global demand for oil in 2021 grew by 6%, from 91.9m barrels per day (bpd), to 97.3m bpd[74]. This follows on from a significant decline in 2020 of 9%, from 100.9m bpd to 91.9m bpd. Global demand for oil in 2021 did not therefore return to pre-pandemic levels. This is reflective of the many COVID-19 related restrictions that were still in place in large economies throughout 2021. The Delta and Omicron waves of COVID-19 suppressed any rapid return to 2019 levels of oil demand.

Of the growth that did occur in 2021, this was largely driven by the US and China. The US accounted for 28% of the growth in oil demand in 2021, while China accounted for 22%. European OECD countries accounted for just 11% of this growth, as many pandemic related restrictions on economic activity were still in place for much of 2021. Oil demand in European OECD countries in 2021 was 12.9m bpd, compared to 14.2m in 2019[75].

[72] US Energy Information Administration
[73] Energy in Ireland 2021, SEAI
[74] Clarkson's Research, Oil & Tanker Trades Outlook, Volume 27 No.3.
[75] Clarkson's Research, Oil & Tanker Trades Outlook, Volume 27 No.3..

Looking ahead, Clarkson's research forecasts global oil demand to grow by 2.8% in 2022 to 100.1m bpd. However, this growth represents a downgrade from forecasts made in early 2022. A number of factors have contributed to the reduction in future oil demand, the most influential of which has been the Russian invasion of Ukraine. The outbreak of this conflict has significantly heightened levels of uncertainty about future demand and supply of oil. A US ban on Russian imports of oil[76] and the possible reduction of Russian oil supply to global markets, has led to a surge in oil prices. In addition, global food prices have risen significantly as a large portion of the world's grain is produced in the Black Sea region, access to which is highly disrupted. These inflationary pressures have led to downgrades in global forecasts of economic growth from 4.2% to 3.5%.[77]

In addition to the outbreak of conflict in Ukraine, demand for oil is China is set to be negatively impacted by recent outbreaks of COVID-19 and the lockdowns which followed. The negative effects of COVID-19 on global oil demand will continue to be relevant in 2022.

(ii) Global Oil Supply[78]

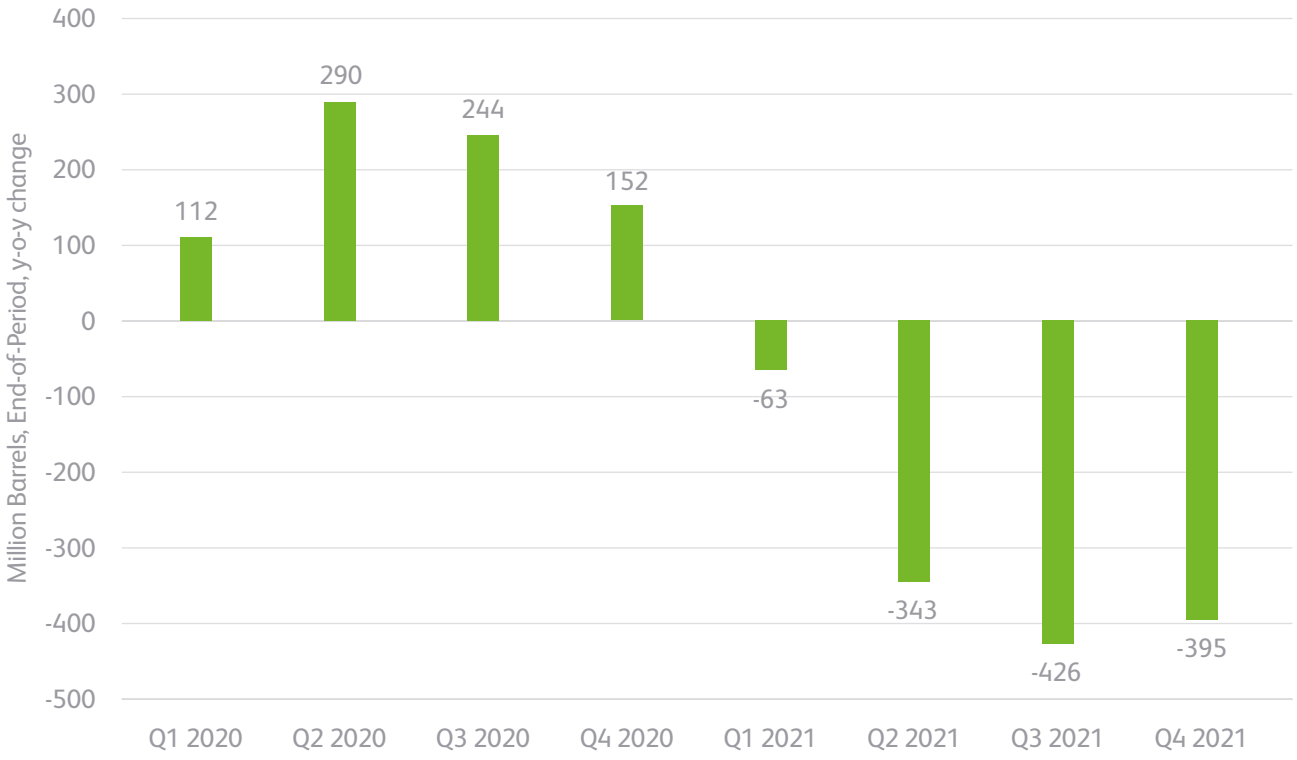
In 2021, global oil supply rose by 1.6% to 96.2m bpd. This follows a 6% decline in 2020, and means that oil supply is yet to reach pre-pandemic levels where 101m bpd was supplied throughout 2019.

The United States was the largest individual oil producer in the world in 2021, with 16.5m bpd, unchanged from 2020. In all, 24m bpd were produced in North America, as Canada increased production from 5.1m bpd to 5.5m, and Mexico recorded 1.9m bpd for the second consecutive year[79]. Middle Eastern countries produced a further 27.9m bpd in 2021, an increase of just 0.2m compared to 2020. Saudi Arabia is the largest producer in this region, with 10.8m bpd in 2021[80].

Global oil producers were in a position to increase supply in 2021 due to large inventory stocks built up in 2020 during the initial waves of the COVID-19 pandemic. Figure 58 presents the liquid fuels inventory built up by OECD countries in 2020, and then depleted in 2021. The unexpected collapse in demand for oil in 2020 drove a large build-up of oil inventories. In 2021, when demand rose suddenly as restrictions lifted, and as vaccination rates increased, these inventories were gradually depleted to meet rising demand. As oil supply is relatively fixed in the near term, a build-up of inventory can be helpful for periods when global oil consumption suddenly outpaces production.

[76] United States Bans Imports of Russian Oil, Liquefied Natural Gas, and Coal
[77] Global Economic Outlook - March 2022, Fitch Ratings
[78] The definition for Global Total Oil Supply is from Clarkson's Research. Global Total Oil Supply includes Natural Gas Liquids (NGLs), lease condensates, refinery gains and other liquids, country and regional totals include crude, lease condensates and NGLs.
[79] Clarkson's Research, Oil & Tanker Trades Outlook, Volume 27 No.2.
[80] Clarkson's Research, Oil & Tanker Trades Outlook, Volume 27 No.2.

Figure 58: OECD End of Period Liquid Fuels Inventories, Change Vs Previous Year



Source: *US Energy Information Administration*

In early 2022, Clarkson's Research forecasted global oil supply to rise by 5.6%. However, following the Russian invasion of Ukraine, this has been downgraded to 4.3%. This would bring global supply of oil in 2022 to 100.3m bpd.

The Russian invasion of Ukraine has brought about sanctions on many Russian exports. Uncertainty was significantly heightened about how Russian supplies of oil to global markets would be affected as a result of this invasion. In 2021, Russia accounted for 10.9m bpd, or 11% of global oil supply. In early March, the US banned imports of Russian oil. In the EU, no such ban has been imposed, but uncertainty is extremely high as to the nature of future sanctions on Russian imports. For this reason, the outbreak of conflict has represented a supply side shock to global oil production for 2022.

This has been offset however, by announcements of increased production in the US for 2022, as well as an announcement by OPEC in March that they would continue with a plan for modest increases in supply throughout the year[81]. Clarkson's research forecast US production in 2022 to reach 18m bpd, and Saudi Arabian production to reach 11.7m bpd.

[81] OPEC Press Release, March 31st 2022

(iii) Oil & Bunker Prices

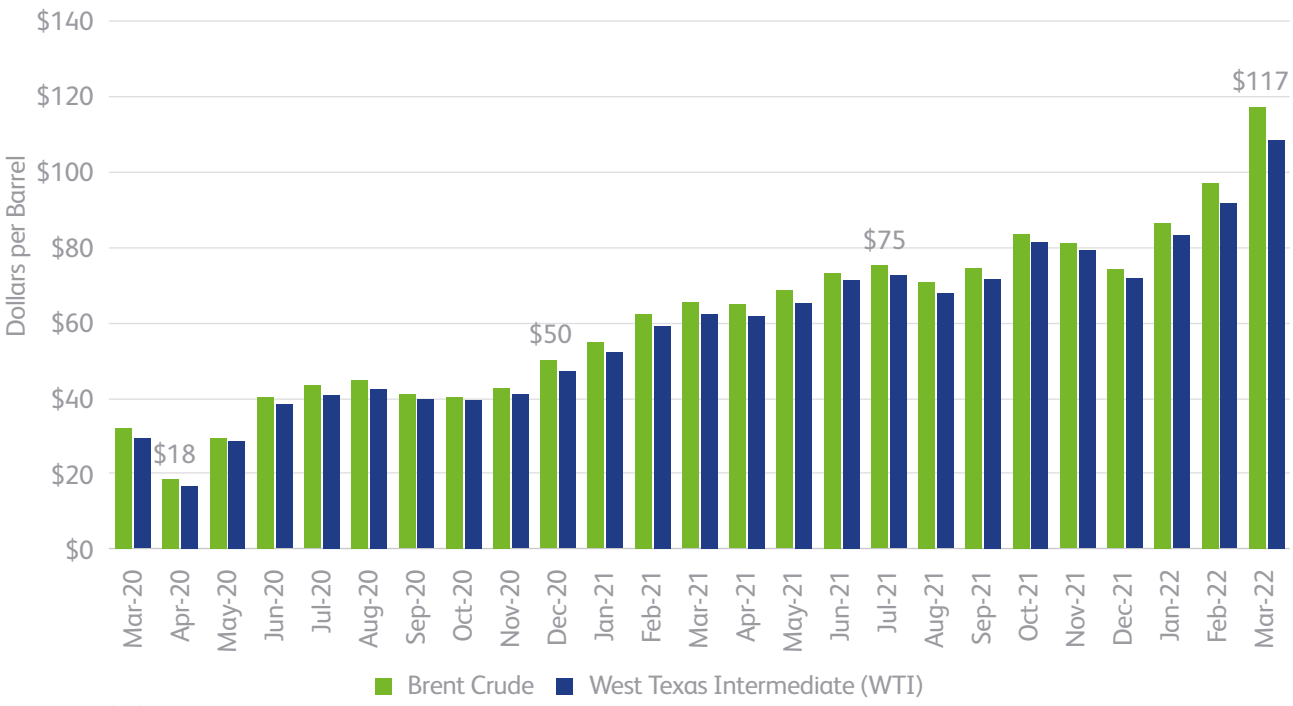
Crude Oil

As shown in the sections above, the global demand for oil outpaced its supply in 2021. This has put upward pressure on oil prices as a result. This was offset by the depletion of a large inventory of liquid fuels that was built up throughout the initial wave of the COVID-19 pandemic.

The price of Brent Crude oil averaged $71 a barrel in 2021, a 70% increase on the 2020 average of $42 per barrel. The 2021 price is also 10% higher than the 2019 average, where Brent crude averaged $64 per barrel. As for West Texas Intermediate (WTI), this averaged $68 a barrel in 2021, $39 in 2020 and $57 in 2019. The significant rise in price in 2021 is reflective of the difficulties of global supply to keep pace with sudden surges in demand as economies eased COVID-19 restrictions.

The trajectory of Brent Crude and WTI monthly price between 2019 and early 2022 is illustrated in Figure 59.

Figure 59: Brent Crude & West Texas Intermediate, Monthly Price, Mar 2019 – Mar 2022[82]



Source: *US Federal Reserve*

As evident in Figure 59, there has been a significant increase in oil prices in the first three months of 2022. This has been driven predominantly by uncertainty about global oil supply caused by the Russian invasion of Ukraine. As noted above, Russia represents 11% of global oil supply. The absence of this production on world market would represent a significant shock to supply. There is heightened uncertainty about how much disruption will occur. As of March 2022, the rise in oil prices has eased on the back of announcements of increased US production. Overall, the outbreak of conflict has exacerbated inflationary pressure in a market where demand was already outpacing supply.

[82] The prices labelled in Figure 59 are for Brent Crude only

Bunker Fuel

The 2021 price trends of crude oil were reflected in Bunker fuel prices. The annual average price for Intermediate Fuel Oil (IFO) benchmark 380 centi-Stoke (cSt) Rotterdam rose by 61% from $247 per tonne to $396. This is also 13% above the average price recorded in 2019, meaning bunker prices surpassed pre-pandemic levels this year.

The Los Angeles bunker price rose by 53% from $298 per tonne to $456. This is 6% higher than 2019 levels. Lastly, the average Singapore bunker price rose by 55% to reach $417 per tonne, which is 3% higher than 2019. The monthly prices for each of these markets are listed in Table 27.

Table 27: 380 cst Bunker Prices, Monthly

	HSFO 380cst (3.5% Sulphur), Los Angeles	HSFO 380cst (3.5% Sulphur), Rotterdam	HSFO 380cst (3.5% Sulphur), Singapore
Date	$/Tonne	$/Tonne	$/Tonne
Jan-2021	$ 383.5	$ 323.6	$ 340.3
Feb-2021	$ 424.7	$ 361.4	$ 379.8
Mar-2021	$ 452.8	$ 382.9	$ 400.6
Apr-2021	$ 426.9	$ 370.3	$ 383.4
May-2021	$ 439.9	$ 378.8	$ 386.0
Jun-2021	$ 454.6	$ 402.9	$ 412.9
Jul-2021	$ 453.0	$ 408.2	$ 421.8
Aug-2021	$ 449.4	$ 394.3	$ 415.3
Sep-2021	$ 460.9	$ 411.6	$ 463.1
Oct-2021	$ 533.9	$ 467.6	$ 503.1
Nov-2021	$ 517.6	$ 436.8	$ 464.6
Dec-2021	$ 473.2	$ 415.0	$ 428.3
Jan-2022	$ 518.5	$ 476.2	$ 489.1
Feb-2022	$ 565.9	$ 523.8	$ 533.5
Mar-2022	$ 693.3	$ 646.1	$ 642.9

Source: Clarkson's Research

As evident in Table 27, bunker prices have risen sharply in the early months of 2022. As of March, the prices in each market in Table 27 has recorded their highest level since 2012. The underlying drivers of this are the same as those in the market for crude oil, in that the Russian invasion of Ukraine has heightened concerns of a negative supply side shock to the crude oil required to produce bunker fuels for international shipping vessels.

3.1B Tanker Market

Vessels that carry liquefied freight, or liquid bulk, are known as tanker vessels. Tankers represent one quarter of the gross tonnage of the world fleet, and are extremely important for carrying the world's liquefied energy around the globe. Examples of liquefied freight include crude oil, petroleum, liquefied natural gas (LNG), bitumen, or chemicals. Tanker vessels are categorized based on their size and the task for which they are employed. Oil tankers are broken down into crude tankers and product tankers. Crude tankers are generally extremely large and carry unrefined oil, mainly from the point of extraction to refineries. Product tankers are much smaller, and carry the refined oil products, such as petroleum to the point of market. Tankers can also carry gas and chemicals, but a large portion of this market facilitates the movement of oil.

Tanker vessels are named based on their size in terms of deadweight tonnes (dwt). [83]Some of the most common vessel classes include; Suezmax, Panamax, Aframax and Very Large Crude Carrier (VLCC)[84]. Suezmax and panamax vessels are so named because their size and operation is designed for the Suez Canal and Panama Canal.

In Ireland, between 9 and 9.5m tonnes of liquid bulk products are imported each year. Approximately 80% of liquid bulk imports arrive at Dublin Port and the Port of Cork. Dublin has held a 45% share on average over the last five years, while Cork has held a 35% share of liquid bulk imports (see Section 1.1B).

(i) Crude Tanker Market

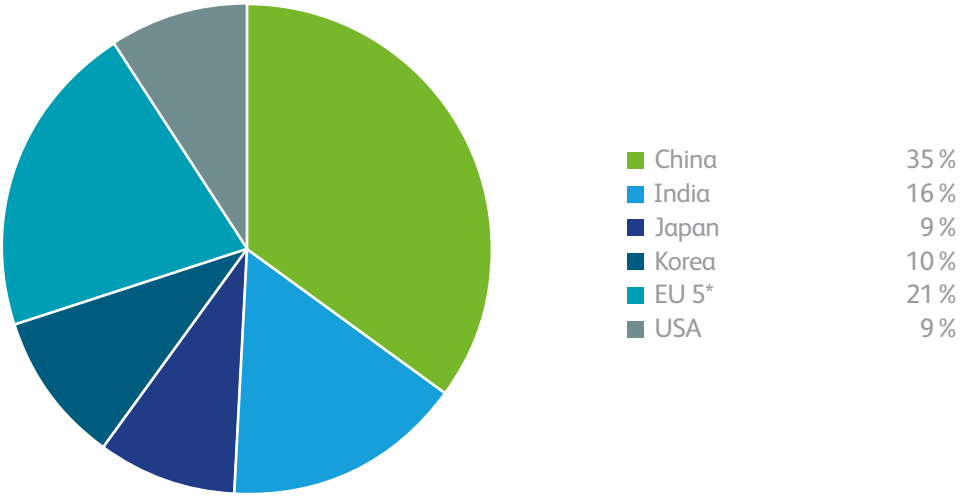
Between 2017 and 2019, approximately 42m bpd of crude oil was transported by tanker vessels around the world. Due to a collapse in demand caused by the COVID-19 pandemic, this volume of seaborne crude oil trade declined in 2020 to 37.3m bpd. In 2021, a further decline of 1.3% was recorded, to 36.9m bpd. COVID-19 restrictions, and their suppressive effect on global demand for energy, were still relevant throughout 2021.

The largest exporting region of seaborne crude oil is in the Middle East. 44% of all seaborne crude oil trade originated from this region in 2021. Saudi Arabia is the world's biggest exporter of crude oil, with 17% of the global market. A further 14% was exported from North Africa, and 11% was exported from South America. A total of 9% was exported from Russia, equivalent to 3.2m bpd. 50% of Russian exports of crude oil crude went to European countries[85].

As noted above, there were 36.9m bpd of crude oil exported by tanker vessels in 2021. In terms of where this seaborne crude oil was destined for, Figure 60 below shows the largest importers of seaborne crude oil this year. When combined, the countries in Figure 60 make up roughly three quarters of seaborne crude oil imports in 2021.

[83] Dwt: This is a measurement of the entire contents of a ship, including cargo, fuel, crew and water.
[84] Panamax = 50,000 – 80,000 dwt, Aframax Capacity = c.80,000 dwt, Suezmax capacity = 125,000 – 180,000 dwt. VLCC capacity = c.320,0000 dwt,
[85] A further 0.7m bpd were exported from Russia to European countries via the Druzhba pipeline

Figure 60: Market Share of Seaborne Crude Oil Imports, 2021[86]



Source: *Clarkson's Research*

The demand for crude tanker vessel capacity in 2021 declined by 2.6 % in 2021, to 291.6m dwt. This follows a steep decline in 2020, and means that demand for tanker vessels are now 10 % below 2019, or pre-pandemic levels. The supply of tanker vessel capacity however, increased in 2021, by 2.2 % to 406.7m dwt, which means that tanker supply is therefore 7 % above 2019 levels. A factor impacting upon the increase in tanker capacity was the unwinding of vessels engaged in 'floating storage' throughout 2020. Demand for floating storage spiked during the first waves of COVID-19, and this gradually declined throughout 2021.

As supply has outpaced demand growth in the market for crude tankers, the earnings of these vessels, measured in time charter rates, had an extremely challenging year[87]. Table 28 below provides the quarterly time charter rates for the main tanker vessel classes; VLCC, Suezmax and Aframax.

[86] EU 5 = Germany, France, Italy, Spain, Netherlands
[87] US Energy Information Administration

Table 28: One-Year Tanker Time-Charter Rates, Quarterly Average

	1 Year Timecharter Rate VLCC	1 Year Timecharter Rate Aframax	1 Year Timecharter Rate Suezmax
	$/day	$/day	$/day
Q1-2019	$29,038	$19,135	$23,538
Q2-2019	$32,144	$21,173	$23,173
Q3-2019	$35,346	$21,519	$25,038
Q4-2019	$48,904	$26,538	$34,846
Q1-2020	$43,327	$25,096	$33,558
Q2-2020	$55,962	$27,942	$36,385
Q3-2020	$34,904	$19,635	$23,423
Q4-2020	$24,962	$16,644	$18,231
Q1-2021	$23,529	$15,125	$16,490
Q2-2021	$22,038	$16,000	$17,308
Q3-2021	$18,962	$15,346	$16,250
Q4-2021	$19,321	$16,071	$17,536

Source: Clarkson's Research

Earnings for VLCC vessels in 2021 were 47% below that of 2020. For Aframax, the decline was 30% and for Suezmax, the decline was 39%.

(ii) Product Tanker Market

As noted above, product tankers are smaller than crude oil tankers, and they predominantly carry refined petroleum product to close to the point of consumption.

In 2021, global seaborne trade of product oil rose by 5% to 21.7m bpd. This follows a significant decline of 11.5% in 2020 resulting from the outbreak of COVID-19. Seaborne trade of product oil remains 7% below 2019 levels.

The largest exporting region of product oil is Asia, with 6.5m bpd in 2021, or 30% of global product exports. European countries, including the Netherlands, UK and Belgium hold a 24% share of global product oil exports, equivalent to 5.1m bpd in 2021.Russia and the United States both hold an 11% share of product exports, equivalent to roughly 2.3m bpd each.

In terms of top imports, one third of product oil trade goes to Asia, with Japan, China and Korea all importing approximately 0.8m bpd in 2021. A further 26% goes to Europe, with France having the largest share, receiving 0.8m bpd in 2021.

The demand for product tanker services increased in 2021 by 7.3%, a robust bounce back after a decline of 8.8% in 2020. In all, 101.6m bpd of product oil was demanded this year. However, product tanker capacity continues to increase. In 2021, the supply of product tankers grew by 2% to 170m bpd. Product tanker supply is now 5% above 2019 levels. Despite the growth in demand this year, it was not large enough to prevent a decline in time charter rates. 1-year time charter rates for product tankers declined by 14% in 2021, from an average of $14,440 per day in 2020, to $12,424 in 2021.

Russia – Ukraine Conflict

The Russian invasion of Ukraine has had a severe impact on seaborne oil trade, both crude oil and product. Historically, many international sanctions have been focused on shipping, and Russia plays an important role in the movement of essential commodities by sea[88].

Clarkson's Research estimates that the Russian owned fleet amounts to roughly 3,000 vessels, and that approximately half of this fleet are oil and gas tankers. 2.4% of the global oi tanker fleet is Russian owned, with the concentration around Aframax vessels, where the Russian owned share is 7%. In trade terms, Russia accounted for 11% of product oil exports, and 9% of crude oil exports in 2021. It is therefore in energy markets, where the impact of Russian sanctions will be most acute.

Since the outbreak of the conflict, there has been a reluctance by global vessel owners to call at Russian ports or engage with Russian exports. The number of port calls by crude tankers to Russian ports fell from 216 in February, to 182 in March.[89] In addition, the US have banned Russian imports of oil and while there has been no formal ban as of yet, both the UK and EU are attempting to reduce exposure to exports of Russian oil.[90]

As a result of these events, seaborne crude oil trade growth for 2022 has been revised downward, from 6.2% to 4.4%. Likewise, seaborne product oil trade has been revised downward from 6.1% growth in 2022 to 5.3%[91]. Reduction in trade have been offset by announcements of increased oil production from both OPEC and the United States[92].

One major trade pattern that is expected to shift is the volume of tonne-miles within the seaborne oil market. As the US and Europe both look further afield to substitute away from Russian oil, transport costs are expected to rise due to longer distances. Reduced pipeline trade between Russia and Europe may also increase the demand for tanker vessels in 2022.

Overall, the impact of this conflict on global shipping markets remains uncertain and highly volatile. The IMDO continue to monitor these events closely and their impacts for the Irish shipping market.

[88] US Energy Information Administration, Clarkson's Research
[89] Clarkon's Research
[90] Clarkson's Oil & Tanker Outlook, Vol 27, No. 3
[91] Clarkson's Oil & Tanker Outlook, Vol 27, No. 3
[92] US Energy Information Administration, Reports on Short Term Energy Outlook

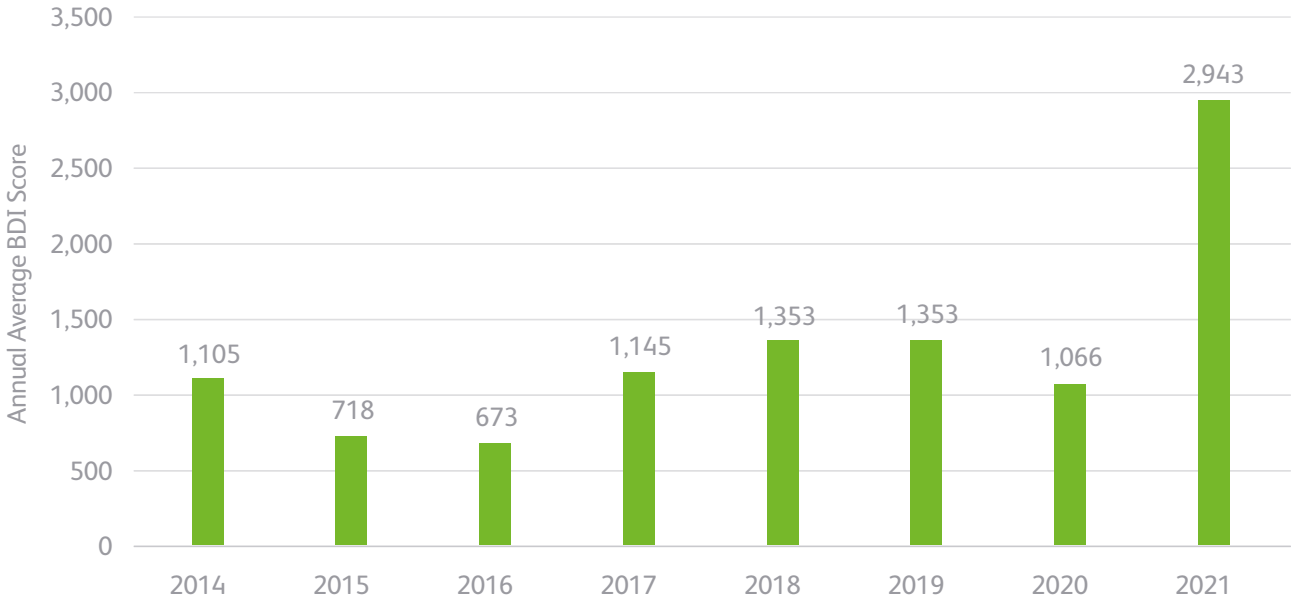
3.2 Dry Bulk Market

Dry bulk vessels, or bulkcarriers, are employed to transport large volumes of loose, bulk cargoes like coal, grains, and iron ore. The products they carry are essential to global food supplies as well as industrial production.

2021 was described as a "bumper year" by Clarkson's research in its first report of 2022[93], as earnings for bulkcarriers surged throughout the year. The London Baltic Dry Index (BDI) measures the rates charged for chartering these bulkcarrier ships that carry essential raw materials. This index is a made up of the Capesize, Supermax and Panamax[94] time charter rate (TCR) averages. The BDI contrasts demand for shipping capacity with the supply of dry bulk carriers. On the supply side, fleet size is relatively inelastic, meaning small changes to fleet size can have outsized impacts on rates. Conversely, the demand for raw materials is an effective indicator of economic activity.

In Figure 61, the annual average index score for the BDI is provided between 2014 and 2021. The BDI rose by 176% in 2021 when compared to 2020.

Figure 61: Annual Average London Baltic Dry Index Score, 2014 - 2021



Source: *Clarkson's Research*

The COVID-19 pandemic drove the BDI to 461 in March 2020, reflecting the reduction in economic activity across the world. The market recovered strongly in 2021, with the index reaching a record high of more than 4,800 in October 2021.

In early 2022, Clarkson's Research acknowledged the "remarkable[95]" rise in rates for the sector, with weighted earnings averaging almost $27,000 per day, its highest since 2008 and 137% above the ten year average. In all, 2021 was the fourth strongest year for bulkcarrier rates since records began in 1990.

In terms of individual vessel classes, the average annual 1-year time charter rate for Supramax vessels rose by 117% to $23,343. The same metric for Panamax vessels rose by 103% to $24,056, and lastly, the average annual rate for Capesize bulkcarriers rose by 79% to $27,009.

[93] Clarkson's Dry Bulk Trade Outlook, Vol 28 No. 3
[94] Like tanker vessels, bulkcarriers are named for their size and the task for which they are employed. Supramax (50,000 – 60,000 dwt), Panamax (80,000 dwt) and Capesize (80,000 – 200,000 dwt) are among the most common vessel classes.
[95] Clarkson's Dry Bulk Trade Outlook, Vol 28 No. 3

This remarkable increase in bulkcarrier earnings in 2021 was driven by three main factors.

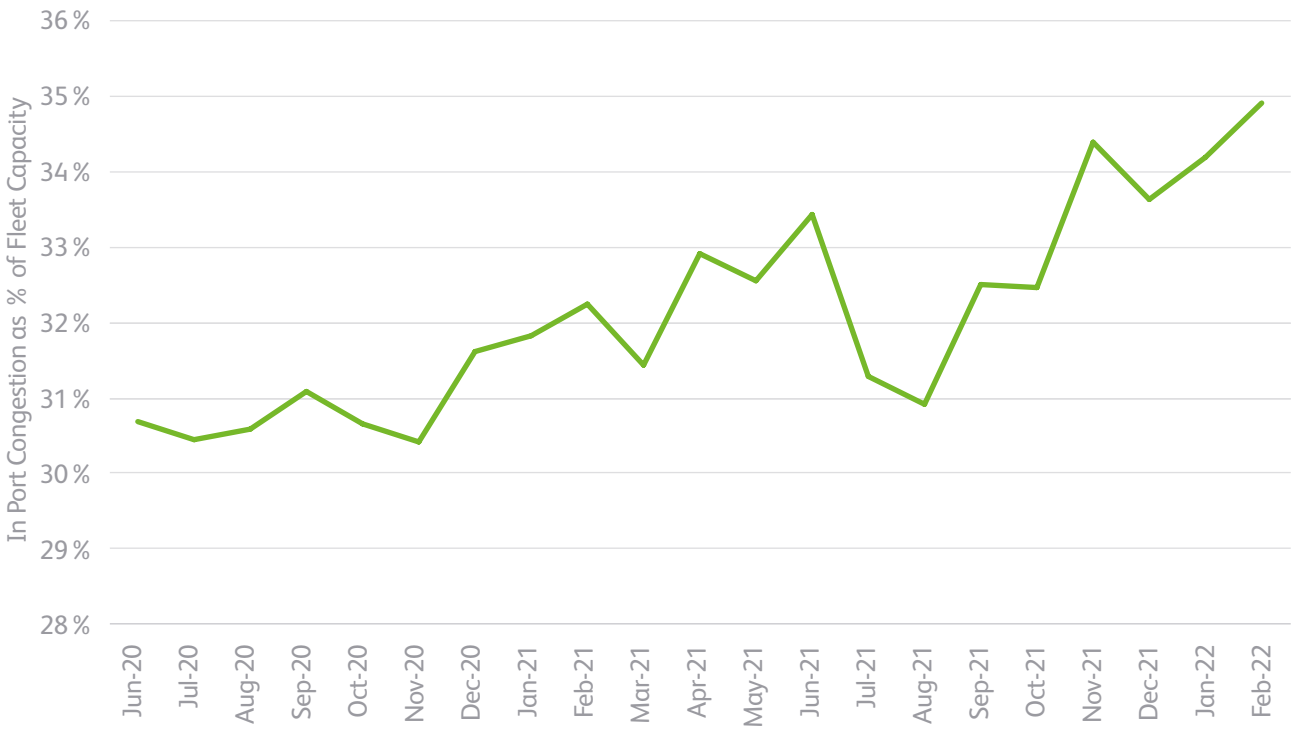
Firstly, post-pandemic demand for dry bulk commodities was robust this year. The volume of "major bulks" traded, which is made up of grains (soyabeans & wheat), coal and iron ore, rose by 3 % to 3.3bn tonnes[96]. The growth in wheat trade was particularly strong, at 7 %. In total, 368m tonnes of wheat were traded on dry bulk vessels in 2021. Trade in "minor bulks," which is made up mainly of industrial metals such as steel, but also fertilizer and sugar, grew by 5 % in 2021 to 2.1bn tonnes. For both major and minor bulk trade, volumes in 2021 surpassed pre pandemic levels recorded in 2019.

Secondly, the growth in the available capacity of dry bulk vessels in 2021 was relatively subdued. The fleet of bulkcarriers grew by a modest 3.6 % in 2021. One factor influencing this relatively slow growth was vessels spending time out of service to be retrofitted with scrubber systems. In January 2020, The International Maritime Organisation (IMO) introduced a sulphur cap, which places stricter conditions on emissions of sulphur from fuel oil used on board ships. A scrubber[97] system can reduce these emissions so a ship can remain in line with new regulations. This retrofitting of vessels reduced active capacity of some bulkcarriers in 2021, according to Clarkson's Research. In addition, the volume of new vessels in the orderbook was historically low in 2021, at just 7 % of total fleet capacity.

Overall, this subdued backdrop in the supply of dry bulk vessels supported high earnings in the sector in the year under review.

Lastly, port congestion in 2021 was close to record levels, as supply chain problems in the wake of the COVID-19 pandemic tied up vessels at port for longer than anticipated, reducing available supply. Figure 62 shows the percentage of Capesize and Panamax dry bulk vessels that were tied up with port congestion from mid-2020 to early 2022. The average percentage between 2016 and 2019 was 30 %. Midway through 2021, this increased to near record levels of 35 %.

Figure 62: Clarkson's Research Port Congestion Index, Deep Sea Cargo Bulkcarriers (Capesize & Panamaz) % of fleet capacity



Source: *Clarkson's Research*

[96] Clarkson's Dry Bulk Trade Outlook, Vol 28 No. 1
[97] For more information on Scrubber systems, see the IMDO's 2019 report on Alternative Fuel Infrastructure in international shipping. See report here.

In all, the combination of the three factors outlined above – increased demand, subdued supply and increased port congestion – caused time charter rates in the bulk market to rise swiftly in 2021.

Russia – Ukraine Conflict

As with the market for tanker vessels, the Russian invasion of Ukraine has created heightened uncertainty and volatility in the dry bulk market, altering forecasts for the coming year. In a report released in late March of 2022, Clarkson's research noted that major impacts are being recorded in seaborne grain trade. Global seaborne trade in grain had been forecasted to rise by between 2-3% in 2022. This has been downgraded to a 3% decline[98].

Ukraine accounted for 9% of global exports of grain in 2021, with a volume of 49mt (million tons). In early March 2022, these exports effectively fell to zero. In the weeks after the outbreak of conflict, Ukraine's state-owned railways were being used to export as much as possible, but with black sea ports closed, volumes are moving much slower. In total, Clarkson's research has forecasted Ukrainian grain exports to decline by 75% in 2022, to 12.3mt. This decline is expected to be offset by an 11% rise in Brazilian grain, and a 7% rise in EU/UK grain production.

The US is the largest exporter of grain in the world. In early April 2022, the US Dept of Agriculture released its first crop report for the year. Crop conditions were worse than expected, with just 30% of US winter wheat rated as good-excellent, compared to 53% in 2021[99]. Drought conditions were a key driver of this underperformance, and weather will be a key factor as this crop is harvested in June/July.

Announcements such as these are influential in a market concerned about global supplies. US grain exports are expected to rise by 5% in 2022, which may not be sufficient to ease rapid price increases on international markets. Furthermore, Argentinian crop conditions are being hampered by dry weather, and industrial action by logistical companies in March 2022 threatens further disruption. Clarkson's has forecasted Argentinian grain to decline by 6% in 2022.

Chinese imports of grain surged in 2021 by 88% as the country began to rebuild inventories. Demand is expected to continue to be robust in 2022, although there is uncertainty as to how much this demand will adjust to the new supply shock. Chinese demand is large enough to push global grain prices even higher.

All of the concerns laid out above are driving increases in global grain prices on international markets, particularly in wheat, for which Ukraine is a major producer.

Overall, trade in grains makes up approximately 10% of all seaborne dry bulk trade in 2021. The market for these products will be challenging in 2022, and significant uncertainty remains as to the extent of the impact the conflict will have upon other sectors. Elsewhere in the dry bulk market, the fundamentals in supply and demand are currently well balanced, according to Clarkson's Research. The post-pandemic recovery still has the capacity to stimulate growth, but uncertainty about global economic activity has become heightened in early 2022. The IMDO continues to monitor these events closely.

[98] Clarkson's Shipping Intelligence Weekly
[99] US Department of Argriculture

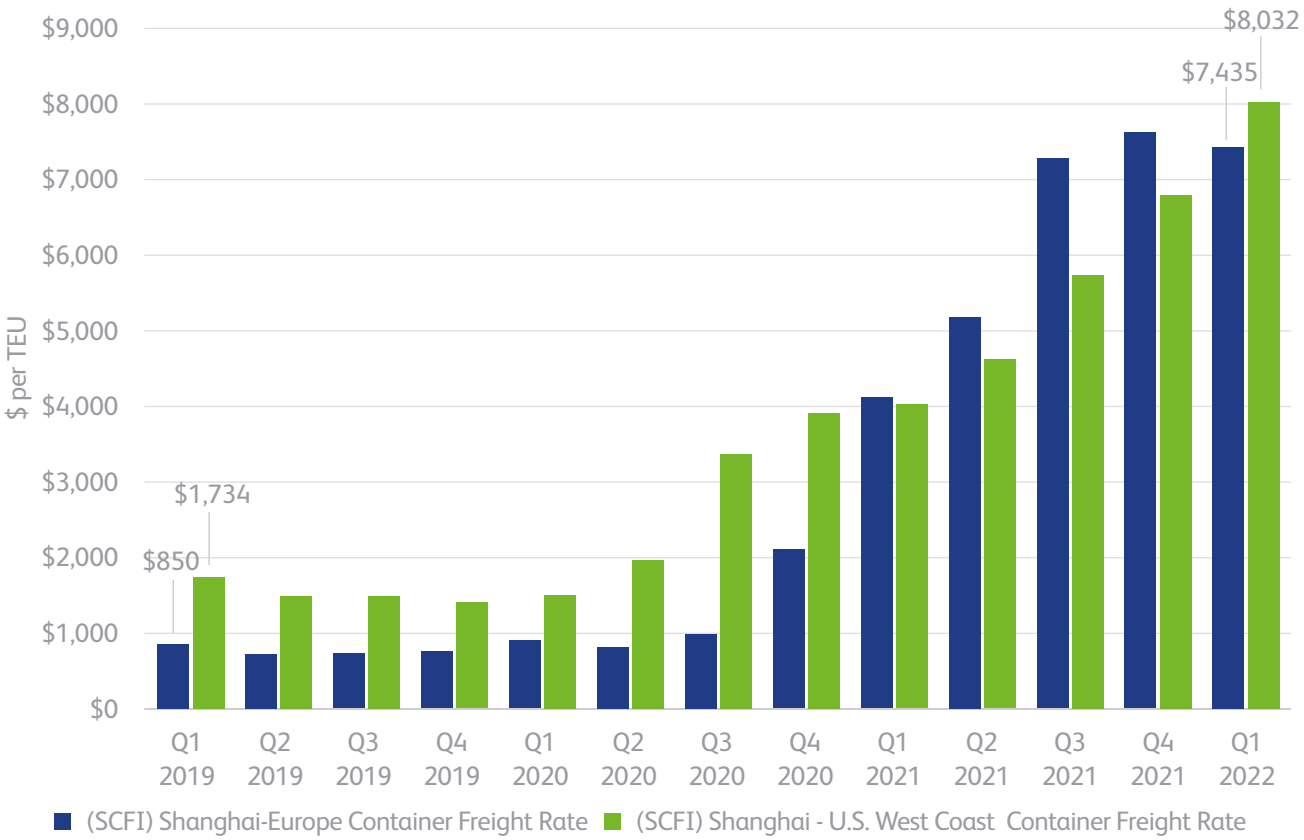
3.3 Containership Market

Containerships are designed to hold vast cargoes that are compacted into unitised 'boxes' or containers. The capacity of a containership is measured in Twenty-Foot Equivalent Units, or TEU's. The largest container vessels in the world can carry more than 15,000 TEU's. Ireland relies mainly on "feeder" container vessels, which have a smaller TEU capacity, often around 1,000 TEU's and below. These vessels transport Ireland's TEU's to and from very large port hubs such as Rotterdam or Antwerp, and feed them back into Irish ports, in a system often referred to as a 'Hub and Spoke' model.

Unlike bulkcarriers and tankers, which carry commodities and raw materials in loose, bulk form, containerships carry the vast majority of the world's manufactured goods. The unitsed format of containerships makes them easier to load and unload at major port cities around the world.

2021 was an extraordinary year in the market for containerships. The cost of transporting goods on containerships soared, consistently setting new records throughout the year. The surge in containership freight rates is captured by the Shanghai Export Containerized Freight Index (SCFI), which is an index that reflects the spot rates on key global shipping routes from Shanghai, China.[100, 101]The SCFI index is presented in Figure 63 for two container shipping routes; Shanghai – Europe[102] and Shanghai – U.S. West Coast[103]. As shown in Figure 63, the price of transporting a shipment from Shanghai to Europe rose from $850 in Q1 2019, to almost $7,500 in Q1 2022. For Shanghai to the US West coast, the price was $1,734 in Q1 2019, and grew to $8,032 in Q1 2022.

Figure 63: SCFI Container Freight Rate Index, ($1,000 = Oct, 2009), $ per TEU, Quarterly

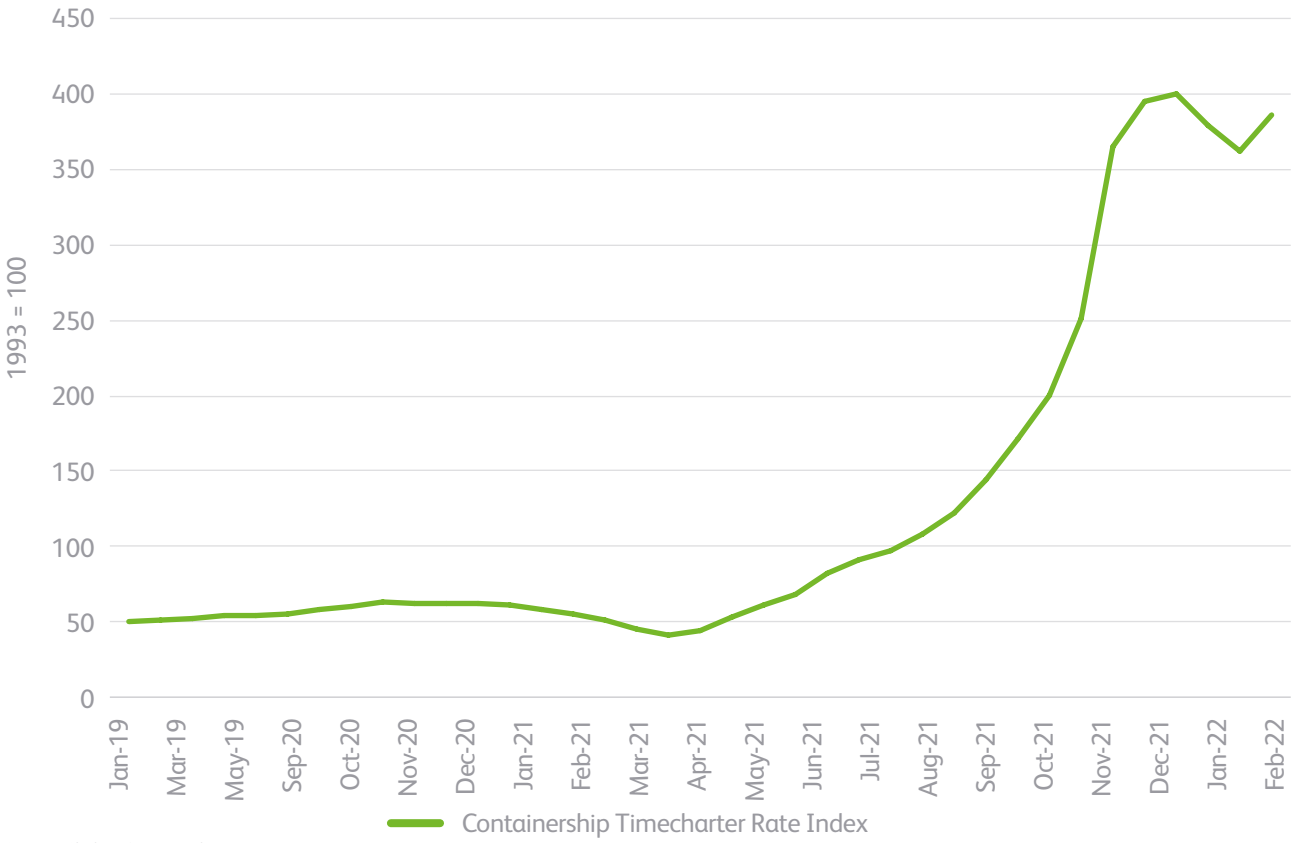


Source: *Clarkson's Research*

[100] A spot rate is a once off fee paid to transport a shipment on a specific shipping route, taken at a particular point in time. They are reflective of the real-time dynamics between supply of and demand for shipping.
[101] Shanghai Shipping Exchange
[102] Shanghai – Europe = Shanghai to Hamburg/Rotterdam/Antwerp/Felixstowe/Le Havre
[103] Shanghai – U.S West Coast = Shanghai to Los Angeles/Long Beach/Oakland

As a result of the dramatic rise in freight rates in 2021, the earnings of individual containership vessels, as measured in time charter rates[104], rose at a similar pace. Figure 64 presents Clarkson's Timecharter Rate Index, an index based on $/day per TEU. As evident in Figure 64, the timecharter index in January 2022 was more than seven times that of January 2019.

Figure 64: Clarkson's Timecharter Rate Index, Quarterly



Source: *Clarkson's Research*

In terms of what caused this surge in containership freight rates, there were three influential factors that overlapped in 2021. This was referred to by Clarkson's Research at the 'perfect storm.'[105] These three events were, firstly, robust post-pandemic demand, especially for merchandise goods. Second, moderate fleet supply growth that lagged behind the growth in demand for shipping. And third, significant port congestion at major global container ports that exacerbated the shortage in supply. The following paragraphs will address each factor individually.

[104] The time charter rate of a vessel is used to measure the daily revenue of a vessel. It is calculated by measuring a ships revenue, from freight rates, minus expenses. Expenses are mainly made up of fuel and crew. Time charter rates are a useful way for ship-owners to assess the earnings performance of a vessel.
[105] Clarkson's Container Intelligence Quarterly, Q1 2022

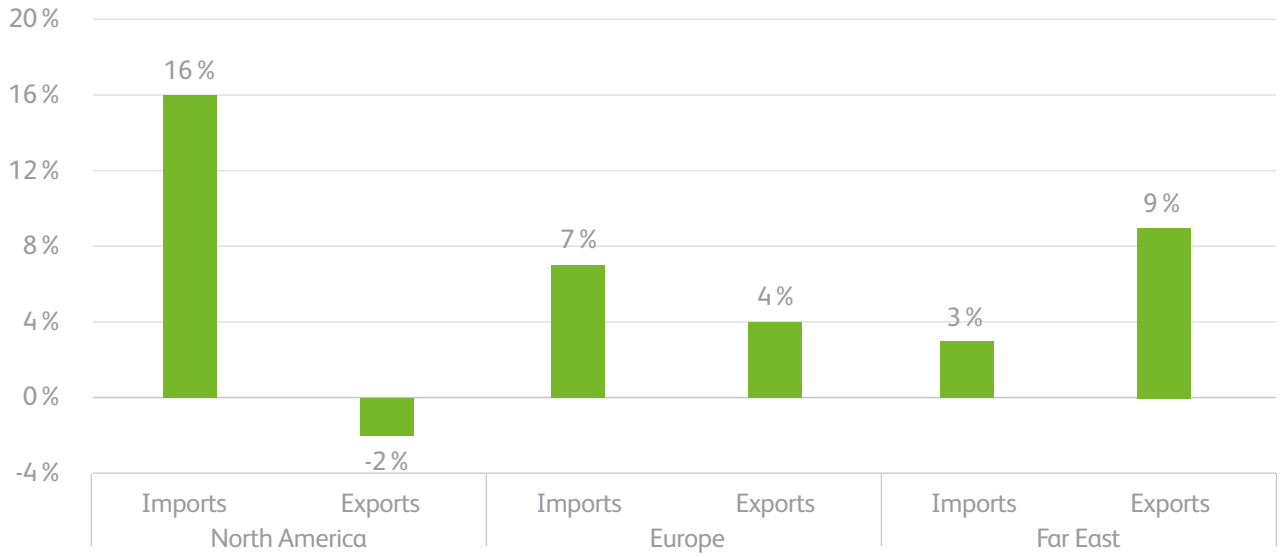
Post-Pandemic Demand

The volume of containers traded globally rose by 6.3% in 2021[106], from 194m to 207m TEU's, a record high. This represents a strong rebounding of demand after a decline of 1.3% in 2020. The growth in container trade was particularly strong on transpacific routes. East bound transpacific trade, i.e. container trade from Asia to the west coast of North America, rose by 18% in 2021, to 23.9m TEUs, the highest volume on this route of the last decade. West bound container trade from Asia to Europe also grew strongly, by 7% to 17.1m TEUs.

The growth in container trade was driven in large part by changes in consumer behavior resulting from the COVID-19 pandemic. As noted by the US Federal Reserve[107], after a sharp contraction that followed the first wave of the pandemic, the demand for durable, or consumer, goods rose sharply towards the end of 2020 - US imports rose by 37.2% in Q4 2020 compared to the same period in 2019[108] - a trend that continued into 2021. A reduction in the demand and availability of consumer services arising from COVID-19 lockdowns and restrictions explains much of this phenomenon. With many incomes unaffected by the COVID-19 pandemic, household expenditures were redirected away from services, (e.g. restaurants, cinema) and towards durable goods (e.g. furniture). In addition, a large fiscal stimulus package by the US Government (The American Rescue Plan) facilitated consumer spending even further.

Overall, a strong macroeconomic environment, driven by a post-pandemic 'pent-up demand', fiscal stimulus packages in the US, and low availability of services, caused demand for container trade to rise significantly in 2021. Figure 65 shows the level of import and export growth between 2020 and 2021 for Europe, Norther America and the Far East (measured in TEU's).

Figure 65: Percentage Change in Seaborne Container TEUs (2020 Vs 2021), Imports & Exports, Selected Economies



Source: *Clarkson's Research*

[106] Container Intelligence Monthly, Vol 24 No. 3
[107] Why Has Durable Goods Spending Been So Strong during the COVID-19 Pandemic? – US Federal Reserve Bank of Cleveland
[108] OECD

Moderate Supply Growth

The total supply of containerships grew by 4.5 % in 2021, a moderate level of growth that was insufficient to slow the growth in containership freight rates. This followed even slower growth of just 2.9 % in 2020, wherein pandemic related disruption to newbuilding was more severe. With freight rates rising throughout the year, the volume of containerships sold for scrap, or recycled, fell to just 16 vessels in 2021, the lowest level since 2005 and reflective of the shortage experienced by the containership fleet[109].

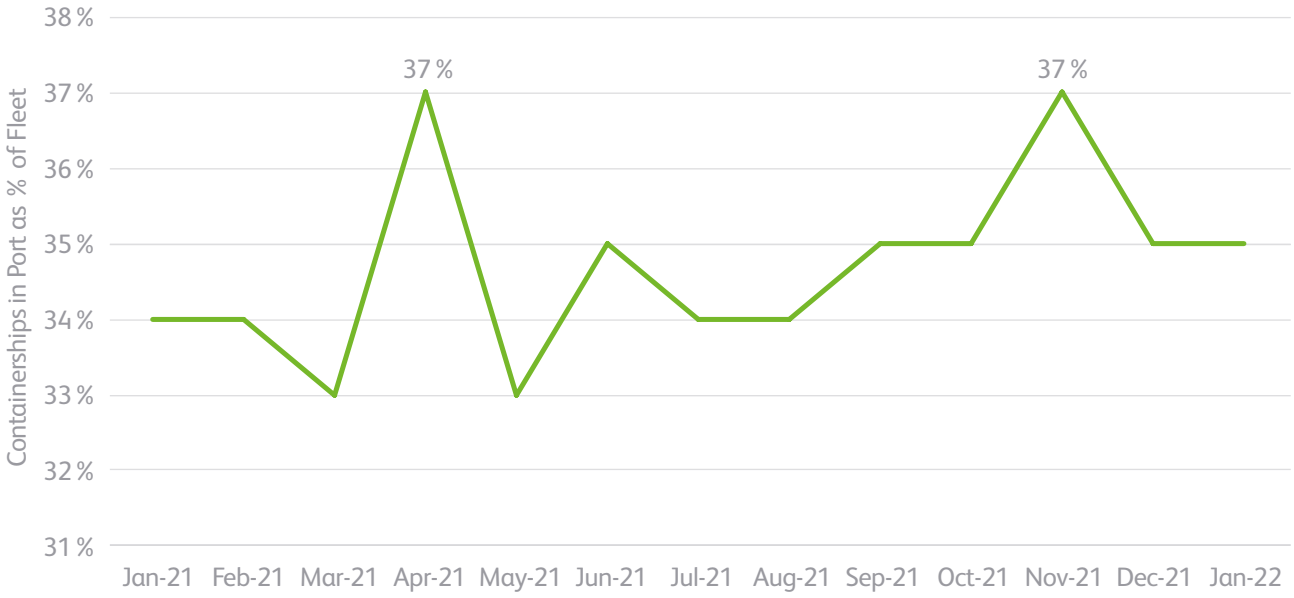
With the earnings of containership vessels at record levels this year, positive investment sentiment was understandably high, and this has led to a sharp rise in orders for newly built containerships. 548 containership vessels were ordered in 2021, a record high. The total capacity of these orders amounts to 4.2m TEU's.

However, as there is significant lead time to build new shipping vessels and bring them into operation, capacity supply in the global shipping market can be inelastic over the short run. As a result, the level of fleet growth in 2022 is forecasted by Clarkson's research to be just 3.6 % in 2022, before rising at a much faster pace in 2023, to 7.9 %[110].

Port Congestion

Significant port congestion and logistical disruption amplified the imbalances of supply and demand in the containership market in 2021, further supporting the rise in freight rates and time charter rates. Figure 66 shows Clarkson's Congestion Index for containerships. This illustrates the level of containerships in port as a percentage of the containership fleet. Between 2016 and 2019, an average of 31 % was recorded. Between January 2021 and January 2022, the average was 35 %, with record highs of 37 % recorded in April and November.

Figure 66: Clarkson's Port Congestion Index - Containerships in Port, % fleet capacity



Source: *Clarkson's Research*

[109] Clarkson's Container Intelligence Monthly Vol 24 No. 3
[110] Clarkson's Container Intelligence Quarterly, Q1 2022.

This congestion was concentrated on transpacific trade lanes, where the largest growth in container trade was recorded. In particular, US West Coast ports such as Long Beach, as well as the Chinese ports of Yantian and Ningbo, were heavily disrupted by port congestion this year.

Looking ahead, Clarkson's Research expects container trade to slow to 3.5% in 2022 as much of the post-pandemic 'pent-up' demand is satisfied. However, with only subdued fleet growth expected in 2022, it is likely that containership freight rates will stay elevated throughout this coming year. This may be compounded by rising fuel costs faced by shipowners.

On the impact of the Russian invasion of Ukraine, the containership market is not as heavily exposed as it is in the market for bulkcarriers and tankers. However, Clarkson's Research estimates that TEU trade growth could be reduced by 0.4% as a result of the conflict. As of March 2022, uncertainty remains extremely high and the IMDO continues to monitor these impacts closely.

3.4 Alternative Fuel Infrastructure in Ireland

In 2019, the Irish Maritime Development Office published a feasibility study on the development of alternative fuels infrastructure (AFI) in Irish ports. To help reduce the dependency of transportation across the European Union on fossil fuels, and to reduce the associated harmful environmental effects, the EU Commission established an alternative fuels strategy in 2014. As a result, the Alternative Fuels Infrastructure Directive (AFID)[111] (2014/94/EU) was published in November of that year.

The AFID required Member States to assess the need for a framework for the supply of shore-side electricity at maritime ports, and based on this assessment, install such infrastructure by 2025. The directive also required Member States to ensure that an appropriate number of refueling points for Liquefied Natural Gas (LNG) were put in place at maritime ports by 2025, to enable LNG seagoing ships to circulate throughout the TEN-T core network[112]. These objectives were to be met by the target year, unless there was an absence of demand or that the relevant costs were disproportionate to the benefits.

In response to the AFID, the IMDO report conducted a feasibility study of Shore Side Electricity (SSE) and assessed market demand for LNG fueling facilities in major Irish ports. To achieve this, the report examined the factors that determine locational or sectoral concentrations in the deployment of AFI, and discussed the applicability of these factors to the Irish context. A copy of the report can be found here.

Overall, the IMDO's AFI report made several recommendations. Among them, were that stakeholders in Ireland's maritime transport sector should seek opportunities to get involved in wider European projects related to alternative fuels in order to gain experience and insights into this area. At present, the IMDO are involved with a number of EU initiatives which are directly and indirectly seeking to make progress in this area. These initiatives include:

- Motorways of the Sea – International Fast & Secure Trade Lanes[113] (IFSTL): Dublin – Cherbourg pilot.
- ASPBAN – Atlantic Smart Ports Blue Accelerator Network[114]
- European flagship Action for Cold-Ironing in Ports (EALING)
- Atlantic Strategy[115] – Liam Lacey, Director of the IMDO, is the coordinator of Pillar 1: 'Ports as gateways and hubs for the Blue Economy'.

[111] Directive 2014/94/EU of the European Parliament and of the Council
[112] Trans-European Transport Network (TEN-T): This is an EU policy that aims to build an effective, EU-wide transport network of roads, railways, airports and waterways
[113] Overview of Ireland – France pilot IFSTL route
[114] For more information, please visit the AspBAN website
[115] Atlantic Strategy: Pillar 1 Goals

The IMDO and other state agencies continue to explore further opportunities to involve Irish stakeholders in such initiatives. In addition, the report concluded that, in the absence of marked changes in environmental regulation or increases in commercial viability, the targets for the development of AFI in Ireland's maritime sector by 2025 should be set at zero.

Since the publication of the IMDO's report, there has been significant progression in environmental regulation at EU level. In December 2019, a list of priorities were set out in the European Green Deal communication, which outlined the goal of transforming the EU into a resource-efficient economy in order to tackle climate change[116]. Within this communication, the European Commission announced that it would undertake a review of the AFID. Following this, in July 2021, the European Climate Law was adopted, which set an EU target for 2030 of reducing greenhouse gas emissions by at least 55 % compared with 1990 levels.

Subsequently, the **Fit for 55 package**[117] was published, and contains a list of legislative proposals to deliver the targets set out in the European Climate Law. As detailed by the European Commission, the package consists of a set of inter-connected proposals, all of which assist the goal of a green transition by 2030 and beyond. Existing European legislation is made more ambitious, and where necessary, new proposals are put forward. In all, eight areas of existing legislation are strengthened, and five new proposals are put forward. This policy mix is described by the European Commission as;

"a careful balance between pricing, targets, standards and support measures."

European Commission, July 2021, pg 3[118].

In the pricing section of this policy, it is proposed that the European Emissions Trading Scheme be extended to maritime transport. And in the Standards / Rules section, proposals for new infrastructure for alternative fuels, and cleaner maritime fuels (known as FuelEU), are also put forward.

In recent months, the IMDO has been engaging closely with these proposals and what they will mean for the Irish maritime industry. Research has already been commissioned with the National University of Ireland, Galway, in relation to the economic implications of the FuelEU maritime proposal. The IMDO will continue to research, assess and engage with the Fit for 55 proposals and the implications of these regulatory changes for the Irish maritime sector.

Conclusions

Section 3 has assessed the 2021 performance of key markets in the global shipping industry, including the tanker market, dry bulk market and containership market. It has also investigated trends in the price and production of oil and bunker fuel, and has provided an update on the outlook for alternative fuel infrastructure at Irish ports.

Overall, for many products, 2021 represented a year of post-pandemic recovery and rebounding. In the containership market, freight rates soared to record highs as the demand for durable goods surged, particularly U.S imports from Asia. With the service industry in many large economies still largely under some form of pandemic-related restriction in 2021, global consumption trends concentrated towards physical merchandise. The rise in freight rates was exacerbated by significant port congestion, where 37 % of the global fleet was stuck in port at different points in the year.

Port congestion was an influential factor in the dry bulk market also. This, combined with robust demand and subdued fleet growth, meant that the earnings for bulkcarriers in 2021 were extremely strong.

Conversely, in the global market for oil, both demand and supply are yet to reach pre-pandemic levels, despite growth in demand this year. This is reflective of the fact that COVID-19 restrictions still had a suppressive effect on the global economy in 2021, with many industries yet to reach 2019 levels.

[116] The European Green Deal
[117] Fit For 55': Delivering The EU's 2030 Climate Target On The Way To Climate Neutrality
[118] Fit For 55': Delivering The EU's 2030 Climate Target On The Way To Climate Neutrality

Fleet development is also a factor in all three shipping markets. With demand quickly returning as restrictions around the world lift, fleet development cannot immediately respond and may also still be facing backlogs built up during the initial waves of the pandemic. The structural imbalances between rising demand and lagging supply facilitated supply chain issues in 2021 that contributed to rising prices around the world.

Against this backdrop, attention now turns to the impact of the Russian invasion of Ukraine. As of March 2022, international prices for food products, particularly grains, as well as oil have risen sharply. The Black Sea is a key exporting region for these products and uncertainty is extremely high as to the extent of the negative supply shock for 2022. Forecasts for growth in some primary goods has been downgraded. This situation remains extremely fluid, and the IMDO will continue to monitor trends closely.

Appendices

Appendix A: Dry Bulk Imports & Exports, Quarterly Tonnage, 2021

	Dry Bulk Imports & Exports				
	Qtr1 Tonnes	Qtr2 Tonnes	Qtr3 Tonnes	Qtr4 Tonnes	Total 2021 Tonnes
Cork	406,975	333,370	327,778	341,256	1,409,379
Drogheda	269,206	202,532	203,318	229,800	904,856
Dublin	514,096	474,057	465,035	520,434	1,973,622
Dundalk	16,227	26,273	16,073	11,551	70,122
Galway	51,892	42,994	45,792	41,529	182,207
Greenore	314,591	241,663	266,630	308,261	1,131,145
New Ross	78,216	70,641	60,293	57,707	266,857
Shannon Foynes	2,290,951	2,146,429	2,247,157	2,694,724	9,379,260
Waterford	410,483	390,950	268,299	404,125	1,473,857
Total ROI	**4,352,636**	**3,928,908**	**3,900,375**	**4,609,387**	**16,791,306**
Belfast	1,725,462	1,726,410	1,783,926	2,072,577	7,308,375
Foyle	296,731	240,323	321,078	247,728	1,105,860
Larne	27,630	7,986	12,973	8,314	56,903
Warrenpoint	139,909	126,566	90,418	98,400	455,293
Total NI	**2,189,732**	**2,101,285**	**2,208,395**	**2,427,019**	**8,926,431**
Total All-Island	**6,542,368**	**6,030,193**	**6,108,770**	**7,036,406**	**25,717,737**

Source: *IMDO*

Appendix B: Liquid Bulk Imports & Exports, Quarterly Tonnage, 2021

Liquid Bulk Imports & Exports					
	Qtr1 Tonnes	Qtr2 Tonnes	Qtr3 Tonnes	Qtr4 Tonnes	Total 2021 Tonnes
Cork	1,228,457	1,388,561	1,254,866	1,350,334	5,222,218
Drogheda	9,064	6,192	5,066	6,216	26,538
Dublin	886,115	969,050	1,012,198	1,070,371	3,937,734
Galway	64,245	73,826	67,195	85,597	290,863
Shannon Foynes	213,841	308,067	292,620	427,185	1,241,713
Total ROI	**2,401,722**	**2,745,696**	**2,631,945**	**2,939,703**	**10,719,066**
Belfast	569,835	471,078	487,371	563,538	2,091,822
Foyle	135,657	147,531	159,554	200,686	643,428
Larne	1,542	1,308	1,268	1,549	5,667
Warrenpoint	8,944	10,148	11,814	11,590	42,496
Total NI	**715,978**	**630,065**	**660,007**	**777,363**	**2,783,413**
Total All-Island	**3,117,700**	**3,375,761**	**3,291,952**	**3,717,066**	**13,502,479**

Source: *IMDO*

Appendix C: Break Bulk Imports & Exports, Quarterly Tonnage, 2021

	Break Bulk Imports & Exports				
	Qtr1 Tonnes	Qtr2 Tonnes	Qtr3 Tonnes	Qtr4 Tonnes	Total 2021 Tonnes
Cork	96,801	108,227	98,649	71,181	374,858
Drogheda	74,160	81,668	69,016	70,853	295,697
Dublin	22,720	15,022	16,885	14,922	69,549
Dundalk	4,083	5,723	2,984	2,872	15,663
Greenore	43,726	48,808	31,234	54,160	177,929
Shannon Foynes	100,164	81,893	74,900	95,901	352,857
Waterford	51,055	30,970	57,662	44,131	183,818
Wicklow	39,282	44,614	35,050	32,521	151,467
Youghal	5,250	2,634	5,070	3,309	16,263
Total ROI	**437,240**	**419,559**	**391,451**	**389,850**	**1,638,100**
Belfast	92,376	82,588	105,556	77,994	358,513
Foyle	10,176	26,861	25,611	18,837	81,485
Warrenpoint	111,374	88,490	89,288	112,248	401,400
Total NI	**213,926**	**197,939**	**220,455**	**209,079**	**841,398**
Total All-Island	**651,166**	**617,498**	**611,905**	**598,929**	**2,479,498**

Source: *IMDO*

Appendix D: RoRo Imports & Exports, Quarterly Units, 2021

RoRo Imports & Exports					
	Qtr1 RoRo Units	Qtr2 RoRo Units	Qtr3 RoRo Units	Qtr4 RoRo Units	Total 2021 RoRo Units
Cork	955	1,377	1,889	2,696	6,917
Dublin	205,516	249,949	251,056	254,863	961,384
Rosslare-Europort	45,370	46,860	45,147	45,961	183,338
Total ROI	**251,841**	**298,186**	**298,092**	**303,520**	**1,151,639**
Total NI	**221,863**	**239,128**	**236,961**	**231,080**	**929,032**
Total All-Island	**473,704**	**537,314**	**535,053**	**534,600**	**2,080,671**

Source: *IMDO*

Appendix E: ROI – GB RoRo Imports & Exports, Quarterly Units, 2021

ROI - GB RoRo Imports & Exports					
	Qtr1 RoRo Units	Qtr2 RoRo Units	Qtr3 RoRo Units	Qtr4 RoRo Units	Total 2021 RoRo Units
Dublin - GB	148,609	181,996	183,731	189,267	703,603
Rosslare - GB	14,389	17,013	17,045	15,886	64,332
Total ROI - GB	**162,998**	**199,009**	**200,776**	**205,153**	**767,935**

Source: *IMDO*

Appendix F: ROI – EU RoRo Imports & Exports, Quarterly Units, 2021

ROI - EU RoRo Imports & Exports					
	Qtr1 RoRo Units	Qtr2 RoRo Units	Qtr3 RoRo Units	Qtr4 RoRo Units	Total 2021 RoRo Units
Dublin - EU	56,907	67,953	67,325	65,596	257,781
Rosslare - EU	30,981	29,847	28,103	30,075	119,006
Cork - EU	955	1377	1889	2696	6,917
Total ROI - GB	**88,843**	**99,177**	**97,317**	**98,367**	**383,704**

Source: *IMDO*

Appendix G: Accompanied RoRo Imports & Exports, Quarterly Units, 2021

Accompanied RoRo Imports & Exports					
	Qtr1 RoRo Units	Qtr2 RoRo Units	Qtr3 RoRo Units	Qtr4 RoRo Units	Total 2021 RoRo Units
Cork	230	343	477	442	1,492
Dublin	53,174	63,895	64,486	64,146	245,701
Rosslare-Europort	22,767	23,011	22,299	22,606	90,682
Total ROI	**76,171**	**87,249**	**87,262**	**87,194**	**337,875**
Total NI	**80,681**	**88,239**	**89,322**	**83,230**	**341,472**
Total All-Island	**156,852**	**175,488**	**176,584**	**170,424**	**679,347**

Source: *IMDO*

Appendix H: Unaccompanied RoRo Imports & Exports, Quarterly Units, 2021

Unaccompanied RoRo Imports & Exports					
	Qtr1 RoRo Units	Qtr2 RoRo Units	Qtr3 RoRo Units	Qtr4 RoRo Units	Total 2021 RoRo Units
Cork	725	1,034	1,412	2,254	5,425
Dublin	152,342	186,054	186,570	190,717	715,683
Rosslare-Europort	22,603	23,850	22,849	23,355	92,656
Total ROI	**175,670**	**210,938**	**210,831**	**216,326**	**813,764**
Total NI	**141,182**	**150,889**	**147,639**	**147,850**	**587,560**
Total All-Island	**316,852**	**361,827**	**358,470**	**364,176**	**1,401,324**

Source: *IMDO*

Appendix I: LoLo Imports & Exports, Quarterly TEUs, 2021

LoLo Imports & Exports					
	Qtr1 TEUs	Qtr2 TEUs	Qtr3 TEUs	Qtr4 TEUs	Total 2021 TEUs
Cork	62,764	74,443	74,691	69,918	281,815
Dublin	206,587	218,594	212,340	205,376	842,897
Waterford	12,004	12,286	12,736	12,713	49,739
Total ROI	**281,355**	**305,322**	**299,767**	**288,007**	**1,174,450**
Total NI	**62,804**	**67,013**	**65,072**	**63,237**	**258,126**
Total All-Island	**344,159**	**372,334**	**364,839**	**351,244**	**1,432,576**

Source: *IMDO*

Appendix J: Laden LoLo Imports & Exports, Quarterly TEUs, 2021

LoLo Imports & Exports (Laden Only)					
	Qtr1 TEUs	Qtr2 TEUs	Qtr3 TEUs	Qtr4 TEUs	Total 2021 TEUs
Cork	48,897	57,383	56,316	54,581	217,176
Dublin	156,195	165,176	162,455	156,480	640,305
Waterford	8,557	8,821	8,803	8,490	34,670
Total ROI	**213,648**	**231,380**	**227,573**	**219,550**	**892,150**
Total NI	**45,551**	**47,436**	**46,822**	**46,125**	**185,934**
Total All-Island	**259,199**	**278,815**	**274,395**	**265,675**	**1,078,084**

Source: *IMDO*

Appendix K: Unladen LoLo Imports & Exports, Quarterly TEUs, 2021

	LoLo Imports & Exports (Unladen Only)				
	Qtr1 TEUs	Qtr2 TEUs	Qtr3 TEUs	Qtr4 TEUs	Total 2021 TEUs
Cork	13,868	17,059	18,376	15,337	64,639
Dublin	50,393	53,418	49,885	48,897	202,592
Waterford	3,447	3,465	3,933	4,224	15,069
Total ROI	**67,707**	**73,942**	**72,194**	**68,457**	**282,300**
Total NI	**17,253**	**19,577**	**18,250**	**17,112**	**72,192**
Total All-Island	**84,960**	**93,519**	**90,444**	**85,569**	**354,492**

Source: *IMDO*

Glossary of Terms:

Bulk Port Traffic: Refers to three market segments of port and shipping activity, Liquid, Dry, and Break Bulk which are explained below.

Break Bulk: Involves loose, non-containerised cargo stowed directly into a ship's hold. Commodities such as timber, steel products, machinery and general project cargo make up the majority of break bulk cargo. The main drivers in this segment's volumes are construction activities and the delivery of project cargo.

Dry Bulk: Commodities in this segment include animal feed, iron ore, coal, fertilizer, cement, bauxite and alumina. This market segment can be particularly affected by adverse weather conditions during the course of a year.

Liquid Bulk: Is a commodity that ranges from petrol for cars to crude oil or liquefied natural gas. Due to their physical characteristics, these are not boxed, bagged or hand stowed, but are instead stored in large tank spaces, known as the holds, of a tanker.

LoLo (Lift-on Lift-off): LoLo involves a specific ship that engages in the transportation of containerised freight that is loaded and unloaded with the use of different cranes or other lifting devices at a port. To describe the capacity of containership or container terminals, twenty-foot equivalent unit (TEU) is used to measure such parameters.

The **twenty-foot equivalent unit** (often TEU or teu) is a unit of cargo capacity often used to describe the capacity of container ships and container terminals

RoPax: The sector that uses vessels capable of carrying passengers, passenger vehicles, and RoRo freight.

RoRo (Roll-on Roll-off): RoRo involves vessels designed to carry wheeled cargo, such as cars, trucks, semi-trailer trucks, trailers, etc., that can be driven on and off the ship on their own wheels, or using a platform vehicle, such as a self-propelled modular transporter

Suezmax: Oil tanker vessels between 120,000 – 250,000 DWT in size.

TCR: time charter rates are set for shipping vessels for a fixed period of time instead of a certain number of voyages. Rate averages allow comparisons between periodic changes in a shipping company's performance.

VLCC: Very Large Crude Carrier is an oil tanker between 150,000 – 320,000 DWT in size.

VLSFO: Very Low Sulphur Fuel Oil containing a maximum of 0.5 % sulphur.

Supramax: are Dry Bulk cargo vessels of between 50,000 – 60,000 DWT.

Panamax: are Dry Bulk cargo vessels that travel through the Panama Canal, with a size of up to 52,500 DWT.

Aframax: derives its name from AFRA (Average Freight Rate Assessment), which refers to a tanker of between 80,000 – 120,000 DWT.

Product tankers: are used to transport petroleum based chemicals.

DWT: Deadweight tonnage, measurement of ships weight carrying capability.

Merchandise Trade: Goods which add or subtract from the stock of material resources of a country by entering (imports) or leaving (exports) its economic territory.

Sources of Data:

The bulletin contains the results of quarterly and annual analysis of activity from Irish and Northern Irish ports, and the activity of shipping lines operating from those ports. The data collected is compiled from returns made by those Harbour Authorities, State Companies, County Councils and RoRo shipping lines on routes to and from the island of Ireland, as outlined below:

Irish Port Companies:

Drogheda Port Company
Dublin Port Company, including Dundalk Port Company
Dún Laoghaire Rathdown County Council[119]
Galway Port Company
Greenore Port Company
New Ross Port Company
Port of Cork, including Bantry Bay Port Company
Port of Waterford Company
Port of Youghal Company
Rosslare-Europort
Shannon Foynes Port Company
Wicklow County Council[120]

Northern Irish Port Companies:

Belfast Harbour Commissioners
Foyle Port
Port of Larne
Warrenpoint Harbour Authority

Roll on/Roll-off Shipping Operators:

Brittany Ferries
CLdN Cobelfret
Irish Ferries
P&O Ferries
Seatruck Ferries
Stena Line

Additional Sources of Data:

Central Bank of Ireland, Central Statistics Office, Clarksons' Shipping Intelligence Network, Eurostat, OECD, European Central Bank, European Commission, US Federal Reserve, International Monetary Fund, World Bank, Office for National Statistics, US energy Information Administration.

[119] Dún Laoghaire Harbour Company was dissolved in October 2018 under Statutory Instrument 391/2018. The Harbour was transferred to Dún Laoghaire Rathdown County Council.
[120] Wicklow Port Company was dissolved in August 2016 under Statutory Instrument 462/2016. The Company was transferred to Wicklow County Council.

Technical Note

The IMDO's iShip Index is a weighed indicator comprised of five separate indices, representing the main maritime freight categories moving through ports in Ireland: Break Bulk, Dry Bulk, Liquid Bulk, LoLo and RoRo. The LoLo Index comprises solely of laden traffic.

The following ports have been included in the iShip Index; Drogheda Port Company, Dublin Port Company, Dundalk Port Company, Galway Port Company, Greenore Port Company, New Ross Port Company, Port of Cork, Port of Waterford Company, Rosslare-Europort, Shannon Foynes Port Company, Wicklow County Council. Bantry Bay Port Company is excluded as its throughput is predominantly of a transhipment nature. Additionally, Dún Laoghaire Rathdown County Council is also excluded as at present, it does not handle any of the five categories that move through Irish ports.

All data is derived from the individual port companies and subject to a one-year revision period.

The case period is Quarter 1 2007, at which all indices equal 1,000.

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