ANNUAL REPORT
2024

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Foras na Mara
Marine Institute

WHO WE ARE

Our Vision

The Marine Institute is a national and international leader in ocean knowledge that benefits people, policy and planet.

Our Mission

The Marine Institute provides scientific research and development services to government, agencies, industry and society that support use of our maritime area, the protection and restoration of marine ecosystems, and promote a shared understanding of the ocean.

Our Values

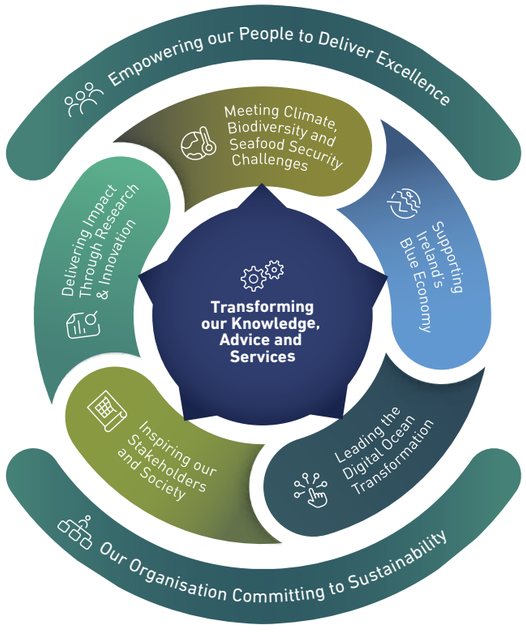
These values are the foundation of our culture. Living by these values, putting them into practice, and weaving them into all aspects of our work inspires our people to deliver excellence.

- **Commitment**
- **Excellence**
- **Collaboration**
- **Integrity**
- **Innovation**
- **Respect**

The Marine Institute's Strategic Priorities 2023-2027

We have eight Strategic Priorities, set out for the period 2023-2027 in our corporate strategy, *Ocean Knowledge that Informs and Inspires*. Our strategy builds on the Marine Institute's resource base by leveraging national and international investment and funding, and our established track record of leadership and influence in key national and international networks and fora.

In line with the corporate strategy, this Annual Report is presented according to the eight Strategic Priorities:



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Welcome from the CEO

I am proud to present the Marine Institute's Annual Report 2024, a publication that reflects the remarkable achievements of our organisation over the past year. This report illustrates the extraordinary breadth of our work, showcasing how the dedication, expertise, and innovation of our teams translate into meaningful impacts across Ireland and beyond.

Driving positive change and delivering impact are at the core of all of our activities at the Marine Institute. By reporting on them annually we aim to show how our work delivers tangible benefits to our stakeholders, and demonstrate our accountability to the strategic priorities that guide us. This report highlights a selection of successes and compelling case studies from each of our eight Strategic Priorities.

The case studies included this year represent just a snapshot of the incredible breadth and depth of work undertaken by the Institute. As we reflect upon the past year, I am extremely proud of the Institute's commitment to innovation and leadership, driving transformative outcomes within our organisation, for our stakeholders and our networks, and for the environment.

As you explore this report, you'll find that collaboration – both across Government and internationally – is a cornerstone of our approach. The Marine Institute continues to provide vital supports for the work of the Department of Agriculture, Food and the Marine (DAFM). The Marine Institute plays a critical role in delivering cutting-edge scientific analyses, expert advice, and specialised knowledge to decision-makers, stakeholders, and society in ways that are both accessible and actionable.

In particular, our trusted research, advice, and services support the implementation of key national and EU directives and policies, which are vital to building a sustainable ocean economy and protecting our marine ecosystems.

In 2024, the Marine Institute's work was defined by significant partnerships with industry, research organisations, and third-level institutes both in Ireland and globally. These international collaborations have continued to grow in scale and impact, and we are proud of our staff's leadership in high-profile ocean science committees and networks.

Our involvement in international partnerships enhances the Institute's knowledge base and global reputation, benefits the international community, and also has a positive impact on the professional and personal development of our staff.

Indeed, none of the achievements outlined in this report would have been possible without the dedication and expertise of the Marine Institute staff. Their continued passion, innovation, and resilience is crucial to realising our vision to be a global leader in ocean knowledge, empowering Ireland and its people to safeguard and harness our ocean wealth. I extend my sincere thanks to our team for their outstanding contributions, often delivered against a backdrop of rapid change and complex challenges.

MARINE INSTITUTE ANNUAL REPORT 2024

My gratitude also goes to the Marine Institute Board for their steadfast oversight and commitment to the highest standards of corporate governance. Finally, I wish to thank all of our partners, stakeholders, and collaborators for their invaluable support throughout the year.

We look forward to building on our achievements and expanding our impact in 2025, with your continued partnership and support.

Dr Rick Officer,

CEO of the Marine Institute

Statement from the Board

To the Minister for Agriculture, Food and the Marine.

In accordance with the requirements of the Marine Institute Act, 1991, we have the honour of presenting the Annual Report and Financial Statements of the Marine Institute for the year ended 31 December 2024.

This Annual Report for 2024 presents the highlights of a hugely productive year in the life of the Marine Institute, and a wide range of case studies that showcase the diverse work taking place across the organisation and its impacts on our stakeholders, networks, and the environment.

The addition of these case studies to the annual publication is an effective way to demonstrate the breadth, impact and reach of our organisation, and how our work delivers on the eight strategic priorities in our five-year Corporate Strategy, *Ocean Knowledge that Informs and Inspires.*

It's clear also from this report that the Marine Institute is continuing, year-on-year, to innovate, to lead, and to deepen its impact both nationally and internationally. Since its formation, the Institute has risen to the challenge of forming strong partnerships, and leading and participating in a wide range of national and international scientific projects. We look forward to continuing these collaborations and forging new ones in the years ahead.

This Annual Report also details our Corporate Governance and Financial Statements for 2024. All of the Marine Institute's operations remain underpinned by best practice corporate governance and financial management, and it maintains the highest Governance Standards.

In 2024, the Marine Institute proudly marked its 20th consecutive year holding the Excellence Through People certification under the National Standards Authority of Ireland (NSAI) Standard ETP 1000:2017, with Platinum certification held through 2024. This signifies how the organisation values its staff, how teams collaborate and the positive impact achieved by focusing on our people and our collective success.

We'd like to thank CEO Dr Rick Officer and the Marine Institute staff for their commitment to excellence and collaboration which has helped to achieve everything you see presented in this Annual Report for 2024.

The Board of the Marine Institute

MARINE INSTITUTE ANNUAL REPORT 2024

A Year in the Life of the Marine Institute

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Strategic Priority 1

Transforming Our Knowledge, Advice and Services

The Marine Institute has an important role in providing analyses of complex science, advice and specialist knowledge to decision-makers, stakeholders, and society in an accessible and understandable way.

Our science advice and service provision is across a wide range of areas, including sustainable fisheries, seafood safety, environmental monitoring, marine spatial planning, offshore renewable energy, aquaculture, socio-economic analysis, climate change monitoring, research supporting climate adaptation and mitigation, and sustainable development of marine and maritime industries (Ireland's Blue Economy).

The Institute continues to excel in the delivery of trusted research, advice and services to meet the needs of the State, supporting the implementation of national and EU directives and policy areas.

KEY HIGHLIGHTS FROM 2024:

Ensuring Food Safety through the Marine Institute's Seafood Safety Programme

Through the Institute's comprehensive suite of Shellfish Safety Monitoring Programmes, shellfish samples were rigorously analysed in 2024 for marine biotoxins, faecal indicator bacteria, harmful human viruses, phytoplankton and harmful algal bloom species, and chemical contaminants. Additionally, the Institute continued its monitoring programme of chemical residues in finfish for the aquaculture sector in 2024 as approved by the European Commission, which is an important component of the Department of Food, Agriculture and the Marine food safety controls. ISO 17025 Accreditation in the laboratories underpins and ensures the quality of our testing in these monitoring programmes. The shellfish microbiology team provided norovirus testing to 20 different oyster producers during 2024, ensuring access to export markets and compliance with the highest safety standards. These vital services ensure the highest levels of food safety and compliance with legislative requirements, and support the Irish aquaculture sector's growth and global reputation.

Roisin Latham and Bolaji Ojofeitimi.

Leading on Fisheries and Ecosystem Advice Internationally

The Institute, through our Fisheries Ecosystems and Advisory Services (FEAS), is involved with and leads the international production of fisheries and ecosystem advice.

This is primarily through two organisations, the International Council for the Exploration of the Seas (ICES) and the Scientific, Technical and Economic Committee for Fisheries (STECF). Several FEAS team members chair expert working groups which are strategically aligned to national programmes and resource interests. At a national level, FEAS provides the expertise behind not only fisheries management advice, but also ecological and spatial analyses. These data provide advice on impacts which support key policies managed at the national level (such as the Marine Strategy Framework Directive and proposed Marine Protected Areas legislation).

The Marine Institute delivered the *2024 Stock Book* to the Department of Agriculture, Food and the Marine, which provides the latest impartial scientific advice to Government on the status of 74 key fish stocks of interest to Ireland. The publication is an invaluable reference guide for the Minister's team of Departmental officials, the fishing industry, marine scientists, environmental NGOs and third level institutes. The equivalent information for shellfish stocks was presented in the *Shellfish Stocks and Fisheries Review*.

Dr Rick Officer, CEO Marine Institute, presenting the 2024 Stock Book to Sinéad McSherry, Department of Agriculture, Food and the Marine

Addressing Climate Risks with first National Climate Change Risk Assessment

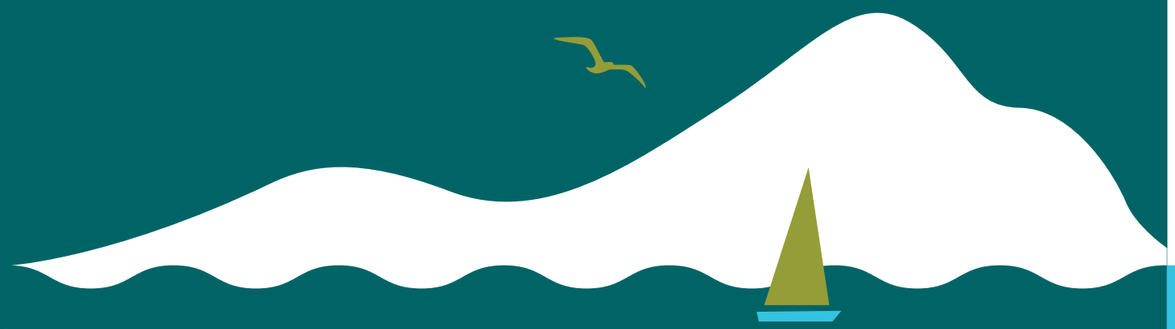
The Marine Institute engaged in Ireland's first National Climate Change Risk Assessment that identifies key climate risks to various sectors of the economy including seafood.

A comprehensive guidance document, due for delivery in 2025, will provide insights to inform adaptation plans.

Delivering Assessments for the Marine Strategy Framework Directive

In 2024, the Marine Institute completed critical assessments for Ireland's obligations under the EU Marine Strategy Framework Directive (MSFD). Assessments were carried out for by-catch of endangered marine species, fish biodiversity, commercial fish and shellfish, marine foodwebs, contaminants in the marine environment, contaminants in seafood, eutrophication (nutrient enrichment), ocean acidification, and impacts on the seabed.

This work ensures Ireland's compliance with EU environmental goals, supporting marine conservation and sustainability. This work was carried out as part of the Service Level Agreement (SLA) between the Department of Housing, Planning and Local Government (DHLGH), the Department of Agriculture, Food and the Marine (DAFM), and the Marine Institute.



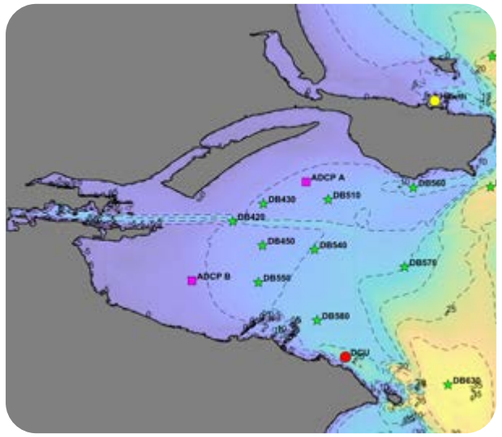
Expanding Seabed Mapping for Sustainable Resource Management

The Marine Institute's Advanced Mapping Services (AMS) extended Ireland's seabed mapping coverage, by acquiring 5,174 km^2 of detailed bathymetric survey data offshore Ireland, on board the *RV Tom Crean*. This represents an area greater than the size of County Donegal.

This expanded mapping of the seabed, delivered through the jointly managed Department of Environment, Climate and Communications funded, state-of-the-art INFOMAR programme with partners Geological Survey Ireland, provides critical baseline maps which increase our understanding of marine ecosystems and support marine spatial planning and decision-making for sustainable marine resource management.

Developing High-Resolution Modelling for Dublin Bay

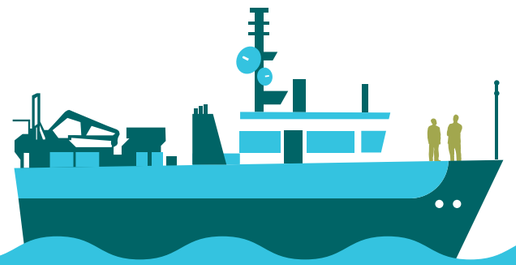
The ocean modelling team developed a high-resolution model of Dublin Bay, integrating data from INFOMAR, Office of Public Works (OPW), United Kingdom Hydrographic Office (UKHO) and satellite imagery. This cutting-edge model supports critical stakeholders including An Garda Síochána, the Irish Coastguard, Royal National Lifeboat Institution (RNLI) and the Environmental Protection Agency (EPA), by enabling enhanced forecasting and emergency response capabilities.



Supporting the Irish Maritime Industry through Evidence-Based Advice

The Marine Institute, through the Irish Maritime Development Office (IMDO), provided updates and policy advice to the Department of Transport in relation to maritime freight transport, ports capacity, shipping services and ancillary industries.

Quarterly reports were prepared tracking shipping trends for 2024, with the annual *Irish Maritime Transport Economist* (IMTE) also published, providing an in-depth analysis of 2023 industry trends. The IMDO's advisory role to the Department in 2024 continued to have a strong focus on the development of Ireland's strategically important maritime industry and how it can best meet the needs of emerging sectors such as Offshore Renewable Energy and Alternative Fuels.



CASE STUDY

Improving the scientific basis for the management and long-term sustainability of Ireland's boarfish fishery

In 2024, the Marine Institute's Fisheries Ecosystems Advisory Services (FEAS) team carried out a full review of all the available data and data gathering methods for the boarfish stock assessment. This was conducted as part of an International Council for the Exploration of the Seas (ICES) coordinated, peer-reviewed assessment benchmarking procedure.

A new assessment method was developed by the FEAS team, which will have positive outcomes for the management and long-term sustainability of Ireland's boarfish fishery.

Boarfish, which have a red and silver appearance, typically live at depths of 40-600 metres in large shoals. They are small fish – commonly just 10-15 centimetres in length. To date, they've mostly been used as fishmeal but there is increased interest in the species as a source of beneficial bioactive compounds and also as human food.

In the mid 2000s, a targeted fishery for boarfish in the Northeast Atlantic was established, primarily by the Irish pelagic industry. Initially, the fishery was unregulated and catches increased rapidly until Total Allowable Catch (TAC) based management was introduced in 2011. Ireland is the principal quota share holder with 70% of the total quota.

Strategic Priorities impacted:
1: Transforming Our Knowledge, Advice and Services
2: Meeting Climate, Biodiversity and Security Challenges
5: Supporting Ireland's Blue Economy

Since 2012, scientific advice on the annual catch of boarfish has been provided by ICES. Close cooperation between the Marine Institute and the Irish pelagic industry resulted in the establishment of an acoustic survey, a catch sampling programme, and developing the biological knowledge base necessary to support a stock assessment.

The initial stock assessment method for boarfish was constrained, mainly due to data limitations with only a few years of survey data available. The assessment depended heavily on the acoustic survey and included a number of assumptions relating to the dynamics of the stock behaviour.

This approach necessitated additional precaution in the catch advice, in order to ensure the stock size remained at a sustainable level.

In recent years, there have been indications of a strong increase in the size of the boarfish stock – however, the framework for the provision of advice allowed for only modest increases in fishing opportunity for the Irish fleet. In order to maximise the sustainable yield available, a more responsive and detailed assessment method, capable of tracking rapid changes in stock size, was required.

The work undertaken by FEAS identified and investigated new data sources, which has led to the new assessment method for boarfish being developed. The method was accepted by ICES as the basis for advice provision for the boarfish stock for 2025 onwards.

What impact is the new assessment method having?

The new method is a significant improvement over the previous method as it makes full use of the available data, is more robust, and provides a more accurate method for monitoring the stock status and providing catch advice.

The new assessment method is classified by ICES as appropriate for the provision of advice that corresponds to the Maximum Sustainable Yield, whilst maintaining the stock within safe biological limits – in accordance with the aims of the EU's Common Fisheries Policy.

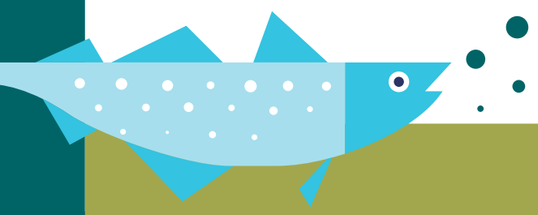
The updated method offers an improved ability to respond to recent increases in the size of the boarfish stock and has led to an increase of 40% in the advised catch for 2025, whilst ensuring the stock remains in a healthy state.

This increase represents an important opportunity for the Irish pelagic sector who were instrumental in establishing both the fishery and the data collection and information base upon which the assessment is based.

In recent years, the boarfish fishery has been worth approximately €5 million. The increased quota for 2025 will represent a significant increase in revenue for a sector that has been impacted by reductions in quota for other species. The assessment indicates that the stock size is currently close to a historic maximum.

Ongoing data collection in support of the stock assessment by the Marine Institute, along with national fisheries laboratories and collaboration with industry, should ensure continued improvement in the quality of the catch advice.

> "Since pioneering the boarfish fishery in 2010, working closely with the Marine Institute, Killybegs Fishermen's Organisation (KFO) members have funded, organised, and contributed to biological studies and acoustic surveys to improve the knowledge on this species. This data has been fed into ICES benchmark stock assessment process by the Institute which has enabled ICES to provide robust catch advice for boarfish, leading to a full analytical assessment (ICES Category 1) being provided by ICES in 2024. The new stock assessment will be used to provide annual catch advice based on a realistic measure of the boarfish biomass and productivity rather than being based largely on recent catches as was previously the case (ICES Category 3). This is seen by the KFO as clear evidence that strong industry-science collaboration and taking a science-based approach in developing new fisheries can yield a highly positive outcome."
>
> **Dominic Rihan, CEO of the Killybegs Fishermen's Organisation**



CASE STUDY

The Fish Health Unit: Protecting Ireland's aquatic animal health status and enabling trade of aquaculture animals

The main objective of the Fish Health Unit (FHU) at the Marine Institute is to protect Ireland's high health status, thereby enabling safe trade of aquaculture animals within the country, as well as with overseas trading partners. Trade in this key sector of Ireland's Blue Economy is worth approximately €170 million per year to Ireland, and supports over 1,900 jobs.

As the Competent Authority for aquatic animal health, the FHU is responsible for approval of aquaculture establishments as well as implementation of risk-based disease surveillance, and the application of disease control measures. The FHU also works with operators to ensure compliance with legislative obligations concerning aquatic animal health.

Three National Reference Laboratories, which are also part of the FHU, support the Competent Authority in its role, by testing approximately 5,000 fish and 2,500 molluscs per year. The Competent Authority is also supported by a team of Veterinary Inspectors who are employed by the Department of Agriculture, Food and the Marine, but who work to a schedule and procedures provided by the FHU.

Strategic Priorities impacted:
1: Transforming Our Knowledge, Advice and Services
5: Supporting Ireland's Blue Economy

Approvals

In accordance with national legislation, all aquaculture establishments in Ireland must be approved by the Marine Institute. Without such approval, issued by the FHU, aquaculture establishments can't operate, even if they have an aquaculture licence. To be approved, an operator must have a system in place which demonstrates compliance with requirements concerning biosecurity, disease surveillance and record keeping, and they must have facilities and equipment that are adequate to reduce the risk of introduction or spread of diseases to an acceptable level.

All movements of aquaculture animals within the country, and consignments of animals and certain products imported to and exported from Ireland are notified to the FHU via its online portal at fishhealth.ie. On average, the FHU processes approximately 2,000 such movements a year (this involves applications being approved, the operator receiving an Approval Notice and a pre-export certification visit being arranged where necessary).

Inspections

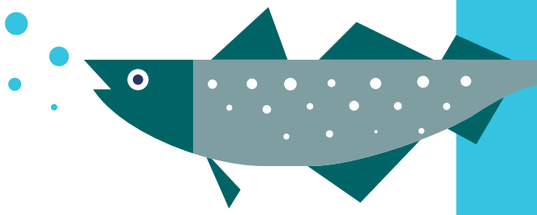
The FHU carries out risk-ranking of aquaculture establishments (based on type of production, the nature of the trade and the location of the aquaculture establishment). Disease surveillance inspections are carried out according to the risk assessment – high risk sites are inspected once a year, medium risk sites are inspected every two years and low risk sites are inspected once every three years. Operators of finfish sites are also obliged to have a prescribed number of additional visits from their private veterinary practitioner.

Bogna Griffin, Fish Health Unit.

Applied research

In addition to the statutory role described above, the Marine Institute works with industry and other stakeholders to identify applied research projects, which are designed to answer a particular need or issue. Current industry related projects include the development of new molecular techniques which will allow a number of pathogens to be identified at the same time (potentially using non-lethal means) and a project on the epidemiology and laboratory cultivation methods for *Piscirickettsia salmonis*, the ultimate aim of which is to facilitate the production of a vaccine against the disease.

The FHU also carries out work on wild aquatic animals when required, including a current project on novel surveillance methods for Crayfish Plague, in conjunction with the National Parks and Wildlife Service (NPWS).



What impact is the Fish Health Unit having?

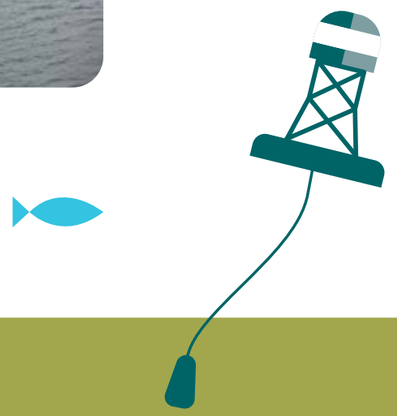
Given that each aquaculture establishment in Ireland must be approved by the FHU before it can operate, and that all internal movements, as well as imports and exports must be approved by the Unit, the impact is evident, given that the Irish aquaculture industry has a high health status, functions well and is profitable.

Ireland's high health status concerning diseases listed in Annex II to Regulation (EU) 2016/429 (the Animal Health Law) has been successfully maintained through disease surveillance and movement controls, thereby enabling Ireland to trade widely within the European Economic Area and also with third countries.

Ireland is an internationally recognised producer of salmon eggs, both for our own use and for export. The various inspection, surveillance and certification duties that the FHU carries out not only underpin that trade but also protect Ireland in terms of imports of ova. These tasks are fundamental in the context of the overall sustainability of the salmon industry in Ireland.

The FHU plays an important statutory role concerning the control of listed diseases in Ireland, and also works with industry to encourage ongoing compliance with a Code of Practice for non-listed diseases, thereby supporting the sustainable operation of all aquaculture establishments in the country.

> The maintenance by all Irish aquaculture production businesses of a fish health management plan is integral to ensuring that Ireland's high-level aquatic animal health status will be maintained, and aquatic diseases controlled. IFA Aquaculture and industry stakeholders work collaboratively with the FHU as part of the Marine Institute/ IFA Fish Health Liaison Group. This group provides a forum for direct communication between the Marine Institute and the finfish industry with a view to ensuring the development of a strategic plan for fish health management in Ireland and identifying a targeted approach to applied research needs on industry issues as they arise.
>
> **Teresa Morrissey, Executive Secretary, Irish Farmers Association Aquaculture**



CASE STUDY

Acquiring key geophysical marine survey data in Ireland's South Coast Designated Maritime Area Plan (DMAP) to inform offshore wind infrastructure planning

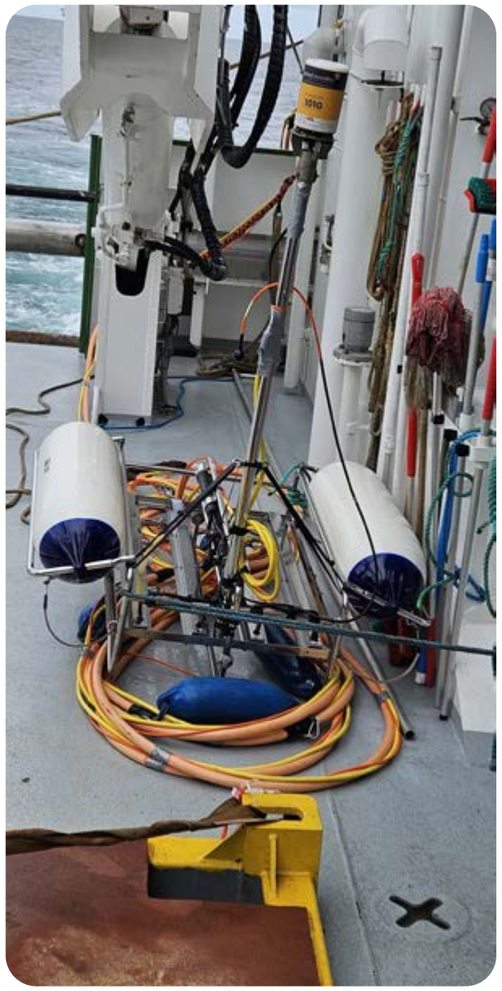
Designated Maritime Area Plans (DMAPs) provide for the sustainable development of offshore wind energy through consideration of environmental protection and existing marine users and activities.

> The requirement for technical and scientific advice from the Marine Institute to support offshore wind development in Irish waters has been increasing, in tandem with new national energy policies.

The Future Framework for Offshore Renewable Energy (ORE), published by the Government in May 2024, outlined the key objectives driving development of Ireland's considerable offshore resources:

1. Decarbonising the Irish economy in line with legally binding national and international climate ambitions;
2. Ensuring long-term energy security; and,
3. Developing green industrial opportunities for energy utilisation and for export markets.

Strategic Priorities impacted:
1: Transforming Our Knowledge, Advice and Services
2: Meeting Climate, Biodiversity and Security Challenges
4: Leading the Digital Ocean Transformation
5: Supporting Ireland's Blue Economy

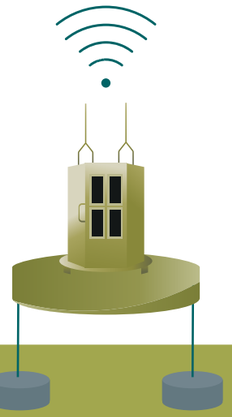


Ambitious targets have been set for the delivery of ORE in Ireland's exclusive economic zone: 20GW by 2040; and at least 37GW in total by 2050 – six times Ireland's current electricity demand. Ireland's policy in this area will also contribute to Europe's goal of making the EU climate-neutral by 2050, in line with the Paris Agreement.

In development of the South Coast DMAP – the first DMAP in Ireland – the Marine Institute acquired and supplied key geophysical marine survey data for the Department of the Environment, Climate and Communications (DECC) to de-risk the 2025 ORESS 2.1 and 2.2 auctions for developers. In support of future ORE decision making, the Marine Institute also developed an easy-to-use digital tool to manage ORE related data as part of the Offshore Wind Energy Programme.

Work on acquiring the geophysical marine survey data began with the provision of the INFOMAR derived DMAP boundary and the commissioning of related desk studies in 2023 and 2024 to investigate survey noise impact on fisheries and to determine the publicly available geophysical data status in the DMAP. The collation of licence application documentation was commissioned, enabling DECC to apply to Marine Area Regulatory Authority (MARA) for a maritime usage licence for the required survey work.

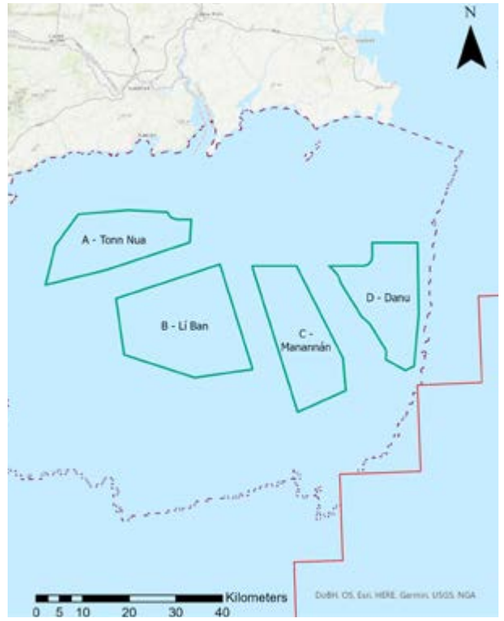
52 vessel days were assigned on the national research vessel, RV *Tom Crean*. Two very successful survey campaigns were undertaken between July and early September 2024. These were scheduled ahead of the annual herring spawning season later in the year to minimise any impact on fishing activity in the area.



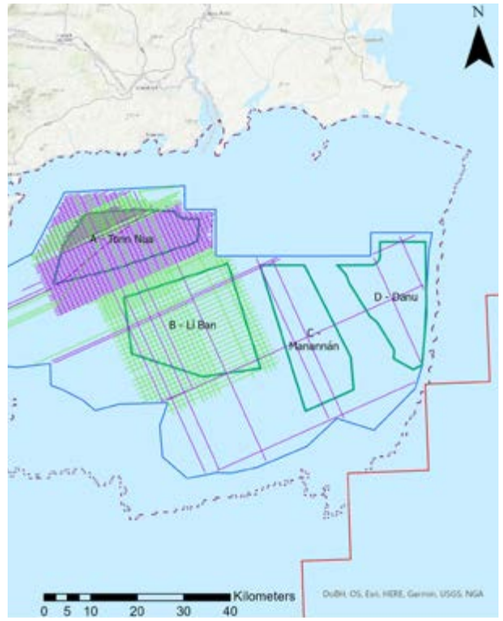
In total, 4,742 survey line kilometres of ultra-high resolution multi-channel seismic (UHRS) data, sub-bottom profile, and multibeam data were acquired. Processed data show complex geology in the area, with varying depth to bedrock, buried sediment channel features, and mobile surface sediments including large sand waves.

Tonn Nua (Site A – highest priority) was fully mapped to specification and a significant portion of Li Ban (Site B) was also surveyed with a further higher resolution survey required to complete. Additional regional data was acquired in the transit corridor from Cork east to the above areas, and west and south into site C and D. These data will be integral to informing regional ground model development and de-risking the South Coast DMAP auction process in 2025.

To achieve the programme of geophysical survey work, several small and medium enterprises (SMES) were engaged including environmental scientists, geoscientists, hydrographers, marine mammal observers, and fisheries liaison officers.



Maritime Areas A to D proposed for offshore wind development in the South Coast DMAP



ORE Geophysical Survey production map of Ultra High Resolution Seismic data acquired by Marine Institute onboard RV *Tom Crean* in the South Coast DMAP during 2024

What impact is this work having?

While some historic localised research projects had been undertaken, this was the first systematic multichannel ultra-high resolution reconnaissance seismic survey undertaken in the south coast area, and the first such survey by the State, increasing government capacity to directly deliver necessary baseline data to accelerate offshore wind development.

Access to a single state acquired dataset mitigated the need for interested ORE companies to undertake their own reconnaissance surveys. This avoids the cumulative effects that would have been associated with multiple similar surveys.

The data gathered by the Marine Institute is invaluable in informing infrastructure emplacement planning and installation options, future industry survey requirements, and in securing a competitive auction for the first of the Plan-Led wind energy sites (planned for 2025) and the best energy unit pricing for the State.

Aside from assisting DECC in the upcoming auction process, the data and information exchange with Eirgrid has been beneficial in informing their infrastructure planning (cable and sub-station), their survey planning, and their public and fisheries engagement approach.

Following public consultation periods, the South Coast DMAP was approved by the Houses of the Oireachtas in October 2024.

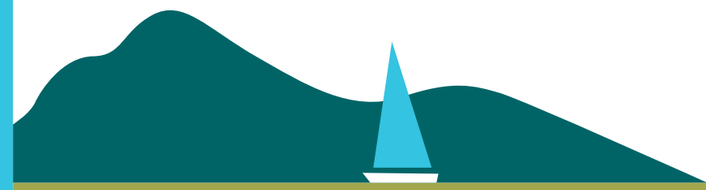
The Marine Institute demonstrated through this work that it has the technical capacity, and domain knowledge to further develop national survey infrastructure and capabilities. It also demonstrated the Institute's competence in management, processing, integration, and dissemination of the associated data, and in building national capacity to support future government requirements, whether DMAP or auction development related, or planning or compliance specific.

The successful delivery of the survey campaign has helped to heighten industry confidence in the State's ability to deliver a Plan-Led ORE Regime, building on the Phase 1 bid success attributed to INFOMAR data availability.

The near survey-live ArcGIS online project developed by the team will prove to be a key tool in demonstrating the survey achievements and data outputs, and in planning any such future activities.

An **ORE Digital Support Tool** was developed in 2024 by the Marine Institute Information Services and Development team for the Offshore Environment & Future Development team in the Department of the Environment, Communications and Climate Action (DECC). The team needed an easy-to-use internal digital tool to provide a single point of access to relevant marine data for teams in the division. The requirement included the provision of controlled access to working data with some basic spatial analysis capabilities that can develop as requirements arise. More than 100 datasets, originating from a range of programmes, were reused and allowed the rapid development of the tool.

> The ORE Digital Tool has been implemented successfully, in partnership with the Marine Institute, and provides the Department of the Environment, Climate and Communications team with easy access to usable, visual and high-quality data that can be shared across teams. The ultimate purpose is to support decision-makers and policy-makers with marine spatial planning for ORE. In particular, the tool will support the designation of maritime areas suitable for ORE development and policy in the context of the plan-led regime for ORE. This has enabled a better understanding of many of the criteria and considerations related to ORE development in marine areas and will be an important support for future decisions concerning ORE policy.
>
> **Jo Coloe, Department of the Environment, Climate and Communications ORE Data & Surveying Team**



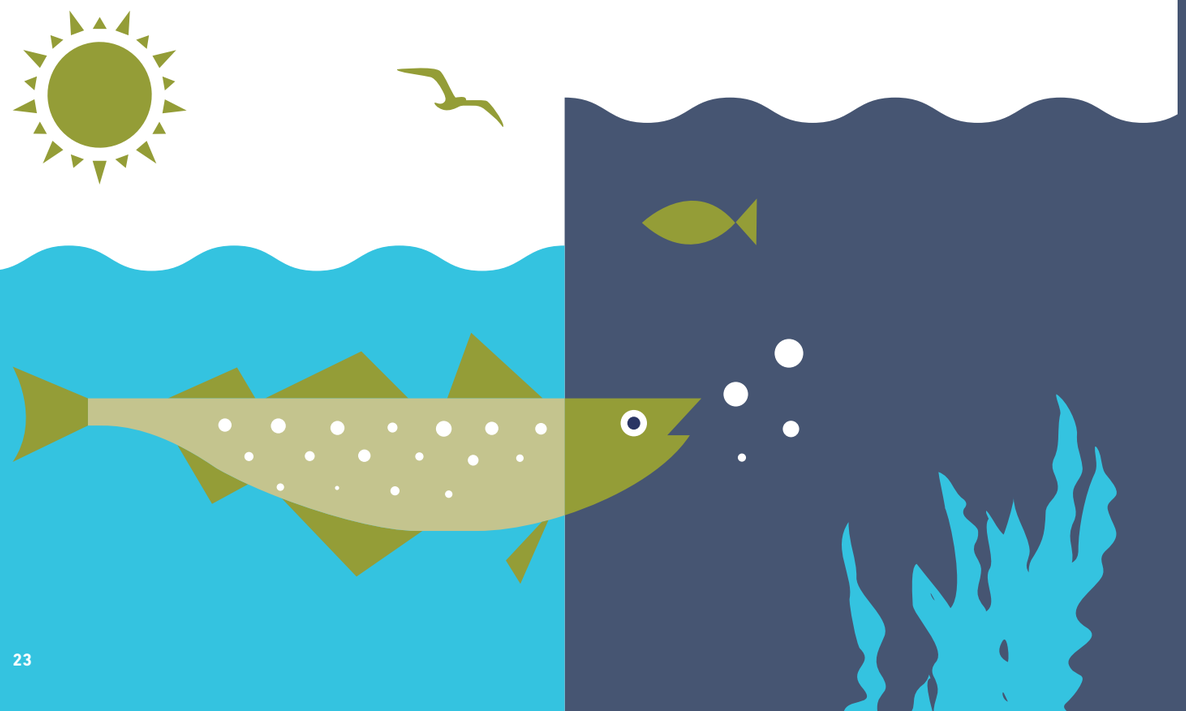
Strategic Priority 2

Meeting Climate, Biodiversity and Seafood Security Challenges

Leveraging Ireland's geographic location at Europe's frontier with the Atlantic, the Marine Institute is a key player in the national effort needed to meet the ambitious commitments and targets set out in Ireland's Climate Action Plan 2024.

Robust advice and operational forecasting on our changing ocean and climate are essential for Government to make effective policies and management decisions to address a range of issues and challenges. These include changing fish distributions, seafood security, low carbon economy, sea-level rise, flooding and, increasingly, extreme weather events.

To meet these challenges, the Marine Institute is continually developing new research partnerships and service delivery arrangements with Government and its agencies, as well as investing in global and national observation and data collection infrastructure. The European Maritime, Fisheries and Aquaculture Fund (EMFAF) programme serves as a key enabler in addressing sectoral challenges linked to climate change and biodiversity.



KEY HIGHLIGHTS FROM 2024

RV *Celtic Explorer* Travels to Greenland for Glacier Research Survey

In July, the RV *Celtic Explorer* set sail to west Greenland to facilitate a collaborative research survey between American universities. The voyage took the research vessel to remote locations beyond its typical expeditions in Irish waters, for scientists to observe how glaciers are changing, using innovative technology.

Understanding the detailed mechanics of moraine-building (moraines are produced when sediment builds up at the termini of outlet glaciers) will allow for far more accurate sea-level projecting models of ice sheets to be built, furthering our resilience to climate change.

Collecting Data on Ocean Health with Annual Ocean Climate Survey

The Marine Institute's annual Ocean Climate Survey took place from 22 June to 5 July, collecting essential physical and chemical information on the health of the ocean, and monitoring changes with time. Each year, the Survey focuses on deep waters off Ireland's west coast, particularly in the Rockall Trough, as well as shallower areas of our continental shelf.

Essential Ocean Variable data was collected from the sea surface down to full ocean depth. The survey was completed successfully, despite encountering a significant summer storm with waves more than six metres high. The data collected feeds into regional and global studies (North Atlantic – ICES and the Global Ocean Observing System), enhancing understanding of ocean changes over time.

Providing Vital Weather and Climate Data

The Irish Marine Data Buoy Observation Network (IMDBON) is a network of five offshore marine observation buoys around Ireland. Since 2001, it has been reporting hourly weather measurements of air temperature, humidity, atmospheric pressure, wind speed and direction, as well as sea surface temperature, wave height and wave period. The Network's data is used by Met Éireann's forecasting systems, shared globally through the World Meteorological Organisation's Global Telecommunications System, and quality controlled for climatological purposes.

The IMDBON has improved Ireland's ability to monitor key Essential Climate Variables (ECVs) on an operational basis and strengthens Ireland's capacity to respond to climate and weather-related challenges. As well as weather forecasting, the Network provides vital data for shipping bulletins, gale and swell warnings for seafarers, oceanographic and environmental monitoring, climate observations, public information, and research.

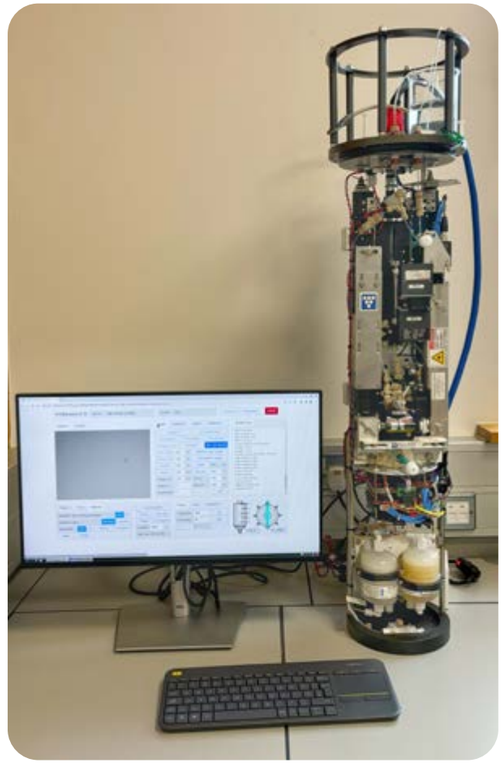
Protecting Species and Stocks

The Marine Institute implements the European Maritime, Fisheries and Aquaculture Fund's Marine Biodiversity Scheme through an approved series of nine fisheries and seven aquaculture related projects. An exemplary project examines the 'Management of the Crayfish Fishery to Protect Critically Endangered Species', and aims to resolve the issue of by-catch of endangered species, reduce interaction between set net fisheries and wildlife (seals, porpoises, dolphin) and endangered species (skates and rays), to assess crayfish stocks, and to develop low impact, viable and sustainable pot fisheries. Progress was made on all seven work packages in 2024, demonstrating tangible steps towards marine biodiversity conservation.

A major new European project, coordinated by the Marine Institute and funded by the Horizon Europe programme, launched in February. Marine Beacon addresses gaps in our understanding of how bycatch impacts Protected, Endangered and Threatened species in the Atlantic, and will develop methods to better monitor and mitigate these impacts. Marine Beacon involves 21 research, technology, and fisheries partners from nine countries to work across our regional seas. This collaboration will ensure that new monitoring and mitigation tools are effective and feasible, achieve long-term application and impact, and deliver healthier seas and more sustainable fisheries.

New remote sensing instrument to observe offshore Harmful Algal Bloom events

A new in-situ remote sensing instrument, which has the capacity of imaging up to 10,000 plankton species in each seawater sample, was successfully installed and deployed aboard the RV *Tom Crean* during the Marine Institute's annual phytoplankton coastal survey in August 2024. The Imaging Flow Cytobot significantly enhances the Phytoplankton team's abilities and capacities to detect and observe Harmful Algal Bloom (HAB) events and species occurring offshore. Identifying HAB events and their potential to affect inshore aquaculture operations enables the team to issue advanced warnings and alerts. These are of huge benefit to shellfish producers/processors, fisheries management and competent authorities, assisting in decision making and risk management to mitigate against socio economic losses and harm to marine ecosystems.



Monitoring Long-Term Oceanic Data

The global Argo programme is the first-ever global in-situ ocean observing network in the history of oceanography. With its high-quality sensors, global spatial and temporal coverage, and large depth range, Argo is well-suited to monitor year to year fluctuations and long-term trends in ocean heat content.

Argo data is now the most abundant source of underwater temperature, salinity and pressure profiles in the ocean. This data helps scientists understand how the physical state of the ocean is changing over time and is used by weather and climate centres to help understand the way the oceans affect climate. The Marine Institute's contribution to the global programme, through Euro-Argo ERIC, consists of 14 floats and has delivered 3,628 salinity and temperature profiles (as of 17 December 2024) from the water surface to minus 2,000 metres depth. This data contributes to climate science and policy on a global scale.

Furthering Information and Related Research on Marine

Protected Areas

The Marine Institute's Advanced Mapping Services team, in collaboration with University College Cork (UCC) and the Centre for Environment, Fisheries and Aquaculture Science (CEFAS), hosted a Marine Protected Areas (MPA) workshop and funded Remote Operated Vehicle deployments. This work is building on AI based data analytics research collaboration with the University of Plymouth and CEFAS, involving automated Sea Pen identification in historic Irish *Nephrops* survey video data.

The Marine Institute supported the Celtic Sea's sensitivity analysis, which is the report upon which the evidence base for Spatial Planning Areas (SPAs) in the Celtic Sea will be based. The Institute is also involved with several Higher Education funded projects working on MPAs such as BioProtect.

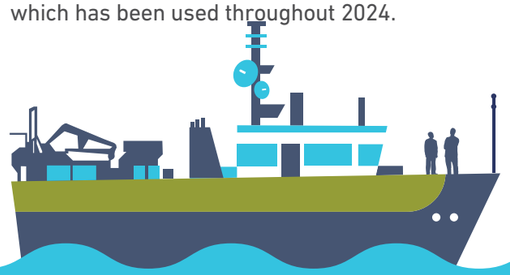
Providing Crucial Data for Seafood Security

The Marine Institute provides the Department of Agriculture, Food and the Marine with annual sustainability statements for over 70 commercially exploited species, forming the basis of Ireland's fishery resource policies. This information ensures Ireland's seafood industry remains viable, underpinning its global reputation for sustainable practices.

Providing Climate Projections to Inform Decision-Making

The JPI-Oceans/JPI-Climate funded CE2COAST project ended in 2024. This project involved the Marine Institute utilising its Celtic Sea Ocean model to carry out climate projections. The project generated high-resolution gridded ocean physics and biogeochemistry data for the period 1993 – 2021, and projection data for 2015 – 2075. CE2COAST and the previous BIOCELTIC project has built important climate modelling capacity, which has been used throughout 2024.

Funded by the European Maritime, Fisheries and Aquaculture Fund (EMFAF), the ocean climate modelling team developed a new kilometre-scale ocean model of the Irish Exclusive Economic Zone (EEZ). This model will provide ocean climate projections under different emission scenarios, enabling fisheries and aquaculture sectors to plan adaptations for climate change impacts. The data will also underpin sectoral climate services and serve as a critical resource for policy decisions.



CASE STUDY

Marine Institute success in tagging extremely rare angel shark species

Data from the electronic tags on two angel sharks – tagged by the Marine Institute in autumn 2024 – will be fundamental in developing conservation plans for the species in Irish and European waters.

In 2022, the Marine Institute began a large-scale fish tracking (telemetry) study in Tralee Bay, Co. Kerry. One of the core priorities of this research was to investigate the movements and behaviour of endangered elasmobranchs (sharks, rays and skates) such as undulate ray, common stingray, flapper skate and angel shark, within the bay, and attempt to identify why this location is so important for these species.

The project also sets out to investigate the interaction of these species with local commercial fisheries and to identify methods to reduce bycatch of these animals.

Tralee Bay has been described as a 'jewel in the crown' of Irish marine life due to the presence of some of the rarest shark, skate and ray species in Europe. These include flapper skate and angel shark, which are critically endangered. Reported numbers of the angel shark, which has a lifespan of up to 35 – 40 years, have declined dramatically since the 1960s and sightings today are rare.

The tagging project within Tralee Bay involves working closely with local fishermen. As part of the ongoing research, two angel sharks were successfully tagged and released in Tralee Bay by the Marine Institute in autumn 2024.

It was a ground-breaking development for marine conservation in Ireland as this was the first (and second) time ever that an angel shark has been fitted with an electronic tag in Irish waters.

Strategic Priorities impacted:
2: Meeting Climate, Biodiversity and Security Challenges
3: Delivering Impact Through Research and Innovation

Local fisherman Michael Peter Hennessy was on his fishing boat, along with Marine Institute staff when they were able to carefully bring two angel sharks (one male and one female) on board, one week apart. They were each tagged with a Pop-off Satellite Archival Tag (PSAT) by the Marine Institute before being released safely back into the water.

The electronic tags will remain attached to the angel sharks for 12 months as they log key information. After this, the tags will automatically detach from the sharks and float to the surface.

The data stored in the tag will begin transmitting back to the Marine Institute scientists who can plot where the individual sharks have been over the previous 12 months. It is hoped that more angel shark specimens will be similarly tagged in 2025.

The tagging is part of a larger project on reducing the effects of fisheries on non-target species, which involves teams of observers working at sea with fishermen. The project is funded by the Department of Agriculture, Food and the Marine and the European Maritime Fisheries and Aquaculture Fund (EMFAF).

What impact is this work having?

The Pop-off Satellite Archival Tags on the angel sharks will give vital data to help scientists understand the movements of the species, their migrations, where they feed and where they might breed.

The electronic data from this tagging and others like it in the programme are also central to developing conservation plans for rare and endangered species, including the designation of Marine Protected Areas. The data will be fundamental for future conservation strategies, aiming to safeguard the survival of the rare angel shark in Irish and European waters

The angel shark tagging was communicated by the Marine Institute to a wide audience (including an interview on RTÉ Radio One's Morning Ireland), raising awareness about the tagging programme, the angel shark species itself, and the importance of conserving marine species.

Another impact of the tagging programme is that the Marine Institute has developed expertise over the past few years to the degree that it's now the preferred team for the International Commission for the Conservation of Atlantic Tuna (ICCAT) Satellite Tagging Programme. Work has also developed with a group of partners in the Loughs Agency and third level institutes, who rely on Marine Institute authorisations to undertake the skilled process of capturing, tagging and releasing unharmed live animals.

> Few, if any, of us will ever see an angel shark in the water, and even if we did, it may not mean much. So why care? Because their presence – and, most importantly, their ability to successfully breed – is a good indicator that the seas are doing well.

Environmental journalist Ella McSweeney in her *Irish Times* article, "Angel sharks are now so rare that maritime scientists can go an entire career without seeing one."

Read the ***Irish Times*** article

Watch Video on YouTube

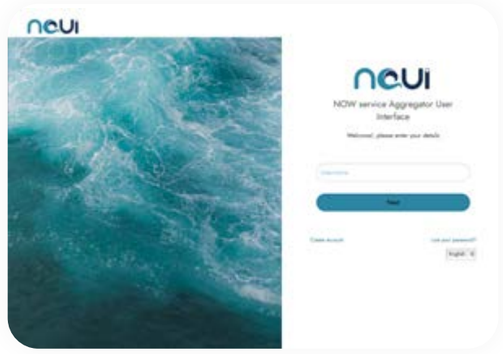
CASE STUDY

Operational coastal modelling service in support of biodiversity restoration and oyster aquaculture in Galway Bay

The Marine Institute's ocean observing and modelling programme provides deeper understanding of how ocean conditions have evolved over past years and helps to predict how the marine environment may evolve under different climate scenarios. One such service in Galway Bay is helping to support oyster aquaculture and aid the restoration of wild native oysters in the bay.

Galway Bay has a population of European native oyster (Ostrea edulis) that is depleted relative to its historic levels when it supported a commercial fishery for centuries, along with a wide range of bivalve mariculture production sites. To aid the restoration of wild native oyster and to support oyster farming in the bay, it's crucial to identify areas suitable for both oyster farming and for oyster settlements, based on the prevailing environmental conditions.

Strategic Priorities impacted:
1: Transforming Our Knowledge, Advice and Services
2: Meeting Climate, Biodiversity and Security Challenges
3: Delivering Impact Through Research and Innovation
4: Leading the Digital Ocean Transformation
5: Supporting Ireland's Blue Economy



To support these aims, the Marine Institute partnered with NOW Systems (Spain) to develop an online platform that provides information on hydrodynamic conditions in Galway Bay. The BIODIVER-COAST project is funded by Mercator Ocean International under the Copernicus Marine Service User Engagement Programme 2022-2028. It began in July 2023 and runs until January 2025.

The platform is a web oceanographic service (biodiver.naui.io) which helps overcome challenges in achieving sustainable bivalve mariculture, oyster ground restoration, and restoration of biodiversity in Galway Bay. The challenges include disease outbreaks, siltation, low salinity events and, in the past, poor fisheries management.

The purpose of BIODIVER-COAST is two-fold: to identify areas with suitable habitat for both oyster farming and for oyster settlements based on the prevailing environmental conditions, and to provide information on upcoming unfavourable conditions, such as low salinity events (which can be caused by occasional or sustained high river freshwater inputs) and heatwaves, so oyster farmers can take actions to protect their stocks.

With the climate mapping service, oyster farmers can now identify how, over the last 10 years, the conditions change, both in terms of long-term trends and short-term variability. They can relate these changes in conditions to the impacts they have in the area.

This information is useful in understanding the inter- and intra-annual dynamics in Galway Bay. It allows the identification of areas under the influence of freshwater, and areas that have suitable conditions of bottom shear stress and kinetic energy for oysters. Importantly, the data also identifies areas prone to excessive warming during heatwaves.

All of these aspects are of concern, as they increase oyster mortality. A mortality model applied to the 10 years of model data across the entire Galway Bay shows that many, but not all, coastal locations have clearly increased mortalities, mostly in the areas of freshwater discharges, whereas, seaward of estuaries, the temperature and salinity do not appear to add to mortality of oysters. An oyster mortality model, which calculates mortality based on salinity, temperature and exposure time, has also been built to develop a map of the estimated 10-year total mortality throughout Galway Bay.

The forecasting service on the platform is customisable, with a traffic light warning system where green represents safe conditions, orange shows the condition is of minor concern, and red indicates the conditions are of major concern, based on the thresholds defined by individual end users.

What impact is BIODIVER-COAST having?

In the short-term, with the help of the forecasting system, oyster farmers in Galway Bay can make better informed decisions whether to handle the oysters or not, based on the events that may increase mortality such as the heatwave of June 2023.

In this case, the oyster farmers were able to see in advance that the temperature was going up by 4-5 degrees and they were able to stop handling and put in place measures to try to protect the stock.

Apart from the heatwave of June 2023, the analysis of the model 10 year hindcast showed that previous increased mortality events were caused by unusually low salinities. One such event took place in February and March 2020 when the salinity remained at low values in the south-east part of the bay, where oyster farms are located. Thanks to the modelling service, the oyster farmers were able to relate the high mortalities experienced at several sites to the low salinity event, caused by high rainfall accumulations at the time.

Stakeholders also use the modelling service for Galway Bay for backtracking coliform bacteria contamination observed at oyster farms (when they occur). One such event took place in late October 2024, when contaminated clams were identified at Killeenaran production site.

Backtracking simulations showed high river inputs into the bay during the days on the run up to the event and that immediately prior to the event, the production site remained under the influence of waters coming from the Mutton Island and River Corrib mouth areas.

A follow on project, BIODIVER-COAST 2, is being funded under the same programme and will run until July 2026. Main developments are: geographical extension to Dublin Bay, provision of biogeochemical variables for Galway and Dublin Bays, and marine heatwaves monitoring in Galway Bay.

> The web oceanographic service has had enormous positive impacts on proactive shellfish management in Galway Bay. Forecasting of low salinity events and mapping of sustainable habitats for native oyster restoration efforts have increased the sustainability of aquaculture in the region and the capacity to restore native oyster reefs in Inner Galway Bay, respectively.
>
> **Diarmuid Kelly, Founding Member & Chair, Cuan Beo Environmental CLG**

CASE STUDY

Our Shared Ocean – Building Research Partnerships Between Ireland and Small Island Developing States (SIDS)

Our Shared Ocean is part of Ireland's response to the environmental and socio-economic issues facing many Small Island Developing States (SIDS). These island nations, collectively home to around 50 million people, are dealing with specific environmental challenges brought about by climate change and are particularly vulnerable to sea-level rises and extreme weather events.

SIDS often share further characteristics including having small, geographically isolated populations; separation from international markets leading to increased transport costs; and higher than average debt burdens. Due to their smaller land sizes and often large ocean territories, many SIDS also rely strongly on extractive ocean economy activities such as fisheries, which are themselves impacted by changing climate and ocean conditions. All these factors contribute to a reduced ability to prioritise and resource climate change mitigation and to develop practical solutions.

Developing community engagement and ocean literacy campaigns in Haiti.

Our Shared Ocean addresses these challenges by building strategic research partnerships with SIDS and fostering collaborative international marine research. The programme is managed by the Marine Institute and funded by Irish Aid, Ireland's programme for overseas development. The programme helps Ireland to meet its commitments set out under the Global Ireland initiative and including our second strategy for partnering with SIDS.

Strategic Priorities impacted:
2: Meeting Climate, Biodiversity & Seafood Security Challenges
3: Delivering Impact Through Research and Innovation
7: Our Organisation, Committing to Sustainability

What types of projects are taking place?

A wide variety of projects have been developed under three main themes – Oceans & Climate, Inclusive & Sustainable Blue Economy, and Marine Policy & Ocean Governance. The project types include Mobility and Travel grants, Masters Scholarships, Research Fellowships, and project awards.

Our projects are developed directly by researchers from SIDS in response to specific local island concerns or co-designed with Ireland's research community. The projects provide practical training opportunities, knowledge-transfer and capacity development. They leverage the expertise Ireland, as a small island, has accrued in its marine sector.

Projects to date include Blue Carbon studies in Fiji and Belize; Nature-based Solutions for coastal adaptation in Timor-Leste; coral reef and fish biodiversity studies in Grenada, Palau and Guam; predictions of hurricane intensity across the Caribbean, and a citizen science project in Haiti.

In May 2024, the Our Shared Ocean Podcast was launched – bringing stories of lived experience of the environmental and economic challenges facing many Small Island Developing States. Each podcast episode takes a deep dive into a particular Our Shared Ocean project, with a range of guests talking through the challenges and solutions being worked on in the course of their project.

Monitoring and measuring healthy coral reef in Guam.

What impact is Our Shared Ocean having?

To date, 19 projects and more than 80 travel grants have been awarded through competitive funding calls to partners in 27 SIDS and regional partners. Although many of the projects have not yet concluded, there is clear growth, ambition and capacity-development demonstrated in their individual objectives.

An excellent example of this is the partnership between University of Belize and University College Cork, co-hosting a Research Fellowship to map vital coastal seagrass ecosystems. The same partnership now includes additional Belizean partners and a Masters scholarship element, showing how projects are building capacity and demonstrating self-sustained growth.

Another successful partnership between St George's University in Grenada and the Atlantic Technological University (ATU) has seen the graduation of the first Our Shared Ocean Masters student with a MSc. in Applied Marine Conservation, another two students will graduate in 2025. The students undertook a taught component in Galway before developing research projects in Grenada.

Similarly, an Irish-led project-team based in ATU Sligo has developed research partnerships across multiple campuses in the University of West Indies that combine ecosystem adaptation and digital technologies, including artificial intelligence, to enhance climate resilience.

These kinds of inter-related, multidisciplinary projects bring together the expertise of multiple international partners to work together on practical solutions to regional climate threats.

Our Shared Ocean now supports a wide range of direct-funded projects with multiple SIDS research partners. This empowers the SIDS researchers to focus fully on the specific research challenges and fosters parity of esteem between them and their Irish counterparts.

These direct-funded projects include a citizen science project in Haiti, focused on building vital marine education and community engagement platforms.

In the western Pacific, Our Shared Ocean is funding the development of a digital tool where biodiversity data from multiple islands can be uploaded in real-time to facilitate fisheries management decisions during damaging marine heatwaves. Several regional SIDS and island partners are involved in this project, all of whom will benefit from this integrated data-to-management tool.

Since 2022, Our Shared Ocean has worked to remove barriers to all SIDS engaging in this international funding opportunity, and has increased the number of eligible island nations from 38 to 58. This includes non-Official Development Assistance (ODA) states and certain Regional Territories, recognising that some islands are jurisdictionally isolated and disadvantaged from accessing aid.

Our Shared Ocean was endorsed as a 'transformative Decade Action' by the United Nations Decade of Ocean Science for Sustainable Development. This has raised the profile of the project internationally, by providing a platform to communicate the vision and values of the project, connect with international research networks, and better promote and establish funding or training opportunities within SIDS.

The collaboration has resulted in the contribution to, and creation of, an online self-led training course in Co-Design, which details an approach to problem-solving focused on inclusion and engagement with all SIDS stakeholders within a particular field or focus.

> "Our new automated database, developed through Our Shared Ocean funding, rapidly evaluates the impacts of marine heatwaves on coral reefs enabling effective management decisions in real-time."

Dr Peter Houk, Professor of Coral Reef and Fisheries Ecology Marine Laboratory, University of Guam Marine Laboratory

> "My research into Nature-Based Solutions and the effects of climate-induced risk experienced by coastal communities in both Timor-Leste and Ireland has applications for all Small Island Developing States which are suffering disproportionately under a changing climate. The Our Shared Ocean programme funds this vital research and has enabled me to continue my studies in Ireland while focusing on issues of my home island of Timor-Leste."

Arsenia Da Craz, PhD candidate, co-supervised by the Department of Geography at University of Galway and the Centre for Climate Change and Biodiversity Timor-Leste

Learn more about Our Shared Ocean

Strategic Priority 3

Delivering Impact Through Research and Innovation

The Marine Institute has a multi-faceted role as a national research body. The Institute is a research performing organisation, a research funding organisation and, in line with its mandate, has a key role in coordinating, supporting and promoting Irish-based marine researchers and research.

As a research performer, the Institute research covers a wide range of areas such as marine resource management, ecosystem assessments, biodiversity, bycatch of endangered species, fish genetics, climate change and its impact on our oceans and catchments, maritime economics and marine socio-economics, food safety and fish health, seabed mapping and data, digital twins, and spatial technologies.

Research and innovation are critical in providing knowledge to inform government policy, decision-making and sectoral development across a broad range of marine and maritime areas. The Marine Institute fosters and supports impactful research, providing critical knowledge and innovation for public policy and sectoral development.

KEY HIGHLIGHTS FROM 2024:

New investment of €14.1 million in 2024 in Marine Research

The Institute's competitive Marine Research Funding Programme invested a total of €14.1 million (€4.7 million for ship-time and €9.4 million for project awards) across a range of new calls and awards in 2024.

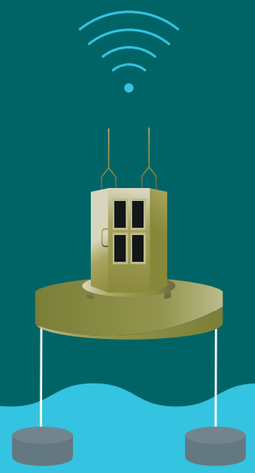
Two flagship calls were launched during the year. A total of €3.3 million was committed to fund 10 projects under the Marine Institute's Industry-Led Awards scheme. These awards will help marine and maritime Small and Medium Enterprises to build their Research & Development capabilities and develop new products, processes and Intellectual Property.

This is a key Marine Institute programme in supporting economic development within our ocean economy. The primary beneficiaries are the successful companies but impact is also felt by researchers in Higher Education Institutes who partner with these companies and deliver these research projects and outcomes.

The second flagship call launched during 2024 was Changing Use of Ireland's Ocean: Measuring and monitoring the impacts on our marine biodiversity and ecosystems, with an investment of €3 million for two awards.

Enhancing Research Capabilities: 610 Marine Research Days Supported on Board our National Research Vessels

The Marine Institute's research vessel fleet supported 610 days of marine research during 2024, serving internal users, Irish academic researchers, state agencies, and international collaborators. The vessels, RV *Celtic Explorer* and RV *Tom Crean*, provided essential infrastructure to complete the Institute's Data Collection Framework Obligations, climate surveys in Ireland, the Labrador Sea and Greenland, as well as working towards the eventual completion of Ireland's seabed map (INFOMAR) and new seabed data collection in support of Ireland's Offshore Renewable Energy ambitions.



Developing Ocean Knowledge: Ocean Knowledge 2030 Strategy and Conference

The Marine Institute, in line with its mandate, developed Ireland's new marine research and innovation strategy, Ocean Knowledge 2030, in partnership with a wide range of stakeholders.

The strategy's implementation over the period 2025-2030 (also coordinated by the Marine Institute) will promote and facilitate close coordination and cooperation across the system to ensure that investments are optimised and targeted at the most strategically important areas, addressing critical knowledge gaps and delivering knowledge, data and evidence to underpin marine policy and management.

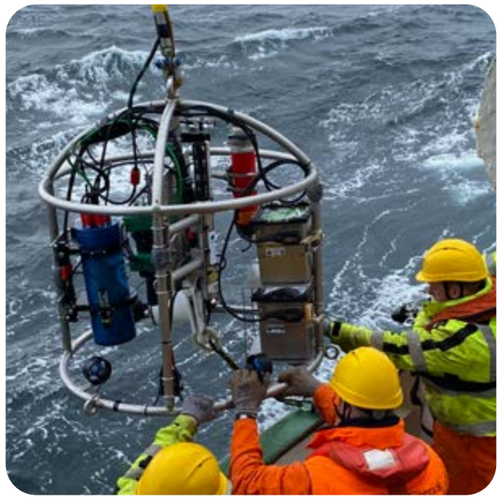
A dedicated conference in Dublin in November 2024 presented an advanced draft of the strategy. The event was attended by more than 260 people and provided a unique forum for exchange of information, fostering synergies and collaboration, and identifying key knowledge, research and innovation actions to address ocean sustainability and blue economy challenges.

Ocean Knowledge 2030 (see photo credits for details).

Ocean Knowledge 2030 (see photo credits for details).

Enhancing Ocean Floor Observations: ALaMo Programme

In 2024, the Marine Institute collaborated with colleagues from Spain (IEO-CSIC; ENVISAD) and Portugal (IPMA) to develop the Atlantic arc Lander Monitoring (ALaMo) programme, a network of low-cost lander arrays for ocean floor observations. The successful deployment of landers during the Marine Institute AIMSIR cruise, in partnership with IEO and ENVISAD, enhances ocean monitoring in Irish waters. This supports effective spatial and temporal monitoring of bottom marine habitats in Marine Protected Areas (MPAs) and fishing grounds off the Irish coast.



Advancing Sustainable Aquaculture ASTRAL Project

The ASTRAL project, which concluded in 2024, developed integrated multi-trophic aquaculture (IMTA) production chains for the Atlantic markets in Europe, South America and South Africa.

The EU-funded project resulted in the creation of a series of production manuals aimed to further enhance the sustainable development of European aquaculture (meeting the aims of the European Green Deal, the EU guidelines for sustainable aquaculture development, and the Irish national strategic plan for sustainable aquaculture development 2030).

Knowledge transfer workshops with 60-70 attendees were organised by the Marine Institute at the Atlantic Aquaculture Conferences in Brazil (2023) and South Africa (2024). Further dissemination events were held at the European Aquaculture Society annual conferences over the course of the project.

Marine Institute Leading €14.5 Million AQUARIUS Project to Facilitate Marine and Fresh Water Research

The four-year long AQUARIUS project - Aquatic Research Infrastructure Services for the health and protection of our unique oceans, seas and freshwater ecosystems - was launched in March. It provides a highly comprehensive suite of integrated research infrastructures appropriate to addressing significant challenges for the long-term sustainability of our oceans, seas and freshwater ecosystems.

Claire Commins, Aodhán Fitzgerald, Bernadette Ní Chonghaile and Frank Armstrong.

Aodhán Fitzgerald at AQUARIUS event.

The Europe-wide project will also include training for third-level students, with all data collected within the project fed into central European data infrastructures to inform future policy and decision making at a European and national level. AQUARIUS, co-ordinated by the Research Vessel Operations team in the Marine Institute, launched its first call for applications in November. A total of €8.1 million is being offered across two Transnational Access Calls in this funding round.

Decarbonising Maritime Transport and Port Activities

Through the Irish Maritime Development Office (IMDO) the Marine Institute was centrally involved in a decarbonisation related research initiative – the EU Atlantic Interreg project called SMARTDEC (Smart Clusters for Maritime Decarbonisation).

Work commenced in 2024, aiming to create a catalogue of services, solutions and technologies available in the Atlantic coast regions, notably from start-ups and SMEs, in favour of the decarbonisation of maritime transport and port activities and in order to boost the adoption of new technologies.

Securing EU Funding: €69.6 million for Marine Research

The Marine Institute optimises national engagement and success in the Horizon Europe Framework programme via a range of channels.

At the midpoint of the Programme, Irish research groups, SMEs and industry have to-date drawn down €69.6 million in funding for marine and maritime related research. This marks significant progress when compared to the total drawdown for the whole of previous programme H2020 was €91.5 million and for FP7, it was €48 million).

Marine Institute Research Facility in Newport, Co Mayo.

CASE STUDY

The Marine Research Programme – building new research capacity and driving innovation in the Irish marine sector

The Marine Institute's Marine Research Programme is a key component of the organisation's research function. Providing funding for projects via competitive calls, research funded under this Programme supports sustainable economic growth, promotes innovation, protects marine ecosystems, and informs policy, governance and regulation of the Irish marine sector.

Dr Gerard McCarthy, Lead Researcher on the A4 Project.

> The Programme, managed by the Policy, Information and Research Service (PIRS) area of the Institute and funded by the Government of Ireland, makes investments of circa €8-10 million per year.

Since 2014, a total of €80 million has been awarded to a wide variety of organisations, academic institutions and businesses. This has funded vital research projects that are improving our scientific knowledge and providing solutions to issues and challenges in the marine sector.

Funding is provided in a number of ways including:

- Industry-led awards
- Equipment/infrastructure awards
- Postdoctoral fellowships
- Postgraduate scholarships (Cullen Scheme)
- Networking and marine research communication awards
- Research for policy awards
- Large-scale project awards
- Ship-time awards (access to the national research vessels)

Strategic Priorities impacted:
2: Meeting Climate, Biodiversity and Security Challenges
3: Delivering Impact Through Research and Innovation
5: Supporting Ireland's Blue Economy

What impact is the Marine Research Programme having?

The Marine Institute is currently carrying out an analysis of the impacts of the €80 million investment through the Programme between 2014 and 2023, and the results will be published in 2025.

Three projects, serving as examples of the Programme's many investments, are detailed below:

The A4 Project: Aigéin, Aeráid and Athrú Atlantaigh (Oceans, Climate, and Atlantic Change)

The A4 Project, led by Dr Gerard McCarthy, Maynooth University, with Trinity College Dublin, was awarded €2 million from the 2018 Marine Research Programme call.

The project commenced in 2019 and is due to complete in 2025. It is studying changes in the Atlantic Meridional Overturning Circulation (AMOC), the main ocean current system in the Atlantic Ocean that plays an important role in the climate system. The project also considers scenarios for Ireland due to a weakening AMOC.

Research is in three areas: 1) understanding Atlantic variability and its connection to the Irish shelf, 2) advancing knowledge of Irish sea level change in an Atlantic context, and 3) development of predictive capacity on decadal timescales for planning and management, which will be integrated to provide comprehensive, stakeholder-focused reports.

Funding supports eight full-time researchers (one fellow, three post-docs and four PhD students). To date, the project has generated 108 outputs including an impressive 61 peer-reviewed publications.

The team's research on sea level rise, sea surface temperature and the increased frequency of severe weather events (e.g. storm surges and marine heatwaves) is providing important scientific evidence for local and national government to plan and implement policy changes for the Irish population to adapt to a changing climate. It is expected that at the project's completion in 2025, even more impacts will be derived from the research findings.

The A4 Project team has featured widely in the media including interviews on radio, television and podcasts e.g. *The Irish Times, The Journal and Will Ireland Survive 2050?*, an RTÉ documentary on climate change.

The Blue Carbon Initiative – BlueC and Quest (both led by University College Dublin)

The Blue Carbon Initiative was launched by the Marine Institute in 2021 to investigate further the potential of Ireland's blue carbon resource to mitigate climate change, the impacts of human activities and climate change on this important ecosystem, and also to address research questions relevant to Irish, European and global marine, climate, nature and biodiversity policy objectives.

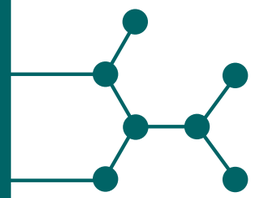
Additional investment from co-funder the Environmental Protection Agency has enabled two projects to be funded for five years (from June 2022 to May 2027).

The first is Blue C (Investigating Ireland's Blue Carbon Potential Through a Scientific, Socioeconomic and Legislative Approach), a partnership between University College Dublin (UCD), University of Galway and University College Cork, with grant-aid of €1.6 million.

This project assesses the carbon sequestration of Ireland's existing saltmarsh and seagrass habitats and seeks to establish a long-term monitoring programme for these habitats. It also evaluates potential new blue carbon ecosystems, quantifies the socio-economic, biodiversity, coastal protection aspects of these blue carbon habitats and looks to develop long-term management strategies for these habitats.

Dr Grace Cott (Blue C) and Dr Mark Coughlan (Quest).

Quest is a collaboration between UCD, Dublin City University and Geological Survey of Norway (non-funded partner), and was awarded €1 million. It aims to quantify the current stocks of carbon in sediments, identify potential carbon 'hotspots', and examine the threats to carbon storage in sediments from human activity (e.g. trawling).



It also takes a look at hydrodynamic effect (e.g. from increased storms), methane release in shallow waters, and aims to develop both long-term management strategies for sediment habitats and standardised approaches to quantifying carbon in Irish sediments.

The two investments – Blue C and Quest – support 12 full-time researchers (five post-docs, six PhD students and one Masters student). To date, the two projects have generated 38 outputs, including seven peer-reviewed publications. Funding was also awarded to UCD for 28 ship days under the Marine Institute's Ship-Time Programme to complete research surveys for the projects in 2022, 2023 and 2024.

Additional impacts include Dr Grace Cott, Principal Investigator for Blue C, being featured in a short ocean documentary filmed at Derrymore saltmarsh in 2023. This was aired 15 times on Euronews TV channel. Both Dr Cott (BlueC) and Dr Anthony Grey (Quest) have been involved as experts in preparing a PI Oceans Concept Paper on Blue Carbon. This paper has since been approved by the JPI Oceans Management Board as a Joint Action.

Dr Mark Coughlan (Quest) leveraged additional funding from the Science Foundation Ireland Research Centre in Applied Geosciences (iCRAG) to fund the 'Taking Stock' project in collaboration with Dr. Geertje Schuitema and led by Post-Doctoral Researcher Dr. Tomas Buitendijk at UCD. This Project was completed in January 2024, and has led to the publication of a Policy Brief.

The Navigate Project

University College Cork (MaREI Centre, ERI and the School of Law) was a recipient of funding in 2017 under the Marine Institute's Ocean Law and Marine Governance call.

Funding of €800,000 was awarded with the aim of building and strengthening national capacity in Ireland on ocean law and marine governance. Specific areas of research have included exploring the marine governance issues arising for Ireland as a result of Brexit (particularly in relation to fisheries), the options for climate-proofing future marine policy, and identifying opportunities for joining up approaches under key marine legislative instruments.

> The funding provided by the Marine Research Programme for the A4 Project has delivered critical research for Ireland in the fields of Atlantic Meridional Overturning Circulation (AMOC) and sea level rise. The A4 Project is a collaboration led by Maynooth University with Trinity College Dublin, working closely with the OCIS team in the Marine Institute, and international collaborators in the US, UK and across Europe. The research produced on AMOC change has set the questions internationally, documenting the critical ongoing changes, and asking about the implications for climate. Research produced on sea level has delivered the first long term studies of mean sea level around Ireland for almost 30 years.

Dr Gerard McCarthy,
Lead researcher of the A4 Project

The funding has supported three researchers (a Principal Investigator, part-time post-doc and a PhD student). The project concluded in 2023 with 199 outputs including 36 peer-reviewed publications. The project team leveraged €5.7 million in additional funding from 2017 to 2023.

Other impacts include participation in relevant conferences and policy development fora, producing conference papers, and securing further research funding (particularly in multidisciplinary projects where governance expertise would assist in supporting the sustainable development of Ireland's marine sectors and conservation of its biodiversity).

> As the sectoral demand for marine space continues to increase and the potential for Ireland to sustainably exploit our marine resource grows, research in marine law and ocean governance becomes more and more critical, particularly as we also need to meet international and national commitments on climate and biodiversity. The funding provided by the Marine Institute's Marine Research Programme for the Navigate project enabled research to be undertaken that has informed policy at national and European levels on Brexit, Marine Protected Areas, Maritime Spatial Planning, Offshore Renewable Energy, International Environmental Law, Climate Change Adaptation and Coastal Resilience.

Dr Anne Marie O'Hagan, MaREI Centre,
Environmental Research Institute,
University College Cork

CASE STUDY

Enabling leading-edge multidisciplinary research and nurturing the future of marine science – the Eurofleets+ project

A major project coordinated by the Research Vessels Operations team in the Marine Institute, Eurofleets+ has now been completed. It was the third iteration in the Eurofleets initiative. Eurofleets created an alliance of European marine research infrastructure, and facilitated open free-of-charge access to that infrastructure to meet the evolving needs of the research and industrial communities.

For the Marine Institute, coordinating the Eurofleets+ project assisted in securing the coordination role in an even larger Horizon Europe funded Transnational Access project – AQUARIUS – which commenced in 2024 and is enabling access to marine and freshwater research infrastructures.

European and international researchers were able to apply to Eurofleets+ for several access programmes through a single-entry application form. Access was granted based on scientific excellence, covering all fields of marine science and giving priority to research on sustainable, clean and healthy oceans. Proposals had to meet strict eligibility criteria and underwent a robust scientific and logistic evaluation process.

Through the programme, access was provided to a wide fleet of state-of-the-art research vessels and a range of autonomous underwater vehicles (AUVs) and deep-water Remotely Operated Vehicles (ROVs). This enabled researchers, including early-career researchers and those from less equipped countries, to access infrastructure across 28 funded scientific cruises, resulting in a total of 268 research days.

Strategic Priorities impacted:
2: Meeting Climate, Biodiversity and Security Challenges
3: Delivering Impact Through Research and Innovation
4: Leading the Digital Ocean Transformation

Eurofleets+ Funded cruise IOPD scientists onboard the RV ***Sanna.***

A total of 315 researchers from 33 different nationalities benefitted from these Transnational Access (TNA) programmes. The SEA (Ship-time and marine Equipment Application) Programme funded nine Early Career Principal Investigators, with a total of 144 early career scientists participating across the TNA programmes.

Twelve main scientific disciplines were studied, varying from New Technologies to Climate Dynamics, with Geology and Geochemistry being the most studied disciplines. Nearly 60% of cruises were multidisciplinary, with most including three or more disciplines.

The study areas were in the North Atlantic, the Mediterranean, the Baltic Sea and included the Gulf Stream (North West Atlantic) and the North Island area in New Zealand, providing access to areas previously not available to European researchers in past projects.

In addition to these Transnational Access activities, the project also undertook joint research activities in challenging and highly relevant areas, including deep ocean research and exploration, data management, and enabling future virtual access.

The Open Data Policy and the use of the Eurofleets Automatic Reporting System (EARS) data acquisition system ensured the collection of over 160 datasets of multidisciplinary data across the world oceans, which will benefit researchers into the future, and inform policymakers.

The Eurofleets+ Education and Training Programme offered opportunities to early career technicians, marine scientists and (future) Research Infrastructure managers and contributed towards the objective of 'Building a Career in Blue Growth'.

Over the course of the project, six Floating Universities, seven Blue Skills Labs, and a Marine Internship Programme were organised. A total of 14 individual courses were implemented, attended by 19 different nationalities with a total of 102 participants benefiting from the programme. Educational materials and resources resulting from the training courses were included in the Eurofleets+ Ocean Classroom, an online ocean literacy resource that is a key legacy of the initiative.

The Eurofleets+ project received funding from the EU H2020 Research and Innovation Programme.

What impact is Eurofleets+ having?

AUV being deployed from the RV ***Tangaroa*** during Eurofleets+ Funded Cruise Focus

Granting scientists access to cutting-edge research vessels and marine infrastructure has led to impactful and ground-breaking work by these researchers. Their contributions have enriched our understanding of the marine world, from deep sea ecosystems to climate patterns.

For instance, the deep-sea scientific research undertaken on the Eurofleets+ funded iMAR research cruise in the mid-Atlantic was instrumental in the establishment of the largest network of marine protected areas in the North Atlantic. The RV *Pelagia* from the Royal Netherlands Institute of Sea Research was provided for this survey in 2021.

Eurofleets' commitment to nurturing the future generation of marine scientists has translated into early career scientists having the knowledge and skills necessary to tackle the complex challenges of marine research. The education initiatives have ensured a steady influx of talent into the field.

Not only has access to Eurofleets+ benefitted individual researchers but it also contributes to the advancement of science and technology on a larger scale, with a long-term impact.

The Eurofleets+ joint research activities have been the driving force behind innovations in data management, deep-sea equipment development, and innovative exploration strategies. These initiatives have catapulted ocean research to new heights, producing a more comprehensive understanding of the ocean's complex ecosystems.

The project aligned with sustainable development goals and global policy frameworks. Its contributions to sustainable ocean governance have been pivotal in addressing urgent environmental issues such as climate change, marine conservation, and sustainable fisheries.

Building upon the achievements of the Eurofleets+ project, the goal is to establish a Eurofleets Research Infrastructure, an AISBL (Association Internationale Sans But Lucratif), to formalise and enhance the coordination and utilisation of European-funded research vessel activities on a pan-European level.

> "It's truly rewarding to see that scientific explorations of the deep sea provided a solid foundation for the expansion of the network of offshore Marine Protected Areas in the Azores, ensuring the preservation of these unique ecosystems for future generations."

Dr Telmo Morato, Principal Investigator of the Eurofleets+ funded iMAR research cruise to the Mid-Atlantic Ridge, in the Azores region.

Watch Video on YouTube

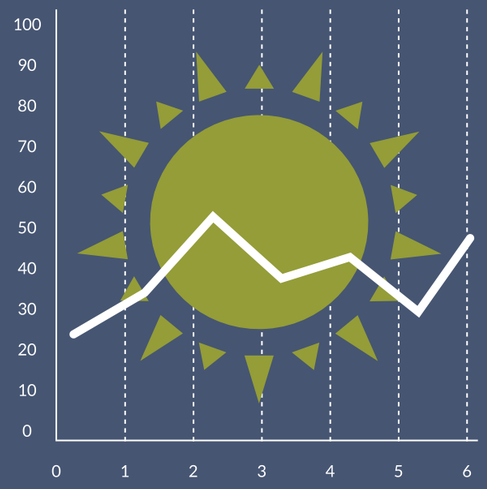
Strategic Priority 4

Leading the Digital Ocean Transformation

The Marine Institute has an important leadership role in collecting, analysing, and sharing marine data to deliver cutting-edge, easily accessible eGovernment services. This builds on an increasingly connected and collaborative national marine digital services platform, underpinned by national marine data resources, coupled with strong data governance and security.

With an accelerating pace of digitalisation, the capacity to collect, process and apply marine scientific data has expanded rapidly. The Marine Institute is leading the way in providing a range of advanced and easily accessible data and digital marine services.

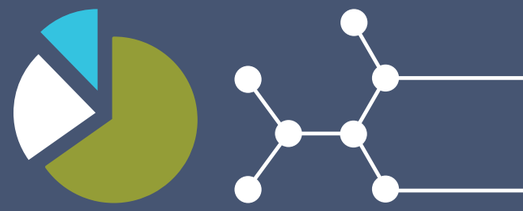
By adopting next-generation technologies and new ways or working, the Institute is delivering its services more effectively and collaboratively, and in ways that better meet the needs of our key clients and stakeholders.



KEY HIGHLIGHTS FROM 2024:

Improving the Institute's Extensive Data Services

Upgrades to the Marine Institute's Data Services in 2024 enabled seamless access to over 750 catalogued datasets, 105 updated web services, and 15 thematic online viewers and dashboards. These upgrades enable easier access to national marine data, fostering open data and information sharing and cross-organisational collaboration.



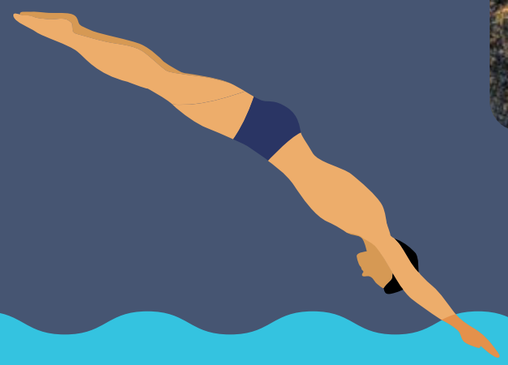
Advancing Applications for Acoustic Surveys

A new application was developed during 2024 to make it easier to record biological data during acoustic surveys. These surveys provide a key data source for assessment of pelagic species.

The new software is significantly more intuitive and includes more quality assurance features. It also simplifies data sharing and incorporates tools to manage genetic sampling data, which is becoming increasingly important for marine research.

Raising Public Awareness of Marine Conditions with new Galway Bay QR Code Plaques

The Marine Institute, in collaboration with Cuan Beo, developed plaques with Quick Response (QR) codes that were installed at 17 locations around Galway Bay frequented by swimmers and shoreline walkers. These plaques provide real-time data on marine conditions, including temperature, salinity, tidal stages, and likely bird sightings. By offering accurate forecasts for recreational users, this initiative enhances safety and fosters a deeper connection to marine environments.



Improving Marine Institute Data Processes and Connectivity

The Institute's Data Management Quality Management Framework provides quality assurance and process improvement for more than 120 data processes. 93 of these processes were reviewed in the past year, for the purposes of process improvement and quality control.

With support from HEAnet, data connectivity speeds were increased tenfold, enabling faster access to Marine Institute data and services, and significantly improving user experience.

Delivering Offshore Renewable Energy Data to Industry

The Marine Institute partnered with the Department of the Environment, Climate and Communications (DECC) to deliver the first Offshore Renewable Energy reconnaissance geophysical survey data directly to industry.

In addition, innovative satellite telecommunications solutions were deployed earlier in the year to enhance seismic data quality assurance and expedited delivery. These advancements ensure that DECC and clients receive accurate, actionable data faster than ever before.

Building Stakeholder Confidence with CoreTrustSeal Accreditation

The Marine Institute received accreditation from CoreTrustSeal for its National Oceanographic Data Centre (NODC) programme, making the Institute only the second Irish repository to be accredited. CoreTrustSeal (CTS) is a well-recognised global certification – the accreditation will further build stakeholder confidence and enhance the reputation of the NODC as an internationally recognised scientific marine data centre, with strong data governance and quality assurance.

CASE STUDY

Developing the integrated evidence base and digital services for national marine programmes: AQUAMIS aquaculture licensing viewers

Realising a marine evidence base requires access to high-quality marine data from a wide range of sources, combined with the expertise to interpret the data and convert it into usable information.

While data are the key raw ingredient in this process, the availability of scientific and technical expertise is important to analyse and make available the data as usable information. This information is then presented in suitable ways that can be better understood and used by different stakeholders. This case study takes a closer look at one example of a Marine Institute supported information service, the AQUAMIS Aquaculture Licensing Viewers, and the impacts they have had.

Over the past four years, the Marine Institute has developed Aquaculture Licensing Viewers, including a private and a public viewer, to support the Department of Agriculture, Food and the Marine's (DAFM's) AQUAMIS programme. The viewers were developed in conjunction with the Department's Aquaculture and Foreshore Management Division (AFMD) and Marine Engineering Division (MED).

Overall, the work set out to enhance the efficiency of the aquaculture licensing review process through digitalisation. The private viewer provides a number of internal teams with shared information and analysis capabilities for new licence applications, while the external viewer provides accessible information on licensed sites to the general public.

Strategic Priorities impacted:
3: Delivering Impact Through Research and Innovation
4: Leading the Digital Ocean Transformation
5: Supporting Ireland's Blue Economy

An older system for aquaculture licensing relied on a local database system, with spatial representation handled individually as needed. The new system modernised the structure of aquaculture licensing data, leveraging advanced Geographical Information Systems (GIS), and database management technologies.

It integrates robust quality-assured datasets including aquaculture licence areas, environmental data, and supporting contextual spatial information from several organisations including the National Parks and Wildlife Service (NPWS), Department of Housing, Local Government and Heritage (DHLGH), and the Environmental Protection Agency (EPA).

The platform allows for regular updates to reflect the latest policy and data updates, ensuring the accuracy and currency of the data. The new viewers were designed with a user-friendly interface to support use across several teams and support access across devices, including mobile.

Users can get access to a single view of the current data required through an efficient map navigation interface. They can also use data analysis and search tools to find sites and analyse possible impacts e.g. to show the level of activities within a particular area, and users can also output map and tabular information use reporting options. This can help communicate the information used to make decisions.

The AQUAMIS Aquaculture Licensing Viewers continue to be improved. A major update in 2024, facilitated through close collaboration between the Marine Institute and DAFM MED, supports the licence data processing and publication process to be fully deployed by the Department. In the updated workflow, aquaculture data entered through the new DAFM system can be processed and securely integrated into the web viewers more efficiently.

What impact are the new Licensing Viewers having?

This work has delivered an online service providing accessible, up-to-date spatial data related to aquaculture licensing activities with important relevant contextual information.

An internal version of the AQUAMIS viewer, used to support decision making for new applications, has over 30 active internal users across DAFM and Marine Institute teams.

The improvements ensure that a single view of the latest data needed, including AQUAMIS licensing data and the additional contextual information from various sources, is made available across the relevant teams to aid relevant decision making. This has also helped to reduce the time needed to access data for the review of new licensing application.

An external version of the viewers, showing currently licensed aquaculture sites, is available online at dafm-maps.marine.ie/aquaculture-viewer/ and has been accessed more than 4,000 times by over 1,400 users in 2024.

> “The AQUAMIS licensing viewers have greatly simplified the sharing and access to data needed for review of foreshore licensing applications. The viewers have been a very successful addition to the AQUAMIS programme, with the improved access to information helping to make the process more joined-up and efficient.”
>
> **Raphael Crowley, who coordinated the DAFM Marine Engineering Division input to the project and is now a key user of the system.**

CASE STUDY

Further digitalisation of the Irish maritime industry – the International Fast and Secure Trade Lane project

The Irish Maritime Development Office (IMDO) at the Marine Institute is leading the way on opportunities for the enhanced digitalisation of the Irish maritime industry, engaging with ports, industry, agencies, regulatory authorities and Government departments.

> Digitalisation opportunities help to maintain and build the maritime industry's competitiveness, efficiency, resilience and sustainability.

A recent major initiative is the International Fast and Secure Trade Lane (IFSTL) project, which began as a series of workshops organised by the IMDO with ports and industry and developed into a major three-year EU Connecting Europe Facility funded project.

The IFSTL project began in 2020, led by the IMDO/Marine Institute with Dublin Port and Ports of Normandie as project partners. France is Ireland's closest trading partner in the EU and central to our connectivity to mainland Europe. Therefore, it's vital that the maritime corridors between Ireland and France operate as efficiently and effectively as possible.

The wider project group included Irish Ferries, Stena Line, Brittany Ferries, Dixon International Transport and ACE Transport, all of whom were involved in the field operational trials.

Strategic Priorities impacted:
3: Delivering Impact Through Research and Innovation
4: Leading the Digital Ocean Transformation
5: Supporting Ireland's Blue Economy

The stakeholders, consisting of industry, ports and agencies, were critical in informing the direction of the project and ensuring that it tested real world scenarios and interventions so that a realistic estimation of impact could be determined.

Throughout the project, the stakeholder group identified bottlenecks and how these processes could most benefit from digitalisation.

Edel O'Connor (IMDO), Liam Lacey (IMDO), Simone Siria (Circle Group), Alexio Picco (Circle Group) and Phillipe Deiss (Ports de Normandie) at the IFSTL final event.

The outcomes include a set of improved IFSTL logistic processes and a set of existing and validated IFSTL software modules that will be used on the Dublin to Cherbourg route. The IFSTL Masterplan was earmarked to develop policy recommendations for exploitation on other shipping routes. In essence, providing a roadmap for the project's expansion to other ports and routes.

The project concluded in 2023 but its work continues through a Marine Institute funded post-doctoral fellowship at the Insight Centre for Data Analytics at Dublin City University (DCU). This post-doctoral researcher will assist the IMDO and the Department of Transport with the development of a roadmap for facilitating the digital transformation of the sector.

Cherbourg

What impact is this work having?

Key impacts that were measured in the IFSTL project included:

- Improvements in operating processes (gate and yard) time efficiency
- Improvements in service quality levels (reduction in queueing and waiting times per truck at gate access)
- Better use of yard space (reduction in congestion)

From a sustainability perspective, there was a decrease in queues and overall kilometres travelled, which reduced emissions and enhanced air quality at the terminal.

The project identified both the economic and environmental benefits through digitalising a small part of the value chain. It signalled that further digitalisation could bring even more benefits to ports, industry and the economy on a whole.

In parallel with the project, Irish ports have also been making their own individual investments in Smart Port technologies.

The project also created a platform for multi-stakeholder collaboration to help to identify challenges, bottlenecks and a future pathway for the industry. Ongoing engagement with and between industry stakeholders is critical to the efficiency and effectiveness of the Irish network as a whole.

A clear understanding of the long-term costs and benefits of digitalisation will drive future investment decisions. The research gained through the IFSTL project and now the work being undertaken by the post-doctoral researcher are already helping to address this issue.

> “In planning for the future, Dublin Port has benefited from the research and evidence base that has been accumulated by the IMDO. Our response to digitalisation in the maritime industry, the provision of on-shore power supply and the development of port capacity to meet future demand has been informed by the valuable work of the IMDO and the impacts that work has had on maritime policy.”
>
> **Barry O’Connell, Chief Executive Officer of Dublin Port**

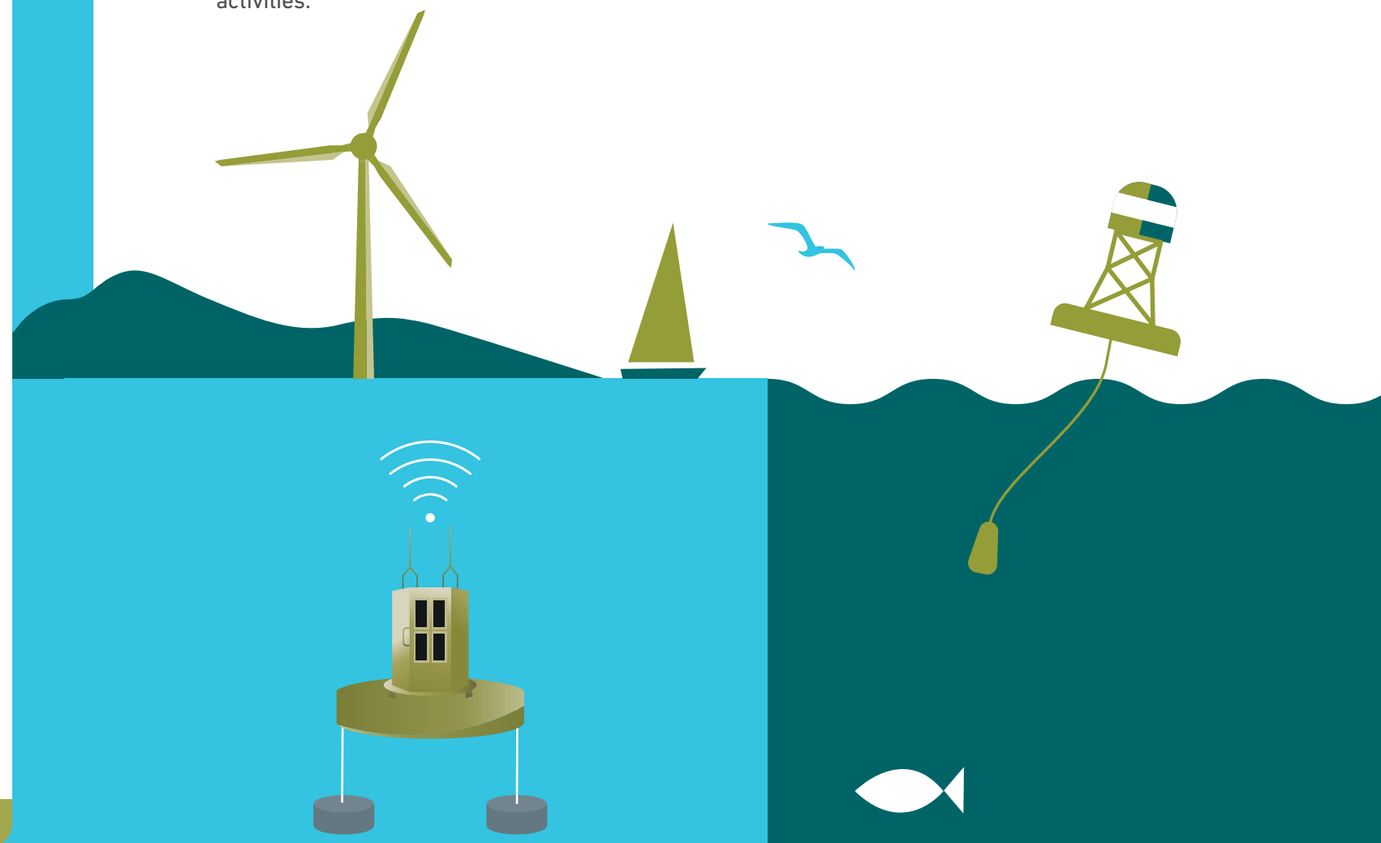
Strategic Priority 5

Supporting Ireland’s Blue Economy

The blue economy encompasses the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, while preserving the health of the ocean ecosystem.

The blue economy is increasingly knowledge-driven, leveraging the potential of marine technology, data, information and associated digital products and services. As the world transitions to a climate-neutral economy, there’s a move away from traditional business models and practices to less energy-intensive, more sustainable and where possible, ‘regenerative’ activities.

Through the provision of scientific, technical, economic and digital services, the Marine Institute supports the development of a sustainable blue economy across multiple marine and maritime sectors, including seafood, Offshore Renewable Energy (ORE), and maritime transport.



KEY HIGHLIGHTS FROM 2024:

Providing Insight: Ireland's Ocean Economy Report

The Marine Institute's Policy Information and Research Services (PIRS) works with University of Galway each year to publish an update on 'Ireland's Ocean Economy'. The 2024 report provided an update on the performance of 13 ocean-based industries covering seafood, transport, energy, manufacturing, engineering, retail, commerce, and tourism. The report underpins marine spatial planning, providing an evidence-based framework, to guide national decision making and governance.

This latest publication shows that Ireland's ocean economy achieved a turnover of €6.5 billion in 2023, contributing €2.7 billion in Gross Value Added (GVA) and supporting approximately 39,000 jobs. Other work carried out by PIRS in 2024 supporting Ireland's Blue Economy included an in-depth analysis of the nation's coastal economy, examining a range of socio-demographic indicators critical for policy and planning.

Fostering Industry Collaboration with Salmon Growers

Meetings with salmon growing companies were convened by Marine Environment and Food Safety Services (MEFSS) throughout 2024 to discuss relevant elements of the application of the Animal Health Law, and to ensure open ongoing communications with industry. These meetings have been very positive and collaborative.

Developing New Digital Models for Wave Climate Data

Due to an increase in data requests for wave climate data in Irish waters (mainly driven by increased activity in the Offshore Renewable Energy sector), the Marine Institute launched the Irish Shelf SWAN wave model. Spanning Ireland's Exclusive Economic Zone (EEZ), this advanced tool replaced the decade-old East Atlantic model. This enables a 30-year hindcast archive (1994-2023) of wave data and a daily nowcast and forecast of wave parameters, publicly accessible via the Marine Institute website.

Irish Maritime Transport Economist publication provides industry vital data

The Irish Maritime Development Office published the *Irish Maritime Transport Economist*, a comprehensive source of national maritime traffic, trade and global shipping market data. The publication provides an in-depth retrospective analysis of maritime freight volumes, cargoes and passenger freight volumes, and is a valuable reference source for the maritime industry.

Empowering Sustainable Fisheries with Scientific Stock Assessments

Through surveys, monitoring and sampling of fishing catch throughout 2024, the Marine Institute's Fisheries Ecosystems and Advisory Services (FEAS) provided objective stock status of critical marine fishing resources, using best available science. Only through standardised, routine monitoring and processes can the changing status of stocks, and how best to target them, be determined. The stock assessment work carried out by the Marine Institute enables the fishing industry to adapt strategies, optimise harvests and ensure the long-term sustainability, securing a cornerstone of Ireland's blue economy.

Shaping Maritime Education for the Future

Given the significant changes underway in the maritime industry, the Irish Maritime Development Office (IMDO) commissioned and completed a piece of work on behalf of the Department of Transport aiming to scope current and future education and training needs in the maritime industry.

It also set out to discover any gaps in the provision of relevant expertise. This piece of work has been extremely important in setting an agenda to be progressed for maritime training and education over the coming year.

CASE STUDY

Delivering best practice norovirus testing service to ensure the safety of Irish oysters for consumers worldwide

Norovirus remains the single most important food safety concern associated with the consumption of oysters. Since March 2018, to support oyster growers to produce the safest oysters possible, the Marine Institute, funded by Bord Iascaigh Mhara, has provided a norovirus testing service to members of the Irish Oyster Packers Group (IOPG) who export oysters throughout the world.

> Since the testing service began, the Marine Institute has analysed approximately 5,000 samples for norovirus. This data is used by oyster growers to produce risk management plans specifically tailored to their production areas and identify suitable mitigation steps to reduce risk to acceptable levels.

Norovirus is commonly known as the "winter vomiting bug" and is the most common cause of acute gastroenteritis globally. Oysters can become contaminated if grown in areas that are impacted by human wastewater discharges. By their nature, oysters accumulate the virus in their tissues and when eaten raw (which is usual for oysters), outbreaks of norovirus illness can occur.

There are currently no legal limits prescribed in food safety regulation for norovirus in oysters in the EU. However, despite this, Ireland has been proactive in dealing with this food safety issue.

Strategic Priorities impacted:
1: Transforming Our Knowledge, Advice and Services
3: Delivering Impact Through Research and Innovation
5: Supporting Ireland's Blue Economy

The norovirus testing programme allows Irish producers to confidently produce the safest possible oysters and supports their efforts to produce an internationally recognised high-quality product for sensitive international markets. The Marine Institute is the only laboratory on the island of Ireland that is accredited for the use of an internationally recognised standard method for the quantification of norovirus in oysters.

The Institute has supported the competent authorities as well as the oyster industry in dealing with outbreaks of norovirus associated with oysters. The lessons learned from these outbreaks and specific risk management projects with oyster farmers has resulted in a wider norovirus risk management programme funded by Bord Iascaigh Mhara (BIM) (MoU 2024 – 2028), of which norovirus testing in oysters is fundamental.

In addition, the norovirus testing service provided by the Institute increasingly supports investigation of food safety incidents in line with its role as National Reference Laboratory and its Service Level Agreement with the Food Safety Authority of Ireland.

The norovirus testing service has been funded by the European Maritime and Fisheries Fund (EMFF) and subsequently, the European Maritime Fisheries and Aquaculture Fund (EMFAF), administered by BIM.

What impact is the Norovirus Testing Service having?

The norovirus testing service helps Irish oyster producers to manage one of the major food safety risks confronting the sector and, ultimately, produce a safe product. The testing programme makes Irish oysters safer for consumption by people.

The service also has a positive impact in supporting Ireland's Blue Economy. Exports of Irish oysters were valued at €40 million in 2023. Trade of Irish oysters supports businesses and employment opportunities in rural communities throughout the country.

An oyster related food illness incident can have a devastating impact on individual businesses and, more generally, on the reputation of Irish oysters. The added food safety security that the world leading norovirus testing programme provides creates customer confidence in Irish oysters and gives businesses a competitive edge in sensitive international markets.

One of the impacts of introducing the norovirus testing programme in 2018 is that highly useful data has been generated. The Marine Institute now has the most comprehensive structured dataset for norovirus in Europe.

This provides a unique insight into the risk factors leading to norovirus contamination in oysters and the effectiveness of post-harvest treatments. Data from this testing and associated projects have contributed to several scientific publications which increase international knowledge of the risk factors involved with norovirus contamination in oysters and potential mitigation procedures.

This data also assists decision making by the competent authorities in Ireland and feeds into discussions at an EU level. This includes ongoing discussions regarding the introduction of an upper limit on an accept limit for norovirus in oysters in food safety regulations.

> "I cannot overstate how important the norovirus data provided to us by the Marine Institute is to our operation and it is no exaggeration to say that our business would not currently exist without access to this world leading facility. The data allows us to develop and implement the most effective control procedures possible. Our customers are aware of the norovirus risk associated with enjoying raw oysters but are increasingly looking for assurance in this regard. The weekly norovirus test results provided by the Marine Institute gives them the confidence to serve our oysters in some of the world's most prestigious restaurants. This has proved vital to accessing markets abroad including the valuable Middle and Far East's demand for premium fresh seafood."
>
> **Kian Louët-Feisser, Managing Director of Carlingford Oyster Company**

CASE STUDY

Determining the appropriate port capacity and infrastructure needed for delivery of Ireland's Offshore Renewable Energy ambitions

One of the most significant challenges facing Irish ports (and those around the world) is their necessary role in facilitating energy transition, in particular their part in supporting the roll-out of Offshore Renewable Energy (ORE) to meet national decarbonisation and energy generation targets. The Irish Maritime Development Office (IMDO) at the Marine Institute is providing an important research and analysis service to meet these challenges.

> Ireland has ambitious targets, set out by the Department of the Environment, Climate and Communications, which aim to deploy 5GW of ORE by 2030, 20GW by 2040, and 37GW by 2050. Research and analysis is vital to understand the future demands of Irish port infrastructure from the ORE sector, to ensure that the ports' responses are timely, efficient and competitive.

In parallel, the Department of Enterprise, Trade and Employment in 2024 launched 'Powering Prosperity – Ireland's Offshore Wind Industrial Strategy', the first strategy of its kind in Ireland and one in which ports will also play a central role in maximising supply chain opportunities and associated economic return to Ireland.

The IMDO in the Marine Institute is playing an integral role in determining the appropriate port capacity and infrastructure needed to provide the evidence-base for national policies and strategies.

Strategic Priorities impacted:
2: Meeting Climate, Biodiversity and Seafood Security Challenges
3: Delivering Impact Through Research and Innovation
5: Supporting Ireland's Blue Economy

Liam Lacey, Director of the IMDO, speaking at the Green Energy Ports Conference

To date, the IMDO has:

- Carried out research underpinning the policy statement on the facilitation of ORE in commercial ports in 2021
- Carried out research to determine the minimum port capacity required to meet Government ORE targets

It is currently:

- Contributing to advisory work being carried out by the European Investment Bank for the Department of Transport, assessing capacity demand and financing strategies for the development of ORE port infrastructure
- Engaging with the Department of Transport and Irish ports in order to help to secure funding from the EU's Connecting Europe Facility and other relevant funding mechanisms, for ORE port infrastructure

What impact is this work having?

The IMDO's extensive work in this area informs the Department of Transport and other stakeholders in relation to the most effective policy responses. It has shaped and will continue to shape national policy on delivering appropriate ORE port infrastructure, at a critical moment in its development, so that it's sufficient to meet emerging demand for this type of energy.

Ports are planning ways to support existing maritime freight transport and future proofing for upcoming challenges. The research and insights from the IMDO are helping greatly with this process, ensuring that long-term development of port infrastructure is reflective of the future capacity requirements for ports. This, in turn, helps to meet demands from existing businesses and those emerging from new sectors such as ORE.

Ultimately, this work helps to support Ireland's Blue Economy, ensuring the longevity and economic viability of these infrastructure assets, and their capacity to support existing and emerging industries into the future.

As well as providing vital research for policy and strategy, the IMDO has been working with the Department of Transport and ports to unlock funding from the EU's Connecting Europe Facility-Transport (CEF-T) and other funding mechanisms for port infrastructure that can assist in the delivery of Irish and EU ORE targets.

This is important as ports need large-scale cost-effective investment in order to rapidly develop specialist facilities and also to unlock social and economic development in regional energy hubs. These investment opportunities for ports help to maximise economic return (contributing to Ireland's Blue Economy) and allow the capacity needed for long-term targets to be met. Overall, these investments will result in increased prosperity for Irish ports and the successful delivery of ORE in Ireland.

What is Offshore Renewable Energy?

The ocean contains vast quantities of untapped renewable energy. When harnessed, these can provide potential for economic growth and job creation, and a more sustainable source of energy for our planet. There are three main types of Offshore Renewable Energy – **wave energy, tidal energy and offshore wind energy.**

IMDO visit to Eemshaven, Netherlands.

> The development of our state-of-the art container terminal at Ringaskiddy and our plans to facilitate the deployment of offshore wind turbines provide evidence of our ability and desire to grow the business of the Port of Cork for the benefit of our stakeholders and the broader Irish economy. Our ambitions are supported by the work of the IMDO. Through our collaboration with them, we've recently been successful in establishing a ports coordination group for Offshore Renewable Energy, attracting EU funding for projects of national strategic importance, and exploring the possibilities of cross-border cooperation to advance all-island interests in cruise tourism and offshore energy generation.

Conor Mowlds, Chief Commercial Officer of the Port of Cork

CASE STUDY

Harnessing Ireland's blue edge: empowering cross-sectoral innovation and growth through the Marine Ireland Industry Network

A joint initiative of the Marine Institute and Enterprise Ireland, the Marine Ireland Industry Network (MIIN) links together more than 250 diverse member organisations and 400 stakeholders from companies, research institutions, state organisations and government bodies.

MIIN brings together the many elements that make up 'Marine Ireland', enhancing the overall understanding of what Irish marine capabilities are, and showcasing Ireland's 'Blue Edge'.

Initially, the network focused primarily on certain cross-cutting and emerging sectors (marine technology and Offshore Renewable Energy). But the interest and momentum behind the network has grown to a much broader multi-sectoral grouping, with strong interest and links to companies operating in the blue bioeconomy.

Strategic Priority impacted:
5: Supporting Ireland's Blue Economy

The network fosters connection and facilitates knowledge exchange. By organising online and in-person networking events, providing a members' directory and a digital platform, MIIN has increased the profile of Ireland's marine businesses, and created opportunities for stakeholders to showcase innovations, explore new markets, and develop partnerships.

Small and Medium Enterprises (SMEs) have the opportunity to collaborate with a wide range of stakeholders such as universities and state agencies. Responding to a need from its members, MIIN focused its 2024 supports on the skills and capacity gaps currently being experienced in the marine sector. This was through a mixture of virtual events, and Higher Education Institute-Industry graduate placements and recruitment initiatives.

MIIN is jointly funded through the Marine Institute and Enterprise Ireland.

What impact is MIIN having?

Ireland's ocean industries generate approximately €6.5 billion in turnover and have a direct economic contribution, as measured by GVA, of €2.7 billion (*Ireland's Ocean Economy Report 2024*). Ireland's Ocean Economy provides direct employment to approximately 38,900 people.

The data shows that it is a growth area. Between 2012 and 2022, Ireland's ocean economy (in nominal values) experienced a 48% increase in turnover and a 31% rise in employment. The OECD has outlined the capacity for future employment creation and innovation, and the importance of emerging ocean-based industries with high growth and innovation potential. These industries are already addressing challenges such as energy security, environment, climate change and food security.

Máire Éinniú at MIIN event in Co Mayo.

Clearly, it is an important economic sector in Ireland that needs to be nurtured and encouraged to grow in a sustainable way.

The work of the Marine Ireland Industry Network meets this need in a very pragmatic way. Its approach, based on fostering collaboration, industry partnerships, and technological advancements, has led to impacts across a range of industries and companies, as evidenced by the many company testimonials and the feedback from the 2023 MIIN survey.

The network has also played a key role in helping Irish marine SMEs pivot to new markets (especially international markets) and adapt to industry shifts, particularly in offshore wind and renewable energy sectors.

For example, XOCEAN, an Irish company specialising in uncrewed surface vessels (USVs), uses MIIN's networking platforms to engage with international markets, offering its ocean data collection services to clients globally. The company's expansion, including its role in offshore wind projects in countries such as the UK and Norway and Australia, was supported by visibility and connections fostered through MIIN.

Another example of MIIN's impact is Inland and Coastal Marine Systems, which has leveraged the network's support to expand its operations in offshore wind energy infrastructure.

The company, known for fabricating and installing pontoon systems, used MIIN's networking capabilities to secure work in the UK, where it installed mooring systems for crew transfer vessels used in offshore wind farms. This has enabled the organisation to scale its business internationally more quickly and integrate more deeply into the renewable energy supply chain.

MIIN has also had an impact on providing companies with tools to modernise operations, access new funding streams, and adopt cutting-edge technologies, while building new cross-sectoral linkages. This has been achieved through conferences and webinars focusing on innovation and sustainability.

MIIN's digital platform is a crucial resource, offering companies a space to feature their services, products and innovations. This directory has made it easier for international buyers to access Irish marine capabilities, thereby accelerating the scaling of businesses and facilitating new market entries.

The strategic work of the MIIN has catalysed significant progress in Ireland's marine sector, providing companies with the tools, resources, and networks they need to thrive. MIIN has been impactful in enhancing Ireland's role in marine innovation and underpinning sustainable growth in the blue economy.

Discover more about Marine Ireland Industry Network

> "MIIN's networking events are crucial enablers of collaboration across the broad spectrum of marine industries in Ireland. These engagements allow us to connect with the right stakeholders to ensure sustainable growth."
>
> **Liam Curran, Enterprise Ireland**

Strategic Priority 6

Empowering Our People to Deliver Excellence

At the Marine Institute, our people are our greatest asset, and we have seen first-hand the impacts of promoting and investing in the development of our team members.

We are building a workplace and workforce for the future; one that is evolving with changing work practices, employee expectations, and service needs. We aim to be an employer of choice, attracting high-calibre staff, retaining existing team members, and fostering an environment where our people feel supported, enabled to innovate, and passionate about the work that we do.

The Marine Institute communicates and acts in line with our shared values, and is committed to, and will continue to invest in, structures that provide equal access and opportunities to all.

KEY HIGHLIGHTS FROM 2024:

High Retention Rates Reflect Our Culture

Newport Staff Day 2024

Our organisation takes pride in a high staff retention rate, with 34% of our staff having worked with us for more than 20 years and 57% for more than 10 years.

This reflects the culture and environment in our organisation including, in particular, our commitment to lifelong learning and supporting education and development from undergraduate to professional levels.

Equality, Diversity and Inclusion in our Workforce

We continue to advance our Equality, Diversity, and Inclusion Programme, celebrating difference and fostering opportunities for all. The Marine Institute Equality, Diversity and Inclusion group is extremely active and seeks to ensure representation from all staff grades, roles, backgrounds, service groups and Marine Institute sites. A key output for 2024 was the development of the Marine Institute *Equality, Diversity & Inclusion (EDI) Strategy and Action Plan* (including Gender Equality Plan) 2024-2027.

20 Years of Excellence Through People Certification

The Institute proudly retained platinum certification under the National Standards Authority of Ireland (NSAI) Excellence Through People (ETP) scheme. The organisation has been accredited for the 20th consecutive year. This milestone reinforces our position as a leader in human resource management, staff engagement, and innovation.

EXCELLENCE THROUGH PEOPLE PLATINUM ETP 1000:2017 NSAI Certified

Culture Night Volunteers at the Marine Institute

Prioritising Development, Achieving Global Impact

Dr Fiona Grant, Head of International Programmes at the Marine Institute, appointed as the Chair of the European Marine Board (EMB) in 2024

The Marine Institute is committed to the learning and development opportunities that directly benefit staff members in their personal and career progression, which also pay dividends for the organisation and our stakeholders. Marine Institute staff continued to lead international collaborations, chairing high profile ocean science committees and groups. These roles not only benefit the international community and have a positive impact on the Marine Institute's knowledge base and global reputation, but also help to progress the professional and personal development of the team members concerned.

CASE STUDY

From Summer Bursar to Quality Manager – a Marine Institute Team Member's Journey

The greatest asset that the Marine Institute has is its people – we are fortunate to have high-performing, talented and committed team members working with us.

Investing in our people through career development, along with training and professional learning, is key. Creating an inclusive environment, where people feel they are making a difference and are part of a team, is also an intrinsic part of our culture. Yvonne Bogan's journey with the Marine Institute over the past 22 years exemplifies our priority to Empower Our People to Deliver Excellence.

Strategic Priority impacted:
6: Empowering Our People to Deliver Excellence

Becoming a scientist

Yvonne is currently the Quality Manager, Team Leader for Marine Environment & Food Safety Services (MEFSS). Her passion for science began in secondary school.

"I had a really enthusiastic science teacher and from day one, I loved science. After my Leaving Cert, the choice was really easy for me on what to study at college – science!"

Yvonne studied for a BSc in Analytical Science at Letterkenny Institute of Technology (now Atlantic Technological University) where she developed an interest in the biotoxin area. She achieved an award for the best food safety related project for her degree project in marine biotoxins from the Food Safety Authority of Ireland.

While approaching her final exams, Yvonne was considering her next steps when the opportunity to apply for the Marine Institute Summer Bursary programme came up in 2002. The scheme gives undergraduate students valuable practical experience and the opportunity to learn from experts in their field, over a period of eight to twelve weeks during the summer.

"I was a bursar in the Shellfish Safety Section – in the biotoxin chemistry unit. My memories of that time are of really enjoying doing the laboratory work as I'd been doing much more the theoretical side of things at college. Being able to put things into practice in the lab was really beneficial for me."

"There was a good group of students there that year – it was great to get to know them and you didn't feel on your own. Some of the laboratory staff I was working with at that time are still here and that's very nice, to be in contact with the same people. The Bursary Programme started my career really and it made me want to progress on to study more about marine biotoxins, through doing a PhD."

Yvonne is one of a number of employees in the organisation who joined as Summer Bursars and continue working there years later.

Yvonne's interaction with the Marine Institute continued during her studies as she carried out some of her laboratory work in the biotoxin section. One of her PhD supervisors was also a team leader at the time in the Institute.

Yvonne began working in an analytical science role with the Environmental Protection Agency (EPA) in 2006 and then moved onto another role as regional quality manager, which introduced her to the areas of quality assurance and people management.

Joining the Marine Institute

In 2015, the Marine Institute advertised a Quality Manager role, and Yvonne applied for it and was successful.

"The job appealed to me because of the scientific and technical ability of the staff in the Institute. I had previously really enjoyed my time gaining knowledge and developing technical ability as a student and felt like I would continue to learn and develop while bringing my quality assurance experience to MEFSS."

Yvonne says the role was also a great fit for her because of the multiple scientific disciplines in the Marine Institute – everything from biotoxin chemistry to microbiology, molecular science to fish health, organic and inorganic chemistry, and lots more.

"Getting to work across these different science areas makes my job diverse and constantly changing," she says. "And having the experience of working in the laboratory earlier in my career, it made it easier as a Quality Manager to understand the work that happens on a practical level."

As Quality Manager, Team Leader for MEFSS, Yvonne's role involves a wide range of areas including managing and coordinating the auditing programme for the quality system, managing reviews and updates to standard operating procedures, overseeing the risk management and improvements register for MEFSS, and harmonising the sections in the quality system.

She also moderates quality system meetings and ensures the overall quality system is constantly improving. Yvonne's role includes representing the Marine Institute in discussions with accreditation bodies, auditors and customers, and ensuring that any updates to accreditation policies and procedures are implemented into the quality system.

"I love the management side of my role, and I am still involved in the science – I have the best of both worlds," she says. "The interaction and engagement with my colleagues, feeling supported, and being enabled to continue to learn and grow definitely makes the job worthwhile."

Learning and development

Yvonne says being encouraged to develop as a manager and leader, and being able to avail of further education courses has allowed her to develop her skills in this area. And it has made her feel like a valued member of the organisation.

"Through the Institute, I completed 'Leadership Development for Women' in Dublin City University in 2019 and I was supported to complete an Advanced Diploma in Personal, Leadership and Executive Coaching from 2019 to 2020 with Kingstown College, which was probably the best thing I've ever done. It was a really good course. I now use this coaching leadership style in my current position and also coach people in the Institute each year, supported by the Human Resources team."

This investment in training and experience has led to Yvonne volunteering to be a mentor on the Aurora Leadership Development Initiative for Women.

"There are always opportunities to upskill with courses at the Institute. I think, being a scientist, that love of learning is always there for me. In addition, I was asked to chair the Key Performance Indicator matrix team for the implementation of the Marine Institute strategy in 2020. This role involved all sections of the organisation, so I met new people and it gave me valuable insight into the other areas of work in the Institute."

In 2022, Yvonne took a two-year career break from her role.

"I think, coming out of Covid, I had a bit of a rethink about where I was at after seven years in the role," she says. "I saw a job with the Irish National Accreditation Board as its Deputy Manager and thought 'I have the skills for this job, I have a love for learning more' so I decided to go for it. The Institute was supportive of me taking the career break which was great because I knew I didn't want to give up my job here."

Yvonne says she learnt a lot during her time in the new role and was involved a lot in strategy implementation.

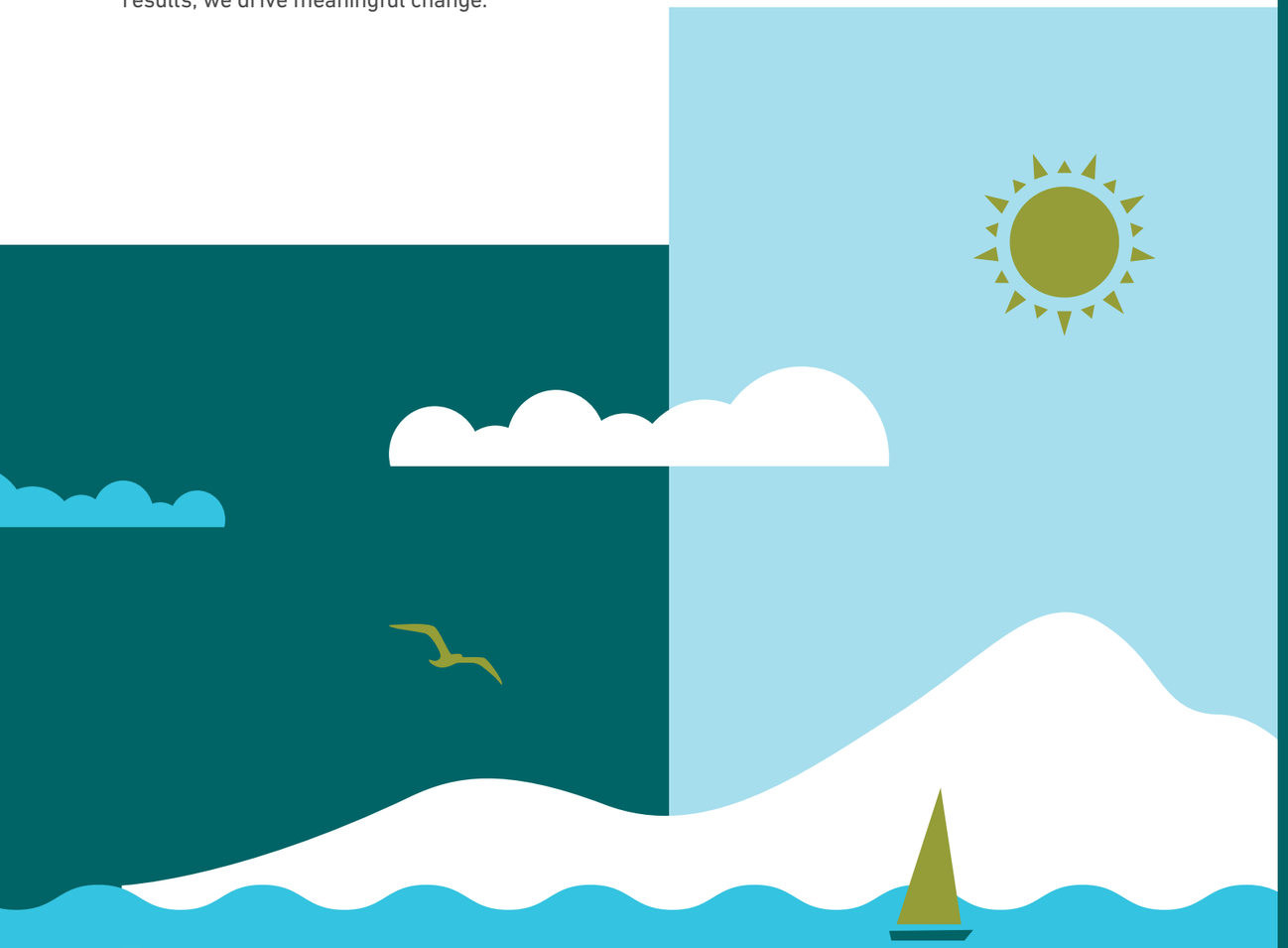
"Coming back to the Institute has been great and getting involved in the science element of my job... I'm very happy to be back. I think anytime you have the opportunity to learn new skills and develop, whether it's training or taking on a new area of work, it's not only beneficial to you but to the organisation as well."

Strategic Priority 7

Our Organisation, Committing to Sustainability

Sustainability is at the heart of how the Marine Institute works and is a guiding principle for our organisation. We are committed to making a positive contribution to society and to the conservation of the environment.

How do we deliver on this commitment? By identifying high-impact programmes, projects and services, executing them with precision, and rigorously tracking and reporting measurable results, we drive meaningful change.



CASE STUDY

Improving and managing the Marine Institute's energy efficiency and decarbonising its operations

One of the Marine Institute's strategic priorities as an organisation is to commit to sustainability. It is a significant consideration for our research, our scientific advice and our economic development services. Sustainability is also a fundamental factor in the way we operate our buildings and infrastructure.

The Climate Action Mandate 2024 supports public sector bodies including the Marine Institute in leading by example on climate action. It aims to inspire the necessary climate action in wider society to reduce Ireland's greenhouse gas (GHG) emissions by 51% and energy efficiency by 50%, both by 2030.

The Marine Institute works towards these government targets, whilst continuing to undertake key national research programmes and deliver services to our clients and stakeholders relating to the sustainable use of our marine resource.

Strategic Priority impacted:
7: Our Organisation, Committing to Sustainability

Staff from the Molecular Biology Unit (Fish Health Unit & Shellfish Microbiology) and Phytoplankton Team (Shellfish Safety) with 'My Green Lab' certification

What are we doing?

We are decarbonising our infrastructure and equipment, using renewable energy sources, such as solar power for our buildings and marine instrumentation. We are also reducing our reliance on fossil fuels and, instead, making use of renewable technologies, where possible, to power our research vessels, buildings and vehicles.

The Institute is now generating onsite renewable energy having installed two solar PV rooftop systems in 2023. 783 panels, producing up to 291,611 kWh of electricity a year have been installed in Oranmore headquarters in Co. Galway, and a smaller 76 panel system, producing c. 29,395 kWh a year, was installed in Newport Research Facility in Co. Mayo.

As the research vessels account for c.81% of the total energy consumed by the Institute, it's critical that they operate as efficiently and sustainably as possible. Following a successful trial in 2023 replacing Marine Gas Oil with Hydrotreated Vegetable Oil (HVO) as an alternative greener fuel, the vessels, in 2024, utilised up to 35% HVO as a portion of the vessels' fuel supply. HVO is a low-carbon biofuel that serves as a replacement for fossil fuels.

Other recent building related energy efficiency projects include a boiler upgrade at Oranmore, LED lighting upgrades throughout the Oranmore and Newport buildings, and air conditioning upgrades in Oranmore (with centralised control to meet the requirements of the EU Energy Performance of Buildings Directive).

The Marine Institute's 'My Green Lab' certification programme reduces the environmental impact of laboratories in four key areas – energy, water, waste and chemical use – through a combination of organisational activities and behaviour change programmes. Four teams in the Institute have achieved certification through the programme to date and more areas are in progress.

Cross organisation sustainability measures include increasing digitisation of our administrative processes (thereby reducing paper use), cessation of single use items where possible, water conservation, and reducing food waste. 'Get Greener' teams at the Institute continue to promote energy efficiency and behavioural change through audits and awareness campaigns.

What impact is this work having?

The energy reduction programme began in 2016, focusing initially on Oranmore headquarters but quickly expanded to include the research vessels and Newport Research Facility operations. The focus of the programme was extended to include sustainability and biodiversity, in tandem with energy reduction.

Since the programme began, significant savings have been made in our buildings – reducing our use of electricity, and our use of Liquified Petroleum Gas and Kerosene (both used for heating).

The most recent Marine Institute Climate Action Roadmap (2024) details how the Institute's Oranmore facility has reduced its energy consumption by 41% (March 2024), relative to the 2015 baseline.

For 2023, the Institute's energy intensity came in at 221 kWh/m2, indicating that the Oranmore building is outperforming that of similar research-intensive buildings (Reference: *AUDE Benchmarking pg. 93, AUDE EMR 2023 DPS report*).

The impact of the new solar panels installed in Oranmore and Newport has already shown itself – a total yield of 253.15 MW of electricity has been produced January to December 2024 for the buildings, reducing the Institute's reliance on grid electricity.

Additionally, 9,672 kW was exported to the grid from the Newport system (January – December 2024). Being in a position to generate our own energy and export excess back to the grid is a significant result for our energy efficiency programme.

The 2023 SEAI Monitoring & Reporting cycle shows that the Institute has seen an overall energy efficiency of 39.7% (2023 relative to 2009). We have reduced total emissions by 313,455 $kgCO_2$ (2023) and are projected to exceed the 51% CO_2 target by 2030.

Take a listen

Jane Kilcoyne, who is an analytical chemist with the Marine Institute, featured on the popular *Nature* podcast in September 2024. She describes how she and colleagues reduced the carbon footprint of the marine biotoxin monitoring lab (including reducing energy consumption, composting shellfish waste, polystyrene recycling, digitising documentation and much more).

Listen here

Did you Know?

The Marine Institute publishes a yearly Climate Action Roadmap which outlines and measures our work in improving energy efficiency, decarbonising our operations and striving towards increased sustainability as an organisation.

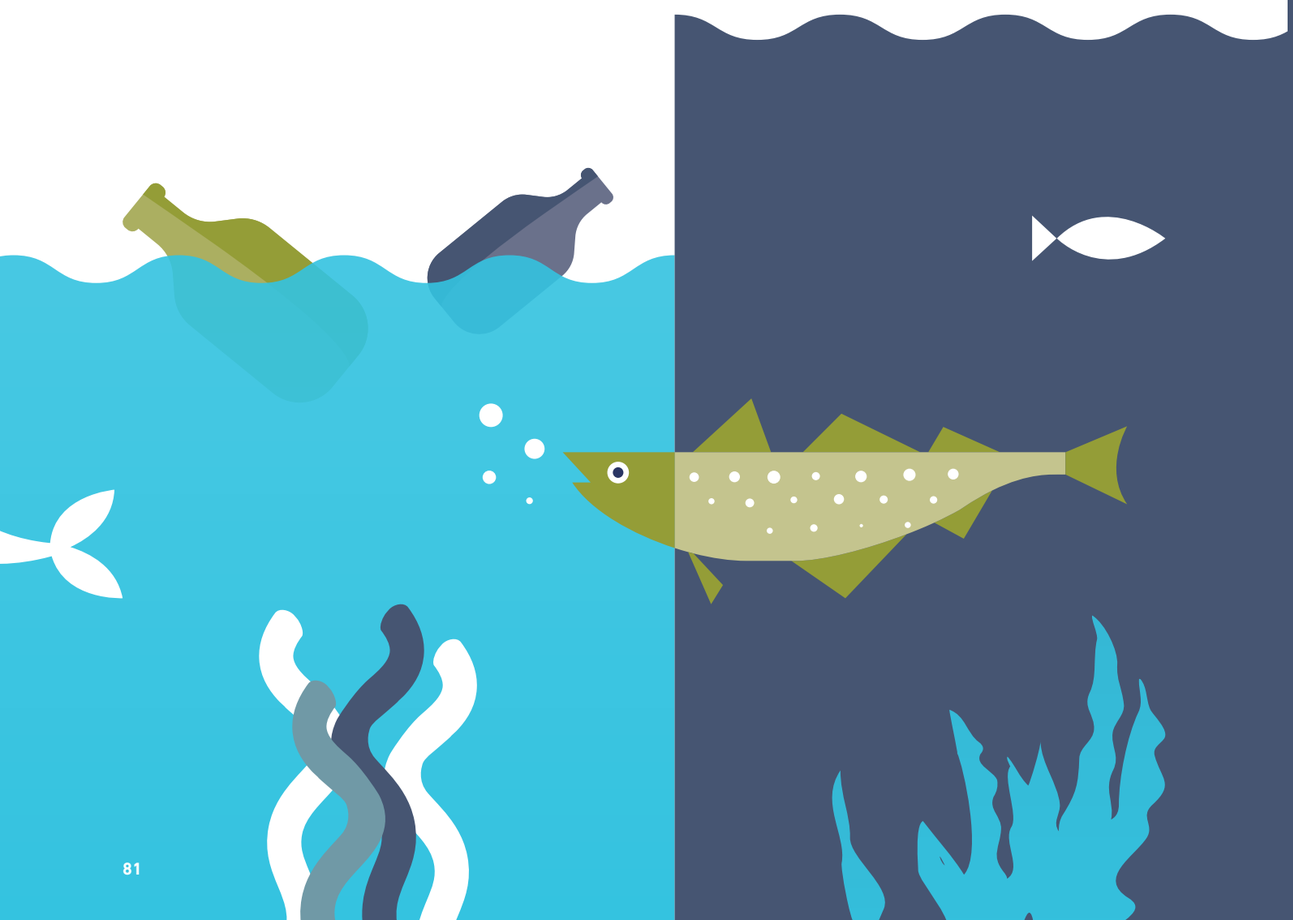
Strategic Priority 8

Inspiring Our Stakeholders and Society

In 2024, the Marine Institute continued to inspire stakeholders and society through a series of impactful initiatives and collaborations.

By organising educational programmes and public outreach campaigns, the Institute not only raises awareness about the crucial role the ocean plays in Ireland's economy and culture but also motivates citizens to actively engage in marine conservation efforts.

Through these efforts, the Marine Institute inspires communities and contributes to the sustainable use of ocean resources.



KEY HIGHLIGHTS FROM 2024:

Celebrating Ireland's Rich Maritime Heritage – 'Eolaíocht na Mara – Sea Science'

A partnership between the Marine Institute and West Kerry Museum resulted in the creation and opening of 'Eolaíocht na Mara – Sea Science' at Músaem Chorca Dhuibhne – West Kerry Museum. This new exhibition showcases Ireland's rich maritime heritage, diverse marine resource, and the Institute's role in marine research.

This new collaboration complements the Marine Institute's 'The Wild Atlantic – Sea Science' exhibit at Galway City Museum, which was again recognised by Trip Advisor's 2024 Travellers' Choice Award for Top Tourist Attraction in Ireland. In 2024, more than 100,000 visitors enjoyed the free exhibit.

These museum exhibits invite visitors to dive beneath the waves of Ireland's wild Atlantic and explore our ocean through interactive displays and digital exhibits. They help to attract tourism, deepen public appreciation for Ireland's marine environment, and foster the connection of local communities to the sea.

Hosting National Policymakers and International Delegations

Throughout 2024, the Marine Institute welcomed national and international policymakers, researchers, scientists and other delegations to our sites and onboard our research vessels.

The Dutch Ambassador to Ireland, Maaike van Koldam, and CEO of the Marine Institute, Dr Rick Officer

The French Ambassador to Ireland, Vincent Guérend, with CEO of the Marine Institute, Dr Rick Officer, and Captain of the RV ***Tom Crean***, Colin McBrearty

These visits underscored Ireland's leadership in marine science and sustainability and led to new collaborations in areas such as ocean observation and climate change. Through these efforts, the Marine Institute solidified its role as a leader in marine research, innovation, and global cooperation, inspiring stakeholders to invest in the future of the ocean and motivating society to engage with marine conservation.

Culture Night Success at the Marine Institute

Culture Night came to the Marine Institute for the first time in September 2024. The specially curated event featured a vibrant line-up of cultural performances, immersive storytelling, captivating music inspired by the sea, and a variety of art displays.

The programme showcased Ireland's profound relationship with its marine environment and how it is immortalised through the arts. Culture Night at the Institute was a resounding success, bringing together a diverse audience, from families to marine enthusiasts, celebrating a fusion of marine science and culture.

Marine Institute's Work Features on Prime Time TV

The Marine Institute was prominently featured in two episodes of RTÉ's television series *10 Things to Know About* in November. With audience figures of over 250,000 per episode, the series on RTÉ One's primetime schedule is Ireland's flagship science programme.

The first episode of the series featured the work of Marine Institute researchers in tagging and tracking sharks, rays and skates to help us better understand these creatures while a later episode explored sustainable food production and the Marine Institute's role in aquaculture, and, in particular, Integrated Multi Tropic Aquaculture (IMTA).

INFOMAR Website Takes Deep Dive into Shipwrecks of Ireland

The INFOMAR website continued to attract visitors, keen to take a look at its downloadable charts, seabed and sediment viewer, blue scale maps and much more. The website (**infomar.ie**) had 86,015 visits between January and December 2024, which included 21,462 new users of the site.

Expanding on its highly successful 2023 Blue Maps series, INFOMAR launched a new infographic series, Shipwrecks of Ireland. This series takes a deep dive into Ireland's maritime history, detailed 3D maps and histories of shipwrecks. In total, 542 shipwrecks have been mapped since 2001.

Empowering our Marine Scientists of the Future: Summer Bursary Programme

The Marine Institute's Annual Summer Bursary Programme empowered 23 students in 2024 to enhance their marine science skills and gain insights into careers in the marine sector.

Participants gained research, presentation, and networking skills, creating a pathway to employment. Many past bursary participants have gone on to contribute to the Marine Institute as team members, reinforcing the programme's lasting impact.

CASE STUDY

Explorers Education Programme: inspiring and educating children to become ocean champions

For close to 20 years, the Explorers Education Programme has been engaging with primary school students, teachers, the public and the education network, to create the next generation of marine leaders and ocean champions in Ireland.

Students from Dooagh National School (recipient of the Explorers Ocean champion National School Award 2024) with Dr Rick Officer, CEO of the Marine Institute

> The programme inspires children and educators to make informed and responsible decisions regarding the ocean and its resources. It promotes our marine and maritime identity and heritage, and helps to introduce the work of the Marine Institute to a new generation.

More than 14,000 children, hundreds of teachers and student teachers, and thousands of members of the public engage annually with the programme.

Funded by the Marine Institute, it is managed and delivered in 14 coastal counties by the Explorers Team of Camden Education, Galway Atlantaquaria, SeashoreKids, Oceanics Surf School, Old Cork Waterworks Experience, Sea Synergy, and Leave No Trace Ireland.

The programme has a focus on hands-on activities, exploration, and real-world contexts and experiences – it includes aquarium-in-the-classroom modules, sea-shore safaris, STEM workshops, and the Healthy Ocean School Project. Educational modules developed in 2024 included content on climate change adaptation and mitigation, and the sustainable development of offshore renewable energy.

The new Primary School Curriculum Framework (2023) is used by the Explorers Education Programme, providing new opportunities for teachers and children to develop a range of skills, including blue skills and ocean literacy.

Strategic Priority impacted:
8: Inspiring Our Stakeholders and Society

Galway kids celebrating European Maritime Day with Sibeal Regan from the Explorers Education Programme

Schools can complete Healthy Ocean

School Projects and have the opportunity to submit them for an Explorers Ocean Champions Award. Examples of recent projects show the range of creativity and innovation of the students – from developing podcasts to writing and performing songs, and from organising beach cleans to developing science and artwork around ocean life.

Schools host guest speakers or visit people from their local community who share stories about working in the marine sector and protecting the marine environment, making the connection to the ocean tangible and relatable for primary school students.

The Explorers Education Programme team take part in outreach events like the Galway Science and Technology Festival, World Ocean Day Webinars, Native Species Weekend at Dublin Zoo, and Cork Carnival of Science.

What impact is the Explorers Education Programme having?

Evaluation of the results in schools shows an average annual increase in student ocean literacy and knowledge of greater than 20%.

Results also show a significant increase in teachers' and student teachers' knowledge of ocean literacy concepts, including ocean life, habitats, exploration, as well as ocean and the climate, and people's connection with the ocean.

79% of teachers indicate that they shared the content with other people and networks, including teachers in the staff room, on social media, and with friends and family.

The Explorers Education Programme has made waves in the wider education sector too – winning 'Best Education Outreach Award' in 2023 at the annual Education Awards. The award was received for the Explorers Healthy Ocean Project & Ocean Champion Awards.

> The class loved the experience and it has had a real impact on their learning. They remember much of what they encountered and have a real interest in the marine environment now. In terms of my teaching, it has really made me realise the impact of outdoor field trips with the children and the importance of teacher knowledge.

Noirin de Barra, Sixth Class Teacher, Gaelscoil an Ghoirt Alainn, Co. Cork

> We are so delighted to have been given the opportunity to work with the Explorers Education Programme and other members of the community. The children took the lead in this Healthy Ocean Project, 'The Basking Sharks', and I will never forget the sense of collaboration and teamwork they achieved. As a small school, we set out to make an impact and we are delighted it has had a ripple effect on the children's parents, families and friends, and many others. The award recognises the school's efforts for being ocean champions, where we have not only learned but also made a positive impact.

Irene Gielty, Dooagh National School Principal

(the school in Achill, Co. Mayo was the winner of the Explorers Ocean Champion School National Award 2023-2024)

Take a deep dive into the Explorers Education Programme explorers.ie

PHOTO CREDITS

P2 Photo: Andrew Downes.

P4 Photo: Gerard McCarthy.

P5 + 6 A Year in the Life of the Marine Institute:

1 Boarfish. Photo: Jonathan White.

2 RV *Celtic Explorer* in Greenland. Photo: Constantino Pana (University of Texas Institute).

3 IMBDON buoy. Photo: Tomas Szumski.

4 Galway kids celebrating European Maritime Day with Sibeal Regan from the Explorers Education Programme. Photo: Cushla Dromgool-Regan.

5 Solar panels on the roof of the Marine Institute's headquarters in Oranmore, Co Galway

6 Máire Éinniú at MIIN event in Co Mayo.

7 Ocean Climate Survey.

8 IFSTL Final Project Event.

9 Young visitors at the 'Eolaíocht na Mara – Sea Science' exhibit in West Kerry Museum. Photo: Domnick Walsh.

10 Eurofleets+ Funded cruise IOPD scientists onboard the RV *Sanna*. Photo: Wieter Boone, VLIZ.

11 Angel shark tagging.

12 The French Ambassador to Ireland, Vincent Guérend, with CEO of the Marine Institute, Dr Rick Officer.

13 Culture Night celebrations in the Marine Institute, Oranmore, Co Galway. Photo: Andrew Downes.

14 The Norovirus testing programme lab.

15 Newport Staff Day 2024.

16 Amelia Hilley and Mairead O'Sullivan at Ocean Knowledge 2030.

17 One of the discussion panels at Ocean Knowledge 2030. Photo: Jason Clarke.

P8 Photo: Andrew Downes.

P9 Photo: Jason Clarke.

P11 Photo: Jonathan White.

P12 Photo: Ciaran O'Donnell.

P15 Photo 2: Coast Monkey, Photo 3: Andrew Downes.

P16 Photo: David McGloin.

P17 Clew Bay. Photos: David Brannigan.

P24 Photos: Constantino Pana (University of Texas Institute).

P25 Photo: Tomas Szumski.

P27 Photo: Jonathan White

P31 Photo: Andrew Downes.

P33 Photo: Kelly Oysters.

P38 Photos: Paul Reardon.

P39 **Photo 1:** Pictured are John Bell, European Commission, Niall McDonough, Marine Institute, Rick Officer, Marine Institute, Sinéad McSherry, Department of Agriculture, Food and the Marine, Colin Stafford-Johnson. wildlife cameraman, director and broadcaster and Deirdre Lillis, DFHERIS. Photo: Jason Clarke.

Photo 2: Panel on 'One Global Ocean' at Ocean Kowledge 2030 (from left to right) - Karen Coleman (Moderator), Carl Grainger, Department of Foreign Affairs, Jan Mees, Flanders Marine Institute (VLIZ), Claire Jolly, OECD, John Bell, European Commission, Dave Reid, Chair of ICES Science Committee (SCICOM). Photo: Jason Clarke.

P42 Photos: Jason Clarke.

P46 Photo: Marcus Fontela.

P47 Photo: Wieter Boone, VLIZ.

P50 Photo: Gerry O'Halloran.

P55 Photo: Ports de Normandie.

P56 Photo 2: Cherbourg: Jérôme Houyvet-Biplan.

P59 Salmon farm, Bantry, Co Cork. Photo: Coast Monkey.

P60 Photo: Jonathan White.

P61 Photo: Andrew Downes.

P63 Photo 2: Andrew Downes.

P82 Photo 1: Domnick Walsh, Photo 3: Andrew Downes.

P83 Culture Night photos: Andrew Downes.

P85 Photo: Michael McLaughlin.

P86 Photo: Cushla Dromgool-Regan.

CORPORATE GOVERNANCE

Code of Practice for the Governance of State Bodies

The Marine Institute operates to best practice corporate governance principles in line with the Code of Practice for the Governance of State Bodies. The Marine Institute has in place a range of procedures, policies and guidelines to ensure compliance with the Code and it is the policy and practice of the Institute to support the development and strengthening of an effective control environment, risk management system and Internal Audit function.

Procurement and Financial Management

The Marine Institute has an appropriate public procurement process which is compliant with EU and national rules. 46 tenders were advertised on the Etenders website (etenders.gov.ie) in 2024, in addition to procuring through the Office of Government Procurement's relevant Framework Agreements.

It is Marine Institute policy to ensure that all invoices are paid promptly within the terms of the Prompt Payment of Accounts Act, 1997, and the European Communities (Late Payment in Commercial Transactions) Regulations 2012. Systems and procedures are in place enabling invoices to be tracked and to ensure that payments are made in a timely and efficient manner. Procedures are also in place to ensure that late interest is paid, if required.

Protected Disclosures

There were no Protected Disclosures during the year.

Compliance Standards in Relation to Queries from Oireachtas Members

The Marine Institute complied fully with standards and requirements relating to responding to queries from Members of the Oireachtas.

Public Sector Equality and Human Rights Duty

The Marine Institute integrates human rights and equality issues into every aspect of how it performs its mandated functions on an ongoing basis. The Institute ensures accessible data, information and services, and has operational structures that eliminate discrimination and ensure equity in how it operates.

In devising the Marine Institute's strategic plan *Ocean Knowledge that Informs and Inspires* (2023-2027), the organisation had regard to the protection of the human rights of employees and service users.

The strategic plan specifically notes that the Institute's contribution to society is enabled through governance structures, with a focus on fairness, transparency, inclusion, ethical conduct, compliance, responsible and fair procurement, and value for money for the State and public.

Within the strategic priority *Empowering our people to deliver excellence,* the Institute's strategic plan also identifies a commitment to a diversity of workplace, and investment in structures that provide equal access and opportunity to all. A specific strategic initiative was identified, being the enablement of the Marine Institute Equality, Diversity and Inclusion Group to advance equality of opportunity for all, with specific actions focusing on gender equality.

The development of the Marine Institute Equality, Diversity & Inclusion (EDI) Strategy and Action Plan (including Gender Equality Plan) 2024-2027, during 2024, also considered and assessed equality and human rights duties and devised specific actions which will be enacted and measured.

Other developments and actions in 2024 in relation to addressing equality and human rights issues include:

- Continuing to advance the Equality, Diversity, and Inclusion Programme, celebrating difference, understanding and removing barriers, promoting and fostering equality of treatment and opportunity
- An extremely active Equality, Diversity and Inclusion group which seeks to ensure representation from all staff grades, roles, backgrounds, Service Groups, and Marine Institute sites
- Continuing to adopt a consultative approach to communicating and assessing human rights and equality issues, for example, in implementing policies, assessing action plans and agreeing work plans
- Devising training and development plans for those working with us
- Preparation of gender pay gap reporting and analysis of trends and drivers of same

Data Protection

The Marine Institute meets its data protection compliance under the General Data Protection Regulation (GDPR) and Data Protection Acts 1988-2018. One low risk data breach was reported to the Data Protection Commissioner in 2024. Immediate mitigation measures were enacted, resulting in no harm to the data subject and no penalties or loss has arisen from same.

Liaison

The programme of the Marine Institute covers a wide range of activities that require close liaison and cooperation with many individuals and organisations.

These include the Department of Agriculture, Food and the Marine, the Department of Public Expenditure, NDP Delivery and Reform, the Department of Housing, Local Government and Heritage, the Department of Transport, the Department of the Environment, Climate and Communications, as well as other governmental departments and State agencies (such as Bord Iascaigh Mhara, the Environmental Protection Agency, Taighde Éireann, the Sustainable Energy Authority of Ireland, Food Safety Authority of Ireland and many more), private enterprises and the higher education sector.

The Institute acknowledges the continued support and cooperation of all concerned.

Ethics and Public Office Act 1995 and 2001

All persons holding a designated position within the Marine Institute complied with the requirements of the Public Office Commission in accordance with the Ethics in Public Office Act, 1995 and 2001.

Official Languages (Amendment) Act 2021

The Institute reports compliance regarding advertising, signage, publications and other requirements of the Official Languages Act 2021 (as amended). The Irish Officer can be contacted at ato@marine.ie.

Risk Management

The Board of the Marine Institute sets the tone and risk appetite for the organisation with the Executive; ensuring that there is an established and robust risk management framework in place that supports the ongoing proactive identification and mitigation of risk.

The Risk Management Policy, which is reviewed annually by the Board, sets out the organisation's risk management objectives; the organisation's risk appetite; and the risk management framework which details the roles and responsibilities of staff and Board members, and the process for identifying, categorising and escalating risk.

The policy and risk framework was reviewed in 2024 and addresses all the requirements of the Code of Practice for the Governance of State Bodies (2016) including the 2020 Annex to the code on Gender Balance, Diversity and Inclusion.

Marine Institute Risk Management Framework

The Board
- Own Board level risk and review organisation risk profile
- Approve the Risk Management Policy (including code requirements)
- Ensure effectiveness of risk management activities – internal and external review
- Monitor the impacts of operating and approval environments on Risk Management Policy including Risk Appetite

Audit and Risk Committee
- Review risk reports and monitor effectiveness of risk management
- Approve a Risk Based Internal Audit Plan
- Provide Guidance to Internal Audit Function focusing on key areas to review

Senior Leadership Team (Headed By CEO)
- Assume the primary ownership for organisation risks
- Appoint a Risk Manager
- Guide and oversee development of Risk Management Policy
- Implement Risk Management Tools, ensuring risk regulation and mitigation
- Review Risk Register and action plans
- Monitor effectiveness of Risk Management
- Promote ongoing enhancement of risk management processes

Internal Audit
- Develop a risk based internal audit plan on an annual basis
- Deliver audits from the audit plan to ARC detailing the level of assurance on the control environment for the areas reviewed and being reported on
- Provide assurance i.e. Adequacy of controls across specific risk areas (including risk management)

Ongoing review

Risk Manager
- Report directly to the CEO and Audit and Risk Committee (ARC)
- Report to Executive Management
- Develop and implement Risk Management Policy
- Coordinate identification prioritisation and management of risk
- Provide guidance to risk owners and organisation staff
- Oversee the incident and events management process
- Participate in and support audits and implementing any audit recommendations

Risk Management Tools
- Risk Register
- Review risk reports and monitor effectiveness of risk management, including a standing review of risk register at management meetings
- Focusing on key areas to review
- Ongoing Risk and Audit staff training

Risk and Action Owners
- Own and manage risk delegated in Risk Register
- Comply with controls stated in Risk Register and report any control gaps/weaknesses
- Risk and Action Owners identify mitigations to reduce the risks identified and report on this to their manager
- Use Risk Register as a weekly management tool to ensure effective mitigation of risk
- Identify risk and populate the risk register
- Report incidents and events to the Risk Managers

Staff
- Comply with controls as stated in the Risk Register and report any control gaps/weaknesses
- Identify risk and report risks and events to Risk Manager

Risk Register

A Risk Register is in place which identifies the key risks facing the Marine Institute and details the controls and actions needed to mitigate against those risks and assigns responsibility for the operation of mitigating controls to specific risk owners.

The Risk Register is reviewed and updated by the Joint Risk Officers in consultation with Risk Owners and the Senior Leadership Team quarterly, and reported to both the Audit and Risk Committee and to the Board.

The Marine Institute confirms that it has carried out an assessment of the organisation's risks and the following principal risks were identified:

Risk	Mitigations
Maintaining the trust and confidence of the Department of Agriculture, Food and the Marine, Department of Transport, other Government Departments and State Agencies, clients, key stakeholders, local communities and the general public	• Implementation of the Marine Institute's Strategic Plan 2023 to 2027 – *Ocean Knowledge That Informs and Inspires*. • Agreed structures for and forms of reporting to DAFM. • Service Level Agreements with Government Departments and State Agencies. • Regular Communications and Engagement with Stakeholders including research partners, coastal communities and industry.
Impacts of changing international and national landscape and events on resourcing including People, Financial and Operational Risk of insufficient resources to meet regulatory and mandated programme deliverables	• Careful management of these risks by Joint Risk Officers with the Executive and Board as part of Risk Management and Business Continuity policies and practices. • Effective rolling workforce, financial and operational plans in place and monitored monthly, taking account of increasing demands and pressures related to supply. • The use of Business Continuity Frameworks, Efficiency Plans to manage financial challenges should they arise, and Staff training / cross training plans and access to emergency supports. • Open dialogue with parent departments and other government departments and agencies with whom we have service level agreements and funding arrangements in place. • Regular independent audits of our operational and risk management frameworks and practices.
Loss or corruption of data or system access or failure or failure of / Interruption to Communications Infrastructure due to a Cyber Security Breach - ensuring adequate security controls and procedures in place to protect against cyber-attacks	• Implementation of appropriate industry standard ICT data and security policies, procedures and practices. • Appointment of independent Virtual Chief Information Security Officer, ongoing investment in cyber security defences. • Implementation on a phased basis with subject matter experts of the public sector cyber-security baseline framework recommendations. • Increased Investment in and planning of targeted and relevant training for staff; Implementation of IT disaster recovery plans for Marine Institute as part of overall Business Continuity Frameworks. • ICT Risk Register in place.
Risk of failure or loss of significant infrastructure including vessels, facilities and equipment deployed at sea	• Implementation of maintenance and safety policies, procedures and practices, adhering to International Safety Management Code codes for the vessels. • A Health, Safety, Environment & Quality plan is in place; coupled with tested Business Continuity Plans which include access to alternate research facilities and vessels. There are also effective crisis /emergency response frameworks in place. In the event of a total loss the high value items are covered by insurance. • Appropriate, industry standard training is in place for all land based and sea faring personnel, including for seagoing activities. • Review with subject matter experts at government level to ensure effective implementation of relevant legislation that governs infrastructure use and programme viability, including vessels at sea.

Sustainability and Energy Efficiency Reporting by Public Sector Bodies (S.I. 542 of 2009)

Sustainability and energy efficiency is a guiding principle throughout our organisation.

The Marine Institute carried out an energy audit in 2024, meeting the regulatory requirements of Statutory Instrument SI426 which requires organisations with over 250 employees or annual turnover in excess of €50 million (and for public sector bodies with a total useful floor area of more than 500m^2 or an annual energy spend of more than €35,000) to carry out an energy audit every consecutive four year period.

The report was structured to meet the requirements of Section 6.3 of the ISO 50001:2018 standards which will be used by the Marine Institute in its planned certification to ISO 50001 in 2025.

The Institute complies with Circular 1/2020: Procedures for offsetting the emissions associated with official air travel and has submitted air travel data to the Department of the Environment, Climate and Communications (DECC) for the last three years. We record and report where relevant all mileage undertaken for business travel purposes.

We undertake and complete the reporting requirements relating to energy use and the production of greenhouse gas and have implemented the requirements outlined in the Climate Action Mandate 2023 (2024 when agreed by Government).

The Marine Institute consumed the following in 2024:

Energy Type	Unit	2024
Liquefied Petroleum Gas (LPG)	litre	198,891
Kerosene	litre	14,499
Road Diesel (DERV)	litre	11,752
Marine Gas Oil (MGO)	litre	2,104,175
Hydrotreated Vegetable Oil (HVO)	litre	494,840
HVO blend rate	%	100%
Net Electricity Imports (MPRN data)	kWh	1,701,111
Onsite RE generation – solar PV	kWh	253,150
Natural Gas (GPRN data)	kWh (gross)	1,300

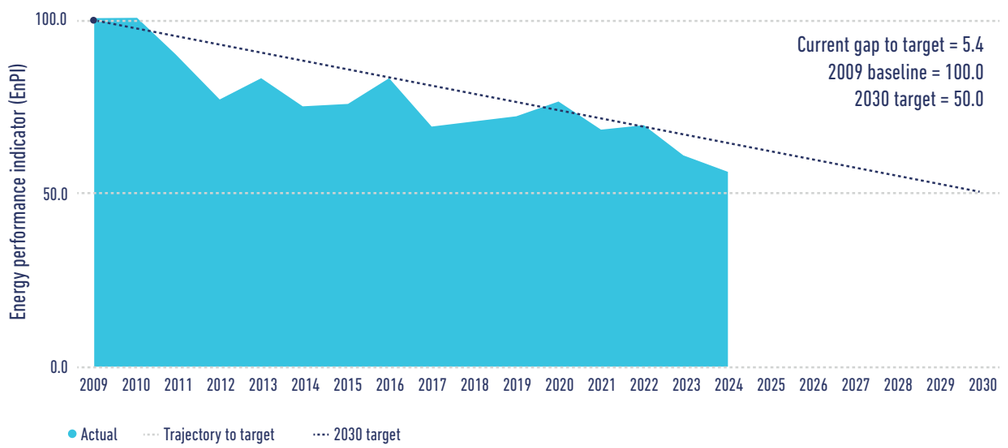
The Institute, along with all other public bodies, is required to meet national targets of 50% energy efficiency savings and a reduction of 51% in Green House Gas (GHG) emissions. The GHG target is for both fossil and total CO_2 emission reductions.

Energy Performance Indicators – 2024

The Marine Institute has achieved a 44.6% efficiency since the 2009 baseline, requiring a reduction of 5.4% to meet the 50% target by 2030. Using the project pipeline, projections show a shortfall of 2.6% by 2030. The SI426 Audit identified a potential 1,568,866 kWh of energy efficiency measures across the research vessels and Oranmore HQ which is included in the pipeline. These projects, our ongoing operational procedures and “other” opportunities will be further investigated, with the intention of identifying the additional 2.6% efficiency reduction required.

To achieve the efficiency target, energy performance must improve by another 5.4% percentage points within six years.

Energy efficiency target



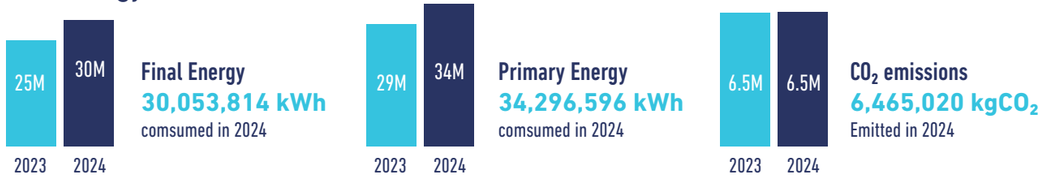
Energy consumption & CO_2 emissions

The Marine Institute consumed more energy in 2024 than 2023, resulting in a 5.6% increase above the baseline (2016-2018) for Fossil CO_2 emissions and a 5.7% reduction in Total CO_2 emissions. The increase in consumption is primarily due to the work undertaken by the research vessels; with 119 additional days at sea and travelling 4,250 nautical miles more compared to 2023. These activities are essential to delivering the Institute's remit and our contribution to marine sustainability.

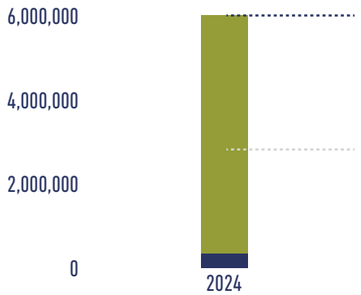
Whilst transport energy consumption increased, emissions remained the same as 2023, due to the use of Hydrotreated Vegetable Oil as an alternative to Marine Gas Oil. Thermal consumption and emissions increased by 10,000kg CO_2, caused by operational control of a newly installed heating system in 2023, which has since been rectified.

Grid Electricity reduced by 80,000 kg CO_2, through the onsite solar PV and improvements in the grid. The Marine Institute's overall total emissions were the same as in 2023 at 6,494,344kg CO_2. A 53% reduction is required to meet the target of 3,039,239kg CO_2 by 2030. Marine Institute is committed to meet this emission target by 2030. Projections show we can meet the emissions targets if we cease using Marine Gas Oil and use Hydrotreated Vegetable Oil as an alternative, this however requires significant operational budget/funding increases. Twenty percent of the fuel used to operate the research vessels in 2024 was HVO.

Total Energy

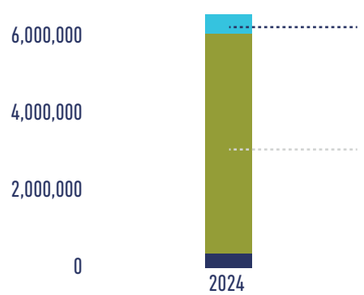


Fossil CO_2 target, $kgCO_2$



if planned projects are implemented fossil CO_2 emission target could be met

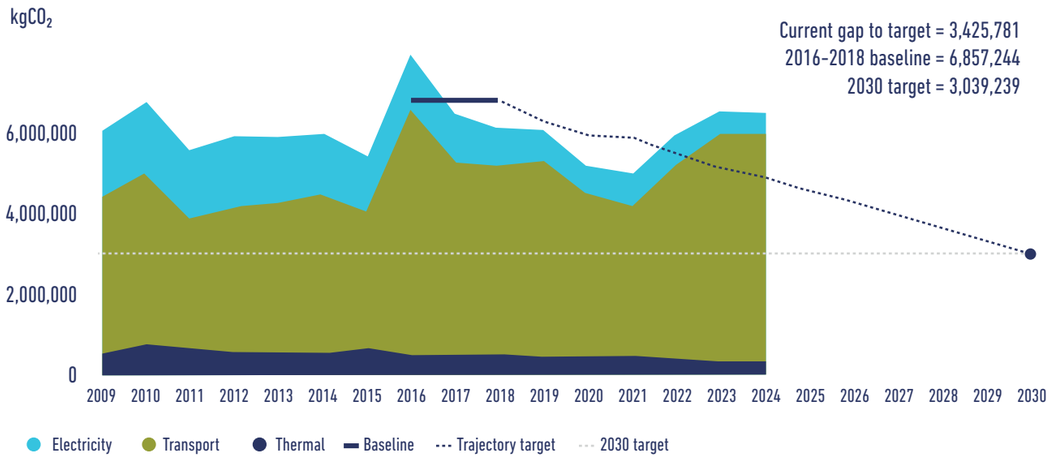
Total CO_2 target, $kgCO_2$



If planned projects are implemented total CO_2 emission target could be met

Thermal CO_2 · Transport CO_2 · Electricity CO_2 · Energy performance indicator · 2030 business as usual · 2030 target

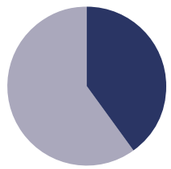
Total CO_2 target



In 2024, Oranmore Headquarters reached 40% energy reduction since joining Optimising Power @ Work in 2015. We continue to join the SEAI winter Reduce Your Use campaign and the aim is to integrate ISO50001 into our organisational practices and procedures. We actively monitor Oranmore HQ and research vessel energy consumption to manage the use on an ongoing basis.

Oranmore HQ Energy reduction 2024 (kWh)

Electrical · Thermal

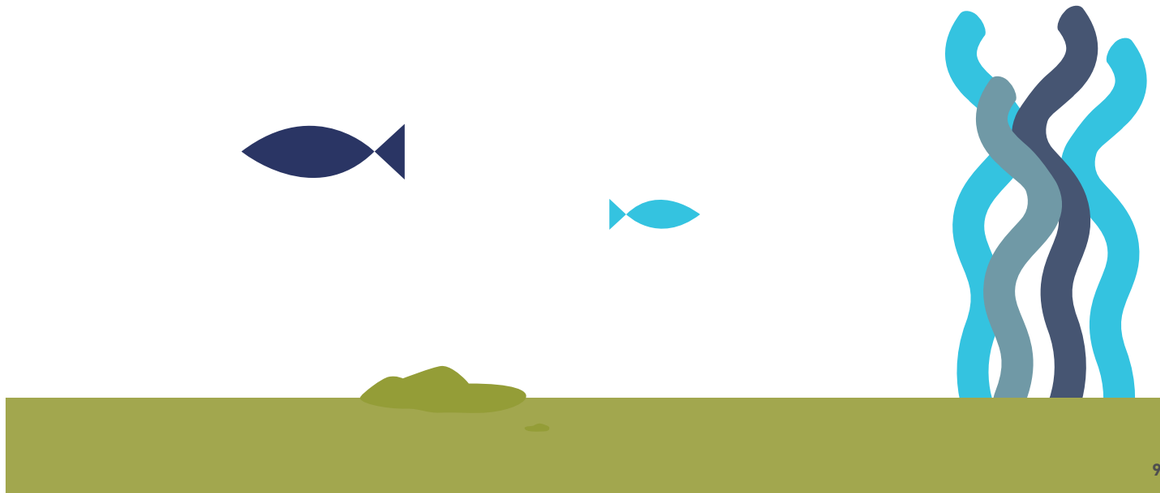


40%

reduction in energy consumed by Oranmore HQ building since 2009.

3 YEARS

how long the Oranmore HQ could be powered for with the savings made since 2016.



SENIOR LEADERSHIP TEAM

(year ended 31 December 2024)

Dr Rick Officer,
CEO Marine Institute

Dr Rick Officer joined the Marine Institute as Chief Executive Officer in January 2024.

Dr Officer has extensive experience in sustainable fisheries, leading innovative and integrated research programmes, and driving strategic collaborations nationally and internationally. Prior to joining the Marine Institute, Dr Officer was Vice President for Research and Innovation at Atlantic Technological University. He led the integration of Research and Innovation activities at the former Galway-Mayo, Sligo, and Letterkenny Institutes of Technology, through the merger into Atlantic Technological University. He also led the establishment of the Marine and Freshwater Research Centre - ATU's largest Research Centre now comprising approximately 100 people.

Dr Officer's executive experience in leading change, delivering high performance, and achieving organisational resilience has been achieved through collegial teamwork, building cohesion around strategic imperatives, and influence within senior professional networks.

Dr Officer's professional experience of international fisheries and aquaculture was gained through his Fisheries Scientist roles in Victoria and Tasmania, and his role as Science Leader for Fisheries and Aquaculture for the State of Queensland, Australia.

He previously led the demersal fisheries research and assessment team at the Marine Institute. As Demersal Fisheries Team Leader, Dr Officer's responsibilities included Chief Scientist roles aboard Ireland's national research vessels, appointment as National Delegate to the European Commission's Scientific, Technical & Economic Committee for Fisheries, and Chairmanship of International Working Groups and Expert Groups for the International Council for the Exploration of the Seas (ICES) and the European Commission.

Dr Officer has a Science degree and PhD in Fisheries Science from the University of Melbourne, Australia, and a Masters in Business Administration from University College London.

Patricia Orme,
Director of Corporate Services

Patricia is a Fellow of Chartered Accountants Ireland and holds a First Class Honours Bachelor of Commerce Degree (Law and Accounting) from National University of Ireland Galway.

Prior to joining the Marine Institute, Patricia was a Director in KPMG, one of Ireland's largest professional service providers. There, she had more than 20 years' experience providing financial, audit, risk management, governance and advisory services to public, private, small medium enterprise and international clients. She held leadership roles with responsibility for strategy, client relationship management, financial performance and Human Resources.

Patricia has lectured on the Masters of Accounting programme at NUI Galway, delivered training and presented to Boards on Corporate Governance and other matters. From 2011 to 2018, she served on the Board of Directors and as Company Secretary of Croí Heart and Stroke Foundation. She is a Member of the Audit and Risk Committee of the Institute of Public Administration.

As Director of Corporate Services, Patricia has responsibility for Corporate Governance, Finance, Human Resources, Facilities, Communications and Library Services.

She served as the Institute's Data Protection Officer until December 2020 and currently is the Marine Institute Joint Risk Officer and Board Secretary.

Michael Gillooly,
Director of Ocean Climate and Information Services

Michael holds a Bachelor of Science (University College Galway), a Masters in Environmental Science (Trinity College Dublin) and a National Diploma in Aquatic Biology (Galway Regional Technical College, now Atlantic Technological University).

He is responsible for the leading, managing and developing of services and delivery of programmes including Research Vessel Operations, Advanced Mapping Services, Oceanography and Climate Services, Information and System Development Services, Marine Infrastructures and Ocean Energy.

Michael has 30 years' senior management experience in marine technical research and operational projects, and infrastructure projects e.g. weather and observation buoy networks, Galway Bay cabled scientific observatory. His experience also extends to operational programmes such as INFOMAR mapping, RV (Research Vessel) and ROV (Remotely Operated Vehicle) programmes, operational oceanography and climate change. Strategic planning experience includes the national marine plan (*Harnessing Our Ocean Wealth*), Integrated Digital Ocean programme and multiple project business planning.

Michael was co-author of the 2005/2006 INFOMAR proposal which was supported by Government as a 20 year programme (scheduled to complete in 2026), Michael was a national delegate to the Steering Council of the International Council for the Exploration of the Sea (ICES) from 2016 to 2018. He is currently a national delegate on the Assembly of Members of the EMSO and EURO ARGO ERICs, and is an Executive Board Member of EurOcean.

Michael was project manager of the programmes to build the Institute's two research vessels, the RV *Celtic Voyager* and RV *Celtic Explorer*, and was the Director responsible for the programme to build RV *Tom Crean*, which replaced the *Celtic Voyager*.

Dr Niall McDonough,
Director of Policy, Information and Research Services (PIRS)

Niall McDonough originally trained as a marine biologist with research interests in marine aquaculture, shellfish stock restoration and marine resource management. He holds a first class BA Mod. in Zoology from Trinity College Dublin (1993) and a PhD from Queen's University Belfast (1998).

Following two years at the Environmental Change Institute at National University Ireland Galway (NUI Galway), Niall served for five years as General Manager of the Centre for Marine Resources and Mariculture (CMar), an innovation centre at Queen's University Belfast providing research, technical and advisory services for the emerging marine aquaculture sector.

From 2007 to 2009, he worked with the Marine Institute's international cooperation programme. In 2009, he was appointed Executive Director of the European Marine Board (EMB), a European marine science policy organisation based at the InnovOcean campus in Ostend, Belgium. He returned to Ireland in 2017 to take up his current role with the Marine Institute.

As Director of PIRS, Niall oversees a team and programme of work that plays a key role in supporting and promoting marine research and innovation at national and international level. He coordinates the implementation of Ireland's Marine Research and Innovation Strategy (2017-2022) and chairs the national Marine Research Funders' Forum. He oversees the Marine Institute's circa €8 million per annum external research funding programme and is a member of the Irish Government's Innovation 2020 Implementation Group and Horizon Europe High-Level Group. In November 2020, he was elected Chair of the European Joint Programming Initiative on Healthy and Productive Seas and Oceans.

Joe Silke,
Director of Marine Environment and Food Safety Services (MEFSS)

Joe holds a National Diploma in Aquatic Science from Galway Regional Technical College (now Atlantic Technological University) and a Masters in Environmental Science from Trinity College Dublin. He began his career in aquaculture, working in shellfish hatcheries and on-growing facilities specialising in innovative production methods in the 1980s before transitioning to research in phytoplankton, oceanography, and marine aquaculture development.

With extensive experience in risk assessment, quality control, and environmental monitoring, Joe previously led the Marine Institute's Shellfish Safety Team, advising Government, industry, and consumers on food safety. He has an international profile, having served as an EU shellfish toxin expert, contributed to Codex, and Chaired the ICES working group on Harmful Algal Bloom dynamics and the FAO-IOC Intergovernmental Panel on Harmful Algal Blooms.

As Director of Marine Environment and Food Safety Services (MEFSS), Joe oversees scientific service teams supporting Government policy on seafood safety, licencing and planning, marine sustainability, fish health, and clean seas. His role encompasses overseeing assessments, monitoring programmes, and research initiatives that inform regulatory decisions and environmental management. He works closely with national and international agencies, ensuring compliance with EU and global standards while advancing scientific knowledge in marine ecosystems.

Dr Ciaran Kelly,
Director of Fisheries Ecosystems Advisory Services (FEAS)

Ciaran trained as a marine biologist and subsequently as a fisheries scientist, with a degree from Trinity College Dublin and a PhD from University College Dublin. He has been involved in advice provision to government managers and policy makers for more than 20 years, working nationally and through international organisations such as the International Council for the Exploration of the Sea (ICES) and Scientific, Technical and Economic Committee for Fisheries (STECF).

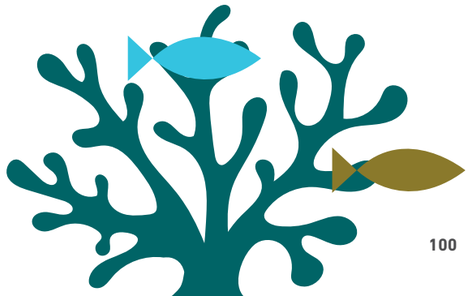
Ciaran has previously worked as a manager of integrated advice, and manager of the Office of Research and Development at the Marine Institute which was responsible for the planning and running of the Marine Institute's National Marine Research Investment programme.

He is Director of the Institute's Fisheries Ecosystems Advisory Services (FEAS), which undertakes resource assessments of commercial fish stocks, provides advice and policy support to the Department of Agriculture Food and the Marine (DAFM) and the Department of Housing, Local Government and Heritage (DHLGH), and undertakes research on marine ecosystems, fish stocks and aquaculture.

Liam Lacey,
Director of the Irish Maritime Development Office (IMDO)

Liam is a Fellow of the Institute of Certified Public Accountants in Ireland and holds a Masters Degree in management from Trinity College Dublin. Before joining the IMDO, Liam lectured in the area of strategic management and innovation in National University of Ireland Maynooth.

He formerly worked with Irish Continental Group as Managing Director of its Container and Terminal Division. He has extensive experience in shipping, chartering and port development. Liam was a member of IBEC's Transport Council, which represents the views of industry in the area of transport and logistics.



BOARD MEMBERS

(As at 31 December 2024)

Dermot Clohessy B.Sc Eng
(2015 - 2020) (2021 - 2026)

Dermot Clohessy has an extensive understanding of foreign direct investment (FDI) having worked for 28 years with IDA Ireland. He was the IDA's Executive Director/COO from 2006 to 2015. During his career with the organisation, he had leadership responsibility across all key functional areas of the organisation. He has strong knowledge of and experience in strategy development and implementation, dealing with corporate governance, including compliance and procurement within the public sector.

Dermot was a member of the Development Task Force established to support the implementation of *Harnessing Our Ocean Wealth – an integrated marine plan for Ireland*. He was Chairperson of one of its subcommittees to address the Business Development, Marketing and Promotion agenda that set about sending a clear message to investors that Ireland is open for, and a good place to do, marine business.

Since leaving IDA Ireland in 2015, Dermot now works internationally as a strategic advisor on a very wide range of projects on investment and international business development, for both the private and public sectors. His work concentrates on strategy implementation, capability building and international business development where his expertise is on implementation management. Dermot is an Engineer by profession, with additional qualifications in Business Strategy and Accounting & Finance.

Dr Berna Grist B.L.
(2015 - 2028)

Dr Berna Grist B.L., a barrister and chartered town planner, is Adjunct Professor in the School of Architecture, Planning and Environmental Policy at University College Dublin. She holds a PhD from the University of Ulster on *The Legislative and Regulatory Framework for Development in the Republic of Ireland* and has practised as a barrister since 1991, specialising in consultancy and advisory work on planning and environmental law.

Berna has published widely in the fields of planning and environmental law, public policy and governance. Together with the late James Macken SC, she coedited the *Irish Planning Law Factbook* (2003), which she updated annually until the 2024 Planning and Development Act commenced its passage through the Oireachtas. In 2012, she published the second edition of *An Introduction to Irish Planning Law*. She has contributed to a number of environmental research projects sponsored by the Environmental Protection Agency (EPA) and is a member of the Irish Environmental Law Association (IELA).

Berna was appointed Deputy Chairperson of the Aquaculture Licences Appeals Board on its establishment in 1998. During the period 2001-2006, she served as a member of An Bord Pleanála and in 2013, she was appointed to the Expert Group advising the Minister for Housing and Planning on a successor to the *National Spatial Strategy 2002-2020*. She has served on a number of State Boards and is currently a director of the Dublin Port Company.

Aodh O Domhnaill
(2021 – 2026)

Aodh O Domhnaill is a native of Co Donegal. He is CEO of the Irish Fish Producers Organisation (IFPO) and formerly the International Sales Director with Errigal Bay, a Gaeltacht based shellfish processor and exporter. His responsibilities in that role included ongoing development of international seafood markets, with a particular focus on Asian, U.S. and Scandinavian territories.

In March 2022, Aodh took up the position of CEO of the IFPO, a body formed in 1975. The IFPO represents owners of commercial sea-fishing vessels of all sizes in the Pelagic, Whitefish, Shellfish and Inshore sectors. The Organisation is concerned with the management of members' fishing activities, both catching and marketing, with a view to making the best use of the available fish stocks and optimising returns.

Aodh has an extensive and lifelong association with the seafood sector and has worked in senior operations, sales and marketing roles. He has served as a committee member of the Irish Fish Processors and Exporters Association (IFPEA) and on the North West Pelagic Advisory Committee. Mr O Domhnaill also served as Chairperson of the Letterkenny Institute of Technology (LYIT) for a four year term from 2007 to 2011.

Aodh is a native Gaelic speaker and has a primary degree from Trinity College Dublin. He holds a Certified Diploma in Accounting and Finance and an MBA from the Open University.

Charlotte O'Kelly de Gallagh
(2021 – 2026)

With over two decades of experience in operational oceanography, Charlotte O'Kelly de Gallagh specialises in real-time data buoy systems and metocean surveys for coastal engineering and offshore renewable energy applications.

Charlotte co-founded and leads TechWorks Marine as Managing Director. Under her leadership, TechWorks Marine has evolved from a startup concept to an internationally recognised provider of marine data services, supporting clients in optimising marine operations through advanced monitoring technologies.

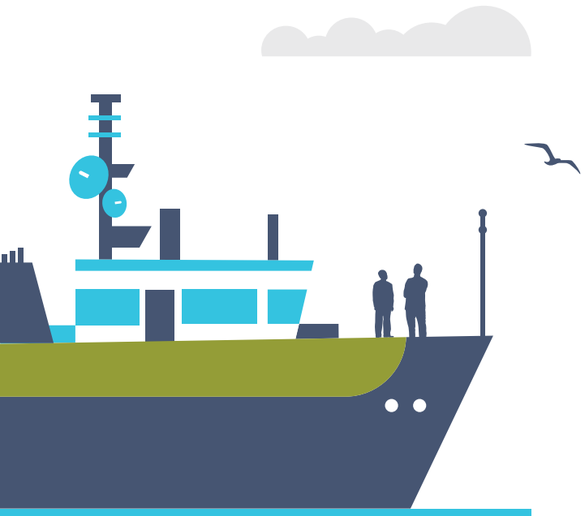
Charlotte holds an Environmental Resources degree from Kingston University, a Master's in Oceanography from University College of

Wales, Bangor, and a Postgraduate Diploma in International Sales from TU Dublin. Her leadership at TechWorks Marine earned the Digital Ocean Achievement Award (2017) and an Irish Times Innovation Award finalist nomination (2019). She has coordinated multiple European Space Agency (ESA) contracts in marine earth observation over the past decade, integrating satellite data with in-situ measurements to develop innovative marine data services. As an EU Commission evaluator and frequent conference speaker, she champions real-time marine monitoring solutions.

She has chaired both Women in Technology and Science (WITS) and the Lycée Francaise d'Irlande, demonstrating a sustained commitment to STEM education and gender equality. Currently, she contributes to the Department of Enterprise, Trade and Employment (DETE) Offshore Wind Industry Forum and the Department of the Environment, Climate and Communications (DECC) Expert Group on Data for Offshore Renewable Energy (ORE).

During the last year, she has been appointed to chair Marine Institute board meetings by fellow Board Members, recognising her governance and marine policy expertise.

An active sailor, she participates year-round in Dublin Bay sailing activities.



Tom Tynan
(2021 – 2025)

Tom Tynan has a distinguished career in agriculture. He was educated at University College Galway (UCG), University College Dublin (UCD), Harper Adams University College Shropshire and UCD Michael Smurfit Graduate Business School, and holds a Degree in Agricultural Science and a Masters in Business. He was the 2015 UCD Alumni Award winner from the UCD School of Agriculture and Food Science.

Tom worked across a range of agri-business and policy areas where he held a variety of senior management roles. He was Commercial Director for IAWS Agri-business and subsequently Chief Operating Officer of Welcon AS, Norway. He served as Special Adviser to the Minister of Agriculture, Food & Forestry in the Irish government. He served six years as a Member of Cabinet in the EU Commissioner's Trade and Agriculture & Rural Development Cabinets where his portfolio responsibilities included agricultural markets, trade remedies, research, development & innovation, bioeconomy and biotechnology.

Currently, in addition to this role as Non-Executive Director of the Marine Institute, Tom is on the Boards of the Shannon Foynes Port Company (ROI) and Agri-Food Bioscience Institute (Northern Ireland). He previously held posts on the Board of Teagasc (Ireland's Agriculture & Food Development Authority), Agri-Aware and the Scientific Advisory Board of Alltech. He is a member of the Institute of Directors (IoD) Ireland.

Kate Burns
(2024 – 2029)

Kate Burns is a marine and rural resources expert and founder and Managing Director of Islander Kelp Ltd. She has over 14 years' experience working on marine resource issues and over 30 years in management. Through her work in seafood, kelp cultivation, and inshore fisheries management planning, Kate has an in-depth understanding of the role of marine science and of the fisheries sector. She supported Bord Iascaigh Mhara (BIM) in preparing the EU FLAG strategies for all six FLAG regions in Ireland in 2013 and 2014. Kate's time as Director of Initiatives with the Gulf of Maine Research Institute included the oversight of a support programme for fishers in their transition to catch share management.

Kate was previously Head of Economic Development for Causeway Coast and Glens Borough Council (then Coleraine), followed by her appointment to CEO of the cross border body, the Irish Central Border Area Network in 2002, responsible for implementation of the INTERREG IIIA Programme Measures. She was contracted as a Director to the Cyprus Reconstruction and Resettlement Council and has prepared numerous business plans, evaluations and LEADER strategies etc. for a range of clients over 20 years.

Kate holds an MSc in Rural Development from Queens University Belfast, a Diploma in Community Development Practice from University College Galway and a BSc in Economics & Politics from Open University. Kate served as a board member of AFBI (Agri-Food & Biosciences Institute) chairing the Science Strategy Committee. She also completed eight years on the Board of the Belfast Met College, Northern Ireland Fishery Harbour Authority and was Chair of the Belfast Met Charitable Trust. She is currently Chair of the Leslie Foundation and board member of Causeway Coast Maritime Heritage Group.

Pauline Cronin
(2024 – 2029)

Pauline Cronin is a Certified Public Accountant and holds an MSC in Economics and Policy, with a particular focus on corporate governance in the public sector. Since 2020, she has been an external member of the Audit and Risk Committee of the Marine Institute. For the past 20 years, she has worked in the Irish Civil Service gaining experience in public sector audit, procurement and risk management. She currently works as Director of Internal Audit and Risk in the University of Galway, providing assurance to the University President and Audit and Risk Committee on the adequacy of the organisation's overall governance framework including its internal control system.

Prior to this, Pauline worked as Head of Internal Audit in the Department of Environment, Climate and Communications, leading the audit function. She also served in the Office of the Comptroller and Auditor General for over 10 years and, later, with the European Commission in the Department of Education and Skills.

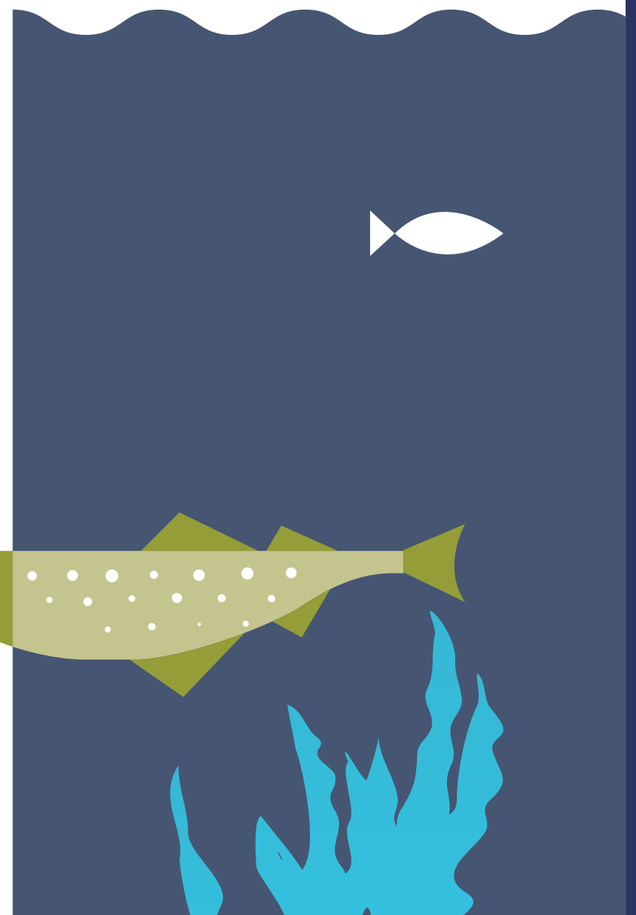
Professor Tim McCarthy
(2024 – 2029)

Prof. Tim McCarthy is a Professor in the Department of Computer Science, and Principal Investigator (PI) based in the National Centre for Geocomputation (NCG) at Maynooth University. He has over thirty years R&D experience in Earth Observation, Geographical Information Science and Geocomputation. Over the past fifteen years at Maynooth, he has led 32 externally funded research projects (with associated funding of €28 million). He has specific expertise in Marine Data Technologies.

Tim possesses core competencies in Digital Data Technologies and Digitalisation with experience gained in senior leadership Research, Technology, Development and Innovation (RTDI) roles, at a National and European level. Active RTDI roles currently held include co-leading a multi-million Euro project, 'Terrain-AI', dealing with Climate Change, coordinating a European Space Agency (ESA) multi-stakeholder project 'Atlantic Maritime Surveillance Pathfinder', and spin-out of Three Data Technology Small and Medium Sized Enterprises.

Tim sits on four committees/working-groups including the Copernicus Earth Observation programme in Brussels, having been appointed in 2015, as Irish National delegate. He provides RTDI support to Industry including a number of start-up ventures, focused around Geospatial Science & Technology, Spatial Decision Support Systems and Artificial Intelligence.

Tim holds a BSc in Geology & Maths from University College Cork, an MSc in Remote Sensing from University College of London and a PhD in Geospatial Science University of London (Birkbeck).



FINANCIAL STATEMENTS

(year ended 31 December 2024)

CONTENTS

Ard Reachtaire Cuntas agus Ciste
Comptroller and Auditor General

Report for presentation to the Houses of the Oireachtas

Marine Institute

Opinion on the financial statements

I have audited the financial statements of the Marine Institute for the year ended 31 December 2024 as required under the provisions of section 12 of the Marine Institute Act 1991.The financial statements comprise

- the statement of income and expenditure and retained revenue reserves
- the statement of comprehensive income
- the statement of financial position
- the statement of cash flows, and
- the related notes, including a summary of significant accounting policies.

In my opinion, the financial statements give a true and fair view of the assets, liabilities and financial position of the Marine Institute at 31 December 2024 and of its income and expenditure for 2024 in accordance with Financial Reporting Standard (FRS) 102 – *The Financial Reporting Standard applicable in the UK and the Republic of Ireland.*

Basis of opinion

I conducted my audit of the financial statements in accordance with the International Standards on Auditing (ISAs) as promulgated by the International Organisation of Supreme Audit Institutions. My responsibilities under those standards are described in the appendix to this report. I am independent of the Marine Institute and have fulfilled my other ethical responsibilities in accordance with the standards.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Report on information other than the financial statements, and on other matters

The Marine Institute has presented certain other information together with the financial statements. This comprises the annual report, the governance statement and Board members' report, and the statement on internal control. My responsibilities to report in relation to such information, and on certain other matters upon which I report by exception, are described in the appendix to this report.

I have nothing to report in that regard.

Andrew Harkness
For and on behalf of the
Comptroller and Auditor General

27 June 2025

Appendix to the report

Responsibilities of Board members

As detailed in the governance statement and Board members' report, the Board members are responsible for

- the preparation of annual financial statements in the form prescribed under section 12 of the Marine Institute Act 1991
- ensuring that the financial statements give a true and fair view in accordance with FRS 102
- ensuring the regularity of transactions
- assessing whether the use of the going concern basis of accounting is appropriate, and
- such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Responsibilities of the Comptroller and Auditor General

I am required under section 12 of the Marine Institute Act 1991 to audit the financial statements of the Marine Institute and to report thereon to the Houses of the Oireachtas.

My objective in carrying out the audit is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement due to fraud or error. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with the ISAs, I exercise professional judgment and maintain professional scepticism throughout the audit. In doing so,

- I identify and assess the risks of material misstatement of the financial statements whether due to fraud or error; design and perform audit procedures responsive to those risks; and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- I obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal controls.
- I evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures.
- I conclude on the appropriateness of the use of the going concern basis of accounting and, based on the audit evidence obtained, on whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Marine Institute's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my report. However, future events or conditions may cause the Marine Institute to cease to continue as a going concern.
- I evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

I report by exception if, in my opinion,

- I have not received all the information and explanations I required for my audit, or
- the accounting records were not sufficient to permit the financial statements to be readily and properly audited, or
- the financial statements are not in agreement with the accounting records.

Information other than the financial statements

My opinion on the financial statements does not cover the other information presented with those statements, and I do not express any form of assurance conclusion thereon.

In connection with my audit of the financial statements, I am required under the ISAs to read the other information presented and, in doing so, consider whether the other information is materially inconsistent with the financial statements or with knowledge obtained during the audit, or if it otherwise appears to be materially misstated. If,based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact.

Reporting on other matters

My audit is conducted by reference to the special considerations which attach to State bodies in relation to their management and operation. I report if I identify material matters relating to the manner in which public business has been conducted.

I seek to obtain evidence about the regularity of financial transactions in the course of audit. I report if I identify any material instance where public money has not been applied for the purposes intended or where transactions did not conform to the authorities governing them.

GOVERNANCE STATEMENT AND BOARD MEMBERS' REPORT

Governance

The Board of the Marine Institute was established under the Marine Institute Act, 1991. The functions of the Board are set out in Section 3 of this Act. The Board is accountable to the Minister for Agriculture, Food and the Marine and is responsible for ensuring good governance, and performs this role by setting strategic objectives and targets, and taking strategic decisions on all key business issues. The regular day-to-day management, control and direction of the Marine Institute are the responsibility of the Chief Executive Officer (CEO) and the senior management team. The CEO and the senior management team must follow the broad strategic direction set by the Board, and ensure that all Board members have a clear understanding of the key activities and decisions related to the entity, and of any significant risks likely to arise. The CEO acts as a direct liaison between the Board and management of the Marine Institute. In accordance with the Marine Institute Act, the Board discharges its duties as set out below.

Board Responsibilities

The work and responsibilities of the Board are set out in the *Board Standing Orders, The Schedule of Matters for Board Decision* and *The Roles of the Board, Chairman, Chief Executive and Board Secretary*, which also contain the matters specifically reserved for Board decision. Standing items considered by the Board during the period included:

- Declaration of interests
- Reports from committees
- Financial statements and items of expenditure in excess of €150,000
- Implementation of strategy and
- Reserved matters.

The Board of the Marine Institute provides leadership and strategic direction for the organisation, defining the purpose of the Institute and developing the policies required to achieve its goals. The Board sets performance indicators and measures progress against these, closely monitoring budgets and financial performance. The Board leads the organisation in behaving ethically and in a manner that accords with the core values and culture of the organisation.

Section 12 of the Marine Institute Act, 1991 requires the Board of the Marine Institute to keep, in such form as may be approved by the Minister for Agriculture, Food and the Marine with consent of the Minister for Public Expenditure, NDP Delivery and Reform, all proper and usual accounts of money received and expended by it.

In preparing these financial statements, the Board of the Marine Institute is required to:

- select suitable accounting policies and apply them consistently,
- make judgements and estimates that are reasonable and prudent,
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that it will continue in operation, and
- state whether applicable accounting standards have been followed, subject to any material departures disclosed and explained in the financial statements.

The Board is responsible for keeping adequate accounting records, which disclose, with reasonable accuracy at any time, its financial position and enables it to ensure that the financial statements comply with Section 12 of the Marine Institute Act, 1991. The maintenance and integrity of the corporate and financial information on the Marine Institute's website is the responsibility of the Board.

The Board is responsible for approving the annual plan and budget. The Board is also responsible for safeguarding its assets and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Board considers that the financial statements of the Marine Institute give a true and fair view of the financial performance and the financial position of the Marine Institute for the year ended 31 December 2024 and as at 31 December 2024, respectively.

Board Structure

The Board consists of a Chairperson and eight ordinary members, all of whom are appointed by the Minister for Agriculture, Food and the Marine. The members of the Board were appointed for a period of five years and met twelve times in 2024. The table below details the appointment period for current members and those who were in office during the period:

Board Member	Role	Term of office
John Killeen	Chairperson	Second term commenced on 8 January 2019. Retired from Board at end of term on 7 January 2024
Berna Grist	Ordinary Member	Second term commenced on 6 February 2018. Reappointed to Board on 6 February 2023
Dermot Clohessy	Ordinary Member	Second term commenced on 4 June 2021
Charlotte O'Kelly de Gallagh	Ordinary Member	First term commenced on 4 June 2021
Aodh O Domhnaill	Ordinary Member	First term commenced on 4 June 2021
Tom Tynan	Ordinary Member	First term commenced on 11 November 2021. Resigned from Board 20 June 2025
Kate Burns	Ordinary Member	First term commenced on 25 January 2024
Pauline Cronin	Ordinary Member	First term commenced on 25 January 2024
Tim McCarthy	Ordinary Member	First term commenced on 25 January 2024

Gender Balance in the Board membership

As at 31 December 2024, the Board had 4 (50%) female and 4 (50%) male members. In filling Board vacancies during 2024, the Minister had regard to the desirability for gender balance, diversity and inclusion on the Board and the 40% minimum representation of each gender has been met. Appointments to the Board are generally for an initial period of 5 years with an option of a second term.

Audit and Risk Committee

Introduction

The Audit and Risk Committee (ARC) is a Committee of the Board of the Marine Institute and, during the year ended 31 December 2024, the membership comprised of the following:

- Pauline Cronin (Chairperson as at 31 December 2024)
- Dermot Clohessy
- Charlotte O'Kelly de Gallagh
- Tom Tynan
- Sinead Ní Fhátharta (external member)

Pauline Cronin was appointed to the Board of the Marine Institute on 25 January 2024 and appointed as Chair of the ARC on 27 February 2024. Dermot Clohessy served as Interim Chairperson of the ARC for the January 2024 meeting, with Tom Tynan holding the position for the February 2024 meeting.

Sinead Ní Fhátharta was appointed as the external member of the ARC on 8 July 2024. Prior to her appointment to the Board, Pauline Cronin had served as an external member of the ARC.

The ARC is independent from the financial management of the Marine Institute.

Role of ARC

The role of the ARC is to oversee and advise the Board and the Chief Executive Officer on matters relating to:

- Financial, operating and governance risks, including overall risk management;
- The effectiveness of the internal controls and risk management;
- The effectiveness of internal audit function;
- Communication with the Internal Auditor;
- Communication with the Comptroller and Auditor General;
- Matters raised by the Internal Auditor and the Comptroller and Auditor General;
- The adequacy of governance procedures;
- Value for money issues;
- Such other matters as the Board requests ARC to investigate, consider and make recommendations to the Board.

The Marine Institute is audited by the Office of the Comptroller & Auditor General. In exercising oversight of the relationship with the External Auditor, the ARC meets with representatives of the Office of the Comptroller and Auditor General in advance of the commencement of the audit and again following completion of the audit. There were no material matters of concern arising from those meetings.

The Committee also monitors the integrity of the financial statements prepared by the Institute.

MARINE INSTITUTE ANNUAL REPORT 2024

Terms of Reference

The terms of reference of the ARC have been approved by the Board and are reviewed on an annual basis and amended as appropriate.

Conflicts of Interest

At each of its meetings, the ARC considers the possibility of conflicts of interest arising in relation to its agenda and such conflicts are dealt with in accordance with the Board's policy.

2024 Work Programme and Areas identified for focus

The ARC's work programme was approved by the Board in January 2024. That programme was reviewed in December 2024 to ensure that all matters were dealt with during the course of the year. The ARC met seven times during 2024. The ARC had two meetings with the auditors who represented the Comptroller and Auditor General. The ARC gives an oral report to the Board directly after each meeting; presents its minutes to the Board after approval and reports formally to the Board annually.

During the year, the ARC also met with members of the management team in order to receive briefings and have an opportunity to have all queries and suggestions discussed in relation to the following areas: Risk Management, Business Continuity Planning, GDPR, Procurement, ICT and Cyber Security.

Additionally, the ARC sought specific reports from the Director of Corporate Services to assure the Committee on fraud, corruption and bribery, capital expenditure, taxation compliance and protected disclosures.

The role of Chairperson of the Board was vacant from 8 January 2024. The Chairperson of the ARC met with the Board appointed Chair of the Marine Institute Board Meetings on a number of occasions during the year to discuss issues relating to the work of the ARC and ways in which the ARC could assist the Board in the conduct of its work.

The ARC also focused on the following specific areas in 2024:

Review of Risks

Issues such as Procurement Risks, Risks relating to outsourcing, GDPR Risks, Fraud Risks, Cyber Security and IT Risks, Resourcing, Funding and Protected Disclosure Risks were constantly monitored formally and informally by regular communication with the management team and the Board during the year.

Internal Audit Services

The ARC completed an Effectiveness evaluation on the outsourced internal audit function.

Performance Evaluation

The Audit and Risk Committee commenced a self-evaluation of its performance at the end of 2024, having obtained an external independent review in the preceding year. The report of the independent reviewer has been considered and a programme put in place to address the findings.

Schedule of Attendance, Fees and Expenses

A schedule of attendance at the Board and Committee meetings for 2024 is set out below. The table also includes the fees and expenses received by each member:

Name	Board Attendance	Audit and Risk Committee Attendance	Fees 2024 €	Expenses 2024 €
John Killeen	1		217	-
Aodh O Domhnaill	12		7,695	3,539
Berna Grist	12		7,695	-
Charlotte O'Kelly de Gallagh	11	7	7,695	5,226
Dermot Clohessy	12	7	7,695	1,835
Kate Burns	10		7,193	2,116
Pauline Cronin *	11	7	-	986
Tim McCarthy *	10		-	2,007
Tom Tynan	12	7	7,695	3,086
Sinead Ní Fhátharta *	n/a	3	-	-
Total – Fees/Expenses €	**n/a**	**n/a**	**45,885**	**18,795**
Total Number of Meetings	**12**	**7**		

* Pauline Cronin, Tim McCarthy and Sinead Ní Fhátharta (Independent ARC member) did not receive fees under the One Person One Salary (OPOS) principle in 2024.

Consultancy Costs

Consultancy costs include the cost of ad-hoc external advice and excludes outsourced business functions.

	2024 €	2023 €
Legal	57,936	96,881
Financial and Governance	128,372	143,230
Human Resource and Pensions Advisory	15,297	30,434
Strategy, project review and other business advisory services	233,959	9,750
Award Evaluators	160,844	150,561
Information Technology related	20,787	24,864
Shipping Development and related Research Consultancy	239,406	96,449
Other	142,552	290,643
	999,153	**842,812**

Legal Costs and Settlements

The Marine Institute had no legal costs or settlements in connection with disputes with third parties. This does not include expenditure incurred in relation to general legal advice received by the Marine Institute, which is disclosed in Consultancy costs above.

Travel and Subsistence Expenditure

Travel and subsistence expenditure is categorised as follows:

	2024 €	2023 €
Domestic:		
Board	17,050	12,792
Employees	668,485	587,703
International		
Board	1,745	-
Employees	428,213	453,591
	1,115,493	**1,054,086**

The amount of €18,795 (2023: €12,792) was paid directly to Board Members to reimburse them for domestic travel and subsistence incurred during 2024.

Hospitality Expenditure

The Statement of Income and Expenditure includes the following hospitality expenditure:

	2024 €	2023 €
Staff	14,872	11,399
Client	27,444	20,147
	42,316	**31,546**

Statement of Compliance

The Board has adopted the Code of Practice for the Governance of State Bodies (2016) (as amended in 2020) and has put procedures in place to ensure compliance with the Code.

Having completed his term of office, John Killeen retired as Board Chairperson on 7 January 2024. The role of Chairperson remained vacant since then. Except for the impact of this vacancy, the Marine Institute was in full compliance with the Code of Practice for the Governance of State Bodies at 31 December 2024.

On behalf of the Board

Charlotte O'Kelly de Gallagh

Board Member

Date: 24 June 2025

On behalf of the Board

Pauline Cronin

Board Member

Date: 24 June 2025

STATEMENT ON INTERNAL CONTROL

1. Scope of Responsibility

On behalf of the Marine Institute, We acknowledge the Board's responsibility for ensuring that an effective system of internal control is maintained and operated. This responsibility takes account of the requirements of the Code of Practice for the Governance of State Bodies 2016 (as amended in 2020).

2. Purpose of the System of Internal Control

The system of internal control is designed to manage risk to a tolerable level rather than to eliminate it. The system can therefore only provide reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded and that material errors or irregularities are either prevented or detected in a timely way.

The system of internal control, which accords with guidance issued by the Department of Public Expenditure, NDP Delivery and Reform, has been in place in the Marine Institute for the year ended 31 December 2024 and up to the date of approval of the financial statements.

3. Key Control Procedures

The Board of the Marine Institute has established a strong and robust control environment in the Marine Institute through:

- Holding regular Board meetings where the agenda includes strategic issues such as corporate governance, financial management and corporate strategy
- The implementation of the Marine Institute Strategy
- Clearly defined management responsibilities, authority and accountability, delegation of appropriate functions and reviewing and approving all Marine Institute policies
- Approval of annual budgets, cash flow forecasting and capital programme expenditure with formal review of these at each Board meeting
- The work of the Audit and Risk Committee, which met seven times in 2024
- Completion of a programme of internal audits. Regular meetings were held between the Audit and Risk Committee and the Internal Auditors to discuss their work programme, the outcomes of their audits, their recommendations and a private meeting was held without members of the executive
- The operation of a risk management system with annual review of the risk policy and regular review of the risk register and report from the joint risk officers
- Robust systems of health and safety, with monthly reports to the Board
- Monitoring of compliance with legislation including Freedom of Information and Access to Environmental Information

- Implementation of a Protected Disclosures Policy, through which the Institute encourages anyone having in good faith suspicions of fraud, financial irregularity of other improper behaviour or practice; to report this in accordance with the procedures set out in the policy. There were no protected disclosures made in 2024
- Consideration of any recommendations made by the External Auditor
- The systems of internal control as detailed in the Marine Institute Operating Control Framework which sets out the key controls in place within the Institute, together with the owner of each control. To further improve the quality of the report, certain control owners have submitted an Assurance Statement for each set of controls in respect of 2024.

Statement on Internal Control

The Statement on Internal Control was reviewed by the Audit and Risk Committee on 24 February 2025 and approved by the Board of Directors on 25 February 2025.

Financial and Budgetary Management Systems

There is a comprehensive annual budgeting system with annual income, budget allocation process, cash flow forecasting and capital programme budgeting reviewed and approved by the Board at the start of each year, with formal review at each subsequent Board meeting. Policies and procedures are in place in relation to budgetary and financial matters, with procurement contracts with a value in excess of €150,000 coming to the Board for consideration and approval. There are regular reviews by the Executive of financial management reports and a Corporate Procurement Plan is in place.

Procedures for monitoring the effectiveness of the Internal Control System

The 2024 Internal Audit Plan was implemented in full with the following audits commenced or completed during the calendar year:

- High Level Review of Internal Controls for 2023 (commenced in 2023, completed in 2024)
- Blended Working Audit
- Outsourcing and Contract Management Audit
- Value for Money Audit
- High Level Review of Internal Controls for 2024 (commenced in 2024, completed in 2025)

Implementation plans to address internal audit recommendations are approved by the Audit & Risk Committee. Progress on the implementation of the agreed actions is reviewed annually and reported to the Audit & Risk Committee.

The Internal Audit Plan for 2024 reflected the risks identified in the Marine Institute's Risk Register, the management letter of the Office of the Comptroller and Auditor General and general developments in relation to Corporate Governance. The Internal Audit Plan for 2024-2026 was approved by the Audit & Risk Committee in December 2023 and by the Marine Institute Board in January 2024. This is a rolling plan which is updated annually for current risk assessments, the results of audits and to consider the impact of any change in the environment in which the Institute operates and general corporate governance developments.

Capacity to Handle Risk

The Marine Institute has an Audit and Risk Committee (ARC) comprising four Board members, one of whom is the Chair, and one non Board member, with a broad range of experience including financial and audit expertise.

The Marine Institute has also established an internal audit function, which is outsourced to a commercial firm. It is adequately resourced and conducts a programme of work agreed with the ARC and approved by the Board.

The ARC oversees the implementation of the risk management policy, which sets out the Marine Institute's risk appetite, the risk management processes in place and details the roles and responsibilities of staff in relation to risk. The policy has been issued to all staff so as to ensure management are alert to emerging risks and so that each staff member is aware of their responsibility for mitigation of risk and operation of controls within their own area of work.

In 2024, the ARC work plan included specific review of the risks such as Procurement Risks, GDPR risks, Fraud risks, Cyber security and IT risks, and management oversight and monitoring risks. These were constantly monitored formally and informally by regular communication between the ARC, the Senior leadership team and the Board during the year.

The financial implications of business risks have been considered through the formal business risk assessment process and in the preparation of the Marine Institute's Internal Audit Plans. A comprehensive set of Financial Procedures have been put in place to control the significant financial elements of the Marine Institute's business including authorisation limits for purchasing/expenditure. These Procedures are subject to regular review.

Risk and Control Framework

The Marine Institute has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the extent possible, to mitigate those risks.

The Marine Institute's Risk Management Policy and Business Continuity Policy are in compliance with the Code of Practice for the Governance of State Bodies 2016 (as amended in 2020). The Marine Institute has appointed Joint Risk Officers. A risk register is in place which identifies the key risks facing the Marine Institute and these have been identified, evaluated and ranked according to their significance. The register is updated by the Executive on a quarterly basis and presented to the ARC. The outcome of these assessments is used to plan and allocate resources to ensure risks are mitigated against and managed to an acceptable level.

The risk register details the controls and actions needed to mitigate against risks and assigns responsibility for the operation of controls to specific staff. We confirm the following with regard to the control environment:

- Procedures for all key business processes have been documented and are regularly reviewed
- Financial responsibilities have been assigned at management level with corresponding accountability
- There is an appropriate budgetary system with an annual budget which is kept under review by senior management
- There are systems aimed at ensuring the security of the information and communication technology systems

- There are systems in place to safeguard the assets, and
- Control procedures over grant funding to outside agencies ensure adequate control over approval of grants and monitoring and review of grantees to mitigate against the risk that grant funding might not be applied solely for the purpose intended.

Ongoing Monitoring and Review

Formal procedures have been established for monitoring control processes and control deficiencies are communicated to those responsible for taking corrective action and to management and the Board, where relevant, in a timely way. We confirm that the following ongoing monitoring systems are in place:

- Key risks and related controls have been identified and processes have been put in place to monitor the operation of those key controls and report any identified deficiencies
- Reporting arrangements have been established at all levels where responsibility for financial management has been assigned, and
- There are regular reviews by senior management of periodic and annual performance and financial reports which indicate performance against budgets/forecasts.

Procurement

We confirm that the Marine Institute has procedures in place to ensure compliance with current procurement rules and guidelines. The Institute was in compliance with these procedures during 2024.

Review of Effectiveness

We confirm that the Marine Institute has procedures in place to monitor the effectiveness of its risk management and control procedures. An external independent review of the Board and the Audit and Risk Committee commenced in 2023 and was completed in 2024. A self-evaluation of the effectiveness of the Board and the Audit and Risk Committee commenced in late 2024 and was completed in early 2025. The Marine Institute's monitoring and review of the effectiveness of the system of internal control is informed by the work of the internal and external auditors, the Audit and Risk Committee which oversees their work, and the senior management within the Marine Institute responsible for the development and maintenance of the internal control framework.

Annual Review of the Effectiveness on Internal Control

We confirm that the Board conducted an annual review of the effectiveness of internal controls for 2024 and was approved by the Board on 25 February 2025. In undertaking this review, the Board considered the following:

- Risk management policies, systems and procedures
- The internal audits conducted
- The operating control framework and related assurance statements
- Results of the external audit by the Comptroller and Auditor General
- The work of the Audit and Risk Committee
- Other elements of the Governance Structure and system of controls

Internal Control Issues

There were no material losses, frauds or breaches in control in 2024.

No weaknesses in internal control were identified in 2024 that require disclosure in the Statement on Internal Control.

On behalf of the Board

Charlotte O'Kelly de Gallagh

Board Member

Date: 24 June 2025

On behalf of the Board

Pauline Cronin

Board Member

Date: 24 June 2025

STATEMENT OF INCOME AND EXPENDITURE ACCOUNT AND RETAINED REVENUE RESERVES

Year Ended 31 December 2024

	Note	2024 €'000	2023 €'000
Income			
Oireachtas Grants	2	43,050	41,345
Other State Grants	3	9,893	10,900
EU and Other Income	4	23,930	7,955
Net Deferred Funding For Retirement Benefits	19	4,837	4,549
Total Income		**81,710**	**64,749**
Expenditure			
Remuneration and Pension Costs	5	(18,247)	(16,947)
Retirement Benefit Costs	19	(4,769)	(4,711)
Vessel Operating Costs	6	(12,072)	(11,478)
Travelling Expenses	7	(1,115)	(1,054)
Grants and External Service Providers	8	(30,702)	(12,682)
Facilities Costs	9	(2,819)	(3,324)
IT, Telephone & Communications		(3,327)	(3,127)
Laboratory & Field Costs		(999)	(1,220)
Other Administration and Equipment Hire Costs	10	(3,233)	(3,216)
Depreciation	15	(6,114)	(6,048)
Total Expenditure		**(83,397)**	**(63,807)**
Transfer from Capital Account	14	1,718	1,410
Proceeds from Asset Disposal due to the Exchequer	18	-	(2,345)
Surplus for the year		**31**	**7**
Balance brought forward at 1 January		2,045	2,038
Balance carried forward at 31 December		**2,076**	**2,045**

The Statement of Cash flows and Notes 1 – 24 form part of these financial statements.

On behalf of the Board

Charlotte O'Kelly de Gallagh

Board Member

Date: 24 June 2025

On behalf of the Board

Pauline Cronin

Board Member

Date: 24 June 2025

STATEMENT OF COMPREHENSIVE INCOME

Year Ended 31 December 2024

	Note	2024 €'000	2023 €'000
Surplus for the year		31	7
Experience Gains	19	929	339
Changes in actuarial assumptions	19	(4,416)	2,525
Adjustment to defined benefit scheme funding		3,487	(2,864)
Total Comprehensive Income for the year		**31**	**7**

The Statement of Cash flows and Notes 1 – 24 form part of these financial statements.

On behalf of the Board

Charlotte O'Kelly de Gallagh

Board Member

Date: 24 June 2025

On behalf of the Board

Pauline Cronin

Board Member

Date: 24 June 2025

STATEMENT OF FINANCIAL POSITION

as at 31 December 2024

	Note	2024 €'000	2024 €'000	2023 €'000	2023 €'000
Property, Plant and Equipment	15		**39,934**		**41,652**
Current Assets					
Receivables	17	1,237		1,476	
Cash and cash equivalents		20,710		18,982	
		21,947		20,458	
Current Liabilities (amounts falling due within one year)					
Payables	18	(19,871)		(18,413)	
Net Current Assets			**2,076**		**2,045**
Total Assets Less Current Liabilities before Retirement Obligations			**42,010**		**43,697**
Deferred Retirement Benefit Obligations	19	(70,041)		(68,691)	
Deferred Retirement Benefit Funding	19	70,041		68,691	
Total Net Assets			**42,010**		**43,697**
Representing:					
Capital Account	14	33,081		34,655	
Revaluation Reserve	16	6,853		6,997	
Retained Revenue Reserves		2,076		2,045	
			42,010		**43,697**

The Statement of Cash flows and Notes 1 – 24 form part of these financial statements.

On behalf of the Board

Charlotte O'Kelly de Gallagh

Board Member

Date: 24 June 2025

On behalf of the Board

Pauline Cronin

Board Member

Date: 24 June 2025

STATEMENT OF CASH FLOWS

Year Ended 31 December 2024

	2024 €'000	2023 €'000
Net Cash flows from operating activities		
Surplus for the financial year	31	7
Adjustments for:		
Depreciation of tangible Property, Plant and Equipment	6,114	6,048
Transfers from Capital Account	(1,718)	(1,410)
Increase in Payables	1,458	10,550
Decrease in Receivables	239	106
Surplus from disposal of Fixed assets	(3)	(2,284)
Net cash flows from operating activities	**6,121**	**13,017**
Cash flows from investing activities		
Payments for tangible Property, Plant and Equipment	(4,400)	(4,699)
Proceeds from Asset Disposal (net of expenses)	7	2,345
Net cash flows from investing activities	**(4,393)**	**(2,354)**
Net increase in cash and cash equivalents	**1,728**	**10,663**
Cash and cash equivalents at beginning of financial year	18,982	8,319
Cash and cash equivalents at end of financial year	**20,710**	**18,982**

NOTES TO FINANCIAL STATEMENTS

Year Ended 31 December 2024

1. Accounting Policies

The basis of accounting and significant accounting policies adopted by the Marine Institute are set out below. They have all been applied consistently throughout the year. The Institute has analysed its expenditure based on the nature of the expense as opposed to a programme basis.

a) General Information

The Marine Institute was established on 30 October 1992 under the provisions of the Marine Institute Act, 1991. The Institute headquarters is located in Rinville, Oranmore, County Galway, H91 R673.

The Marine Institute's primary objectives as set out in Section 4 of the Act are

"to undertake, to co-ordinate, to promote and to assist in marine research and development and to provide such services related to marine research and development, that in the opinion of the Institute will promote economic development and create employment and protect the marine environment".

The Marine Institute is a Public Benefit Entity (PBE).

b) Statement of Compliance

The financial statements of The Marine Institute for the year ended 31 December 2024 have been prepared in accordance with FRS 102, the financial reporting standard applicable in the UK and Ireland issued by the Financial Reporting Council (FRC).

c) Currency

The financial statements have been presented in Euro (€) which is also the functional currency of the Institute. In instances where amounts have been rounded to the nearest thousand Euro, this is indicated by the symbol €'000.

d) Basis of Preparation

The financial statements are prepared under the accruals method of accounting and under the historical cost convention, except that land and property is stated at valuation less accumulated depreciation, in the form approved by the Minister for Agriculture, Food and the Marine with the concurrence of the Minister for Public Expenditure and Reform, in accordance with Section 12(1) of the Marine Institute Act, 1991.

The financial statements are prepared using the going concern basis of accounting. There are no events between the reporting date and the date of approval of these financial statements for issue that require adjustment to the financial statements. The Board has considered the general global environment, inflationary pressures and impacts on the price of energy and other items, the future funding of the Institute and its strategic and operational planning and have concluded that there are no material uncertainties that may cast significant doubt about Institute's ability to continue to adopt the going concern basis of accounting for a period of at least twelve months from the date when the financial statements are authorised for issue.

The following accounting policies have been applied consistently in dealing with items which are considered material in relation to The Marine Institute's financial statements.

e) Income

Oireachtas Income from the Department of Agriculture, Food and the Marine is recognised as it is received. It is received in the year to which it relates.

European Maritime, Fisheries and Aquaculture Fund (EMFAF) funded income is recognised in the year in which related spend is incurred.

Other State Grants are recognised on an accruals basis.

Income received in relation to EU and other contract research projects is recognised on an accruals basis whereby the income is recognised in the accounting period in which the related expenditure is charged. Income received in advance is treated as deferred income and included within Payables in the Statement of Financial Position. Expenditure incurred where the related income has not been received is treated as accrued income and shown as a Receivable in the Statement of Financial Position.

f) Property, Plant and Equipment and Depreciation

Plant and Equipment are stated at cost less accumulated depreciation.

Land and property is stated at valuation less accumulated depreciation. Land and property is revalued every five years by an independent professionally qualified valuer.

Depreciation is provided on a straight line basis at rates estimated to reduce the assets to their realisable value by the end of their expected lives. The rates in use are as follows:

Property (excluding land)	2%
Leasehold Improvements	4%
Fixtures and Fittings/Equipment	25%
Computers	33%
Research Vessel	4%
Motor Vehicles	20%

The carrying values of the Property, Plant and Equipment are reviewed for impairment when events or changes in circumstances indicate that the carrying value may not be recoverable. If there is objective evidence of impairment of the value of the asset, an impairment loss is recognised in the Statement of Income and Expenditure and Retained Revenue Reserves in the year

Up to 31 December 2020, assets or groups of assets which cost at least €1,000 were capitalised on the fixed asset register. From 1 January 2021, the Marine Institute increased the threshold for capitalising assets or groups of assets from €1,000 to €10,000. This considers the nature and materiality of the Institute's assets and is also in line with Government circular 21/2020.

g) Intangible Assets

Intangible assets comprise fishing rights held by the Marine Institute to Lough Feeagh, Lough Furnace and Estuaries in Newport, County Mayo. These intangible assets are carried in the Statement of Financial Position at their cost of €nil as their fair value cannot be reliably determined by reference to an active market.

h) Leased Assets

Rental expenditure under operating leases is recognised in the Statement of Income and Expenditure and Retained Revenue Reserves over the life of the lease. Expenditure is recognised on a straight-line basis over the lease period, except where there are rental increases linked to the expected rate of inflation, in which case these increases are recognised when incurred. Any lease incentives received are recognised over the life of the lease.

i) Capital Account

The Institute recognises funding received for capital purposes under the Accruals Model specified in FRS 102. The amount received is recognised in income on a systematic basis over the expected useful life of the asset.

j) Foreign Currencies

Transactions denominated in a foreign currency are translated into the functional currency using the spot exchange rates at the date of the transactions. At the end of each financial year, foreign currency monetary items are translated to Euro using the closing rate. Non-monetary items measured at historical cost are translated using the exchange rate at the date of the transaction and non-monetary items measured at fair value are measured using the exchange rate when fair value was determined.

k) Marine Research Programme

The Marine Institute enters into commitments in respect of contracts awarded for Marine Research Programme projects. Expenditure is charged in the financial statements as it is incurred/falls due. An initial payment is made on the signing of the project contract, an interim payment may be made subject to satisfactory performance under the contract and further payments are made on receipt and verification of claims in respect of work completed. Costs incurred by the Institute in the administration of Marine Research Programme projects are funded by the capital vote of the Marine Institute and charged to the financial statements as they are incurred.

l) Employee Benefits - Short term benefits

Short term benefits such as holiday pay are recognised as an expense in the year in which the employee renders service, and benefits that are accrued at year-end are included in the payables figures in the Statement of Financial Position.

m) Retirement Benefits

The Marine Institute operates its own defined benefit pension scheme, funded annually on a pay-as-you-go basis from monies provided by the Department of Agriculture, Food and the Marine. Contributions deducted from members' salaries are paid over to the Department of Agriculture, Food and the Marine.

The Marine Institute also participates in the Single Public Service Pension Scheme ("Single Scheme"), which is a defined benefit scheme for pensionable public servants appointed on or after 1 January 2013. Single Scheme members' contributions are paid over to the Department of Public Expenditure, NDP Delivery and Reform.

Pension costs reflect pension benefits earned by employees, and are shown net of staff pension contributions which are remitted to the Department of Agriculture, Food and the Marine. An amount corresponding to the pension charge is recognised as income to the extent that it is recoverable, and offset by grants received in the year to discharge pension payments.

Actuarial gains or losses arising on scheme liabilities are reflected in the Statement of Comprehensive Income, and a corresponding adjustment is recognised in the amount recoverable from the Department of Agriculture, Food and the Marine.

The financial statements reflect, at fair value, the assets and liabilities arising from The Marine Institute's pension obligations and any related funding, and recognises the costs of providing pension benefits in the accounting periods in which they are earned by employees. Retirement benefit scheme liabilities are measured on an actuarial basis using the projected unit credit method. They are matched by a Deferred Retirement Benefit Funding asset as the pension liabilities are guaranteed by the State.

n) Receivables

Receivables are recognised at fair value, less a provision for doubtful debts. The provision for doubtful debts is a specific provision and is established when there is objective evidence that the Marine Institute will not be able to collect all amounts owed to it. All movements in the provision for doubtful debts are recognised in the Statement of Income and Expenditure and Retained Revenue Reserves.

o) Contingencies

Contingent liabilities, arising as a result of past events, are not recognised when (i) it is not probable that there will be an outflow of resources or that the amount cannot be reliably measured at the reporting date or (ii) when the existence will be confirmed by the occurrence or non-occurrence of uncertain future events not wholly within the Institute's control. Contingent liabilities are disclosed in the financial statements unless the probability of an outflow of resources is remote.

Contingent assets are not recognised. Contingent assets are disclosed in the financial statements when an inflow of economic benefits is probable.

p) Related Parties

Related party transactions are disclosed in the notes to the financial statements in accordance with FRS 102.

q) Critical Accounting Estimates and Judgements

The preparation of the financial statements requires management to make judgements, estimates and assumptions that affect the amounts reported for assets and liabilities as at the reporting date and the amounts reported for revenues and expenses during the year. However, the nature of estimation means

that actual outcomes could differ from those estimates. The following judgements have had the most significant effect on amounts recognised in the financial statements.

- ***Impairment of Property, Plant and Equipment***
  Assets that are subject to amortisation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less cost to sell and value in use. For the purpose of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash generating units). Non-financial assets that suffered impairment are reviewed for possible reversal of the impairment at each reporting date.

- ***Depreciation and Residual Values***
  The Board has reviewed the asset lives and associated residual values of all fixed asset classes and in particular, the useful economic life and residual values of fixtures and fittings and have concluded that asset lives and residual values are appropriate.

- ***Retirement Benefit Obligation***
  The assumptions underlying the actuarial valuations for which the amounts recognised in the financial statements are determined (including discount rates, rates of increase in future compensation levels, mortality rates and healthcare cost trend rates) are updated annually based on current economic conditions and for any relevant changes to the terms and conditions of the pension and post-retirement plans.

The assumptions can be affected by:

i. the discount rate, changes in the rate of return on high-quality corporate bonds

ii. future compensation levels, future labour market conditions

iii. health care cost trend rates and the rate of medical cost inflation.

2. Oireachtas Grants from the Department of Agriculture, Food and the Marine

	2024 €'000	2024 €'000	2023 €'000	2023 €'000
Current Purposes				
Marine Institute - Vote 30,Subhead D.4/D.3	28,390		27,447	
Less Superannuation contributions repayable	(740)		(702)	
		27,650		**26,745**
Capital Purposes				
Marine Research Programme Vote 30, Subhead D.4 (Note 12)	15,400		14,600	
		15,400		14,600
		43,050		**41,345**

By agreement with the Department of Agriculture, Food and the Marine, employee pension contributions are refunded directly to the Department and are shown as a reduction in grant levels. Single scheme pension contributions are remitted to the Department of Public Expenditure, NDP Delivery and Reform.

3. Other State Grants

	2024 €'000	2024 €'000	2023 €'000	2023 €'000
Infomar (National Seabed Survey) – Department of Environment, Climate and Communications Vote 29, Subhead C.5				
Cash Received and recorded as income	2,500		2,504	
Amounts (deferred)/accrued as income	(7)		(4)	
Amount recorded as income		**2,493**		**2,500**
Water Framework Directive funded by Department of Housing, Local Government and Heritage under the Water Quality Budget Vote 34, Subhead B.3				
Cash Received and recorded as income	1,398		1,163	
Amounts (deferred)/accrued as income	(31)		(19)	
Amount recorded as income		**1,367**		**1,144**
Marine Strategy Framework Directive and Ospar funded by Department of Housing, Local Government and Heritage under the Marine Environment Budget Vote 34, Subhead B.8				
Cash Received and recorded as income	580		645	
Amounts (deferred)/accrued as income	(30)		23	
Amount recorded as income		**550**		**668**
Marine Spatial Planning funded by Department of Housing, Local Government and Heritage under the Marine Spatial Planning Budget Vote 34, Subhead D.14				
Cash Received and recorded as income	26		291	
Amounts (deferred)/accrued as income	(29)		23	
Amount recorded as income		**(3)**		**314**
Marine Planning Programme Budget funded by Department of Environment, Climate and Communications Vote 29, Subhead C.10				
Cash Received and recorded as income	284		-	
Amounts (deferred)/accrued as income	-		-	
Amount recorded as income		**284**		**-**
Other Marine Related Projects Funded by Department of Housing, Local Government and Heritage under the Marine Environmental Budget Vote 34, Subhead B8				
Cash Received and recorded as income	122		138	
Amounts (deferred)/accrued as income	-		-	
Amount recorded as income		**122**		**138**
MARA Exempted Usage Project Maritime Area Regulatory Authority Vote 34, Subhead D.15.2				
Cash Received and recorded as income	13		116	
Amounts (deferred)/accrued as income	46		(46)	
Amount recorded as income		**59**		**70**
Wave Energy programme funded by SEAI Vote 29, Subhead B.5				
Cash Received and recorded as income	1,247		1,331	
Amounts (deferred)/accrued as income	(13)		135	
Amount recorded as income		**1,234**		**1,466**
EMFF/EMFAF projects funded by Department of Agriculture Food and the Marine Vote 30, Subhead D.3				
Cash Received and recorded as income	2,928		4,012	
Amounts (deferred)/accrued as income	(80)		78	
Amount recorded as income		**2,848**		**4,090**
Our Shared Ocean Programme funded by International Co-Operations Vote 27, Subhead A.3				
Cash Received and recorded as income	850		500	
Amounts (deferred)/accrued as income	89		10	
Amount recorded as income		**939**		**510**
TOTAL		**9,893**		**10,900**

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4. EU and Other Income

	2024 €'000	2024 €'000	2023 €'000	2023 €'000
EU Contract Research		**18,274**		**1,573**
Other Income				
Research Vessel Charterage	2,133		2,250	
Surplus on the Sale of Assets (net of disposal costs)	3		2,284	
Sundry and Other Contract Income	3,520		1,848	
		5,656		6,382
TOTAL		**23,930**		**7,955**

5. Remuneration and Pension Costs

Aggregate Employee Benefits	2024 €'000	2023 €'000
Staff Short term benefits	16,074	14,884
Pension Contribution *	436	509
Termination Payments	28	7
Board Fees	46	47
Movement in Holiday Pay Accrual	27	(21)
Employers Contribution to Social Welfare and other taxes	1,636	1,521
	18,247	**16,947**

Total salary costs include an accrual of €0.47m (2023: €0.44m) in respect of accumulated staff annual leave entitlements. Pension related deductions of €0.467m (2023 €0.469m) were made from salaries and were remitted to the Department of Agriculture, Food and the Marine. Single pension related deductions of €0.274m (2023: €0.233m) were made from salaries and were remitted to the Department of Public Expenditure, NDP Delivery and Reform.

*The Pension contribution separately disclosed above is to cover the deferred cost to the Exchequer of future pension entitlements for employees on contract research and other externally funded posts. This amount was refunded to the Department of Agriculture, Food and the Marine and Department of Public Expenditure, NDP Delivery and Reform.

Staff Short term Benefits	2024 €'000	2023 €'000
Basic Pay	15,486	14,306
Overtime	-	-
Allowances	588	578
	16,074	**14,884**

Termination Benefits	2024 €'000	2023 €'000
Statutory Redundancy payments	28	7
	28	**7**

Statutory redundancy payments were made to five staff members (2023: one) on cessation of their fixed term or other employment contracts.

The average number of employees by location at year end is as follows:

Employees	2024 No.	2023 No.
Rinville Galway	217	212
Newport	16	16
Dublin	7	5
Ports	8	10
EU Based	1	2
	249	245
The whole time equivalents at each year end	**242.63**	**237.59**

Chief Executive Officer (CEO) Salary and Expenses	2024 €'000	2023 €'000
Basic Pay-CEO	158	83
Basic Pay- Interim CEO	-	74
	158	**157**

Total expenses reimbursed to the CEO in respect of business related spend was €11,702 (2023: €8,028). This includes foreign travel expenses of €1,473 (2023: €Nil).

Key Management Personnel	2024 €'000	2023 €'000
Salary	927	861
	927	**861**

Key Management personnel in the Marine Institute include the members of the Board and the members of the Senior Leadership Team of the Marine Institute, including the CEO. The total value of employee benefits for key management personnel is set out above. No payments were made in respect of termination payments, benefit in kind or health insurance. This does not include the value of retirement benefits earned in the period. The Senior Leadership Team including the CEO are members of either the Marine Institute Staff Superannuation Scheme 1998 or the Single Public Service Pension scheme and their entitlements in that regard do not extend beyond the terms of the model public service pension scheme. Total expenses reimbursed to the Senior Leadership Team in respect of business related spend was €52,005 (2023: €43,546).

Employee Short-Term Benefits Breakdown

Employees' short-term benefits (wages and salaries) in excess of €60,000 are categorised into the following bands:

	2024 No's	2023 No's
€60,000 - €69,999	39	29
€70,000 - €79,999	33	39
€80,000 - €89,999	31	23
€90,000 - €99,999	18	15
€100,000 - €109,999	6	4
€110,000 - €119,999	5	2
€120,000 - €129,999	-	1
€130,000 - €139,999	1	2
€140,000 - €149,999	-	-
€150,000 - €159,999	1	-

Note: For the purposes of this disclosure, short-term employee benefits in relation to services rendered during the reporting period include salary, overtime allowances and other payments made on behalf of the employee, but exclude employer's PRSI and accrued holiday pay.

6. Vessel Operating Costs

	2024 €'000	2023 €'000
Personnel and Associated Costs	6,383	5,901
Fuel	2,186	2,208
Insurance	222	295
Victualling	287	292
Management Fee	306	294
Port Fees and Safety	173	103
Leases and Rental Storage	126	126
Engineering and Maintenance Costs	1,357	1,378
Operating and Administration Costs	1,032	881
	12,072	**11,478**

The vessel operating costs exclude the cost of vessel equipment and refits which are capitalised, per note 15, as they meet the criteria for recognition as property, plant and equipment. The vessels are owned by the Marine Institute and the operations of the vessels are subcontracted to a third party vessel management company.

7. Travelling Expenses

	2024 €'000	2023 €'000
Travel and Subsistence		
Domestic	662	600
Foreign	453	454
	1,115	**1,054**

An element of these expenses relate to funded projects, where the cost incurred will be reimbursed to the Marine Institute.

8. Grants and External Service Providers

	2024 €'000	2023 €'000
Marine Research Programme Grants and support costs (Note 12)	5,286	4,430
Seafarer Training & Education	136	125
Contractors, External Service Providers, Professional Fees and Other Research Funding*	24,828	7,538
Sample Analysis	452	589
	30,702	**12,682**

*This includes payments to partners where the Marine Institute is the lead partner in EU funded projects, payments relating to EMFF/EMFAF funded projects and payments to other contract providers for samples, scientific surveys, operations support, external survey contractors and other items required in order for the Marine Institute to fulfil its statutory mandate. The increase in the period is driven by payments to EU project partners where the Marine Institute is the lead partner and the related funding from the grantor is included in income.

9. Facilities Costs

	2024 €'000	2023 €'000
Maintenance	1,664	1,649
Light & Heat	501	779
Replacement Expenses	444	666
Other	210	230
	2,819	**3,324**

10. Other Administration and Equipment Hire Costs

	2024 €'000	2023 €'000
Rent, Rates & Other Property Costs	249	263
Journal Subscriptions, Memberships and Library Costs	334	220
Training	205	219
Stationery & Consumables	125	138
Publications, Promotional Materials and Design	376	426
Insurance	210	213
Audit fee	29	29
Hire of Equipment & Vessels	701	652
Sundry Equipment and repairs	317	625
Other Administration Costs	687	700
Reclassification of costs related to the Sale of the RV Celtic Voyager		(269)
	3,233	**3,216**

The provisions of the European Communities (Late Payment in Commercial Transactions) Regulations 2012 (S.I. No. 580 of 2012) apply to the Marine Institute. Interest and compensation paid during 2024 was €130 (2023 €175).

11. Taxation

The Marine Institute is specifically exempted from taxation under the provisions of Section 32 and Schedule 2 of the Finance Act 1994. Accordingly, no taxation charge has been included in the financial statements.

12. Marine Research Programme Payments – Capital Exchequer Funded

This is a memorandum note, the function of which is to show the application of the €15.4m capital funding received in 2024 (2023: €14.6m), as it was expended in support of National Marine Research & Innovation Strategies. The spend is categorised throughout the financial statements as described below.

The *National Marine Research & Innovation Strategy 2017-2021* was published in June 2017 and identified 15 research themes under the three goals of *Harnessing Our Ocean Wealth*. This strategy also set the research priorities in 2023 and 2024 and aligns with the draft new national strategy for Marine Research, Knowledge & Innovation for the period 2025-2030, *Ocean Knowledge 2030*, which was disseminated in November 2024 and will be finalised in 2025.

	2024 €'000	2023 €'000
Oireachtas Income (Note 2)	15,400	14,600
Other Income or Co-funded Income	31	163
Total Income	**15,431**	**14,763**
Expenditure on Marine Research Programme projects		
Access to Shiptime Award	4,728	5,445
Marine Research Programme Grants (Note 8)	5,286	4,430
Marine Research Policy Support, Education and Outreach and Administration Payments	1,263	1,094
Capital, IT, Vessel, Vessel Refit and Oceanographic Equipment	4,152	3,793
Total Expenditure	**15,429**	**14,762**

Access to Shiptime Award: Access to the Institute's research vessels is provided to Researchers, including to third parties such as Higher Education Institutions for research and education purposes, after an annual competitive call "Shiptime Award". The €4,728,400 is the value of this "in kind" award to the successful applicants, who are not charged a monetary usage fee. The €4,728,400 is the estimated operating cost of the vessels, while in use by such applicants. This sum is part of the total vessel operations costs included in the income and expenditure account.

Marine Research Programme Grants: This includes payments linked to National Marine Research & Innovation Strategy for awards in strategically important areas of marine research. Research projects awarded are subject to contracts which specify that an initial payment will be made on signature of the contract; with interim payment(s) made subject to satisfactory performance and a final payment made on receipt of and verification of claims plus completion of project deliverables. These payments are included in "Grants and External Service Providers" in the Income and Expenditure account.

Marine Research Policy Support /Education and Outreach/ and Administration Payments: This includes the administration, auditor and evaluation costs of the Marine Research Programme, policy support to international research organisations and the cost of education and outreach programmes. These payments are included in various captions in the Income and Expenditure account.

Capital, IT, Vessel, Vessel Refit and Oceanographic Equipment: This includes capital equipment purchase, refit costs and IT costs. These costs, to the extent that they meet the definition of an asset under FRS 102, are capitalised in the statement of financial position.

Expenditure is charged in the financial statements as it is incurred/falls due in accordance with the Marine Research Programme accounting policy. At 31 December 2024 payments in the amount of €749,650 (2023: €468,004) were outstanding and are included within payables.

13. Marine Research Programme Future Capital Commitments

At the start of 2024 there were 96 projects ongoing. 52 new awards were made in 2024, and 34 awards were completed in 2024, leaving 114 projects ongoing at 31 December 2024.

Contractual commitments at 31 December 2024, which have not yet been charged to the financial statements are analysed as follows:

	Total €'000
Commitments as at 1 January 2024	**14,707**
Decommitments and Revisions 2024	(76)
New Commitments 2024 - Marine Research Programme Grants	10,712
Paid in 2024	(5.529)
Commitments as at 31 December 2024	**19,814**

14. Capital Account and Retained Capital Reserves

Capital Account	2024 €'000	2024 €'000	2023 €'000	2023 €'000
Balance at 1 January		34,655		35,962
Transfer (to) /from Statement of Income and Expenditure				
Income (net) allocated for Capital funding	4,404		4,699	
Depreciation charge for the year	(6,112)		(6,048)	
Impact of Fixed Asset Register adjustment	(6)	(1,714)	-	(1,349)
Impact of disposals of property, plant and equipment		(4)		(61)
Charge to Revaluation reserve		144		103
Balance at 31 December		**33,081**		**34,655**

The aggregate balance of the Capital Account (€33.081m) and the Revaluation Reserve (€6.853m) equates to the Net Book Value of Property, Plant and Equipment of €39.934m at 31 December 2024.

15. Property, Plant and Equipment

	Land & Property and Leasehold Improvements	Research Vessels	Assets Under Construction	Vessel Equip	Equipment/ Fixtures & Fittings	Computers	Motor Vehicles	Total
	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
Cost or Valuation								
Balance at 1 January 2024	9,541	55,500	575	7,001	30,518	8,601	443	112,179
Additions	11	998		569	2,263	425	138	4,404
Disposals	-		-	(12)	(703)	(115)		(830)
Fixed assets register adjustment		2	-	(28)	22	-	-	(4)
Transfer of assets	-	-	(575)	575			-	-
Balance at 31 December 2024	**9,552**	**56,500**	**-**	**8,105**	**32,100**	**8,911**	**581**	**115,749**
Depreciation								
Balance at 1 January 2024	-	27,870	-	6,543	27,956	7,719	439	70,527
Charge for the financial year	241	2,816	-	523	1,813	686	33	6,112
Disposal	-		-	(12)	(699)	(115)		(826)
Fixed assets register adjustment		13	-	(37)	34	(7)	(1)	2
Balance at 31 December 2024	**241**	**30,699**	**-**	**7,017**	**29,104**	**8,283**	**471**	**75,815**
Net Book Value								
At 31 December 2024	9,311	25,801	-	1,088	2,996	628	110	39,934
At 31 December 2023	9,541	27,630	575	458	2,562	882	4	41,652

The Marine Institute's headquarters are at Rinville, Oranmore, County Galway. This building, which is owned by the OPW, is provided rent-free. The Institute owns land and buildings in Newport, Co Mayo and in Parkmore, Galway. All the land, and property owned by the Marine Institute were revalued upwards by €2.072m after a valuation by independent professional qualified valuers during 2023. The other various premises used by the Institute in Dublin and at the port locations around Ireland are held under either operating leases or rental agreements as set out in Note 20.

Depreciation was not recognised at 31 December 2023 in relation to €0.575m of assets which are under construction. These items which meet the definition of an asset but were not in use at 31 December 2023 had not commenced their useful lives for depreciation purposes at year end. During 2024, these items of €0.575m were transferred from assets under construction to relevant asset category and have been subject to depreciation during year ended 31st December 2024.

In accordance with the Institute's policy, depreciation will commence, with a full year's depreciation charged in the year in which the asset comes into use.

16. Revaluation Reserve

	2024 €'000	2023 €'000
Balance at 1 January	6,997	5,028
Movement/release in year	(144)	(103)
Revaluation Increase	-	2,072
Balance at 31 December	**6,853**	**6,997**

The land and property owned by the Marine Institute were revalued upwards by €2.072m after a valuation by independent professional qualified valuers during 2023.

17. Receivables

	2024 €'000	2023 €'000
Trade Receivables	335	195
Contract Income	431	801
Prepayments	471	480
	1,237	**1,476**

All receivables are due within one year and are stated net of any impairment in respect of doubtful debts.

18. Payables

	2024 €'000	2023 €'000
Amounts falling due within one year		
Trade Payables	2,871	4,258
Deferred Income	12,728	10,394
Proceeds from Asset Disposal due to the Exchequer	2,345	2,345
Marine Research Programme Accrual (Note 12)	750	468
Accruals	137	29
Payroll and Revenue Accruals	568	475
Holiday Pay Accrual (Note 5)	472	444
	19,871	**18,413**

As at 31 December 2024, the net proceeds arising on the disposal of the RV Celtic Voyager are included within the Marine Institute cash and cash equivalents and have been recorded within liabilities, as amounts due to the Exchequer, in line with the Department of Agriculture, Food and the Marine and Department of Public Expenditure, NDP Delivery and Reform sanction permitting the disposal of the vessel. In 2024, the Institute sought clarification and approval for retention of the net proceeds for reinvestment in solar and climate related projects. Should approval be received for this alternate treatment of the funds, the impact of same will be recorded in the 2025 financial statements. Absent approval for such alternate treatment, the net proceeds shall be returned to the Exchequer and the liability to the Exchequer cleared in 2025.

Included in payables and in payroll and revenue accruals above are the following amounts due to the Revenue Commissioners:

	2024 €'000	2023 €'000
Professional Service Withholding Tax	212	198
PAYE/PRSI/USC	559	472
VAT	241	432
Relevant Contract Tax	1	6
	1,013	**1,108**

19. Superannuation Scheme and Spouse & Children's Contributory Retirement Benefits Scheme

a. General Description of the Scheme

The Marine Institute is a statutory State agency, established under section 3(1) of the Marine Institute Act, 1991 (No. 2 of 1991). Section 9(1) of the Act provides that the Institute shall make schemes for the granting of superannuation benefits to and in respect of staff members, subject to Ministerial approval. Two such approved schemes – the Marine Institute Staff Superannuation Scheme 1998 and the Marine Institute Spouses' and Children's Contributory Pension Scheme 1998 are being operated by the Institute. The former scheme provides retirement benefits (lump sum and pension) to staff members and death gratuity benefits in respect of death in service. The latter scheme provides pension benefits for the surviving spouses and dependent children of deceased members. Normal retirement age is a member's 65th birthday. Both schemes are defined benefit superannuation schemes. Staff Superannuation contributions are paid to the Department of Agriculture, Food and the Marine.

The Single Public Service Pension Scheme (Single Scheme) is the defined benefit pension scheme for pensionable public servants appointed for the first time on or after 1 January 2013 in accordance with the Public Service Pension (Single Scheme and Other Provisions) Act 2012. The scheme provides for a pension and retirement lump sum based on career-average pensionable remuneration, and spouses' and children's pensions. The minimum pension age is 66 years (rising in line with State pension age changes). It includes an actuarially reduced early retirement facility from age 55. Pensions in payment increase in line with the consumer price index.

For the purposes of reporting in accordance with FRS 102, the Institute has been advised by a qualified actuary who has prepared a full valuation in order to assess the liabilities of the superannuation schemes at 31 December 2024.

The principal actuarial assumptions which are based on professional actuarial advice, per annum, are as follows:

	2024	2023	2022
Inflation rate increase	2.10%	2.40%	2.60%
Salary rate increase	3.10%	3.40%	3.60%
Pension rate increase	2.60%	2.90%	3.10%
Scheme liabilities discount rate	3.65%	3.65%	4.25%

As pension increases under the Marine Institute schemes are based on salary increases rather than on price increases, a price inflation assumption is not necessary for the purposes of this valuation. However, since FRS 102 requires reference to an assumed rate of inflation, the above rate would be appropriate for this purpose.

The average remaining future life expectancy according to the mortality tables used to determine pension liabilities, is as follows:

	2024	2023
Male aged 65	22.5	22.7
Female aged 65	24.3	24.4

On the basis of these and other assumptions and applying the projected unit method prescribed in FRS 102, the deferred funding asset and retirement benefits liability are as follows:

	2024	2023
Total accrued retirement benefits liability	€70.04m	€68.69m

b. Analysis of the Total Pension Costs charged to Expenditure

	2024 €'000	2023 €'000
Current Service Cost	3,015	2,827
Interest on pension scheme liabilities	2,495	2,586
Employee Contributions	(741)	(702)
	4,769	**4,711**

c. Analysis of the amount recognised in the Statement of Comprehensive Income

	2024 €'000	2023 €'000
Experience Gains	929	339
Changes in actuarial assumptions underlying the present value of scheme	(4,416)	2,525
Actuarial (loss)/gain recognised in the Statement of Comprehensive Income	**(3,487)**	**2,864**

d. Net Deferred Funding for Pensions Recognised in the year

	2024 €'000	2023 €'000
Current Service and Interest Cost	5,510	5,413
Less benefits paid in the year	(673)	(864)
	4,837	**4,549**

The Marine Institute recognises amounts owing from the State as an asset corresponding to the unfunded deferred liability for pensions on the basis of the set of assumptions described above and a number of past events. These events include the statutory basis for the establishment of the superannuation scheme and the policy and practice in relation to funding public service pensions, including contributions from employees and the annual estimates process. In common with the generality of public service superannuation schemes, no separate fund is maintained, or assets held, to finance the payment of pensions and gratuities.

In line with the custom and practice as adopted by the Department of Agriculture, Food and the Marine to date, the Marine Institute has no evidence that this funding policy will not continue to meet such sums in accordance with current practice. The deferred funding asset for pensions as at 31 December 2024 amounted to €70.04 million (2023: €68.69 million). The quantification of the liability is based on the financial assumptions set out in this note.

e. Analysis of movement in net pension liability during the year

	2024 €'000	2023 €'000	2022 €'000	2021 €'000	2020 €'000
Liability at the beginning of the year	68,691	61,278	97,605	88,810	74.341
Current Service Cost	3,015	2,827	5,079	4,721	4,066
Interest on Scheme Liabilities	2,495	2,586	1,217	708	889
Actuarial (Gain)/Loss recognised in the Statement of Comprehensive Income	(3,487)	2,864	(42,073)	3,796	9,946
Benefits paid in the year	(673)	(864)	(550)	(430)	(432)
Liability at the end of the year	**70,041**	**68,691**	**61,278**	**97,605**	**88,810**

f. History of Defined Benefit Obligations

	2024 €'000	2023 €'000	2022 €'000	2021 €'000	2020 €'000
Deficit benefit obligations	70,041	68,691	61,278	97,605	88,810
Experience Gains/(Losses) on Scheme Liabilities	929	339	(4,065)	1,515	(1,124)
Percentage of Scheme Liabilities	**1.32%**	**0.49%**	**6.6%**	**1.5%**	**1.3%**
Assumption Gains/(Losses) on Scheme Liabilities	(4,416)	2,525	(46,138)	(5,311)	(8,822)
Percentage of Scheme Liabilities	**6.30%**	**3.67%**	**75.3%**	**5.44%**	**9.93%**

The cumulative actuarial gain recognised in the Statement of Comprehensive Income amounts to €11,200,000.

20. Operating Lease commitments

The Marine Institute occupies leased premises at the following locations as 31 December 2024:

- **Lease 1:** 3 Park Place, Dublin 2, commenced in June 2019 for a period of 25 years and is due to terminate on 31 October 2044
- **Lease 2:** Site Lease, Galway Harbour, commenced in 2024 for a period of 10 years. Rent review year six.
- **Lease 3:** Industrial Land, Galway Technology Park, commenced in 1988 for a period of 999 years, with five yearly rent reviews
- **Lease 4:** Laboratory Space in Greencastle for five years with effect from 1 June 2020, plus option to extend for an additional three years.
- **Lease 5:** Foreshore lease in Spiddal, granted for 35 years with effect from 15 December 2017

The Marine Institute also occupies the following premises where the leases have expired as at 31 December 2024. New leases or rental arrangements have or are being agreed but non-cancellable operating leases are not in place as at 31 December 2024.

Location 1: Parkmore Office Park, Galway

Location 2: Laboratory Space in Castletownbere

The Institute also has a number of short term rental agreements relating to piers, laboratory and sheds.

The total future minimum lease payments under non-cancellable operating leases, all of which relate to Land & Buildings, are as follows:

Relating to leases:	2024 €'000	2023 €'000
Payable within 1 year	272	139
Payable between 2 and 5 years	1,071	516
Payable thereafter	2,350	1,917
	3,693	**2,572**

Operating lease and rental payments recognised as an expense in 2024 amounted to €319,515 (2023: €288,748).

21. Related Party Transactions

Ms Charlotte O'Kelly, member of the Marine Institute Board, is a controlling party and Board member of Techworks Marine Limited, a supplier to the Marine Institute. Purchases (ex VAT) from Techworks Marine Limited amounted to €67,318 in 2024 and €134,030 in 2023. All transactions were conducted on an arms-length basis following the Institute's normal procurement procedures, in compliance with public procurement regulations.

22. Register of interests

The Institute has adopted procedures in accordance with the guidelines issued by the Department of Public Expenditure, NDP Delivery and Reform in relation to the disclosure of interests by the Board and the Institute has adhered to these procedures. Except for the transactions with Techworks Marine Limited disclosed in note 21, there were no transactions in the year in relation to the Institute's activities in which members of the Board had a beneficial interest.

23. Events after the end of the financial year

The Board is not aware of any events occurring after 31 December 2024 which affect these financial statements.

24. Board Approval

The financial statements were approved by the Board on 24 June 2025.

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