Year in Review 2023

MARINE.IE

Foras na Mara
Marine Institute

THE MARINE INSTITUTE IS A NATIONAL AND INTERNATIONAL LEADER IN OCEAN KNOWLEDGE THAT BENEFITS PEOPLE, POLICY AND PLANET.

WHO WE ARE

Our Mission:

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

Our Values:

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

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PHOTO CREDITS

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2023 - A YEAR IN REVIEW

I am pleased to present *Year in Review 2023*, a snapshot of some of the Marine Institute's many highlights during a busy and productive year.

The breadth of services, projects and initiatives that our organisation delivers is clear in this publication, along with the positive impact that the Institute has at both a national and international level. In the pages ahead, you'll read about the leading role that the Marine Institute plays in researching, understanding, and supporting the sustainable development of Ireland's marine resources.

In 2023, we embarked upon the first year of our new Corporate Strategy, *Ocean Knowledge that Informs and Inspires*. This strategy sets a new vision and mission for the organisation and identifies eight strategic priorities for the next five years.

The Institute's scientific advice and services provision informs government policy and decision-making. We play an important role in acquiring and providing complex scientific and specialist knowledge to decision-makers, stakeholders, and society, in an understandable and accessible way.

We provide expertise across a wide range of areas including sustainable fisheries, seafood safety and security, environmental monitoring, marine spatial planning, ocean renewable energy, climate change monitoring, and research supporting climate change adaptation and mitigation, aquaculture licensing, and sustainable development of the maritime industry.

The Institute continued to play a vital support role for Government, with our focus on providing a quality scientific evidence base – supporting decision makers in sustainable management of the marine resource including monitoring the marine environment, marine spatial planning, supporting the Offshore Renewable Energy Development Programme, and ensuring the protection of consumers through seafood safety monitoring and analysis.

The Institute also provided detailed scientific data and analysis to the Department of Agriculture Food and the Marine (DAFM) in support of sustainable fisheries management. This included the publication of the annual Stock Book with the latest scientific advice on 74 key fish stocks of interest to Ireland.

In 2023, our Research Funding Office managed a record €12.3 million in new research investments awarded under the Marine Research Programme. This included €5.4 million for ship-time on the research vessels and €6.9 million on research projects.

2023 was a challenging year for the shipping industry - traffic volumes across all maritime transport modes were affected by the difficult economic environment within which Irish importers and exporters have traded in recent years. The Marine Institute's Irish Maritime Development Office (IMDO) worked to address and overcome challenges to the maritime industry and to support the blue economy.

The RV *Celtic Explorer* and RV *Tom Crean* completed 596 survey days. Some 6,409 km^2 of seabed was mapped by the Marine Institute as part of the INFOMAR programme, in partnership with Geological Survey Ireland.

Climate change continued to be an important focus for the Institute this year. We worked with climate stakeholders in defining the climate services they need for the marine domain and continued our support for Ireland's climate change research with a significant number of surveys and projects.

The Irish Ocean Climate & Ecosystem Status Report 2023 was a significant publication co-ordinated by the Ocean Climate and Information Services (OCIS) service area, with input from a wide range of Marine Institute and external authors. The report was well publicised and prompted significant media and public interest.

The Marine Institute is committed to being a sustainable organisation, making a positive contribution to society and to the conservation of our environment. Our Climate Action Roadmap underwent its first annual review in 2023. The Roadmap outlines the renewable technologies used, and the policy and procedural changes we make to ensure that we implement sustainable practices throughout the organisation.

With increasing digitalisation, the ability to acquire and make use of scientific data has increased rapidly. Throughout 2023, the Marine Institute showed that it is a leader in digital ocean transformation, adopting new digital tools and ways of working to deliver our services more efficiently and collaboratively, and in ways that better meet the needs of our key clients and stakeholders.

My sincere thanks to all of our stakeholders and partners, to our Board, and to the staff of the Marine Institute for their commitment, professionalism and teamwork during this past year. We look forward to continuing to progress our activities in 2024, with your support.

MICHAEL GILLOOLY

Interim CEO, Marine Institute (as at 31 December 2023)

TRANSFORMING OUR KNOWLEDGE, ADVICE AND SERVICES

The Marine Institute has an important role in providing complex science 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 and security, environmental monitoring, marine spatial planning, ocean renewable energy, climate change monitoring, and research supporting adaptation and mitigation, aquaculture licensing, and sustainable development of the maritime industry.

Key role in providing evidence basis to the Department of Food, Agriculture and the Marine

Throughout 2023, the Marine Institute carried out analysis and provided scientific support on a wide range of topics affecting the fishing and aquaculture sectors, with 99 requests responded to from the Department of Agriculture, Food and the Marine (DAFM). The advice to DAFM included many directives and policies impacting on fishing such as the Marine Strategy Framework Directive (MSFD), the Habitats Directive, and the development of the new Nature Restoration Law.

Under the European Maritime Fisheries and Aquaculture Fund (EMFAF) Collection Framework Programme, 24 research surveys were carried out on a variety of commercially exploited species to provide the basic data that supports stock assessment. A total of 2,142 scientist days were spent at sea focused on a broad range of species including mackerel, blue whiting, herring, anglerfish, megrim, Nephrops, cockles, scallop and lobster. 636,500 fish and shellfish were measured, 59,000 aged and over 40 data calls responded to.

The annual Stock Book, delivered to DAFM in December, provided the latest scientific advice on 74 Irish stocks exploited by the Irish fishing fleet. The publication provides an evidence basis to support decision-makers in setting sustainable catch levels, and is an invaluable reference guide to a wide audience.

The Marine Institute continued to support the Department in the development of the EMFAF Operational Programme 2021-2027. Activity under the Biodiversity and Marine Knowledge schemes continued, with several projects of strategic importance now underway covering areas such as impact and risk assessments from aquaculture and fisheries in NATURA designated areas, species protection and restoration, foodwebs, data services and ocean climate change.

Marine Institute Seafood Safety Programmes

Over 3,500 shellfish samples (live and processed bi-valve molluscs) were analysed by the Shellfish Safety team through national monitoring and official control for marine biotoxins, E.coli analyses and also through laboratory research monitoring programmes for Norovirus analysis.

Additionally, over 3,700 water samples from classified production and Water Framework Directive (WFD) areas were analysed for the presence of causative toxin producing and harmful algal bloom phytoplankton species. This analysis ensures the highest levels of food safety, compliance with legislative requirements, and supports the Irish aquaculture industry.

The Shellfish Safety team provides support and advice to the Competent Authorities in Ireland and at a European level on microbiological and marine biotoxins food safety issues associated with bivalve shellfish.

Research Vessel Operations

Between the RV *Celtic Explorer* and RV *Tom Crean*, a total of 596 survey days were completed this year, with a total of 17 surveys on the *Celtic Explorer*, and 28 on the *Tom Crean*. This met all in-house survey requirements, ship-time funded programmes and externally funded surveys.

Supporting the Irish maritime industry through policy and evidence-based advice

The Marine Institute's Irish Maritime Development Office (IMDO) contributed fully and consistently to the development of policy for the maritime transport industry throughout 2023. The advice delivered to the Department of Transport (DoT) covered many aspects of maritime transport policy and related areas.

One of the key policy areas where advice was provided was Offshore Renewable Energy (ORE). A very clear emphasis has been placed by Government on the achievement of Ireland's ORE targets, as set out in the Climate Action Plan and the Programme for Government. The IMDO consulted widely with industry, Irish ports and ports in other jurisdictions as part of ongoing consultation, feeding into advice given to DoT on port infrastructure provision for the facilitation of ORE.

Other key policy areas for IMDO include economic analysis of trade volumes and port traffic, and decarbonising the maritime industry (the Fit for 55 package).

Seabed mapping for sustainable resource management

The Marine Institute's Advanced Mapping Services (AMS) extended Ireland's seabed mapping coverage in 2023, acquiring 6,409 km^2 of multibeam bathymetry during 86 days of INFOMAR operations on board the RV *Tom Crean.* This represents an area 200 km^2 greater than the size of County Galway.

Technical field and office support was provided for the decommissioning of Kinsale Energy infrastructure, for development of the Atlantic Marine Energy Test Site, and for the wreck search for the FV *Carrickatine*.

A high-resolution geomorphology map of the Irish continental shelf was created and published in the Marine Atlas and the Journal of Maps, as part of an AMS supervised Marine Institute Post Doctorate.

These new Irish digital products and services will inform ongoing Marine Protected Area designations, Offshore Renewable Energy development, MARA decision processes, and sustainable marine resource development.

Supporting implementation of Marine Environmental and Spatial Planning Legislation

Under our Service Level Agreement (SLA) with the Department of Housing, Local Government and Heritage, the Marine Institute supports the implementation of new marine planning processes. This includes the provision of relevant marine data sets as a key enabler for marine planning decision-making.

Working with the Environmental Protection Agency, the Marine Institute delivered the 2023 Water Framework Directive (WFD) monitoring programme for key parameters in transitional and coastal waters. This resulted in 8,440 water measurements being produced. Large datasets for contaminants in biota, water and sediments, and results of a study of biological effects were reported to the International Council for the Exploration of the Sea (ICES) to contribute to regional assessments by OSPAR.

636,500

Fish and shellfish were measured and 59,000 individuals were aged under the 2023 EMFAF Collection Framework Programme

3,500+

Shellfish samples were analysed for marine biotoxins, E.coli and Norovirus

6,409KM²

The total area of seabed mapped by the Marine Institute as part of the INFOMAR programme, undertaken in partnership with Geological Survey Ireland

4,171

Fish samples were analysed by the Fish Health Unit for surveillance, research or diagnostic purposes

MEETING CLIMATE, BIODIVERSITY AND SEAFOOD SECURITY CHALLENGES

The Marine Institute is a key player in the national effort needed to meet the commitments and targets set out in Ireland's Climate Action and Low Carbon Development (Amendment) Act 2021 and Climate Action Plan 2023.

Robust advice and operational forecasting on projections of 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.

Highlights of 2023 include:

- 48 long term monitoring platforms for essential ocean and climate variables were managed during the year. These include the Irish Marine Data Buoy Observation Network (IMDBON), Irish National Tide Gauge Network (INTGN) and Global Sea Level Observing system (GLOSS), Deep Sea Moorings, Argo float network, Irish Glider Network, and the Irish Wave Buoy Network.

- New coastal platforms monitoring essential climate variables included the deployment of a wave monitoring buoy off the Aran Islands in Co. Galway, the installation of meteorological sensors and an upgrade of the tide gauge at the Port of Galway (in support of the coastal observation component of Met Éireann's Flood Forecasting and Warning Service), and a new tide gauge installation at Buncranna Pier, Co. Donegal.

- The Institute was funded through the Department of Agriculture, Food and Marine (DAFM) EMFAF programme to deliver four new projects to build climate research capacity in Ireland. These projects are focusing on ocean carbon chemistry, satellite remote sensing, future ocean climate modelling, and the establishment of climate sentinel sites to gather long-term marine climate data.

- Ocean biogeochemistry/CO2 observing capacity was built using data collected from a range of activities including:
  - Ship-based surveys (Winter Environmental Survey on board the RV *Tom Crean* where 309 coastal and shelf stations were sampled for water chemistry, and the Rockall Ocean Climate Survey on the RV *Celtic Explore*r where 29 shelf and deep ocean stations were sampled)
  - Real-time and physically sampled data collection from Mace Head Atmospheric Research Station in Connemara
  - Semi-continuous surface ocean pCO2 on board the research vessels. In 2023, Ireland joined the International Carbon Observing System and the RV *Celtic Explorer* was nominated as the Irish marine station
- Data collected from these activities were widely used in national, regional, and global climate and environmental indicators.
- Ocean Climate and Information Services (OCIS) chaired the internal Climate Matrix Team to coordinate climate activities in the Marine Institute. It also acted as principal contact with DAFM on marine climate activities including the Climate Action Plan, National Climate Dialogue, and scoping the next Seafood Sector Climate Adaptation Plan.
- OCIS and Marine Environment and Food Safety Services (MEFSS) contributed as steering group members to Ireland's Climate Change Assessment, essentially an IPCC like report with a specific focus on Ireland. Services were also provided to the Department of Housing, Local Government and Heritage on climate indicators and climate reporting for the Marine Strategy Framework Directive.

48

Long term monitoring platforms for essential ocean and climate variables were managed by the Marine Institute during 2023

309

Coastal and shelf stations were sampled for water chemistry on board the RV *Tom Crean* during the 2023 Winter Environmental Survey

DELIVERING IMPACT THROUGH RESEARCH AND INNOVATION

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 has a multi-faceted role – as a research performing organisation, a research funding organisation, and, in line with our mandate, in coordinating, supporting and promoting Irish-based marine researchers and research.

A record €12.3 million in research awards granted under the Marine Research Programme

The Marine Institute's Research Funding Office managed a record €12.3 million in new research investments, under the organisation's competitive Marine Research Programme. Some €5.4 million was awarded for ship-time on the research vessels, which supported 27 awards and 246 days at sea.

An additional €6.9 million was allocated for research project awards – including nine post-doctoral fellowship awards worth a total of €3.5 million. University College Cork and Queen's University Belfast were successful under an Ocean Law and Governance Call in 2023, with €1.5 million awarded over five years to the consortium for the CoCoMar project Co-existence and Co-location in shared island marine governance.

In 2023, we launched a new pilot call for short-term research funding to address public policy questions (over six to twelve months). Under this pilot, six awards were successful with a total investment of €600,000. A total of 87 awards were made under the Networking and Marine Research Communication calls with a total investment of €138,000 in grant aid, representing a significant increase on 2022.

Innovative fisheries, ecosystems and aquaculture projects

The Institute was successful in bidding for new European project calls in 2023, with the following major projects awarded:

- **Horizon Europe -** Marine Beacon research project being coordinated by the Marine Institute, dealing with by-catch in commercial fisheries of protected, endangered and threatened (PET) species.

- **EU LIFE project -** CIBBRiNA, providing concrete outcomes to underpin Ireland's legal obligations on by-catch of PETS species under the NATURA, Marine Strategy Framework Directives and the EU's Common Fisheries Policy.

Celebrating 10 years since the signing of the Galway Statement

In July, the Marine Institute, the Department of Foreign Affairs and the European Commission hosted an event at Iveagh House, Dublin, marking 10 years of the Galway Statement on Atlantic Ocean Cooperation

It celebrated marine research cooperation between the European Union, United States and Canada, and renewed our shared commitment to the Atlantic.

The hybrid celebration continued over the next two days, including sessions at University of Galway and the Marine Institute headquarters in Oranmore, Galway. Close to 300 European and international Atlantic partners and actors came together to discuss how the All-Atlantic Declaration (signed in 2022) will shape continued Atlantic marine research cooperation over the next decade.

Ocean research and innovation continues to be a major focus

Nine major projects on ocean observing and forecasting continued in 2023.

MyCOAST, CleanAtlantic (developing modelling capacity in mapping and predicting the fate of marine litter) and iFADO (ocean modelling and observing activities in support of Marine Strategy Framework Directive and OSPAR reporting) concluded this year.

BioCeltic, CE2Coast, Copernicus (supporting native oyster restoration and oyster aquaculture in Galway Bay, based on ocean modelling), WFD Futures, FreeLitter AAT (aiming to prevent and reduce macro and micro litter in the European Atlantic) and EuroSea project (helping to advance ocean observing and forecasting capabilities for extreme marine events in support of aquaculture and fisheries) progressed during 2023 and are ongoing projects.

A wide range of other Ocean Climate and Information Services research projects took place during 2023, including ones undertaken by Advanced Mapping Services, Marine Research Infrastructures and Research Vessel Operations. The latter included the conclusion of the Eurofleets Plus project, which delivered over 268 days of transnational access to European and international research vessels to the marine research community over the five years of the project.

€12.3M

in research awards granted under the Marine Research Programme in 2023

€5.4M

was awarded for ship-time on Marine Institute research vessels. This supported 27 awards and 246 days at sea

Shellfish safety research activities

The Shellfish Safety team participated in the Irish module of Traversing European Coastlines (TREC) and TARA Oceans sampling campaign, conducted by the European Molecular Biology Laboratory, in September. Four sample stations were organised in Co. Galway, in association with TARA Oceans schooner.

The expedition is exploring interactions between the two major ecosystems (Land and Sea) on our planet in order to better understand how these ecosystems interact, and how the organisms within them respond to changes both natural and those from human disturbance.

Other research projects within the wider Marine Environment and Food Safety Services (MEFSS) section this year included a number of collaborative projects relating to marine carbon system dynamics and ocean acidification, novel approaches to evaluating pollution, and contaminant burdens in animals near the apex of the marine food chain.

A significant investment was made in expanding and enhancing research capabilities through the procurement of remote sensing instruments. These will help to assess the impacts of climate change drivers on phytoplankton.

Two research projects delivering value for the Irish maritime industry

Two external research projects are already delivering value for the Irish maritime industry in strategically important areas. The SHIP project, which was completed in 2023 and was based in Queen's University Belfast, guides Irish ports towards a sustainable future and is aligned with the Fit for 55 initiative and broader initiatives on a carbon neutral economy by 2050.

The second research project, based in University of Galway's Socio-Economic Marine Research Unit (SEMRU), seeks to establish the socio-economic value of investing in the development of Ireland's maritime industry. This research focuses on the economic impacts of the transition to alternative fuels in 2022 and will deliver an important research paper that quantifies such impacts to 2024.

Our Shared Ocean projects awarded a total of €2.38 million

Our Shared Ocean programme, launched in 2022 and funded by Irish Aid in the Department of Foreign Affairs, builds strategic research partnerships between Irish researchers and those in Small Island Developing States (SIDS). They collaborate on joint transnational projects addressing specific ocean and climate science challenges for SIDS in the Caribbean, and the Atlantic, Indian and Pacific Oceans. Partner countries include Trinidad, Jamaica and Haiti in the Caribbean, and Guam, Palau and Fiji in the Pacific.

In 2023, a total of €2.38 million was awarded to 23 developing island nations for projects. These projects will address critical ocean and climate related challenges, along with blue economy related challenges.

LEADING THE DIGITAL OCEAN TRANSFORMATION

With increasing digitalisation, the ability to make use of marine scientific data has rapidly increased. The Marine Institute is leading the way in providing a range of advanced and easily accessible data and digital marine services. We're adopting new digital tools and ways of working to deliver our services more effectively and collaboratively, and in ways that better meet the needs of our key clients and stakeholders.

Support and upgrades to the Marine Institute's IT, data and cyber security capabilities took place in 2023 to facilitate the ongoing move to digitally enabled working. Improvements included new cloud-based data storage services and enhanced process digitalisation and visualisation of oceanographic, food safety, socio-economic and marine environmental data.

The Marine Institute received renewed accreditation of the International Oceanographic Data Exchange (IODE)-accredited quality management framework for a further five years. This has now been applied to over 120 data processes, driving improvements in how data are processed, stored and reported, and providing greater confidence in the data processes underpinning the Institute's services.

Work was also undertaken to support the Department of Agriculture, Food and the Marine's Aquaculture Information Management System (AQUAMIS) programme to further develop the online Aquaculture Licensed Sites Viewer. The viewer allows members of the public to see where aquaculture activities are licensed in Ireland.

More than 40 new maps and other data visualisations were developed this year based on data from the Marine Institute and contributing partners, in support of the Marine Strategy Framework Directive and National Marine Planning Framework.

There was an increasing need for data and digital services to support offshore wind development in Irish waters. Important outputs included providing data supporting the south coast OW Designated Maritime Area Plans (DMAP), planning, support for the Seafood/Offshore Renewable Energy Working Group and an assessment of survey activities that could be exempt under the Maritime Area Planning Act. The completion of a new ocean economy data dashboard in December 2023 was a major milestone.

A major reorganisation of our THREDDS (Thematic Realtime Environmental Distributed Data Services) data server, which makes data available to third parties, took place this year. This work streamlined the process through which many external users access our ocean model output.

The Institute (through Fisheries Ecosystems Advisory Services) chaired the ICES Working Group on the Governance of Quality Management of Data and Advice (WGQuality) as it completed its three-year work plan. The group's work supported the ICES aim of creating an end-to-end quality assurance framework for advice production from data management, data integration, data analysis, and data use, to the process of translating that data into advice.

788

Datasets are available online via the Marine Institute data catalogue

27%+

The increase in the number of custom data requests received by the Marine Institute in 2023

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. 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.

Port volumes in Ireland return to pre Covid-19 levels, with the market benefitting from increased capacity

2023 was a challenging year for the shipping industry - traffic volumes across all maritime transport modes were affected by the difficult economic environment within which Irish importers and exporters have traded in recent years.

It's testament to the resilience and agility of Ireland's maritime industry that port volumes have returned to pre Covid-19 levels, notwithstanding these challenges, and that the market has benefitted from increased capacity on continental routes.

The Irish Maritime Development Office's (IMDO) role in business development is of critical importance and is measurable in terms of the responsiveness of the maritime industry to emerging challenges and threats. In 2023, the IMDO undertook its usual business activities of acting as a key point of contact and facilitator of meetings/introductions both nationally and internationally for companies, ports, agencies, embassies, and other stakeholders.

Supporting and facilitating projects led by science researchers and industry partners

Ocean Climate and Information Services (OCIS) supported and facilitated several external projects led by members of the scientific research community and industry partners.

These projects used Marine Institute infrastructure such as the Irish Wave Buoy Network, the SmartBay observatory and the Galway Bay Cable to carry out research into novel technologies, and added value applications of same including:

- The deployment of a wave monitoring buoy in Bantry Bay, Co. Cork, for the Wild Atlantic Mussel (WAM) project led by University College Cork
- The deployment of a wave monitoring buoy in Brandon Bay, Co. Donegal, for a coastal resilience and dune regeneration project led by University of Galway
- The deployment of a wave monitoring buoy at Inisfarnard, Co. Cork, to quantify the efficiency of a novel energy-generating mooring technology, developed by TFI and Exceedence, providing power to an aquaculture feed barge on site
- Access to the SmartBay fibre optic cable for distributed acoustic sensing for the geotechnical assessment of offshore renewable developments by iCRAG (Irish Centre for Research in Applied Geosciences) researchers
- Access to the SmartBay facility for DIAS researchers in the deployment of iMARL's hydrophone array for underwater acoustic noise localisation

EU funded projects contributing to the development of the Irish maritime industry

The IMDO is currently involved in four EU funded projects, all of which are contributing to the development of the Irish maritime industry, and all of which made impressive progress in 2023. They are:

- The International Fast and Secure Trade Lanes (IFSTL) project, which ended in March 2023. The main deliverable was an analysis of the processes for RoRo terminals in Dublin and Cherbourg, and field trials of new digital systems that could improve the efficiency and safety of operations at terminals.

- The Ealing Project, a European flagship action for cold ironing in EU ports, which involves ships using shore-based electrical power while in port. The IMDO represented the Irish ports and coordinated a technical study on the Ports of Cork to serve as a case study for the wider Irish port system.

- The Atlantic Smart Ports Blue Acceleration Network (AspBAN) which is developing a dynamic acceleration services platform for Atlantic ports to work as blue economy hubs, thus diversifying their business models and revenue streams. The project ended in June 2023, with a final event and conference in Brussels.

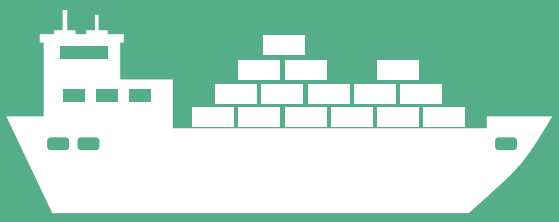
- Maritec-X, which aims to establish the Cyprus Marine and Maritime Industry (CMMI), along broadly similar lines to Ireland's Marine Institute. The project made significant progress in 2023 and both the IMDO and the Marine Institute continue to play a pivotal role in advising CMMI and charting its path to success.

Ireland's Ocean Economy Report Published

The Marine Institute, in collaboration with the Socio-Economic Marine Research Unit (SEMRU) at University of Galway, continues to progress the reporting, analysis and monitoring of Ireland's ocean economy, required to underpin a range of socioeconomic services to Government.

The latest update of the Ireland's Ocean Economy Report was published in December. It shows that Ireland's ocean economy generates over €7 billion in turnover; has a direct economic contribution, as measured by Gross Value Added, of €2.85 billion; and employs approximately 33,500 Full-Time Equivalents. The report estimates the annual trends across all sectors as well as commentary on 5-year, 10-year and post-Covid recovery.

This year's report was accompanied by an online dashboard to enable further dissemination of the data and also encourage further analysis and research.



€7 BILLION

The turnover of Ireland's ocean economy (data from *Ireland's Ocean Economy Report 2023*)

EMPOWERING OUR PEOPLE TO DELIVER EXCELLENCE

The Marine Institute is committed to building a workplace of the future, where an agile, diverse, motivated and valued team delivers service with excellence.

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.

Platinum Excellence Through People Certification Retained

The Institute was audited and retained platinum level certification from the National Standards Authority of Ireland (NSAI) against Excellence Through People (ETP) 1000:2017 (a national human resource management scheme promoting better engagement, innovation and efficiency while recognising the importance of people).

Our Commitment to Equality, Diversity & Inclusion

We delivered on our 2021-2023 Equality, Diversity and Inclusion (ED&I) Action Plan and launched a programme of actions to continue to increase awareness of ED&I whilst ensuring accessibility to training, work experience, recruitment opportunities, infrastructure, and tailored supports.

We continue to partner with AsIAm, completing a sensory audit in 2023, offering training to everyone working with us, and receiving our "badges" recognising our organisation as being Autism Friendly.

Our Oranmore Headquarters and Newport facility had sensory audits completed by AsIAm to ensure that our workplaces are comfortable and offer better accessibility for neurodiverse individuals.

Prioritising development and wellbeing

Our investment in development continued with a focus on digital skills, managing in a changing work environment, cyber security and the building of resilience and wellbeing.

Health and safety training also continued to be a focus for the Marine Institute this year. Our teams invested significant effort to ensure high quality service delivery in safe working environments onsite, in the field, and at sea.

19

The number of years that the Marine Institute has successively held the prestigious Excellence Through People (ETP) certification

1ST

Gender Pay Gap Report published in 2023

50%

of the roles offered and accepted in 2023 were by females

OUR ORGANISATION, COMMITTING TO SUSTAINABILITY

Sustainability is at the heart of how we work 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.

Sustainability developments on our research vessels

The research vessel fleet commenced trials on the use of Hydrotreated Vegetable Oil (HVO) in 2023 with the RV *Tom Crean* successfully operating on a Marine Gas oil/HVO blend in the fourth quarter of 2023.

The use of HVO can result in a reduction of up to 90% in C02 emissions over Hydrocarbon-derived Marine Gas Oil.

Following the success of the trials and the establishment of a reliable supply chain for this alternate fuel supply, it's intended to use an average of 35% HVO between the two vessels in future years. This will enable the research vessel fleet to reduce emissions and support the Institute's work towards Climate Action Plan targets.

After 25 years of service to the Marine Institute and following its purchase by new owners in Canada, RV *Celtic Voyager* crossed the Atlantic in December 2023. It is being refitted by its new owners for continued use for fisheries research and seabed mapping. We are pleased that the vessel has many more years ahead of it, making it sustainable beyond the 600 surveys, 6,500 science days and more than 885,000 kilometres completed whilst in our service.

Our Sustainable Organisation

Our Climate Action Roadmap, reviewed in 2023, outlines our transition to renewable technologies and other energy reduction measures to be implemented between now and 2030. The roadmap also sets out how the Institute is working towards the new targets for energy reduction (50%) and Greenhouse Gas reduction (51%), as set out in the Climate Action Plan 2021.

We completed several significant energy and sustainability capital projects in 2023, resulting in an estimated 626,000 kWh in annual grid savings. These included:

- Installation of two solar PV rooftop systems. 783 panels, producing up to 291,611 kWh/year of electricity, were installed in Oranmore and a smaller 76 panel system, producing c. 29,395 kWh per year, was installed in Newport.
- Upgrades in Oranmore and Newport lighting were also completed. A total of 1,356 LED fittings were replaced, saving an estimated 200,000 kWh of electricity per year.
- The Office of Public Works (OPW) undertook a boiler upgrade project for the Marine Institute, resulting in a more energy efficient heating system.

My Green Laboratories programme

Two laboratories in the Marine Institute were awarded My Green Laboratories (MGL) certification this year, leading the way in sustainability from a laboratory perspective. The Biotoxin Chemistry team and our Newport facility took part in the MGL programme this year.

The programme seeks to reduce the environmental aspect of laboratories considering 14 key topics over four main areas - through a combination of organisational initiatives and behaviour change programmes. MGL empowers scientists to make choices that not only benefit their work but also the environment and communities around them. It's planned to expand the programme to other Marine Institute laboratories in 2024.

Other sustainability highlights:

- Throughout the winter period of 2023/2024, we continued to operate our buildings in accordance with the Government's Reduce Your Use campaign.
- Other sustainability activities during the year included the 'Get Greener' Green Team activities, out of hours energy audits, membership of the All-Ireland Pollinator Plan, and awareness campaigns and events.

40%

Energy saving made by the Institute's headquarters at Oranmore, Co. Galway, since joining Optimising Power @ Work in 2016

626,000KWH

Estimated amount of annual grid savings through implementing several Marine Institute energy and sustainability capital projects in 2023

INSPIRING OUR STAKEHOLDERS AND SOCIETY

As a leader in ocean knowledge, the Marine Institute is uniquely placed to engage, inform and inspire stakeholders and society about the role and importance of the ocean that surrounds our shores, defines our weather and climate, and provides substantial opportunities for employment and growth across multiple maritime sectors.

Irish Ocean Climate & Ecosystem System Report 2023

The Irish Ocean Climate & Ecosystem Status Report 2023 was a major publication co-ordinated by Ocean Climate and Information Services (OCIS), with input from a wide range of Marine Institute and external authors.

The report and associated summary for policy makers provides important and timely updates on national observations and research and recommendations on the changing state of our seas.

INFOMAR Blue Map Series

The INFOMAR Blue Scale Map series, graphically representing the extension of Ireland's unique and complex terrain beyond the coastline, was launched over 18 weeks in 2023.

Developed by a dedicated team of hydrographers, data processors and cartographers, the maps highlight the topography of the coast in unprecedented detail.

OCEANS 23

The Marine Institute was a key partner to the OCEANS 2023 conference, which took place at University of Limerick from 5 - 8 June 2023. With close on 1,000 attendees, 500 technical papers and more than 60 exhibitors, it was one of the most high-profile marine events in Ireland this year.

Explorers Education programme

The Explorers Education programme is the primary school marine themed education programme funded by the Marine Institute and managed and delivered by the Explorers Team of Camden Education, Galway Atlantaquaria, SeashoreKids, Oceanics Surf School, Old Cork Waterworks Experience, Sea Synergy and Leave No Trace Ireland.

In 2023, more than 400 modules were delivered to 13,500 children across Ireland. 26 primary schools in 14 counties participated in Healthy Oceans projects, with Scoil Chaitríona Junior, Renmore, Co. Galway, crowned the national winner.

Foras na Mara
Marine Institute

Rinville, Oranmore,
Co. Galway, H91 R673
T: +353 91 38 7200
E: institute.mail@marine.ie

Marine Institute Dublin,
Three Park Place,
Upper Hatch Street,
Dublin 2, D02 FX65
T: +353 1 7753900
E: institute.mail@marine.ie

Marine Institute Catchment
Research Facility,
Furnace, Newport,
Co Mayo, F28 PF65
T: +353 98 42300
E: institute.mail@marine.ie

marineinstituteireland
marine-institute
@marineinstituteireland
@MarineInst

marine.ie