

A MARINE KNOWLEDGE, RESEARCH & INNOVATION STRATEGY FOR IRELAND 2007-2013

SEA CHANGE

ANNUAL PROGRESS REPORT 2007



Contents

Preface	i
Foreword	iii
1 Overview of <i>Sea Change</i> Activity 2007	1
2 Breakdown of Investment by <i>Sea Change</i> Measure	7
3 High-Level Impacts in 2007	10
4 Influencing the European Marine Research Agenda	11
5 Implementation Framework: Implementing <i>Sea Change</i> through Co-ordination & Collaboration	12
6 Plans for 2008	17
Appendix 1: <i>Sea Change</i> Research Programmes – Overview of Progress in 2007	18
Industry Research Measure	18
<i>Marine Food Research Programmes</i>	18
<i>Shipping & Maritime Transport Research Programme</i>	20
<i>Offshore Oil & Gas Research Programme</i>	21
Discovery Research Measure	22
<i>Marine Biodiscovery/Biotechnology Research Programme</i>	22
<i>Marine Technology Research Programme</i>	23
<i>Renewable Ocean Energy Research Programme</i>	25
<i>Marine Functional Foods Research Programme</i>	27
Policy Support Research Measure	29
<i>Marine Environment Research Programme</i>	29
<i>Rapid Climate Change Research Programme</i>	30
<i>Knowledge & Information Management Research Programme</i>	31
<i>Policy, Socio-Economic & Legal Research Programme</i>	32
Infrastructure Supporting Programme	33
<i>Seabed & Resource Mapping Research Programme</i>	33
<i>Fund to Access Ship Time</i>	34
<i>Specialist Marine Research Infrastructure</i>	35
Appendix 2: Marine Research Projects 2007	36
Appendix 3: Membership of <i>Sea Change</i> Advisory Groups	53
List of Abbreviations	58



Preface

Sustained investment in research and development is essential to improve Ireland's industrial and economic competitiveness. It stimulates the creation and exploitation of knowledge; yields benefits of increased productivity and growth; provides opportunities in new commercial markets; and is a source of competitive advantage in all sectors of the economy. This has been recognised by the Irish Government through the publication in 2006 of the National Strategy for Science, Technology and Innovation (SSTI)¹. The SSTI sets ambitious goals for the attainment of a knowledge society offering new opportunities for employment and social advancement whilst setting out a shared vision of placing Ireland firmly on the global map in terms of the excellence of our research and its application for the benefit of society.

2013 Vision: *Strategy for Science, Technology & Innovation*

"Ireland by 2013 will be internationally renowned for the excellence of its research, and will be to the forefront in generating and using new knowledge for economic and social progress, within an innovation driven culture."

Sea Change, the National Marine Knowledge, Research and Innovation Strategy 2007-2013, builds on the vision and strategy outlined by the National Strategy for Science, Technology and Innovation. It aims to bring about a transformation of the marine sector from a traditional one which is primarily associated with food harvesting to one which is multifaceted, embracing a range of new, high value, knowledge-intensive, commercial opportunities developed in a sustainable manner.

Investment over the period 2007-2013 will be targeted at research to increase industrial competitiveness, stimulate innovation, build research capacity in new areas and address public policy issues. In doing so, it will address a number of high-level goals set out in the 2008-2010 Strategy Statement of the Department of Agriculture, Fisheries and Food namely:

- Promote an internationally competitive, innovative consumer-focused food sector; and
- Support the development of the rural economy, promoting economic, social and environmental sustainability, and appropriate structural change.

¹ www.entemp.ie/science/technology/sciencestrategy.htm

The impacts that are targeted in the *Sea Change* Strategy are very much oriented toward sectors that are rural in nature and location, and include:

- Environmental management;
- Economic stimulation and diversification;
- Building research capacity;
- Regional and socio-economic R&D programmes;
- Public service improvements; and
- North-south co-operation projects.

The progress in Year 1 is very impressive and encouraging and I want to thank the broad range of stakeholders, including industry, academia and state agencies, for their contributions. A solid foundation is being built in an area of critical national importance and potential and I look forward to future exciting developments as the Strategy is delivered.

Brendan Smith T.D.

Minister for Agriculture, Fisheries and Food



Foreword

The overall aim of the *Sea Change* Strategy is to contribute to the knowledge economy, to the achievement of key national strategic objectives (Competitiveness and Growth, Innovation, Regional and North-South Development and Environmental Sustainability) and to enhance Ireland's profile as an international leader in marine research and innovation.

The *Sea Change* Strategy provides a clear and realistic picture of future opportunities and challenges and a roadmap for selective and managed investment in marine research and innovation. It calls for a strategic and co-ordinated approach aimed at developing synergies across a wide range of government initiatives and leveraging previous strategic investments in science and technology. In this way, a **whole government approach** is being attempted with the aim of maximising the value of marine resources to the economic, social and environmental well-being of Ireland.

In January 2007, the Marine Institute was tasked with managing and co-ordinating the implementation of *Sea Change* over the seven-year period. Throughout 2007, activity moved from planning into implementation; commencing with the announcement of the Marine Research Sub – Programme in the National Development Plan in January (*National Development Plan 2007-2013: Transforming Ireland²*), the launch of the *Sea Change* Strategy by Minister Noel Dempsey in February, through to the launch and award of a number of dedicated marine research funding schemes which saw a commitment of €43.8m in research funding over a 1-7 year timeframe. This funding comprised NDP 2007-2013 Marine Research Sub-Programme (€10.4m); Beaufort Marine Research Awards (€20m); SSTI Award (€7.4m); and ERDF Infrastructure Funding (€6m). In addition to this €43.8m, €21.6m was successfully invested via other national and international funding sources, for programmes/projects spanning a 1-7 year period. This included an investment of €2.66m from the DAFF Food Institutional Research Measure (FIRM) as a matching contribution for a joint Marine Institute SSTI/FIRM Marine Functional Foods Research Initiative (MFFRI).

This total investment of €65.5m, from multiple competitive research funding sources, will result in the creation of new capacity and knowledge generation – with in excess of 81 new research positions and 76 PhD scholarships being created. Overall, in 2007, 60 research groups across 23 research institutions and 21 industry research performers have received funding to carry out marine-related research and innovation projects/initiatives.

Other key activities in 2007 included the establishment by the Marine Institute of implementation arrangements for *Sea Change*, consisting of a High-Level Steering Group (drawn from a range of public and private sector bodies); External Advisory Groups; a dedicated *Sea Change Management Unit* within the Marine Institute; the strengthening of existing inter-agency collaboration and co-ordination; and building new partnerships and collaborations to ensure the delivery of *Sea Change*.

Dr. Peter B. Heffernan
Chief Executive, Marine Institute

² www.ndp.ie

1 Overview of *Sea Change* Activity 2007

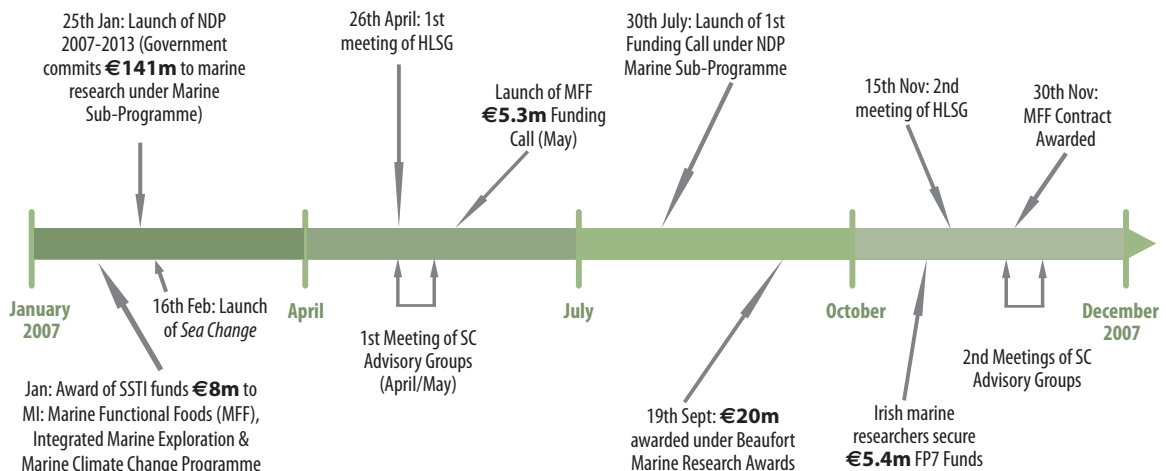
Sea Change 2007

In 2007, the Marine Institute focussed on a number of preparatory implementing mechanisms required to deliver *Sea Change*. These included:

- Securing marine research funding and the administration and management of related measures and supports (outlined below);
- Setting up of an implementation framework consisting of a High-Level Steering Group (HLSG) and External Advisory Groups to provide advice and input to ensure that the implementation of the Strategy remains responsive to changes in the industrial, scientific and policy environments (see Section 5);
- Establishment of a dedicated *Sea Change Management Unit* within the Marine Institute (see Section 5);
- Establishment of transparent management processes and procedures (see Section 5);
- Strengthening of existing inter-agency collaboration and co-ordination, and building new collaborations to ensure the delivery of the three research measures and two supporting programmes (see Sections 5 & 6); and
- Targeting of complementary research funding programmes at national and international levels (see Sections 2, 3 & 5).

The focus of activity in 2007 moved from planning into implementation; commencing with the announcement of the NDP by Government in January, the launch of *Sea Change* in February, through to the launch of a number of dedicated marine research funding calls; e.g. Marine Functional Foods Research Initiative (MFFRI), Beaufort Marine Research Awards and the NDP Marine Sub-Programme, and subsequent award. The following diagram provides an overview of the key milestones achieved in 2007.

Figure 1.1: Key milestones in the implementation of *Sea Change* during 2007



2007 Investment in Marine Research

2007 saw an unprecedented level of investment in marine research, with approximately €65.5m of R&D investment committed against the Research Measures and Programmes outlined in *Sea Change*. This investment comes via a wide range of funding sources for programmes/projects spanning a 1-7 year period:

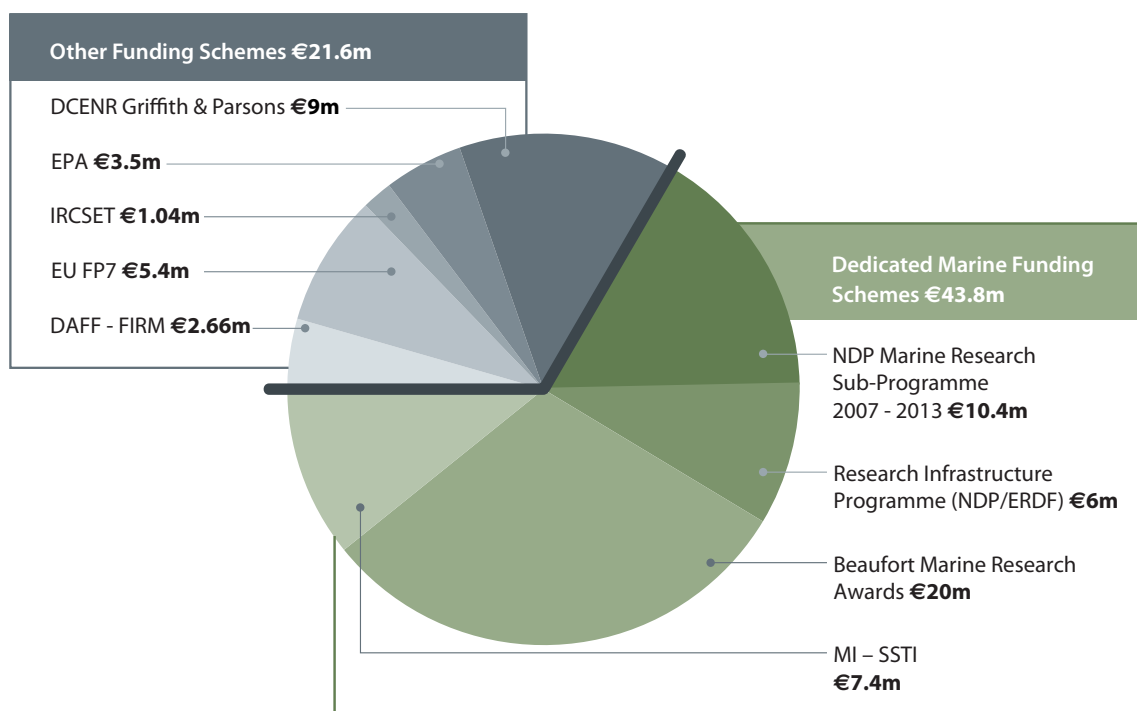
- **€43.8m** committed via **dedicated marine research funding schemes**; and
- **€21.6m** secured by Irish researchers via other national and international funding sources (including €2.66m FIRM funding).

This funding commitment has provided support for:

- 81 new research positions, 76 new PhD scholarships and 117 student placements;
- 60 research groups across 23 research institutions; and
- 21 industry research performers.

The following diagram and associated tables summarise the key funding sources/mechanisms in 2007, their associated level of investment and the impacts this will have on capacity building and knowledge generation.

Figure 1.2: Key Funding Sources/Mechanisms in 2007



This €65.5m investment was spread across a range of marine sectors and policy areas, from marine food (fisheries, aquaculture and marine functional foods) to technology, biodiscovery, marine environment and socio-economics. The focus of the investment from the various sources (MI/DAFF v'Other') is presented in Table 1 and the associated Figure. Tables 2 and 3 provide further detail on the knowledge generation/research capacity outputs from this investment.

Table 1: 2007 Sea Change Investment Focus

Investment Focus	Marine Institute/DAFF						Other Funding (€000s)	Total (€000s)
	NDP (€000s)	SSTI (€000s)	Beaufort (€000s)	ERDF (€000s)	DAFF/FIRM (€000s)	Sub-Total (€000s)		
Fisheries, Aquaculture & Seafood	5,996	2,660	7,839	-	2,660	19,155	1,654	20,809
Seaweed	1,365	-	-	-	-	1,365	72	1,437
Shipping	59	-	-	-	-	59	809	868
Offshore Oil & Gas	-	-	-	-	-	0	1,500	1,500
Marine Technology	64	-	2,588	-	-	2,652	167	2,819
Biodiscovery/ Biotechnology	234	-	7,349	-	-	7,583	-	7,583
Renewable Ocean Energy	96	-	-	-	-	96	5,229	5,325
Marine Environment	932	-	-	-	-	932	3,964	4,896
Marine Climate Change	-	2,225	-	-	-	2,225	1,602	3,827
Marine Socio-Economic	-	-	2,199	-	-	2,199	-	2,199
Knowledge & Information Management	1,688	-	-	-	-	1,688	852	2,540
Seabed & Resource Mapping	-	1,111	-	-	-	1,111	3,144	4,255
Ship-Time Research Programme	-	1,439	-	-	-	1,439	-	1,439
Research Infrastructure	-	-	-	5,959	-	5,959	-	5,959
Total	€10,434	€7,435	€19,975	€5,959	€2,660	€46,463	€18,993	€65,456

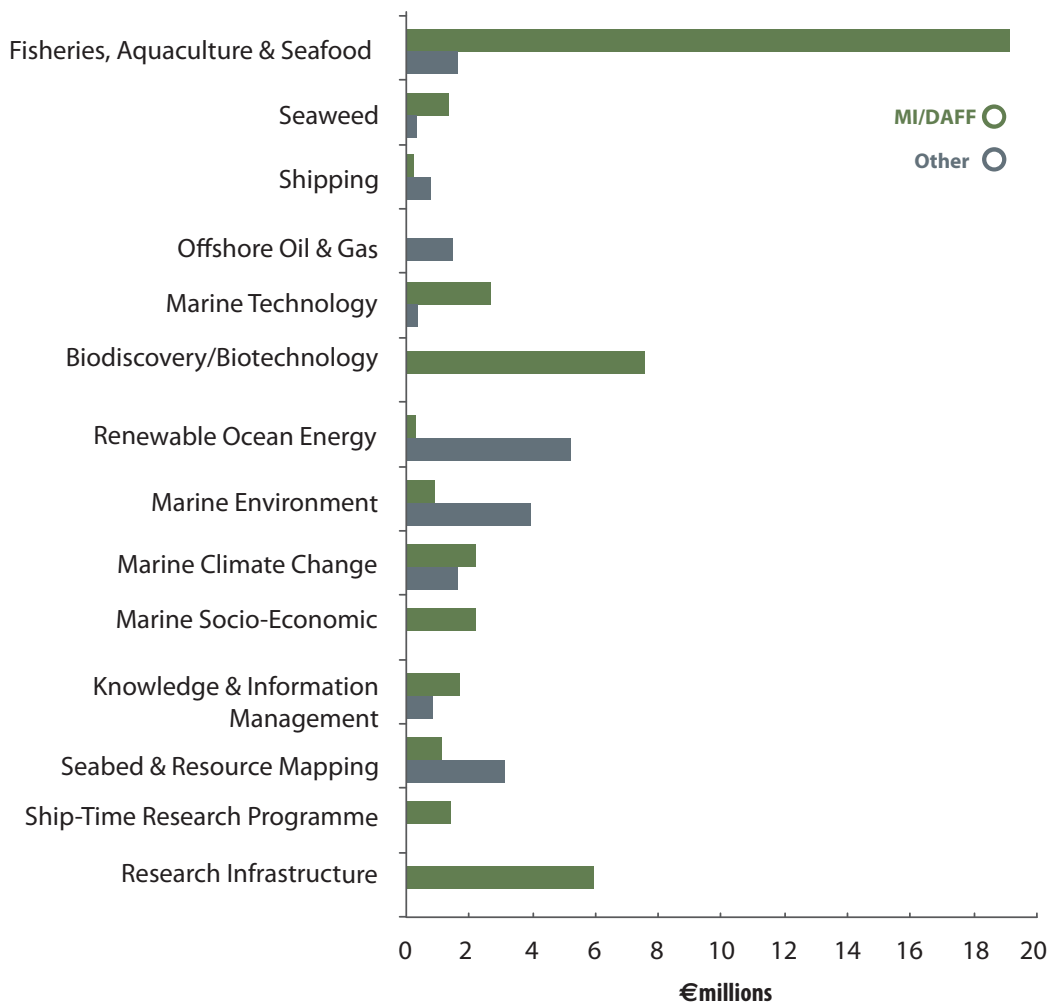
Figure 1.3: 2007 *Sea Change* Investment Focus

Table 2: Investments Committed in 2007 via Dedicated Marine Funding Schemes

	Dedicated Marine Funding Schemes	Investment Committed in 2007 & Spread Across Sea Change Programmes	Knowledge Generation/Research Capacity Outputs
€46.5m DEDICATED MARINE FUNDING SCHEMES	Beaufort Marine Research Awards	€20m over a seven-year period for funding in the following <i>Sea Change</i> Research Programmes: Fisheries, Marine Biodiscovery, Marine Technology, Climate Change and Socio-Economic & Legal Research	11 research groups in six research institutions located on the island of Ireland funded. 19 new research positions (breakdown of researchers: four Principal Investigators & 15 researchers), 28 new PhD scholarships and 94 student placements supported over the next seven years.
	Strategy for Science, Technology & Innovation (SSTI): Marine Institute Award	€4.75m over a two-year period in the following areas: <ul style="list-style-type: none"> • €2.55m Integrated Marine Exploration Programme (offshore oil & gas, seabed mapping, marine ecosystems, biodiscovery and infrastructure/shiptime programme) • €2.2m Marine Climate Change Programme 	Two new teams funded in the Marine Institute. 19 new research/scientist positions supported over the next two years. Funding provided in 2007 for five dedicated ship-based training programmes providing training for 79 students/scientists. Six integrated research surveys funded accommodating 67 scientists from 12 research groups from seven research institutions.
	Joint Award: SSTI Marine Institute/ Department of Agriculture, Fisheries & Food	€5.32m over a five-year period for research into Marine Functional Foods	Two new research teams funded in six research institutions on the island of Ireland. Nine new research positions (including two Principle Investigators) and seven new PhD scholarships supported over the next five years.
	NDP 2007–2013 Marine Research Sub-Programme	€10.4m to fund research projects in the following areas: <ul style="list-style-type: none"> • Defined call in the areas of fisheries, aquaculture, shipping, seaweed, marine environment and knowledge & information management • Industry–Led call (open to all marine sectors) • IRCSET PhDs in marine biodiscovery 	23 new research projects funded across 14 research institutions and 13 SME's (including six industry-led projects). Funding will support 18 existing researcher groups and will create new research capacity: funding 14 new research positions and 12 new PhD scholarships .
	NDP 2000 – 2006 NDP Marine RTDI Measure/ERDF Funding	€6m over a two-year period for national marine research infrastructure in the BMW region	Purchase of key national marine infrastructure in the BMW region to support a number of <i>Sea Change</i> Programmes.
	Total	€46.5m	<ul style="list-style-type: none"> • 61 new research positions, 47 new PhD scholarships & 94 student placements • 45 research groups across 17 research institutions • 13 industry research performers

Note: The €2.66m investment under FIRM in the Marine Functional Foods Initiative is included in the above.

Further detail on individual funded projects is provided in Appendices 1 and 2.

Table 3: Funding Secured by Irish Researchers in 2007 via other Funding Schemes

	Other Funding Schemes	Investment Committed in 2007 & Spread Across <i>Sea Change</i> Programmes	Knowledge Generation/Research Capacity Outputs
€19m NON-MARINE FUNDS (Funding secured by Irish researchers from other national & international funding schemes)	Department of Communications, Energy & Natural Resources: • Charles Parsons Energy Research Awards • GSI Griffith Geoscience Research Awards	€9m over a seven-year period: • €3.5m: Parsons Energy Award (Renewable Ocean Energy) • €5.5m: Griffith Geoscience Award (offshore oil and gas, seabed mapping and knowledge & information management)	Five research groups in four HE Institutions funded. 13 new research positions, 13 new PhD scholarships and 23 student placements supported over the next seven years.
	International Funding: EU Framework 7 Programme	€5.4m grant-aid secured by Irish researchers in competitive, co-operative projects supported under the EU's FP7 first call in the areas of aquaculture, fisheries, marine environment, ocean energy and shipping	11 marine projects funded with Irish participation, two of which are being led by Irish researchers. Funding provided for 10 existing research groups across five research institutions and eight industry partners.
	EPA STRIVE Programme	€3.5m committed to marine projects under the EPA STRIVE Programme in the areas of fisheries, marine environment, marine climate change and marine technology	Four new research positions (including one PI) and seven new PhD scholarships funded across eight HE Institutions.
	IRCSET	€800k awarded under IRCSET's 2007 PhD Scholarship and Post-Doctoral Fellowship Scheme in the areas of marine climate change, renewable ocean energy, marine technology, seaweed, fisheries and the marine environment. €240k award for deep-sea research (ESF-EUROCORES)	Three new research positions (Post-Doctoral Fellowships) and nine new PhD scholarships supported. Funding also provided for existing researchers.
Total		€19m	<ul style="list-style-type: none"> • 20 new research positions, 29 new PhD scholarships & 23 student placements • 15 research groups across 12 research institutions • 8 industry research performers

Further detail on individual funded projects is provided in Appendices 1 and 2.

In addition to this €19m identified above, other investment by government departments and agencies (e.g. see Box HEA: PRTL Cycle 4 below) funded research during 2007 related to *Sea Change* Programmes.

HEA: PRTL Cycle 4	Potential links across seven of the PRTL projects with the following <i>Sea Change</i> Programmes: Advanced Marine Technologies, Marine Biodiscovery/Biotechnology, Knowledge & Information Management, Marine Functional Foods, Marine Climate Change and Marine Socio-Economics.
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2 Breakdown of Investment by *Sea Change* Measure

Sea Change comprises three Research Measures and two Supporting Programmes as follows:

Figure 2.1: Structure and Content of the Marine Knowledge, Research and Innovation Strategy for Ireland 2007-2013

Research Measures		
Industry Research Measure	Discovery Research Measure	Policy Support Research Measure
Research Programme 1: Shipping & Maritime Transport Research Programme 2: Seafood Processing Research Programme 3: Finfish Aquaculture Research Programme 4: Shellfish Aquaculture Research Programme 5: Fisheries Resources Research Programme 6: Seaweed Research Programme 7: Offshore Oil & Gas	Research Programme 1: Marine Biodiscovery/ Biotechnology Research Programme 2: Marine Technology Research Programme 3: Marine Functional Foods Research Programme 4: Renewable Ocean Energy	Research Programme 1: Marine Environment Research Programme 2: Knowledge & Information Management Research Programme 3: Socio-Economic & Legal Research Research Programme 4: Rapid Climate Change* * Previously categorised under Discovery Research Measure
Supporting Programmes		
Industry Innovation Programme	Discovery Innovation Programme	Policy Support Innovation Programme
To support industry to develop R&D management and development capability and to support the commercialisation of R&D outputs		
Marine Research Infrastructure Programme		
<ul style="list-style-type: none"> > Seabed & Resource Mapping > High-End Computing Capacity (Access) > Test & Demonstration Facilities for Marine and Coastal Observatories and Monitoring Technologies > Extension of Ocean & Coastal Monitoring Network > Research Vessel – Ship Time > National Equipment Pool > Robotic Platforms > Test Facilities for Offshore Energy > Specialist Laboratories & Facilities 		

Investment in marine research in 2007 was spread throughout the island of Ireland and across all of the *Sea Change* Measures—Industry Research Measure €19m, Discovery Research Measure €21.3m, Policy Support Research Measure €13.5m and Infrastructure Supporting Programme €11.7m—building new research capacity and strengthening existing research capacity across 60 research groups (see Table 4).

Figure 2.2: Spread of Investment in Marine Research on the Island of Ireland in 2007

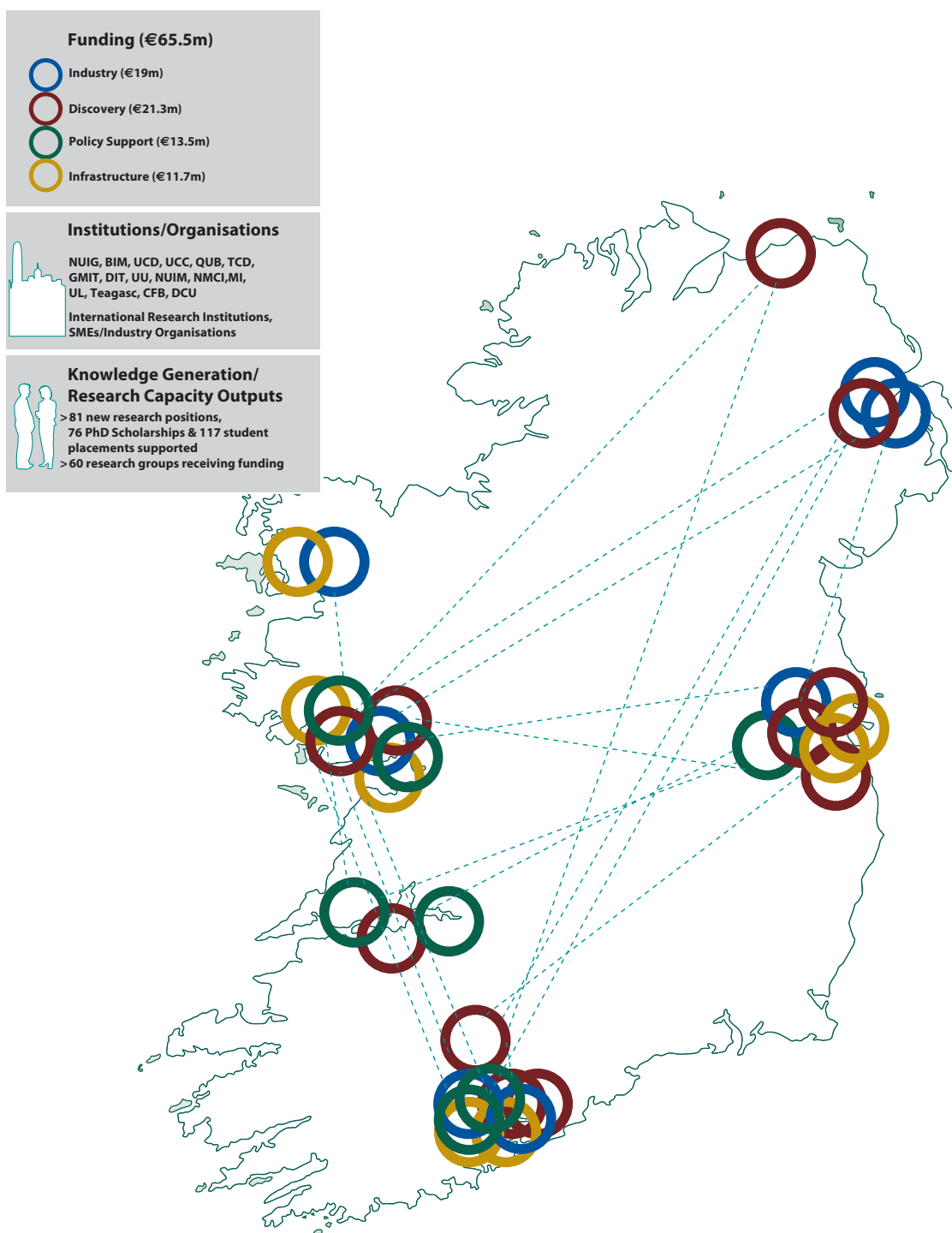
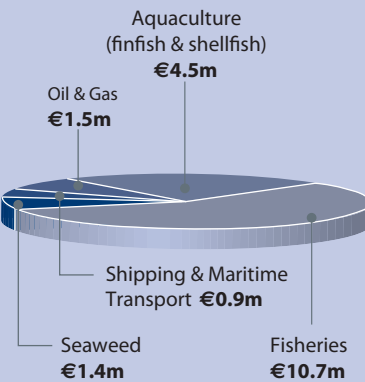
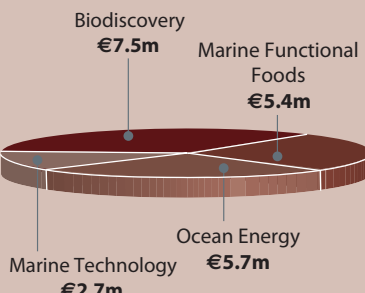
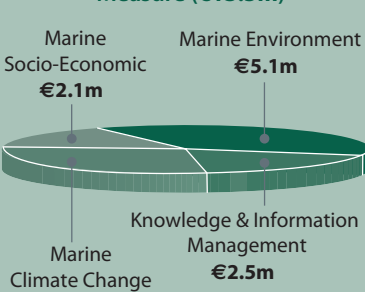



Table 4: Research Focus across Sea Change Measures in 2007

Measure (Funds Committed in 2007)	Knowledge Generation/ Research Capacity	Focus of Research
<p>Industry Research Measure (€19m)</p>  <p>Aquaculture (finfish & shellfish) €4.5m Oil & Gas €1.5m Shipping & Maritime Transport €0.9m Seaweed €1.4m Fisheries €10.7m</p>	<ul style="list-style-type: none"> • 24 research projects/initiatives • 17 research groups across 10 research institutions • Research team focussed on <i>Ecosystems Approach to Fisheries Management</i> established • 19 new research positions (including two PIs), 20 PhD scholarships and 26 student placements supported • 10 SME's/industry participating in R&D Projects 	<p>Research projects/initiatives in the following areas:</p> <ul style="list-style-type: none"> • Ecosystems approach to fisheries management • Understanding of commercial fish stocks and their habitats • Atlantic wild salmon & eels • Aquaculture: new species development • Seaweed aquaculture and resource assessment • Offshore oil and gas (petroleum geology) research • Shipping and maritime transport
<p>Discovery Research Measure (€21.3m)</p>  <p>Biodiscovery €7.5m Marine Functional Foods €5.4m Ocean Energy €5.7m Marine Technology €2.7m</p>	<ul style="list-style-type: none"> • 17 research projects/initiatives • 13 research groups across eight research institutions • Three new multidisciplinary research teams established (biodiscovery and marine functional foods) • 23 new research positions (including four PIs), 35 PhD scholarships and 52 student placements funded • Four SME's participating in R&D Projects 	<p>Building new multidisciplinary research capacity and competencies in the following areas:</p> <ul style="list-style-type: none"> • Marine functional foods and ingredients • Marine biodiscovery • Sensors and ICT • Renewable ocean energy <p>Supporting a number of industry initiatives in emerging sectors (e.g. ocean energy, marine functional foods and marine technology)</p>
<p>Policy Support Research Measure (€13.5m)</p>  <p>Marine Socio-Economic €2.1m Marine Environment €5.1m Knowledge & Information Management €2.5m Marine Climate Change €3.8m</p>	<ul style="list-style-type: none"> • 27 research projects/initiatives • 23 research groups across 14 research institutions funded • Research teams in marine socio-economics and marine climate change research established • 29 new research positions, 15 PhD scholarships and 21 student placements • Seven SMEs and one NGO participating in R&D projects/initiatives 	<p>Research projects focussing on the following:</p> <ul style="list-style-type: none"> • Marine environmental assessment • Marine climate change • Marine economic and social research • Supporting the implementation of EU legislation • Advancing the development of scientific data management
<p>Infrastructure Support Programme (€11.7m)</p>  <p>Ship Time Fund €1.4m Specialist Infrastructure €6m Seabed & Resource Mapping €4.3m</p>	<ul style="list-style-type: none"> • 15 research/training projects/initiatives funded • 18 research groups across 10 research institutions supported • Inter-disciplinary team in integrated marine exploration established • Nine new research positions, six PhD scholarships and 18 student placements funded • 66 days of ship-time funded (50 survey days, 16 training days), funding over 200 scientists and 53 students (totalling 600 scientist/student days) 	<ul style="list-style-type: none"> • Research projects and capacity building in seabed and resource mapping/related disciplines • National marine research infrastructure identified in <i>Sea Change</i> supporting a number of research programmes e.g. climate change, knowledge and information management, environment and fisheries • Fund to access ship-time (for both research surveys and dedicated training programmes)

3 High-Level Impacts in 2007

Sea Change sets out specific impacts/indicators in order to measure performance in a number of areas, i.e. economic, regional development, North – South co-operation, socio-economic, public services, environmental and research capacity & capability impacts. The following diagram summarises key inputs in 2007 under each of these areas:

Figure 3.1: Key Inputs in 2007

Regional Development /North-South/ Socio-Economic Impacts	<ul style="list-style-type: none"> • 16 research groups across four research institutions funded in the BMW Region (supporting 35 new research positions and 23 PhD scholarships) • Five SMEs funded in the BMW region • Six NI research groups funded in two HE institutions supporting six new research positions, 10 PhD scholarships and 14 student placements • Six projects/initiatives funded with N/S co-operation
Public Service/ Environmental Impacts	<ul style="list-style-type: none"> • Research projects supporting the implementation of environmental legislation • Increased knowledge base • Support for new integrated information services, including data visualisation tools • Projects and programmes funded to enhance biodiversity and increase our understanding of environmental issues e.g. climate change impacts
Research Capacity & Capability Impacts	<ul style="list-style-type: none"> • 81 new research positions, 76 PhD scholarships & 117 student placements supported • Funding provided to 60 research groups • New interdisciplinary expertise and competencies being supported in the areas of marine functional foods, marine biodiscovery/biotechnology, marine technology and marine economics
Economic Impacts	<ul style="list-style-type: none"> • 15 projects funded with industry involvement (funding 21 different industry partners), five led by industry • 17 research projects/initiatives aimed at supporting new commercial opportunities funded e.g. marine food, shipping, marine technology and ocean energy sectors

There is a need to develop relevant indicators that can accurately reflect the impact of investment in research, development and innovation over the period of *Sea Change*. In this context, work is in progress to develop a suite of impact indicators designed to measure the performance of each of the objectives and targets set out in *Sea Change*. This will include the collection of data to report on project outputs and outcomes and the identification/commissioning of a number of evidence-based studies, e.g. to support the measurement of economic impacts of investment in the research base and innovation in a number of sectors.

4 Influencing the European Marine Research Agenda

Participation in international marine research and development initiatives and programmes contributes significantly to research and innovation capacity building. International co-operation in research is essential in order to understand marine ecosystem functioning and ensure the sustainable development of marine resources. In parallel with securing national marine research funding, the Marine Institute has been active in influencing European Marine Research Strategies and Funding Programmes. In 2006, Ireland, through the Marine Institute, and in partnership with like-minded nations and European science institutes, was instrumental in:

- including “marine science and technology” as a “priority cross-cutting theme in Framework 7”; and
- placing Marine Science and Technology as one of the pillars of the new European Maritime Policy (June 2006 Green Paper: *Towards a Future Maritime Policy for Europe: A European Vision for the Oceans and Seas*).

This momentum carried forward into 2007, with Marine Institute staff playing a critical role in facilitating both national and European marine research community responses to the **European Maritime Policy Green Paper Consultative Process**:

- Providing technical and administrative support to the Inter-Departmental Steering Group (January 2006 – May 2007), facilitating public consultation (both written and on-line), hosting a dedicated website, organising a National Stakeholder Conference (March) and preparing the initial draft government response which was published in May 2007.
- Actively facilitating the debate at European level with key meetings being chaired by the Marine Institute’s CEO, including those in Brussels (January) and Aberdeen (June) and during special events organised by the German EU Presidency (Bremen – May) and the Portuguese EU Presidency (Lisbon – July and October). The main output of these meetings, the **Aberdeen Declaration – A New Deal for Marine and Maritime Science**, had a significant influence on the marine research and development initiatives proposed in the Commission’s EU Maritime Strategy Blue Book and Action Plan published in October 2007.

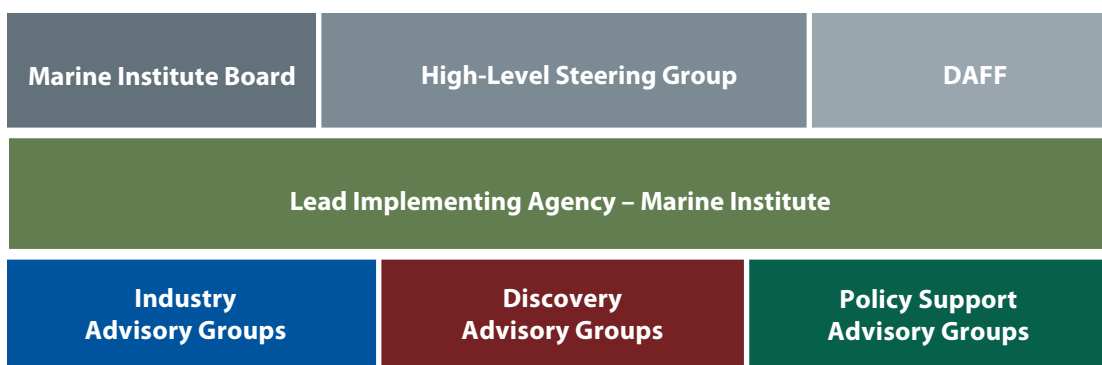


5 Implementation Framework: Implementing *Sea Change* through Co-ordination & Collaboration

Sea Change is a Government approved **national** strategy. A national partnership of government departments, development and funding agencies, research performers and industry is therefore required to ensure successful implementation. The *Sea Change* implementation framework brings all of these partners together in a co-ordinated and structured manner to facilitate ongoing input to the implementation of the Strategy via:

- A High-Level Steering Group to provide high-level direction, co-ordination and monitoring of the Strategy;
- External Advisory Groups to advise on research priorities and to ensure *Sea Change* evolves in a transparent manner and is responsive to changes in the industrial, scientific and policy environments; and
- A *Sea Change Management Unit* – set up within the Marine Institute to lead the delivery and management of the Strategy.

Figure 5.1: *Sea Change* Implementation Framework



High-Level Steering Group

In April 2007 (26th), the Marine Institute held the first meeting of the *Sea Change* High-Level Steering Group (HLSG). The Group is chaired by Barry McSweeney, Research Co-ordinator in the Department of Communications, Energy & Natural Resources. The group consists of 25 members from across 22 organisations (five government departments, nine agencies, three industry organisations, one higher education representative organisation, one NGO and three international experts). The second meeting of the HLSG took place on the 15th of November 2007.

Table 5: Membership of the High-Level Steering Group

Government Departments	
Mr. Barry Mc Sweeney, Research Co-Ordinator, (Chair of the High-Level Steering Group)	Department of Communications, Energy & Natural Resources
Dr. Cecil Beamish, Assistant Secretary	Department of Agriculture, Fisheries & Food
Mr. Tom Teehan, Chief Agriculture Inspector	Department of Agriculture, Fisheries & Food
Mr. Martin Shanagher, Assistant Secretary/Director	Department of Enterprise, Trade & Employment
Mr. Tom Corcoran, Assistant Secretary	Department of Environment, Heritage & Local Government
Mr. John Lumsden, Assistant Secretary	Department of Transport
Agencies	
Mr. Jason Whooley, Chief Executive Officer	Bord Iascaigh Mhara
Mr. Mike Feeney, Executive Director	Enterprise Ireland
Dr. Larry Stapleton, Director	Environmental Protection Agency
Ms. Helena Acheson, Director STI,	Forfás
Dr. Eucharía Meehan, Head of Research	Higher Education Authority
Dr. Martin Hynes, Director	Irish Research Council for Science, Engineering & Technology
Mr. Kevin Bonner, Chairman	Marine Institute
Dr. Peter Heffernan, Chief Executive Officer	Marine Institute
Ms. Yvonne Shields, Director, SPDS	Marine Institute
Prof. Frank Gannon, Director General	Science Foundation Ireland
Mr. Pádraig Ó hAoláin, Chief Executive Officer	Údarás na Gaeltachta
Other	
Prof. Brendan Whelan, Research Professor	Economic and Social Research Institute
Higher Education	
Mr. Ned Costello, Chief Executive Officer	Irish Universities Association
Industry Representatives	
Mr. Fergus Cahill, Chairman	Irish Offshore Operators Association
Dr. Noel Cawley, Chairman	Seafood Strategy Implementation Group
Capt. Dave Hopkins, President	Irish Chamber of Shipping
International	
Prof. Gerd Hubold, Secretary General	International Council for the Exploration of the Sea
Mr. Jóhann Sigurjónsson, Director General	Marine Research Institute, Reykjavík, Iceland
Dr. Lars Horn, Avdelingssjef/Director	Norwegian Research Council

Sea Change Advisory Groups

External Advisory Groups were established in 2007 to support the implementation of *Sea Change*. The groups incorporate a range of stakeholders (industry, academic and multi-agency representatives) to provide a source of advice and guidance on the development of specific research programmes within each of the *Sea Change* Research Measures.

Figure 5.2: *Sea Change* External Advisory Groups

External Advisory Groups: Industry Measure	External Advisory Groups: Discovery Measure	External Advisory Groups: Policy Support Measure
<ul style="list-style-type: none"> • Shipping & Maritime Transport • Offshore Oil & Gas (including Seabed & Resource Mapping) • Marine Food* <ul style="list-style-type: none"> - Finfish & Shellfish Aquaculture - Seaweed - Fisheries Resources & Seafood Processing - Marine Functional Foods 	<ul style="list-style-type: none"> • Marine Biodiscovery/ Biotechnology • Marine Technology • Renewable Ocean Energy <ul style="list-style-type: none"> - <i>Industry Forum</i> - <i>Researchers Forum</i> 	<ul style="list-style-type: none"> • Marine Environment, Policy, Socio-Economic & Legal • Knowledge & Information Management • Rapid Climate Change

*Note: Originally, within the Marine Food area, four individual groups were established (Seaweed, Finfish & Shellfish Aquaculture, Seafood & Fisheries Resources and Marine Functional Foods). Due to the strong synergies that exist across these various research programmes, including cross-over with a number of members, and taking into account feedback from the High-Level Steering Group and the various groups and stakeholders involved, the Marine Institute has amalgamated these four groups into a single group known as the 'Marine Food Advisory Group'.

The Groups comprise 114 members from across 54 different organisations (seven government departments, 18 agencies, 17 SMEs/industry organisations, nine higher education institutions and three NGOs). A list of the membership of the Groups is provided in Appendix 3.

The first round of Advisory Group meetings took place over the months of April and May 2007.

The following table provides an overview of the meetings that took place during 2007.

Table 6: Schedule of Meetings in 2007

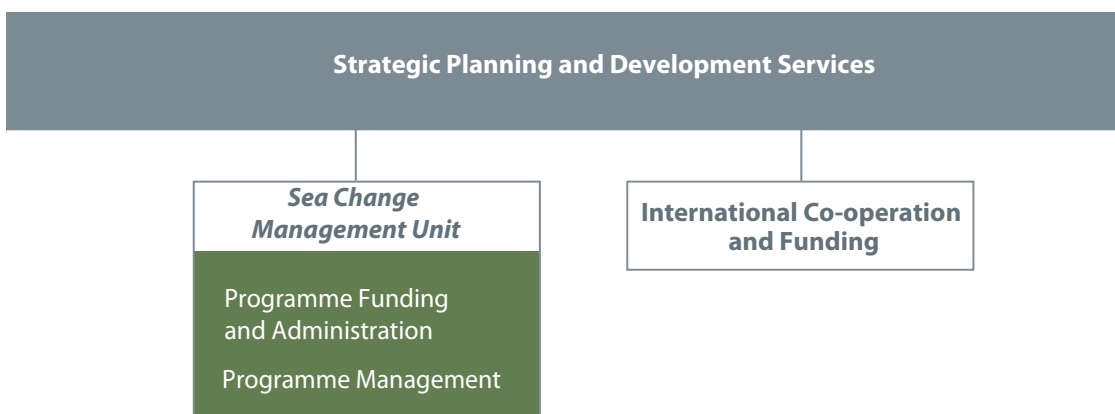
MEETINGS IN 2007			
Marine Food Advisory Group	Fisheries Resources/Seafood Processing	3rd May	27th Nov
	Finfish and Shellfish Aquaculture	3rd May	
	Seaweed	24th April	
	Marine Functional Foods	2006	
Offshore Oil & Gas and Seabed Resources Advisory Group		1st May	
Shipping and Maritime Transport Advisory Group		-	
Knowledge and Information Management Advisory Group		9th May	
Marine Environment, Policy, Socio-Economic and Legal Advisory Group		1st May	
Marine Biotechnology/Biodiscovery Advisory Group		24th May, 9th Nov	
Marine Technology Advisory Group		25th May, 19th Oct	
Renewable Ocean Energy	Researchers & Industry Forums: Open Meeting (Researchers/Industry/Stakeholders/Interested Parties)	28th June, 15th Nov	
Rapid Climate Change Advisory Group		21st May	

Sea Change Management Unit

As lead implementing agency for *Sea Change*, the Marine Institute has created a dedicated unit to lead the successful development and management of the multiple research programmes associated with *Sea Change*. Established within the Strategic Planning and Development Services (SPDS) Group, the unit is led by Ms. Yvonne Shields, Director of SPDS.

The *Sea Change Management Unit* interacts closely with the Marine Institute's **International Co-operation Programme** (a unit within SPDS), one of whose functions is "to add value to the *Sea Change* Strategy by ensuring appropriate links with and access to matching EU R&D Funding Programmes".

Figure 5.3: *Sea Change Management Unit*



Programme Funding and Administration

The *Sea Change Funding Office* is responsible for the financial and administrative management of *Sea Change* projects funded by the Marine Institute, specifically the management of the Marine Research Sub-Programme of the NDP. This includes the grant application process, evaluation, contract award negotiations, financial management and administration of project management and monitoring arrangements in order to ensure:

- Value for Money;
- Compliance with governance and procurement requirements;
- Financial planning of research spend; and
- Timely and accurate reporting.

Programme Management

Sea Change Programme Management consists of developing, co-ordinating and managing research projects/programmes under the various Research Measures of *Sea Change* in order to achieve the high-level objectives and impacts set out in the Strategy. Specifically:

1. **Developing and delivering research that:**
 - Strengthens the competitiveness of existing marine sectors;
 - Contributes to the governance and regulation of marine activities; and
 - Build leading edge, multidisciplinary research programmes in areas that offer high growth potential.
2. **Establishing and developing relationships with key industry sectors** with a view to:
 - Assessing the on-going relevance of research to commercial and market needs;
 - Promoting and facilitating greater linkages between the target industry sectors and the HE sector; and
 - Identifying and supporting the development of existing and new research capabilities and competencies that will benefit industry.
3. **Liaising with other Departments/Agencies to ensure existing and targeted projects are aligned with national strategies/objectives/programmes;**
4. Developing initiatives that **maximise marine research and development funding opportunities** from a wide range of public and private sources; and
5. Stimulating and supporting **European research programme investment.**

6 Plans for 2008

2008 will see the initiation of research activities funded in 2007. Through the year effort will be focused on assisting in the initiation of funded projects e.g. attracting high-calibre researchers, establishing research management structures and starting the research programmes. Selective investment will continue to take place, building on the achievements of previous research and targeting research and capacity gap areas.

During 2008, the Marine Institute will continue to foster relations with other agencies/departments; principally BIM (and the implementation of the Cawley Seafood Strategy), HEA, Údarás na Gaeltachta, EPA, SEI, GSI, Enterprise Ireland, SFI and IDA. Issues related to innovation and commercialisation of research will be explored and active partnerships with the key development agencies will be strengthened to exploit industrial and commercial development and technology road-mapping.

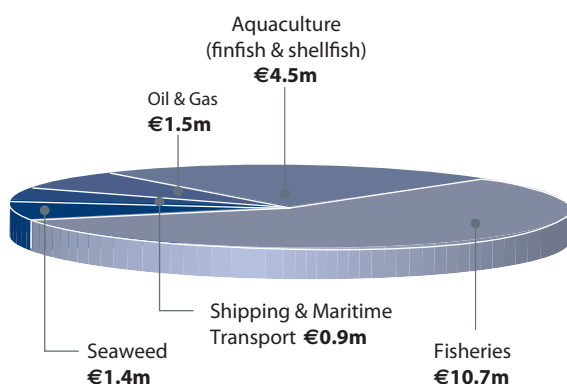
There will be a strengthening of engagement with industry and specific efforts will be made to identify and support industry needs and to encourage more first time R&D performers. Efforts will also be made to develop synergies between industry and the higher education sector and across scientific, technical and social science disciplines.

European Union Research (Framework Programme) and Regional Development (INTERREG) Programmes play a major role in facilitating and supporting Irish participation in pan-European marine research and regional development projects and initiatives. These Programmes provide very significant opportunities to enable and co-fund Irish marine research projects, including identified Irish priorities in marine research and infrastructures. In 2008, the Marine Institute will continue to support and encourage Irish participation in international competitive research funding programmes through its dedicated European Desk.

To support the monitoring and management of *Sea Change* activity and projects, the Marine Institute will set up a Research Information Management System (RIMS). Substantial work has already taken place in 2007 to map out the requirements for the system, which will include an on-line grant management system and a web front-end that will act as a communications tool/database for activity/projects related to *Sea Change* over the lifetime of the Strategy.

Appendix 1: Sea Change Research Programmes – Overview of Progress in 2007

Industry Research Measure



Overview

Throughout 2007, activity has taken place across all the Research Programmes within the Industry Research Measure, with an estimated €19m being committed in research funding for 24 research and innovation projects/initiatives.

Research Programme	Funds Committed
Marine Food (excluding Marine Functional Foods)	€16.6m
Offshore Oil & Gas	€1.5m
Shipping & Maritime Transport	€0.9m

In addition, €5.4m has been committed under the Marine Functional Foods Programme, of which €5.2m has been awarded to the Marine Functional Foods Research Initiative – MFFRI, (see information under the Discovery Measure). The MFFRI is a pre-competitive institutional-based research programme focussing on new research effort to identify marine origin food ingredients for use by Ireland's expanding food ingredients and marine foods industries.

Summary of impact

The investment committed in the Industry Measure will significantly strengthen research capacity, supporting 17 research groups spread across 10 research institutions on the island of Ireland, providing new research capacity (19 new research positions, 20 PhD scholarships and 26 summer student placements) and funding for existing research groups. In addition, support for 10 SMEs has been provided to carry out marine research and innovation in the marine food and shipping sectors.

Marine Food Research Programmes:

Fisheries Resources
Aquaculture (Finfish & Shellfish)
Seaweed
Seafood Processing

A number of funding mechanisms, aimed at achieving the objectives within the research programmes of the marine food area, have successfully been rolled out in 2007. An estimated €16.6m has been committed in research funding across the programmes.

An additional €5.4m committed to marine functional foods research (an element of the Seafood Processing Research Programme) will build new research competencies and multi-disciplinary teams.

Research Programme	Research Capacity
Fisheries (€10.7m)	13 research projects across 11 organisations (including industry), 11 new research positions and 13 PhD scholarships created
Aquaculture (€4.5m)	Five new researchers involved in two projects across six organisations (including industry)
Seaweed (€1.4m)	Two research projects with strong industry focus and one Post-Doctoral Fellowship (funding provided to six research groups and one SME)
Seafood Processing-Functional Foods (€5.4m)*	Two new teams in marine functional foods, supporting nine new researchers and seven PhDs across six organisations. One industry-led research project

* Categorized under Discovery Programme. (Further information provided in the Case Study presented on Page 27).

Strong links have been developed between *Sea Change* and the *Seafood Strategy Implementation Group*, with reciprocal representation on the respective Steering Groups and considerable collaboration/information exchange between BIM and the Marine Institute aimed at achieving common objectives.



Members of the Marine Food Advisory Group

Case Study: Cod Aquaculture

The Marine Institute (under the 2000-2006 NDP) funded research on hatchery rearing of cod at NUIG's Carna facility. This led in turn to additional support through the AquaReg programme, leading to the first successful harvest of farmed cod in early 2007. This cod project was directed by a management group comprising MI, BIM, Údarás na Gaeltachta/ Taighde Mara, NUIG and industry (Trosco Teo).

Considerable expertise in hatchery production now exists and there is ongoing production of juvenile cod, based largely on imported eggs. Key to the further development of cod farming in Ireland is a national cod broodstock resource. A seven-year research programme, supported under *Sea Change* through the Marine Research Sub-Programme of the NDP 2007-2013, co-financed by ERDF, via the BMW Regional Operational Programme, seeks to remove this production bottleneck and establish an indigenous supply of quality eggs/juveniles.

By ensuring the availability of a regular supply of eggs, with full traceability in terms of parentage, genetic characteristics and health status and providing focussed R&D in key areas of larval/juvenile production, this project will support the emerging industry.

The research consortium includes NUIG, UCC, BIM, MI, Údarás na Gaeltachta, the Irish Seafood Producers Group and Trosco Teo.

Marine Food Research Projects/Initiatives Funded in 2007	
Project Title/Focus	Project Type
Fisheries Research Projects	
NDP Marine Research Sub-Programme (€1.8m)	
Rebuilding Depleted Fish Stocks	Post-Doctoral Fellowship
Fisheries Data Integration	Post-Doctoral Fellowship
Signal Detection Methods to the Fisheries Management System	PhD Scholarship
Scholarships related to: Nephrops, Black Scabbard, Herring and Climate Change	PhD Scholarships (x4)
Beaufort Marine Research Award (€7.6m)	
Ecosystems Approach to Fisheries Management	Capacity Building
Fish Population Genetics	Capacity Building
EU FP7, EPA & IRCSET (€1.3m)	
Atlantic Salmon: Stock Migration & Distribution (SALSEA)	EU FP7 Project
Atlantic Eels: Assessment of their Decline (EELIAD)	EU FP7 Project
European Fisheries & Ecosystem Management (MEFEPO)	EU FP7 Project
Juvenile Fish Habitats	EPA PhD Scholarship
Ecology of Coral Feeding Butterfly Fishes	IRCSET Post-Doctoral Fellowship
Aquaculture Research Projects	
NDP Marine Research Sub-Programme (€4.1m) EU FP7 (€0.4m)	
Cod Broodstock & Breeding	Strategic Industry
MIDTAL Microarrays for the Detection of Toxic Algae	EU FP7 Project

Marine Food Research Projects/Initiatives Funded in 2007	
Project Title/Focus	Project Type
Seaweed Research Projects	
NDP Marine Research Sub-Programme (€1.4m) IRCSET (€0.07m)	
Seaweed Aquaculture	Strategic Industry
Inshore Kelp Resource Assessment	Applied Industry
Metal Contamination in Seaweeds	IRCSET PhD Scholarship
*Seafood Processing/Marine Functional Foods Research Projects/Initiatives	
SSTI MI/DAFF Award (€5.2m)* & NDP Marine Research Sub-Programme (€100k)	
Marine Functional Foods Research Initiative	Capacity Building
Flavouring and Taste Components in Irish Seaweeds	Industry-Led

*Categorised under Discovery Programme.

Shipping & Maritime Transport Research Programme

The *Sea Change Marine Foresight Panel* on Shipping and Maritime Transport identified a number of opportunities within the Shipping and Maritime Transport Sector, e.g. development of the maritime services sector (economics and transport). Building upon the Foresight Exercise, in 2007, the Marine Institute commissioned an international expert to work on the creation of a plan to expand Ireland's research effort in the area of shipping and maritime economics; to enable Irish researchers to participate in international research networks within this area. This work will be completed in 2008.

Under the first round of the EU's FP7 Co-operation Programme, Irish researchers have been successful in securing grant-aid across three collaborative research projects, providing funding to four Irish industry partners/organisations.

Shipping & Maritime Transport Research Projects/Initiatives Funded in 2007	
Project Title/Focus	Project Type
NDP Marine Research Sub-Programme (€59k)	
An Assessment of Research Capabilities and Development of a National Research Agenda in the area of Maritime Economics and Transport	Tender
EU FP7 (€803k)	
Intuitive Operation and Pilot Training when using Marine Azimuthing Control Devices (AZIPILOT)	EU FP7 Project
Promotional Platform for Short Sea Shipping & Intermodality (PROPS)	EU FP7 Project
Sustainable Knowledge Platform for the European Maritime and Logistics Industry (SKEMA)	EU FP7 Project

Offshore Oil & Gas Research Programme

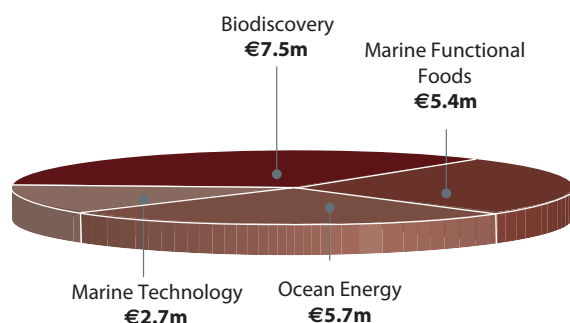
Research funding provided by the DCENR/GSI under the Griffith Geoscience Research Awards resulted in €1.5m being awarded to petroleum geology research and associated knowledge and information management. This funding will build and strengthen existing capacity in this area by supporting two new research positions, four PhD scholarships and five summer students.

In addition, the Marine Institute has been liaising with the DCENR's Petroleum Affairs Division (PAD) to identify collaborative opportunities and synergies with its Petroleum Infrastructure Programme (PIP).

Finally, through the Marine Institute's Integrated Marine Exploration Programme, a number of deep sea research initiatives will support the development of this sector.

Offshore Oil & Gas Research Projects/ Initiatives Funded in 2007	
Project Title/Focus	Project Type
DCENR/GSI Griffith Geoscience Research Award (€1.5m)	
Petroleum Geology Research	Capacity Building

Discovery Research Measure



Overview

Significant research funding was secured in 2007 to meet the objectives of the four Programmes in the Discovery Research Measure. Sizable funds were made available through the Charles Parsons Energy Research Awards (DCENR) and the Beaufort Marine Research Awards (MI/DAFF). These awards, together with funding secured by the Marine Institute under the SSTI, co-funding received from DAFF's FIRM Programme, and recent successes by Irish researchers in EU FP7 Projects, amount to a total of €21.3m being committed across the four Research Programmes.

Research Programme	Funds Committed
Marine Biodiscovery/ Biotechnology	€7.5m
Marine Technology	€2.7m
Renewable Ocean Energy	€5.7m
Marine Functional Foods	€5.4m

Note: Reporting on the Rapid Climate Change Programme can be found under the Policy Support Research Measure below.

Summary of Impact

This investment has provided the opportunity to build new internationally competitive multidisciplinary research teams across the four Research Programmes; bringing together knowledge and expertise from non-marine areas and focussing on these new emerging marine sectors. This investment has been focussed primarily on human capital, supporting 13 research groups across eight research institutions and four SME's. The investment has resulted in the creation of significant new capacity (three new research teams, 23 new research positions, 34 PhD scholarships & 52 summer students), in addition to funding for existing researchers.

Marine Biodiscovery/Biotechnology Research Programme

The Marine Institute, in partnership with a range of national and international centres of expertise, has developed a National Marine Biodiscovery Programme. The focus of activity during 2007 was to build on previous work (e.g. proof of concept exercise) and secure funding for the creation of new multidisciplinary research teams.

The allocation of research funds through the Beaufort Marine Research Awards has significantly enhanced activities in this programme. €7.3m has been awarded to three HE Institutions, supporting seven new research positions, 12 PhD scholarships and 38 student placements. This team will:

- develop core research capabilities in taxonomy, natural products chemistry, chemogenomics and bioinformatics; and
- develop capabilities for the isolation and identification of novel chemical compounds or

proteins for use by the biopharma sector and the medical device industry (e.g. adhesives, biofilms and sensors).

In addition to this Beaufort Award, two further initiatives have helped to increase research capacity in this area:

- Through funds secured in 2006, via the HEA's Strategic Innovation Fund (SIF), two new Professorships have been established in marine biodiversity (NUIG) and marine microbial diversity (UCC); and
- During 2007, three PhD biodiscovery scholarships (in DCU and UCD) were funded by the Marine NDP Sub-Programme and implemented through IRCSET's PhD Scholarship Programme.

Marine Biodiscovery/Biotechnology Research Projects/Initiatives Funded in 2007

Project Title/Focus	Project Type
Beaufort Marine Research Award (€7.3m)	
Marine Biodiscovery Award	Capacity Building
NDP Marine Research Sub-Programme/IRCSET (€234k)	
Suite of three PhDs in the area of Marine Biotechnology/Biodiscovery	PhD Scholarships (x3)

Funded via the SSTI Integrated Marine Exploration Programme, the Marine Institute has established an initial capability to aid with the collection of samples for the Biodiscovery Programme via surveys taking place onboard the national research vessel fleet. In addition, the Marine Institute is in the process of establishing a Biodiscovery Laboratory, at its Oranmore Laboratory Facilities, for the preparation and initial processing of marine samples prior to dissemination to research groups.

Marine Technology Research Programme

Activity in the Marine Technology Programme in 2007 focussed on monitoring and managing the outputs from investments made in 2004 under the Marine Institute's and EPA's jointly funded initiative, which funded three advanced technology projects (i.e. SmartCoast and Smart Catchment Projects). These investments have helped to build a multi-disciplinary, industry-oriented research capability in the area of sensors and environmental technologies.

In 2007, investment in the programme was further boosted by the announcement of the Beaufort Marine Research Award in Marine Sensors and Communications, resulting in a €2.5m investment in the programme over a seven-year period, supporting two new research positions (including one PI), five PhD scholarships and 14 summer students. This investment will further enhance research capacity and build on previous investments in the priority area of sensors and communications systems for the marine environment. The focus of the research includes sensor systems and related telemetry and communications, and data management related to monitoring water quality and the marine environment.



Prof. E. Kennedy and Prof. D. Diamond, (DCU) accepting the Beaufort Award in Marine Sensors and Communications from Ms. Mary Coughlan T.D. and Mr. Eamonn Ryan, T.D.

Strong synergies exist between the *Sea Change* Technology Programme and the EPA's STRIVE (Science, Technology, Research & Innovation for the Environment) Programme, which includes research into the development of environmental technologies, e.g. for water quality monitoring.

Summary of Marine Technology Research Projects/Initiatives Funded in 2007

Project Title/Focus	Project Type
Beaufort Marine Research Award (€2.5m)	
Marine Sensors and Communications	Capacity Building
NDP Marine Research Sub-Programme(€64k)	
Acoustic Based Cetacean Detection	Industry-Led
EPA & IRCSET Scholarships (€167k)	
Novel Passive Sampling Devices for the Monitoring of Priority Pollutants	EPA PhD Scholarship
Development of Navigational System for UUV Mapping/ Reconnaissance	IRCSET PhD Scholarship

Case Study: Flagship Research Platform for Marine Environmental Technologies

The Marine Institute is currently in the process of scoping a major flagship research project for Galway Bay entitled SmartBay. This initiative falls under the Discovery and Infrastructure Measures in *Sea Change* and is also a specific deliverable in the National Strategy for Science, and Innovation.

SmartBay will be an inter-disciplinary and inter-agency research, test and demonstration platform. It will link the emergence and availability of new environmental technologies with a wide range of monitoring and management applications.

The system will comprise a network of seafloor cables, buoys and other infrastructure, supporting a range of sensors, information systems, telemetry and other communication technologies. Together they provide the basis for in-situ, real time monitoring. SmartBay will service the testing of new sensor systems, provide a learning curve for Celtnet (EU Deep Sea Observatory Initiative) and offer a platform for collaboration with research and industry.

It will also act as a significant attraction for international research consortia. This flagship project will help develop Ireland as a global monitoring centre for climate change assessments in the context of the North Atlantic Gulf Stream (a national priority identified under the SSTI).



SmartBay is currently being developed in conjunction with the EPA, IDA, EI, HEA and relevant government departments. A number of industry partnerships were developed in 2007, e.g. with IBM, Intel, Transas, WISEN. Other collaborations are being developed with SMEs and environmental consultancies.

Renewable Ocean Energy Research Programme

The focus of activity in 2007 in this Research Programme involved further strengthening in Irish research capability and capacity in ocean energy, through the BluePower Initiative, initially funded under the Marine Institute's NDP Marine RTDI 2000-2006 Measure.

Through the DCENR Charles Parsons Energy Research Awards, €3.5m was awarded to ocean energy research groups (UCC's HMRC and UL). The award provides funding for an additional five new postdoctoral research positions (in the areas of electronics, hydrodynamics, environmental conditions and economics) and three PhD scholarships in the Hydraulics and Maritime Research Centre (UCC) and a senior research fellow (in ocean systems modelling) in UL. Other national funding includes two IRCSET PhD scholarships (wave and offshore wind) and an industry award under the Marine Institute's NDP Programme.

Furthermore, Irish ocean energy researchers are continuing to build on previous EU Funding successes – two ocean energy research projects have recently been awarded FP7 funding to the value of €1.6m.

Other Strategic Initiatives

During 2007, the Marine Institute continued to service and manage the Galway Bay Wave Energy Test Site³, providing support for device developers to test their devices at sea. In October 2007, the Galway Bay Site became the first test site to simultaneously host two prototype devices (Wavebob and Ocean Energy). In addition to this inshore site, plans to establish a grid-connected offshore test site were initiated.

The Marine Institute has continued to liaise with both industry and policy-makers involved in the development of Ocean Energy in Ireland with respect to the successful implementation of the National Ocean Energy Strategy, with particular emphasis on creating the conditions in which an Irish ocean energy industry sector can develop and compete on international markets. In December 2006, the Marine Institute set up and held the first meeting of the 'Ocean Energy Industry Forum' to provide an informal communications mechanism for all stakeholders in this area. The forum brings together developers, investors, researchers and state agencies with an interest in ocean energy. In 2007, two meetings of the Forum took place, involving over 100 participants.

³ www.marine.ie/home/aboutus/organisationstaff/researchfacilities/Ocean+Energy+Test+Site.htm

Renewable Ocean Energy Research Projects/ Initiatives Funded in 2007	
Project Title/Focus	Project Type
DCENR Parsons Energy Research Awards (€3.5m)	
Parsons Award in Ocean Energy	Capacity Building
NDP Marine Research Sub-Programme (€96k)	
Development of an Efficient Design Technique for the Optimisation of Mooring Systems for Wave Energy Arrays	Industry-Led
EU FP7 (€1.6m)	
Components for Ocean Renewable Energy Systems (CORES)	EU FP7 Project
Pre-Normative Research for Ocean Energy (Equimar)	EU FP7 Project
IRCSET (€216k)	
Multi-Terminal HVDC for Offshore Wind-Farms	PhD Scholarship
Analysis of Power Generation System of Wave Energy Power Converter	PhD Scholarship
Bearing Design Development and Wear Characterisation for a Tidal Stream Energy Extraction Device	PhD Scholarship

Minister Ryan launches major new Ocean Energy initiative, January 2008

On the 15th January 2008, the Department of Communications, Energy & Natural Resources announced a major programme of activity, grants and supports to develop ocean energy in Ireland. Over €26 million in targeted funding will go to the sector over the next three years. Minister Eamon Ryan also announced a significant boost for the future of the sector with the first ever guaranteed price for wave energy.

In 2008, the initiative will target:

- €1 million towards a world class, state-of-the-art National Ocean Energy facility in UCC.
The Facility will have an advanced wave basin for the development and testing of early ocean energy devices.
- €2 million to support and develop a grid-connected wave energy test site.
- €2 million in grants under the Ocean Energy Prototype Fund. This will help developers to make their devices commercial.
- The introduction of a new feed-in-tariff under the REFIT scheme for wave energy of €220 per MegaWatt Hour.
- €500,000 to establish an Ocean Energy Development Unit located within Sustainable Energy Ireland (SEI), operating with the support and assistance of the Marine Institute. This unit will oversee the implementation of the initiative.

Marine Functional Foods Research Programme

Activity during 2007 in this Research Programme focussed on further scoping and kick-starting a national marine functional foods programme. The Marine Functional Foods Research Initiative (see Case Study below) is a major flagship project linked to the implementation of the *National Strategy for Science, Technology & Innovation (SSTI)*, *Sea Change* and the Seafood Development Strategy *Steering a New Course*.

Research outputs will provide the Irish marine and foods sectors with the knowledge on which to base new high value-added products.

Summary of Marine Functional Foods Research Projects/Initiatives Funded in 2007

Project Title/Focus	Project Type
SSTI MI/DAFF Award (€5.2m)	
Marine Functional Foods Research Initiative	Capacity Building
NDP Marine Research Sub-Programme (€100k)	
Flavouring and Taste Components in Irish Seaweeds	Industry-Led



Dr. Declan Troy (Teagasc), Ms. Mary Coughlan T.D. & Dr. Peter Heffernan (Marine Institute) at the launch of the Marine Functional Foods Research Initiative January 2007

In addition to this large investment by the Marine Institute and DAFF, the Marine Institute has also provided funding to an SME through its NDP Industry-Led Awards for an 18-month project which involves the investigation of the flavouring and taste components in Irish seaweeds.

Case Study: Innovation within the Food Sector: Marine Functional Foods Research

In March 2007, the Marine Institute (via SSTI funding) and the Department of Agriculture, Fisheries and Food (via the Food Institutional Research Measure) signed an agreement to co-fund a national research programme in marine functional foods and ingredients. The total funding of €5.2m aims to develop new research capabilities and additional research capacity in marine functional foods.

This major research initiative spans across two Research Measures and two Research Programmes within *Sea Change*; addressing a major objective within the Seafood Processing Research Programme of the Industry Measure and helping to achieve the vision of the Marine Functional Foods Research Programme within the Discovery Measure.

The five-year award, led by Teagasc, will create two new research teams across six research institutions on the island of Ireland, creating nine new research positions (two Principal Investigators and seven Post-Doctoral fellowships) and seven PhD scholarships.

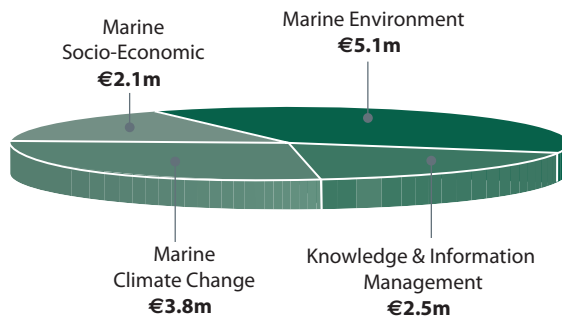
Case Study: Innovation within the Food Sector: Marine Functional Foods Research

It is anticipated that the research teams established by the successful consortium will be in a position to support the future needs of the Irish food and seafood industries; have the capability to participate in international collaborative research programmes (e.g. FP7); and secure significant research funds to enable an expansion of their research programmes.

Marine Functional Foods Research Initiative – Chairman

The Chairman of the Marine Functional Foods Research Initiative Management Committee is Dr. Noel Cawley. His extensive experience of the Irish and global food industry, as managing director of the Irish Dairy Board and more recently as Chairman of the Seafood Industry Strategy Review Group, is particularly valuable in this position. Dr. Cawley is also a member of the High-Level Steering Group of *Sea Change*.

Policy Support Research Measure



Overview

During 2007, activity took place across all Research Programmes within the Policy Research Measure from a number of funding sources. An estimated €13.5m has been committed as follows:

Research Programme	Funds Committed
Marine Environment	€5.1m
Rapid Climate Change*	€3.8m
Knowledge & Information Management	€2.5m
Policy, Socio-Economic & Legal Research Programme	€2.1m

* Note: The Policy Research Measure information now contains details on the Rapid Climate Change Programme (previously associated with the Discovery Research Measure).

Summary of Impact

This investment has strengthened research capacity across the four Programmes, specifically in the areas of marine socio-economics and marine climate change research. In addition, funding has been provided to existing research groups for research and innovation focussing on the following areas: marine environmental assessment; air-sea exchange processes; research to support the

implementation of EU legislation and advancing the development of scientific data management.

Across the four Research Programmes, 26 research projects/initiatives involving 23 research groups in 14 research institutions will be funded, supporting existing researchers and 29 new research positions, 14 new PhD scholarships and 21 summer students. In addition, seven SMEs and one NGO have received funding.

Marine Environment Research Programme

A total of €5.1m has been committed to this Research Programme in 2007 through a number of national and international funding sources (NDP Marine Research Sub-Programme, EPA STRIVE Programme, IRCSET Scholarship and Fellowship Awards and EU FP7).

The focus of the research includes initiatives supporting the implementation of EU and national legislation, research projects related to environmental assessment, water quality, pollution studies and marine biodiversity.

During 2007, 16 research groups across 10 research institutions received funding for projects/initiatives that address the objectives of the Programme. In addition, funding has been provided for new research capacity and capability (funding eight new research positions and eight PhD scholarships). Three SMEs and a NGO have also received funding to participate in higher education/industry collaborative research initiatives.

Significant synergies exist between *Sea Change* and the EPA's STRIVE Programme and this has resulted in significant funding to marine environmental research.

Marine Environment Research Projects/ Initiatives Funded in 2007	
Project Title/Focus	Project Type
NDP Marine Research Sub-Programme (€1.23m)	
Marine Mammals and Megafauna ^a	Applied Policy
Biological Effects and Chemical Measurements for the Assessment of Pollution ^b	Capacity & Competency Building
Habitat Based Catchment Information and Historical Eel Data in support of Eel Management Plans	Desk Study
EPA STRIVE Programme (€1.5m)	
Biological Effects of Pharmaceuticals in the Marine Environment	Capacity Building (DERP)
Scholarships related to Biodiversity and ecological requirements of meiofauna; Novel anti-fouling strategies based on materials doped with nanoparticles for use in new monitoring technologies; and Safe disposal of sewage effluent in coastal waters	PhD Scholarships (x3)
Fellowships related to nutrients and ecosystem dynamics and human impacts on marine biodiversity	Post-Doctoral Fellowships (x2)
IRCSET Scholarships & Fellowships (€512k)	
Scholarship in marine biodiversity. Fellowships related to toxicity of manufactured nano-particles and tracking ocean giants and their jellyfish prey	PhD Scholarship & Post-Doctoral Fellowships (x2)

Marine Environment Research Projects/ Initiatives Funded in 2007

Project Title/Focus	Project Type
EU FP7 (€1.6m)	
Development and Pre-Operational Validation of Upgraded GMES Marine Core Services and Capabilities (Myocean)	EU FP7 Project
Assessment of the Interactions between Corals, Fish and Fisheries to Develop Tools for Ecosystem Based Management (CORALFISH)	EU FP7 Project

a) Jointly funded by National Parks and Wildlife Service (DoEHLG). b) Jointly funded by EPA.

Marine environmental research related to marine climate change is addressed separately under the *Rapid Climate Change Research Programme*.

Rapid Climate Change Research Programme

In 2007, the Marine Institute received €2.2m in funding under the SSTI for a two-year marine climate change research programme. The programme will support eight researchers/scientists within the Marine Institute and existing researchers in HE Institutions through competitive research projects. The outputs will include the publication of a *National Ocean Climate Change Research Plan 2008-2013* and an *Ocean Climate Change Status Report for Ireland*. The programme comprises the following elements:

1. Optimisation of data collecting platforms and programmes;
2. Integration of Marine Institute data sets;
3. Downscaling future scenario model studies for the Irish Area;
4. Phytoplankton and climate research;

5. Impacts of increased atmospheric CO₂ on ocean chemistry and ecosystems;
6. Climate and catchment environment research;
7. Salmonid and eel growth & survival research; and
8. Fisheries and climate research.

In 2007, a team of climate scientists were recruited to the Marine Institute with the aim of addressing elements 1-4 and 7-8. Elements 5 and 6 have been funded via a competitive Call for Research Proposals.

In addition to this SSTI funding, significant research activity has been taking place in higher education institutions in Ireland. Throughout 2007, Irish researchers have been successful in securing EPA and IRCSET funding for projects addressing ocean climate change research.

Rapid Climate Change Research Projects/ Initiatives Funded in 2007	
Project Title/Focus	Project Type
MI SSTI Award in Marine Climate Change (€2.2m)	
Marine Climate Change Team	Capacity & Competency Building
Impact of Increased Atmospheric CO ₂ on Ocean Chemistry and Ecosystems	Strategic Project
Climate and Catchment (statistical downscaling climate models)	Strategic Project
EPA STRIVE & IRCSET Scholarships (€1.6m)	
Air-Sea Exchange Processes (EASI-AQCIS)	EPA SSTI Joint Research Area: Air Quality/Climate
Scholarships related to: <ul style="list-style-type: none"> • Downscaling global climate models for regional modelling of Irish climate; and • The impact of climate change on the composition of vegetation in Irish Lagoons 	IRCSET PhD Scholarships (x2)

Knowledge & Information Management Research Programme

Over €2.5m in funding has been committed in 2007 to support a number of the objectives within the Knowledge and Information Management Research Programme. Three research projects have been funded (including one industry-led award) under the Marine Institute's NDP Programme and the DCENR/GSI Griffith Geoscience Research Award, creating five new research positions.

In addition, agencies have continued their efforts to improve the accessibility and level of integration between marine datasets they hold, with the aim of establishing national Coastal and Marine Infrastructure and expanding the availability of 'eServices'. Key initiatives included:

- The Marine Institute's *Integrated Marine Data Repositories Project*;
- The Geological Survey of Ireland's programme of online access to its digital holdings; and
- The Marine Institute, GSI and EPA's cross-departmental initiative, *Irish Spatial Data Exchange*. This initiative will ensure that data is discoverable and accessible across agencies and research centres.

Marine Knowledge & Information Management Research Projects/Initiatives Funded in 2007

Project Title/Focus	Project Type
NDP Marine Research Sub-Programme (€1.7m)	
Data Management for Marine Geological and Geophysical Datasets	Strategic Project
Information Management & Archive Solutions	Industry-Led Project
Integrated Marine Data Repositories Project	Strategic Project
DCENR/GSI Griffith Geoscience Award (€851k)	
Web-enabled delivery and 4-D Visualisation of Geological Datasets (a substantial component of which has been obtained through the National Seabed Survey)	Capacity Building

Policy, Socio-Economic & Legal Research Programme



Dr. D. Leech & Prof. M. Cuddy (NUIG) accepting the Beaufort Award in Marine Socioeconomic Research from Ms. Mary Coughlan, T.D. & Mr. Eamonn Ryan, T.D

Under this Programme, €2.1m has been secured through the Beaufort Marine Research Awards to build new research capacity and capability in marine economic and social research over the next seven years.

The award will fund two new researchers, four PhDs and 21 summer students. The team will initially focus on the following research topics:

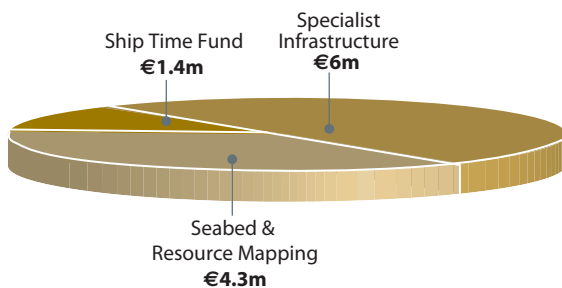
- The impact of regulation on the development of the marine industry in Ireland;
- Competitiveness and innovation in the marine food sector in Ireland;
- The economic and social impact of the marine sector in Ireland; and
- Measuring the non-market benefits of recreational marine resources in Ireland.

In addition, the team will focus on the collection of economic data related to the marine sector and will produce a regular economic update on the status of the marine sector in Ireland.

Socio-Economic Research Projects/Initiatives Funded in 2007

Project Title/Focus	Project Type
Beaufort Marine Research Award (€2.1 m)	
Beaufort Marine Socio-Economic Award	Capacity Building

Infrastructure Supporting Programme



Overview

The Infrastructure Supporting Programme of *Sea Change* has seen significant activity throughout 2007. The Seabed Mapping Programme received over €4.3m in research funds via the DCENR/ GSI Griffith Geoscience Research Award and the Marine Institute's SSTI funded Integrated Marine Exploration Programme. In addition, significant investment was targeted at the acquisition of priority national marine research infrastructure. Funds were also provided to researchers and students to gain access to the national research vessels (through the Marine Institute's SSTI award).

Area	Funds Committed
Seabed & Resource Mapping	€4.3m
Ship-Time Fund	€1.4m
Priority Research Infrastructure	€6m

Seabed & Resource Mapping Research Programme

Funding for this Research Programme came primarily via the DCENR/GSI Griffith Geoscience Research Award, in line with priorities identified under the GSI's *Geoscience Strategy* and *Sea Change*. €4m was awarded to two HE institutions (NUIG and UCC) to support three new research positions, six PhD scholarships and 18 summer students over a seven-year period.

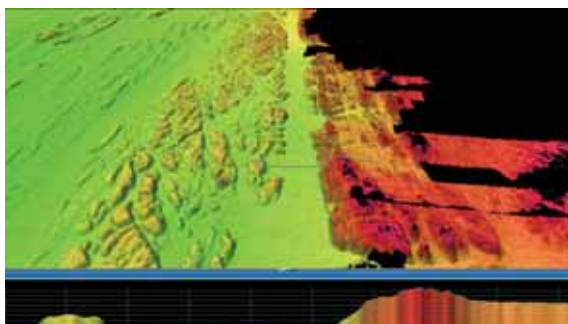
Under the SSTI, the Marine Institute secured funding to establish an Integrated Marine Exploration Programme. The overall purpose of this programme is to further develop research capacity and capability in marine exploration by developing a pool of trained personnel who can utilise national assets and increase the quantum and nature of information gathered on surveys. In addition to the establishment of this team of six multidisciplinary scientists, an important element includes the co-ordination of deep-sea research initiatives.

Outside of these national research funds, a major North/South collaborative mapping project *Joint Irish Bathymetric Survey Project (JIBS)* commenced in April 2007. The UK's Maritime and Coastguard Agency (MCA) and the Marine Institute received grant-aid of over €2m from the EU INTERREG IIIA Programme.

Other Strategic Initiatives

In 2007, the Marine Institute and the GSI continued to jointly manage the mapping of Ireland's inshore waters through the INFOMAR (the INtegrated Mapping FOre the Sustainable Development of Ireland's MARine Resource) Programme. This Programme will produce integrated mapping products covering the physical, chemical and biological features of the seabed from depths of 200m to 0m.

Other initiatives include the GSI's new on-line information service *Seabed Maps Viewer* (launched in June 2007) which allows easy access to data collected as part of the Irish National Seabed Survey and INFOMAR. In line with government policy in this area, all data collected as part of these programmes is now available digitally and free of charge from the GSI.



*A newly discovered trough off the Dingle Peninsula, Kerry.
Image Copyright INFOMAR.*

Fund to Access Ship Time



R.V. Celtic Explorer and R.V. Celtic Voyager

As part of the Marine Institute's Integrated Marine Exploration Programme, funded under the SSTI, the Marine Institute launched its Ship Time Programme, with two competitive calls to provide grant-aid to researchers for ship time during the 2007 and 2008 survey season. The purpose of this Ship Time Programme is to expand existing marine research capabilities and build research capacities by providing grant-aid for ship-time onboard the national research vessels (*R.V. Celtic Explorer* and *R.V. Celtic Voyager*) for:

- Higher education institutions on the island of Ireland, to provide **dedicated training programmes** at sea and;
- Higher education institutions and R&D institutions on the island of Ireland to carry out **integrated research surveys** of a multidisciplinary nature.

The funding committed under the Marine Institute's SSTI scheme for ship time amounts to €1.4m over two years (2007-2008).

During 2007, €0.7m in grant-aid was provided to six research surveys and five training programmes, funding 200 scientists and 53 students over 66 days of ship time (50 for surveys and 16 for undergraduate and postgraduate training),

equating to 660 scientist/student days.

During 2008, the Marine Institute will fund a further €0.7m of ship time as part of its SSTI programme.

Negotiations took place with the HEA during 2007 with the aim of expanding the scale of the ship-time scheme. For the 2008 survey season, the HEA has agreed to co-fund the Programme, providing a further €0.7m; effectively doubling the scale of the programme from 2007 to 2008.

Specialist Marine Research Infrastructure

Through NDP/ERDF Funds of €6m, a suite of capital investment items, consistent with the infrastructure requirements identified in the Infrastructure Supporting Programme of *Sea Change*, are being acquired over a two-year period (2007-2008). The infrastructure is acquired on the basis that it is 'nationally managed on behalf of the research community'.

In addition to the infrastructure items listed, significant planning has also taken place to implement the following initiatives: Deep Sea Observatory—Cabled Network, Test Facilities for Offshore Energy and SmartBay (See Marine Technology Programme).

In addition, the following table provides a list of the marine research infrastructure acquired/contracted in 2007 and the associated research programmes they will support:

Specialist Infrastructure	Associated Research Programmes
National Equipment Pool	
Autonomous Underwater Glider	Environment/Ecosystems, Climate Change
Argo Profiling Floats	Environment/Ecosystems
Underwater TV	Fisheries, Seabed Mapping
Expansion of Ocean & Coastal Monitoring Network	
Automatic Water Quality Monitoring Station	Environment/Ecosystems, Climate Change
Directional Wave Buoy	Renewable Ocean Energy
Inshore Data Buoy System	Environment/Ecosystems, Climate Change, Ocean Energy
Autonomous Research Platform	
Remotely Operated Vehicle	Biodiscovery, Environment/Ecosystems
Other Specialist Equipment	
Research Vessel CTD System	Environment/Ecosystems, Climate Change
Acoustic Monitoring System	Fisheries, Climate Change



Argo Profiling Float

Appendix 2: Marine Research Projects 2007 (Marine Institute and other Sources)

Industry Research Measure						
Fisheries Resources Research Programme						
Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners	
Beaufort Marine Research Award (Capacity Building)	Ecosystems Approach to Fisheries Management	€3,926,688	7 Years	University College Cork Department of Zoology, Ecology & Plant Science	Queen's University Belfast Ecology & Evolution Research Cluster, School of Biological Sciences Marine Institute Fisheries Science Services	
Beaufort Marine Research Award (Capacity Building)	Fish Population Genetics	€3,712,588	7 Years	University College Cork Department of Zoology, Ecology & Plant Science	Queen's University Belfast Fisheries Genetics & Molecular Ecology Research Group & Fisheries & Aquatic Ecosystems Branch	
Marine Institute NDP Marine Research Sub- Programme (Postdoctoral Fellowship)	Develop and test through Simulation a Suite of Measures that will Contribute to Rebuilding Depleted Fish Stocks in Waters Around Ireland	€627,570	84 months	University College Cork Department of Zoology, Ecology & Plant Science		
Marine Institute NDP Marine Research Sub-Programme (PhD Scholarship)	The Application of Signal Detection Methods to the Fisheries Management System	€115,000	48 months	University College Cork Department of Zoology, Ecology & Plant Science		
Marine Institute NDP Marine Research Sub- Programme (Postdoctoral Fellowship)	"Joined Up Thinking from Joined Up Data" Fisheries Data Integration and Analysis, Facilitating the Ecosystems Approach to Fisheries Management	€612,602	84 months	University College Cork Coastal & Marine Resource Centre (CMRC)		

4. This is the amount available at the time of writing and means the maximum grant-aid allocated to the project. This figure may be revised downwards at the end of the project when a full audit of eligible costs is carried out. In the case of EU FP7 Grant-aid it is the figure included for the Irish partner(s) at the project approval stage. This may however be revised during detailed contract negotiations and is subject to a final audit of eligible costs.

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
Marine Institute NDP Marine Research Sub-Programme (PhD Scholarship)	Modelling the Ecology, Population Dynamics, Assessment and Management of Nephrops (<i>Nephrops</i> <i>Norvegicus</i>) in the Waters around Great Britain and Ireland	€105,000	48 months	University College Cork <i>Department of Zoology, Ecology & Plant Science</i>	
Marine Institute NDP Marine Research Sub-Programme (PhD Scholarship)	The Impact of Climate Change on the Distribution, Biology and Productivity of Fish Stocks in Waters around Ireland	€110,000	48 months	National University of Ireland, Galway <i>Martin Ryan Institute</i>	
Marine Institute NDP Marine Research Sub-Programme (PhD Scholarship)	The Life History, Ecology and Dynamics of the Black Scabbard (<i>Aphanopus Carbo</i>) on the Deep Water Ecosystem of the North East Atlantic	€115,000	48 months	University College Cork <i>Department of Zoology, Ecology & Plant Science</i>	
Marine Institute NDP Marine Research Sub-Programme (PhD Scholarship)	Long-Term Dynamics of Herring Populations around Ireland	€114,840	48 months	Galway-Mayo Institute of Technology <i>Commercial Fisheries Research Group</i>	
EU FP7 Programme (Theme 6)	SALSEA-Merge: Advancing Understanding of Atlantic Salmon at Sea: Merging Genetics and Ecology to Resolve Stock-Specific Migration and Distribution Patterns	€767,753	36 months	Institute of Marine Research (IMR), Norway	Marine Institute <i>Aquaculture & Catchment Management Services</i> University College Cork <i>Department of Zoology, Ecology & Plant Science</i>
EU FP7 Programme (Theme 6)	EELIAD: European Eels in the Atlantic: Assessment of their Decline	€112,809	48 months	Centre for Environment, Fisheries and Aquaculture Science (CEFAS), UK	Central Fisheries Board <i>Research & Development Division</i> Marine Institute <i>Aquaculture & Catchment Management Services</i>
EU FP7 Programme (Theme 2)	MEFEPO: Making European Fisheries Ecosystem Operational	€214,958	36 months	University of Liverpool, UK	Marine Institute <i>Fisheries Science Services</i>

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
EPA Strive Programme (PhD Scholarship)	Juvenile Fish Habitat Requirements in Changing Coastal Ecosystems	€95,000	36 months	Galway-Mayo Institute of Technology <i>Department of Life Sciences</i>	
IRCSET (Postdoctoral Fellowship)	Community and Nutritional Ecology of Coral-Feeding Butterflyfishes	€100,000	24 months	Trinity College Dublin <i>Department of Earth & Environmental Sciences</i>	

Aquaculture Research Programme

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
Marine Institute NDP Marine Research Sub-Programme (Strategic Industry Project)	Cod Broodstock & Breeding Project	€4,099,992	84 months	National University of Ireland, Galway <i>Martin Ryan Institute</i>	Irish Seafood Producers Group (ISPG) Trosc Teoranta Bord Iascaigh Mhara (BIM) University College Cork <i>Department of Zoology, Ecology & Plant Science</i>
EU FP7 Programme (Theme 6)	MIDTAL: Micro-Arrays for the Detection of Toxic Algae	€363,629	45 months	Alfred Wegener Institute for Polar and Marine Research (AWI), Germany	NUJ, Galway <i>Martin Ryan Institute</i>

Seaweed Research Programme

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
Marine Institute NDP Marine Research Sub-Programme (Strategic Industry Project)	Development and Demonstration of Viable Hatchery and Ongoing Methodologies for Seaweed Species with Identified Commercial Potential	€749,197	36 months	Bord Iascaigh Mhara (BIM)	Queen's University Belfast C-MAR NUI Galway Martin Ryan Institute
Marine Institute NDP Marine Research Sub-Programme (Applied Industry Project)	Development of a Methodology for the Quantitative Assessment of Ireland's Inshore Kelp Resource	€616,063	27 months	Queen's University Belfast School of Biological Sciences	Envison Mapping Ltd. University College Cork Department of Zoology, Ecology & Plant Science
IRCSET (PhD Scholarship)	Investigation of the Genomic and Proteomic Effects of Metal Contamination in Seaweeds	€ 72,009	36 months	Waterford Institute of Technology Estuarine Research Group	

Offshore Oil & Gas Research Programme

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
DCENR/GSI – Griffith Geoscience Research Award (Capacity Building)	Griffith Award in Marine Petroleum Geology	€1,545,257	7 Years	University College Dublin Marine & Petroleum Geology Research Group	

Shipping & Maritime Transport Research Projects/Initiatives

Funding Source & Type	Project Name	Grant Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
Marine Institute NDP Marine Research Sub-Programme (Tender)	An Assessment of Research Capabilities and Development of a National Research Agenda in the Area of Maritime Economics and Transport	€58,950	4 months	John Mangan & Associates	
EU FP7 Programme (Theme 7)	AZIPLOT: Intuitive Operation and Pilot Training when using Marine Azimuthing Control Devices	€83,558	36 months	University of Newcastle-upon-Tyne (UK) <i>School of Marine Science and Technology</i>	Transas Group
EU FP7 Programme (Theme 7)	PROPS: Promotional Platform for Short Sea Shipping & Intermodality	€319,078	36 months	Alliance of Maritime Regional Interests in Europe (AMRIE)	Nautical Enterprise Centre Ltd. Irish Exporters' Association
EU FP7 Programme (Theme 7)	SKEMA: Sustainable Knowledge Platform for the European Maritime and Logistics Industry	€401,042	36 months	Athens University of Economics and Business, Greece	Nautical Enterprise Centre Ltd. Dublin Port Company Irish Exporters' Association

Discovery Research Measure

Biodiscovery/Biotechnology Research Projects/Initiatives

Funding Source & Type	Project Name	Grant-Aid (agreed)*	Project Duration	Lead Partner	Partners
Beaufort Marine Research Award (Capacity Building)	Marine Biodiscovery	€7,249,444	7 Years	National University of Ireland, Galway Martin Ryan Institute	University College Cork Environmental Research Institute Department of Microbiology Queen's University, Belfast School of Biological Sciences
Marine Institute NDP Marine Research Sub-Programme (IRCSET PhD Scholarship)	Exploiting Marine Biodiversity to Develop Drugs for Normalising Neural Communication in Disease: Therapeutics Targeting Neuronal Channel	€90,000	36 months	Dublin City University International Centre for Neurotherapeutics	
Marine Institute NDP Marine Research Sub-Programme (IRCSET PhD Scholarship)	Characterisation of Anti-Inflammatory Potential of Marine Extracts	€72,000	36 months	Dublin City University School of Biotechnology	
Marine Institute NDP Marine Research Sub-Programme (IRCSET PhD Scholarship)	Isolation and Synthesis of Bioactive Natural Products from Marine Sources	€72,000	36 months	University College Dublin Centre for Synthesis and Chemical Biology	

Marine Technology Research Projects/Initiatives

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
Beaufort Marine Research Award (Capacity Building)	Marine Sensors & Communication	€2,488,484	7 Years	Dublin City University <i>National Centre for Sensor Research</i>	
Marine Institute NDP Marine Research Sub-Programme (Industry-Led Project)	Acoustic Based Cetacean Detection	€64,110	22 months	Biospheric Engineering Ltd.	
EPA Strive (PhD Scholarship)	Novel Passive Sampling Devices for the Monitoring of Priority Pollutants	€95,000	36 months	Dublin City University	
IRCSET (PhD Scholarship)	Development of Navigational System for Unmanned Underwater Vehicle (UUV) Mapping/Reconnaissance	€72,009	36 months	University of Limerick <i>Mobile & Marine Robotics Research Group</i>	

Marine Functional Foods

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
Joint Funding: Marine Institute SSTI Award and DAFF Firm Programme (Capacity Building)	Marine Functional Foods Research Initiative	€5,200,000	7 Years	Teagasc Ashtown Food Research Centre (AFRC)	Teagasc Moorepark Food Research Centre National University of Ireland, Galway, Martin Ryan Institute University College Dublin School of Agriculture, Food Science and Veterinary Medicine University College Cork Faculty of Food Science & Technology University of Limerick Department of Life Sciences University of Ulster (Coleraine) Northern Ireland Centre for Food and Health
Marine Institute NDP Marine Research Sub-Programme (Industry-Led Project)	Investigation of the Flavouring and Taste Components in Irish Seaweeds	€99,645	18 months	Cybercolloids Ltd.	

Renewable Ocean Energy

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partners
Marine Institute NDP Marine Research Sub- Programme (Industry- Led Project)	Development of an Efficient Design Technique for the Optimisation of Mooring Systems for Wave Energy Arrays	€95,928	12 months	Marine Computation Services (MCS) Ltd.	
EU FP7 Programme (Theme 5)	CORES: Components for Ocean Renewable Energy Systems	€1,251,966	36 months	University College Cork <i>Hydraulics & Maritime Research Centre (HMRC)</i>	Marine Computation Services (MCS) Ltd. Ocean Energy Ltd. University of Limerick <i>Department of Electronic & Computer Engineering</i>
EU FP7 Programme (Theme 5)	EquiMAR: Pre-Normative Research for Ocean Energy	€304,000	36 months	University of Edinburgh, UK	University College Cork <i>Hydraulics & Maritime Research Centre (HMRC)</i>
IRCSET (PhD Scholarship)	Multi-Terminal HVDC for Offshore Wind-Farms	€72,009	36 months	University College Cork	
IRCSET (PhD Scholarship)	Analysis of Power Generation System of Wave Energy Power Converter	€72,009	36 months	University of Limerick	
IRCSET (PhD Scholarship)	Bearing Design Development and Wear Characterisation for a Tidal Stream Energy Extraction Device	€72,009	36 months	University College Dublin	
DCENR – Charles Parsons Energy Research Award (Capacity Building)	Parsons Award in Ocean Energy	€3,474,408	7 Years	University College Cork <i>Hydraulics & Maritime Research Centre (HMRC)</i>	
DCENR – Charles Parsons Energy Research Award (Capacity Building)	Parsons Award in Ocean Energy	TBC	7 Years 7 Years	University of Limerick <i>Mobile & Marine Robotics Research Centre</i>	

Policy Support Research Measure

Knowledge & Information Management

Funding Source & Type	Project Name	Grant-aid (agreed)*	Project Duration	Lead Partner	Partners
Marine Institute NDP Marine Research Sub-Programme (Strategic Project)	Data Management for Marine Geological and Geophysical Datasets (including Integration with the Marine Data Repository)	€336,906	36 months	University College Cork Coastal & Marine Resources Centre (CMRC)	Oregon State University (USA)
Marine Institute NDP Marine Research Sub-Programme (Industry-Led Project)	Information Management & Archive Solutions	€82,250	15 months	Central Solutions Ltd.	
Marine Institute NDP Marine Research Sub-Programme (Strategic Project/Framework Agreement)	Integrated Marine Data Repositories	€1,266,004	24 months	-	Kainos Technology Ltd. Compass Informatics Ltd. Ivor Marsh Insight Test Services
DCENR/GSI – Griffith Geoscience Research Award (Capacity Building)	Griffith Award in Geoscience Data	€851,878	7 Years	University College Cork Coastal & Marine Resources Centre (CMRC)	

Marine Environment Research Programme

Funding Source & Type	Project Name	Grant-Aid (agreed)*	Project Duration	Lead Partner	Partner
Marine Institute NDP Marine Research Sub-Programme (Capacity & Competency Building Project)	Biological Effects and Chemical Measurements for the Assessment of Pollution in Irish Marine Waters	€641,763	42 months	Trinity College Dublin Department of Earth and Environmental Sciences	Marine Institute Marine Chemistry Unit (MEFSS) Enterprise Ireland Shannon Aquatic Toxicity Laboratory Dublin Institute of Technology (DIT) Radiation and Environmental Sciences Centre
Marine Institute NDP Marine Research Sub-Programme (Applied Policy Project)	Marine Mammals and Megafauna in Irish Waters – Behaviour, Distribution and Habitat Use	€441,340	36 months	Galway-Mayo Institute of Technology Marine Biodiversity Research Group	Irish Whale & Dolphin Group
Marine Institute NDP Marine Research Sub-Programme (Desk Study)	Compilation of Habitat Based Catchment Information and Historical Eel Data in Support of Eel Management Plans (EEL-PLAN)	€149,697	15 months	Compass Informatics	Central Fisheries Board (CFB) Research Section National University of Ireland, Galway Zoology Department
EU FP7 Programme (Theme 9)	MyOCEAN: Development and Pre-Operational Validation of Upgraded GMES Marine Core Services and Capabilities	€475,000 (Provisional)	36 months	GIP Mercator Ocean, France	Marine Institute Ocean Science Services (OSS) Techworks Marine Ltd.
EU FP7 Programme (Theme 6)	CORALFISH: Assessment of the Interactions between Corals, Fish And Fisheries in Order to Develop Monitoring and Predictive Modelling Tools for Ecosystem Based Management in the Deep Waters of Europe and Beyond	€1,142,066	48 months	National University of Ireland, Galway Department of Earth & Ocean Sciences	O'Malley Fisheries University College Cork Coastal & Marine Resources Centre

Funding Source & Type	Project Name	Grant-Aid (agreed)*	Project Duration	Lead Partner	Partner
EPA STRIVE (PhD Scholarship)	Biodiversity and Ecological Requirements of Meiofauna and a Typology for Irish Transitional Waters	€95,000	36 months	Trinity College Dublin <i>Department of Earth and Environmental Sciences</i>	
EPA STRIVE (PhD Scholarship)	Novel Anti-fouling Strategies based on Materials Doped with Nanoparticles for use in new Monitoring Technologies	€95,000	36 months	Dublin City University	
EPA STRIVE (PhD Scholarship)	SADOSE: Safe Disposal of Sewage Effluent in Coastal Waters Designated for the Cultivation of Oysters and for Water-Contact Recreation	€95,000	36 months	University College Cork	
EPA STRIVE (Postdoctoral Fellowship)	Nutrient and Ecosystem Dynamics in Ireland's Only Marine Nature Reserve (NEIDIN)	€225,000	24 months	University College Cork	
EPA STRIVE (Postdoctoral Fellowship)	Anthropogenic Impacts on Marine Biodiversity	€225,000	24 months	University College Dublin	
IRCSET	Award for Deep-Sea Research (ESF-EUROCORES)	€240,000		University College Cork	
IRCSET (Postdoctoral Fellowship)	Toxicity of Manufactured Nano-Particles in the Aquatic Environment	€100,000	24 months	University College Cork	
IRCSET (Postdoctoral Fellowship)	Tracking Ocean Giants and their Jellyfish Prey	€100,000	24 months	University College Cork	
IRCSET (PhD Scholarship)	Surrogacy and Rapid Assessment Techniques in Marine Biodiversity Evaluation and Monitoring	€72,009	36 months	Galway-Mayo Institute of Technology	

Funding Source & Type	Project Name	Grant-Aid (agreed)*	Project Duration	Lead Partner	Partner
EPA STRIVE (DERP: Capacity Building)	Biological Effects of Pharmaceuticals in the Marine Environment	€700,000	5 years	Galway-Mayo Institute of Technology	

Rapid Ocean Climate Change Research Programme

Funding Source & Type	Project Name	Grant-Aid (agreed)*	Project Duration	Lead Partner	Partner
Marine Institute SSTI Funding (Strategic Project)	Impact of Increased Atmospheric CO ₂ on Ocean Chemistry and Ecosystems	€604,438	24 months	National University of Ireland, Galway Centre for Climate & Air Pollution Studies (C-CAPS)	Marine Institute Marine Chemistry Section (MEFSS)
Marine Institute SSTI Funding (Strategic Project)	Climate & Catchment Environment	€261,214	18 months	National University of Ireland, Maynooth Irish Climate and Analysis Research Institute	Trinity College Dublin Department of Earth and Environmental Sciences
Marine Institute SSTI Award (Capacity & Competency Building)	Marine Climate Change Research Programme	€1,335,000	24 months	Marine Institute Ocean Science Services (OSS)	
IRCSET (PhD Scholarship)	Downscaling Global Climate Models for Regional Modelling of Irish Climate	€72,009	36 months	National University of Ireland, Maynooth Irish Climate and Analysis Research Institute	
IRCSET (PhD Scholarship)	The Analysis of Vegetation Composition in Relation to Salinity Levels in Irish Lagoons in Order to Create a Base Line for Determining the Impact of Global Climate Change	€72,009	36 months	University College Cork	

Funding Source & Type	Project Name	Grant-Aid (agreed)*	Project Duration	Lead Partner	Partner
IRCSET (PhD Scholarship)	The role of Salinity in Structuring Intertidal Estuarine Ecosystems with regard to Global Climate Change.	€72,009	36 months	University College Cork	
EPA STRIVE	Air-Sea Exchange Processes (Easi-Aqcis)	€1,358,193	36 months	National University of Ireland, Galway <i>Centre for Climate & Air Pollution Studies (C-CAPS)</i> National University of Ireland, Galway <i>Department of Botany</i> National University of Ireland, Galway <i>Marine Modelling Centre</i>	National Research Council, Bologna Institute of Atmospheric Sciences and Climate (ISAC)

Socio-Economics

Funding Source & Type	Project Name	Grant-Aid (agreed)*	Project Duration	Lead Partner	Partner
Beaufort Marine Research Award (Capacity Building)	Economic and Social Research Related to Development Dynamics of the Marine Sector in Ireland	€2,099,204	7 Years	National University of Ireland, Galway <i>Irish Centre for Rural Transformation & Sustainability (ICERTS)</i>	Teagasc <i>Rural Economy Research Centre (RERC)</i>

Infrastructure Research Programme

Ship-Time

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partner
Marine Institute Integrated Research Surveys	Standard Oceanographic Section Cruise: Irish Coastal Waters	€60,000	10 days	Marine Institute Ocean Science Services	National University of Ireland, Galway Department of Earth & Ocean Sciences
Marine Institute Integrated Research Surveys	Harmful Algal Blooms in Thin Layers	€120,000	8 days	National University of Ireland, Galway Martin Ryan Institute	
Marine Institute Integrated Research Surveys	Salmon Smolt Survey	€60,000	10 days	University College Cork Department of Zoology, Ecology & Plant Science	Central Fisheries Board
Marine Institute Integrated Research Surveys	Irish Deepwater Ecosystem Survey 2007	€135,000	9 days	Marine Institute Fisheries Science Services (FSS)	National University of Ireland, Galway Department of Earth & Ocean Sciences Marine Institute Marine Environmental Health Services National University of Ireland, Galway Department of Earth & Ocean Sciences

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partner
Marine Institute Integrated Research Surveys	Ground-Truthing Seismic Images of Ocean Structure in Rockall Trough, Part I: Baseline Survey of Biological Productivity and Water Motion along WESTLINE	€120,000	8 days	Trinity College Dublin Seismic & Basin Analysis Group	Marine Institute Ocean Science Services Trinity College Dublin Seismic & Basin Analysis Group University College Dublin School of Geological Sciences Durham University Department of Earth Sciences Trinity College Dublin Department of Zoology
Marine Institute Dedicated Training Programme	Trainee Deck Officers & Trainee Engineering Officers	€60,000	4 days	National Maritime College of Ireland	Marine Institute Irish Maritime Development Office (IMDO)
Marine Institute Dedicated Training Programme	Multidisciplinary Offshore Training for Marine Scientists (UCC-MOTS)	€15,000	1 day	University College Cork Environmental Research Institute	
Marine Institute Dedicated Training Programme	Marine Environment – Undergraduate and Graduate programme	€12,000	2 days	Trinity College Dublin Department of Earth & Environmental Sciences	
Marine Institute Dedicated Training Programme	Multi-Disciplinary Training during the PAP Mooring Service Visit	€105,000	7 days	National University of Ireland, Galway Department of Earth & Ocean Sciences	
Marine Institute Dedicated Training Programme	Undergraduate Training in Fisheries and Oceanographic Sampling Techniques at Sea	€12,000	2 days	Galway-Mayo Institute of Technology Department of Life & Physical Science	

Funding Source & Type	Project Name	Grant-Aid (agreed) ⁴	Project Duration	Lead Partner	Partner
Marine Institute Dedicated Training Programme	Benthic and Demersal Assemblages on Sandbanks in the Western Irish Sea and Potential Impacts of Offshore Wind Farms	€35,000	5 days	University College Dublin <i>Marine Biodiversity Ecology and Evolution</i>	

Appendix 3: Membership of *Sea Change* Advisory Groups

Membership of the Marine Food Advisory Group

Name	Organisation
Government Departments	
Mr. John Quinlan	Department of Agriculture, Fisheries & Food
Dr. Pamela Byrne	Department of Agriculture, Fisheries & Food
Ms. Josephine Kelly	Department of Communications, Energy & Natural Resources
Dr. Eamonn Kelly	Department of Environment, Heritage & Local Government
Agencies	
Mr. Donal Maguire	Bord lascaigh Mhara
Dr. Michael Keatinge	Bord lascaigh Mhara
Mr. Terence O'Carroll	Bord lascaigh Mhara
Mr. Tom Scanlon	Bord lascaigh Mhara
Ms. Tara McCarthy	Bord Bia
Mr. Don McSwiney	Enterprise Ireland
Dr. Dave Jackson	Marine Institute (ACMS)
Dr. Dermot Hurst (Chair)	Marine Institute (SPDS)
Dr. Francis O'Beirn	Marine Institute (MEFSS)
Dr. Frank O'Brien	Marine Institute (FSS)
Dr. Ken Whelan	Marine Institute (ACMS)
Dr. Niall O'Maoileidigh	Marine Institute (ACMS)
Dr. Paul Connolly	Marine Institute (FSS)
Ms. Yvonne Shields	Marine Institute (SPDS)
Mr. Jim Condon	Sea-Fisheries Protection Authority
Dr. Declan Troy	Teagasc
Prof. Liam Donnelly	Teagasc
Mr. Micheál Seoighe	Údarás na Gaeltachta
Higher Education	
Dr. Pauline King	Galway-Mayo Institute of Technology
Dr. John Slater	Letterkenny Institute of Technology
Dr. Dagmar Stengel	National University of Ireland, Galway
Prof. Jim Ward	National University of Ireland, Galway
Dr. Richard Fitzgerald	National University of Ireland, Galway
Dr. Stefan Kraan	National University of Ireland, Galway
Dr. Emer Rogan	University College Cork
Prof. Gerald Fitzgerald	University College Cork
Dr. Sarah Culloty	University College Cork
Dr. Stefano Mariani	University College Dublin

Name	Organisation
Industry Representatives	
Mr. Dónal Mac Giolla Bhríde	Arramara Teo
Mr. Andy Mulloy	Connemara Seafoods
Mr. Aodh O’ Domhnaill	Earagail Eisc Teoranta
Mr. Paul Kelly	Irish Business & Employers Confederation
Mr. Lorcan O’Cinneide	Irish Fish Producers’ Organisation
Mr. Richie Flynn	Irish Salmon Grower’s Association
Dr. Ashie Norris	Marine Harvest
Mr. Damien O’Ceallachain	Muir Gheal Teo
Mr. Mark Norman	Taighde Mara Teo

Membership of the Offshore Oil & Gas and Seabed Resources Advisory Group

Name	Organisation
Government Departments	
Dr. Peter Croker	Department of Communications, Energy & Natural Resources
Agencies	
Mr. Mick Gillooly (Chair)	Marine Institute (OSS)
Dr. Dermot Hurst	Marine Institute (SPDS)
Ms. Yvonne Shields	Marine Institute (SPDS)
Mr. Koen Verbruggen	Geological Survey of Ireland
Third Level	
Dr. Andy Wheeler	University College Cork
Dr. Colin Browne	National University of Ireland, Galway
Prof. Pat Shannon	University College Dublin
Industry	
Mr. Fergus Cahill	Irish Offshore Operators Association
Mr. John O’ Sullivan	Providence Resources Plc.
Mr. Nick O’Neill	CSA Group Ltd.

Membership of the Marine Biotechnology/Biodiscovery Advisory Group

Name	Organisation
Agencies	
Dr. Paul Roben	Enterprise Ireland
Dr. Philipp Hess	Marine Institute (MEFSS)
Ms. Yvonne Shields	Marine Institute (SPDS)
Mr. Eoin Sweeney (Chair)	Marine Institute (SPDS)
Dr. Ruth Freeman	Science Foundation Ireland
Higher Education	
Prof. Oliver Dolly	Dublin City University
Prof. Mike Guiry	National University of Ireland, Galway
Dr. Mark Johnson	Queens University Belfast
Prof. Anita Maguire	University College Cork
Prof. Alan Dobson	University College Cork
Prof. Pat Guiry	University College Dublin
Industry	
Dr. Cormac Kilty	Biotrin International
Dr. Leo Bishop	Irish Development Authority
Mr. Richard Fernandez	Luxel Biosciences Ltd.
Mr. David Newman	US National Cancer Institute

Membership of the Marine Technology Advisory Group

Name	Organisation
Government Departments	
Mr. Pat Gilheaney	Department of Environment, Heritage & Local Government
Agencies	
Dr. Brian Donlon	Environmental Protection Agency
Ms. Yvonne Shields	Marine Institute (SPDS)
Mr. Eoin Sweeney (Chair)	Marine Institute (SPDS)
Mr. Jim Lawlor	Enterprise Ireland
Dr. Gary Crawley	Science Foundation Ireland
Higher Education	
Prof. Dermot Diamond	Dublin City University
Dr. Wilson McGarel	Queens University Belfast
Dr. Cian O' Mathuna	University College Cork
Industry	
Mr. Alan Leddy	Irish Development Authority
Dr. Mark White	Nowcasting International Ltd.

Membership of the Marine Environment, Policy, Socio-Economic & Legal Advisory Group

Name	Organisation
Government Departments	
Mr. John Quinlan	Department of Agriculture, Fisheries & Food
Dr. Elizabeth Sides	Department of Environment, Heritage & Local Government
Ms. Lisa Walshe	Department of Foreign Affairs
Mr. Martin Diskin	Department of Transport
Agency	
Dr. Shane O'Boyle	Environmental Protection Agency
Ms. Beatrice Kelly	Heritage Council
Ms. Oonagh Duggan	Heritage Council
Mr. Michéal Ó Cinnéide (Chair)	Marine Institute (MEFSS)
Dr. Terry McMahon	Marine Institute (MEFSS)
Ms. Yvonne Shields	Marine Institute (SPDS)
Dr. Cathal O'Donoghue	Teagasc
Higher Education	
Dr. Ronan Long	National University of Ireland, Galway
Prof. Frank Convery	University College Dublin
Other	
Dr. Simon Berrow	Irish Whale & Dolphin Group
Prof. Brendan Whelan	Economic & Social Research Institute

Membership of the Knowledge & Information Management Advisory Group

Name	Organisation
Government Departments	
Mr. Colm Butler	Department of An Taoiseach
Mr. Muiris de Buitlear	Department of Environment, Heritage & Local Government
Mr. Tony Flynn	Department of Communications, Energy & Natural Resources
Ms. Phylis Doyle	Local Government Computer Services Board
Agency	
Mr. Tom Stafford	Environmental Protection Agency
Mr. Koen Verbruggen	Geological Survey of Ireland
Mr. John Evans (Chair)	Marine Institute (SPDS)
Mr. Eoin O'Grady	Marine Institute (SPDS)
Higher Education	
Ms. Valerie Cummins	University College Cork
Other	
Mr. Eamonn Doyle	Economic & Social Research Institute

Membership of the Rapid Climate Change Advisory Group

Name	Organisation
Government Departments	
Mr. Jim Casey	Department of Communications, Energy & Natural Resources
Agency	
Dr. Frank McGovern	Environmental Protection Agency
Dr. Glenn Nolan	Marine Institute (OSS)
Mr. Joe Silke	Marine Institute (MEFSS)
Dr. Ken Whelan (Chair)	Marine Institute (ACMS)
Mr. Liam Keegan	Met Éireann
Higher Education	
Dr. Rowan Fealy	National University of Ireland, Maynooth
Prof. John Sweeney	National University of Ireland, Maynooth
Prof. Robert Devoy	University College Cork

List of Abbreviations

ACMS	Aquaculture and Catchment Management Services
BIM	Bord Iascaigh Mhara
BMW	Border, Midland and Western
CEO	Chief Executive Officer
CFB	Central Fisheries Board
CTD	Conductivity, Temperature and Depth
DAFF	Department of Agriculture, Fisheries and Food
DCENR	Department of Communications, Energy and Natural Resources
DCU	Dublin City University
DoEHLG	Department of Environment, Heritage and Local Government
DERP	Developing Environmental Research Potential
DIT	Dublin Institute of Technology
EI	Enterprise Ireland
EPA	Environmental Protection Agency
ERDF	European Regional Development Fund
ESF	European Science Foundation
EU	European Union
EUROCORES	European Collaborative Research Scheme
FIRM	Food Institutional Research Measure
FP7	Seventh Research Framework Programme
FSS	Fisheries Science Services
GMIT	Galway-Mayo Institute of Technology
GSI	Geological Survey of Ireland
HE	Higher Education
HEA	Higher Education Authority
HLSG	High-Level Steering Group
HMRC	Hydraulics and Maritime Research Centre
IBEC	Irish Business and Employers Confederation
ICT	Information and Communications Technology
IDA	Industrial Development Authority
INFOMAR	INtegrated Mapping For the Sustainable Development of Ireland's MARine Resource
IMDO	Irish Maritime Development Office
INTERREG	Interregional Co-operation Programme
IRCSET	Irish Research Council for Science, Engineering and Technology
MEFSS	Marine Environment and Food Safety Services
MFF	Marine Functional Foods

MFFRI	Marine Functional Foods Research Initiative
MI	Marine Institute
NI	Northern Ireland
NDP	National Development Plan
NGO	Non-Governmental Organisation
NMCI	National Maritime College of Ireland
N/S	North/South
NUIG	National University of Ireland, Galway
NUIM	National University of Ireland, Maynooth
OSS	Ocean Science Services
PAD	Petroleum Affairs Division
PI	Principle Investigator
PIP	Petroleum Infrastructure Programme (PIP)
PRTL	Programme for Research in Third-Level Institutions
QUB	Queen's University Belfast
REFIT	Renewable Energy Feed In Tariff
R.V.	Research Vessel
RIMS	Research Information Management System
R&D	Research and Development
RTDI	Research and Technology Development and Innovation
SC	<i>Sea Change</i>
SEI	Sustainable Energy Ireland
SIF	Strategic Innovation Fund
SFI	Science Foundation Ireland
SME	Small and Medium Enterprises
SPDS	Strategic Planning and Development Services
SSTI	Strategy for Science, Technology and Innovation 2006-2013
STI	Science Technology and Innovation
STRIVE	Science, Technology, Research and Innovation for the Environment
TCD	Trinity College Dublin
UCC	University College Cork
UCD	University College Dublin
UL	University of Limerick
UU	University of Ulster
UUV	Unmanned Underwater Vehicle



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