

National Development Plan 2000 • 2006

Productive Sector Operational Programme

Marine RTDI Measure Interim Report 2000 • 2002



Marine Institute
Foras na Mara

Marine RTDI Measure



NATIONAL DEVELOPMENT PLAN

The Marine Institute is the national agency, which has the following general functions:

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

Marine Institute Act 1991

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Foreword

The inclusion of a €52 million Marine RTDI Measure, as a component of the Productive Sector Operational Programme of the National Development Plan 2000–2006, represents a very significant boost for Irish marine science and marine resource development. It signifies a real appreciation of the central role that marine science and technology must play in the sustainable development of Ireland's 900,000 km² marine resource and recognises the opportunities and challenges contained in the statement that "Ireland is 90% undeveloped, undiscovered and underwater".

The Marine RTDI Measure Programme, developed by the Marine Institute for and on behalf of the Department of Communications, Marine & Natural Resources, is fully consistent with government strategy on marine resource development and builds on and develops the strategies outlined in "A Marine Research, Technology, Development and Innovation Strategy for Ireland – A National Team Approach" (Marine Institute 1998).

The purpose of this Report is two fold. Firstly, consistent with best practice in RTDI management and NDP procedures and guidelines, an independent analysis of progress (Mid-Term Review) in the implementation of Productive Sector Operational Programme will take place in 2003. This Report is designed to summarise and report on activities, achievements and expenditure during the period 2000–2002 and as such, provides an important contribution to the Mid-Term Review process.

Secondly, the preparation of this report provides an opportunity to report on the many achievements and activities supported under the NDP Marine RTDI Measure during the period 2000–2002.

Highlights include the design and construction of a new multipurpose 65m research vessel the *Celtic Explorer*, capable of working to the full extent (and beyond) of Ireland's marine territories. With regard to up-grading key marine infrastructures and facilities, a modest start has begun in 2002 which includes improving laboratory facilities in the ports of Dunmore East and Castletownbere.

Already, over €4.5 million has been allocated to a suite of projects, desk studies and fellowships which will contribute to capacity building and will address a number of priority RTDI issues:

- > Identified priority topics dealing with Orange Roughy, Harmful Algal Blooms, Phytotoxins and the sustainability of the Seed Mussel Resource in Irish Sea are being addressed under the Strategic Marine RTDI Programme.
- > Industry has been engaged under the Applied Marine RTDI Programme with 5 projects supporting industry needs, of which 3 incorporate the input of academic research institutions.
- > Thirteen young researchers are in receipt of scholarships and fellowships, worth in excess of €1 million, aimed at developing essential capabilities in fisheries and marine environmental research, aquaculture and marine biotechnology.
- > The prestigious Manahan Fellowship (2002) is being used to support the development of a new Marine Law Policy Centre at the National University of Ireland, Galway.



Peter Heffernan
CEO MARINE INSTITUTE

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Introduction

The aim of this Report is to summarise the activities, achievements and expenditure during the first three years (2000–2002) of the implementation of the NDP Marine RTDI Measure.

The Marine RTDI Measure is one of 6 RTDI Measures supported under the Productive Sector Operational Programme of the National Development Plan 2000–2006¹.

The Marine RTDI Measure², with an indicative budget of €52 million, is managed by the Marine Institute (the Implementing Body), for and on behalf of the Department of Communications, Marine and Natural Resources. The Marine Institute reports to the Operational Programme Monitoring Committee (OPMC) established by the Department of Finance and the Department of Enterprise, Trade and Employment (the Managing Authority) to oversee the implementation of all RTDI Measures.

The primary objectives of the Marine RTDI Measure are to:

- > Enhance and consolidate the performance of the marine sector in Ireland through support for R&D and technology transfer activities.
- > Provide the RTDI capacity and infrastructure to enable Ireland to fully utilise her marine resource potential in a sustainable manner.

The Marine RTDI Measure consists of the following Sub-Measures:

- > Provision of **enhanced research vessel capacity** to cover Outer Continental Shelf Activities.
- > Upgrade of **key national marine laboratories and facilities** to provide necessary capacity and infrastructure to support planned activities.
- > Establishment of a **Marine RTDI Fund** to support project based RTDI in identified and targeted areas.

The Marine RTDI Fund consists of 2 Marine RTDI Grant-Aid Programmes and 5 Supporting Initiatives:

Sub-Measure 3.1. The Applied (Industry) Marine RTDI Programme. (Launched in July 2002)

Aims to support and strengthen the RTDI capacity of indigenous industry in the marine sector by providing grant-aid to support in-house and co-operative RTDI projects.

Sub-Measure 3.2. The Strategic Marine RTDI Programme. (Launched in June 2002)

Aims to support national marine RTDI capacity building through grant-aid support for strategic marine RTDI projects.

Supporting Initiatives:

3.3. Desk Studies.

(Launched in September 2001)

3.4. Fellowships.

(Launched in September 2001)

Postgraduate Fellowships.

Post-doctoral Fellowships.

Manahan Fellowship.

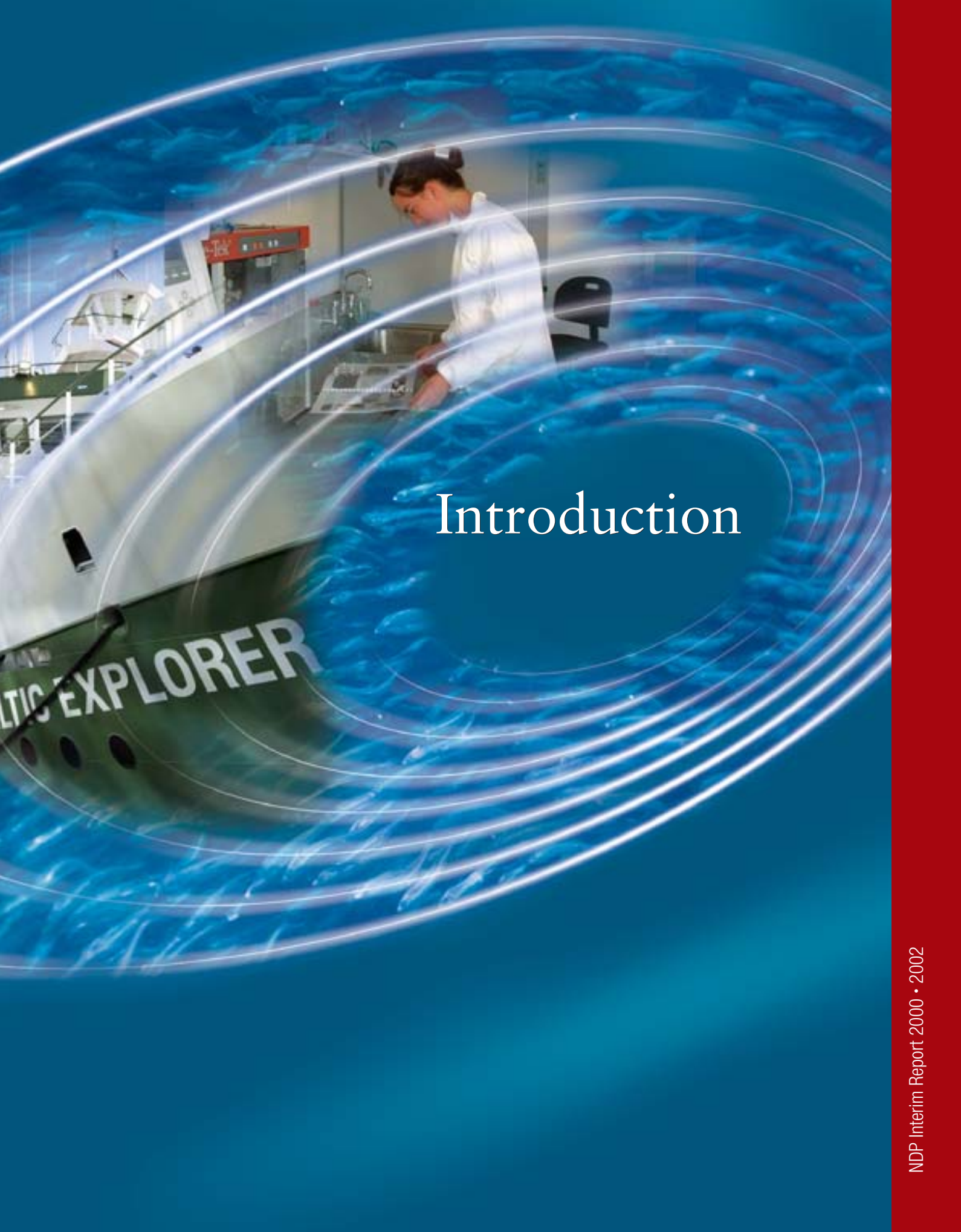
3.5. Sponsorship of High Level

Appointments (HLA) in Gap Areas
(preparatory actions only).

3.6. Demonstration Projects.

3.7. Marine RTDI Networking & Technology
Transfer. (Launched in October 2002).





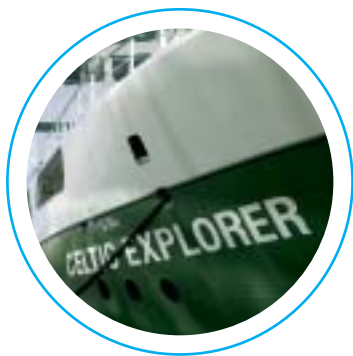
Introduction

RV Celtic Explorer

Provision of enhanced research vessel capacity to cover Outer Continental Shelf Activities

Ireland's marine resource encompasses an area of circa 900,000 km². Up until 2002, Ireland's marine research vessel infrastructure, the 31m Celtic Voyager (1997), was capable of covering only a fraction of this territory. The provision of grant-aid under the NDP Marine RTDI Measure to provide enhanced research vessel capacity to cover Outer Continental Shelf Activities allowed the design and acquisition of a purpose-built multipurpose research vessel, the Celtic Explorer, to provide access to the outer reaches of the Irish Continental Shelf.

The RV *Celtic Explorer*, a 65m multipurpose research vessel, was designed as a collaborative effort by the Marine Institute, MTDS Ltd. and Skipteknisk (a Norwegian naval architectural firm) and was built by the Damen shipyards in The Netherlands and Romania. Dedicated Project Management ensured that the *Celtic Explorer* made her maiden voyage into Galway Docks on the 30th December 2002, on time and on budget. The *Celtic Explorer* is 100% grant-aided under the NDP Marine RTDI Measure and is primarily designed for offshore scientific research and survey.



Special features

The RV *Celtic Explorer* has two unique features which make it particularly useful for marine research and surveying:

- > The vessel is fully compliant with ICES 209 noise requirements for fisheries research. As such it is one of only 3 vessels to have this feature.
- > The vessels scientific transducers are mounted on a drop keel such that (a) they can be lowered below the depth of hull interference and (b) the keel can be raised inside the vessel in order to service the transducers whilst underway and avoid the use of divers or having to dry-dock the vessel.

Design Stage

December 1999	Design tenders invited by open procedure – OJ Ref: 1999/S 251-207252.
May 2000	Design contract awarded to Skipteknisk naval architects (Norway).

Tender Phase

July 2000	Construction tenders invited by restricted procedure for the supply of a multi-purpose research vessel – OJ Ref:2000/S 131-085636.
January 2001	Tenders evaluated and construction contract awarded to the Damen Shipyards (The Netherlands) OJ Ref: 2001/S 11-007252.

Construction Phase

June 2001	Construction work (cutting and assembly of steel plates) begins at the Damen shipyard in Galatz, Romania.
July 2001	Keel-laying ceremony takes place on the 5 th of July at the Damen shipyard (Galaz, Romania).
November 2001	Testing of ship's Indar propulsion system takes place at the factory in Spain.
April 2002	The fore and aft sections of the vessel are joined.
May 2002	The <i>Celtic Explorer</i> launched from the dry dock into the water on the 10 th May.
June 2002	The ship departs from the Romanian yard on the 20 th June and arrives at Damen's yard at Vlissingen (The Netherlands) on the 8 th July.
July-Dec 2002	Outfitting of interiors and electrical installation etc. commences.
Nov-Dec 2002	Sea trials and noise trials were carried out in Norway.
December 2002	The <i>Celtic Explorer</i> delivered to the Marine Institute in Galway Dock on 30 th December 2002.

The first task of the new *Celtic Explorer* will be to commence seabed mapping in Zone 2 (50m-200m) of the National Seabed Survey.



A photograph of the research vessel Celtic Explorer, a white ship with a green hull, viewed from a low angle. The ship is set against a clear blue sky. Overlaid on the image are several concentric, glowing white arcs that represent sonar or radar waves emanating from the ship's bow. The text 'RV Celtic Explorer' is centered over the ship's hull in a white serif font.

RV Celtic Explorer

Provision of enhanced research vessel capacity to cover Outer Continental Shelf Activities.

General Information

- > 65.5m length, 15m beam (Voyager 31.4m, 8.5m).
- > Gross tonnage 2500 (Voyager 340 GT).
- > Accommodates 31 people – 19 scientists, 12 regular crew.
- > 16kn speed, 11kn service speed.
- > Engines: 2 x Wartsila 9L20, 1530 KW/1000 rpm, 690 V plus 1 x Wartsila 6L20, 1020 KW/1000 rpm, 690 V.
- > Propulsion System: 2 x Indar DC electric motors (1500 KW, 180 rpm each).
- > 45 days endurance.

Special Features

- > Complies with noise requirements of ICES CRR Report 209.
- > Drop Keel.
- > Emergency towing capability.
- > Capacity to carry 4 20ft Containerised labs.
- > Containerised labs support systems – 220, 440 VAC (250 kW), LAN, phone, sea/freshwater, waste drain.
- > Scientists' office/meeting room.
- > Messroom, Lounge, Smokers' Lounge.
- > Accommodation for 19 scientists – 9 single berths, 5 two-man berths, all en-suite.
- > Gymnasium, Sauna.
- > Hospital.

On Board Equipment

- > Data Acquisition System.
- > Weather fax, Navtex, Mini-M.
- > CTD.
- > Multibeam sounder.
- > Sound Velocity Probe.
- > Sub-bottom profiler.
- > Thermosalinograph.
- > Motion Reference Unit.
- > Gravity Meter.
- > Moving Vessel Profiler.
- > Magnetometer.
- > Navigation Package.
- > Fluorometer.
- > ADCP.
- > Navigational Echo Sounder.
- > Hydrographic Echo Sounder.

Fishing Equipment

- > Colour Video Sonar.
- > Scientific Echo.
- > Scanmar Net Monitoring.

Deck Equipment

- > Aft A-Frame: 25T, 4m reach
- > Stbd. A-Frame: 10T, 3m reach
- > Midship Crane: 2T @ 8m
- > Fwd. Crane: 1.5T @ 10m
- > Aft Crane: 8T @ 15m
- > 2 x Split trawl winches: 30T, 5000m
- > 2 x Gilson winches: 12T, 200m
- > Net Drum winches: 35T
- > General Purpose winch: 5T, 2500m
- > General Purpose winch: 20T, 2000m
- > Net Sounding winch: 6T, 4700m
- > Hydrographic winch: 4T, 2000m
- > CTD winch: 6T, 6000m, heave
- > Compensation system.

Schedule of Expenditure

	Budget (€)	2000	2001	2002	Total Exp
Payments	31,697,000	8,432,944	12,318,260	9,111,860	29,863,064
Annual %		27%	40%	29%	
Cumulative total		8,432,944	20,751,204	29,863,064	
Cumulative %		27%	67%	96%	



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The keel-laying took place on the 6th of July 2001, marking what is traditionally an important milestone in the build of any vessel.

*April 2002:
The entire steel superstructure of the vessel was completed, when the fore and aft sections were closed.*

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*December 2002:
Arriving into Galway Docks.*



Marine RTDI Infrastructures

Upgrade of key national marine laboratories and facilities to provide necessary capacity and infrastructure to support planned activities



The primary objective of Sub-Measure 2: Marine RTDI Infrastructure, was to provide grant-aid to upgrade key national marine RTDI laboratories and facilities to provide the necessary capacity and infrastructure to support planned and priority marine RTDI activities.

In 2001, an internal Strategic Marine RTDI Infrastructure Needs Analysis was carried out to identify and prioritise Marine RTDI infrastructure projects. On foot of this Needs Analysis, Marine Institute Divisions were invited in 2002 to submit competitive infrastructure proposals.

Infrastructure proposals submitted were independently evaluated and 7 projects were recommended for Grant Aid (totalling €268,541).

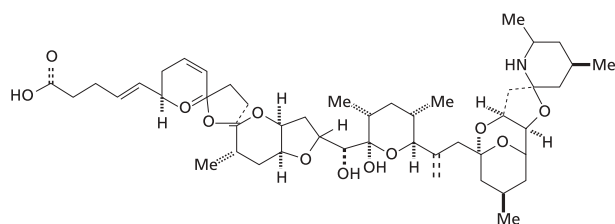
Key marine RTDI infrastructures and specialised equipment supported in 2002 under Sub-Measure 2 of the NDP Marine RTDI Measure included:

National Fisheries Assessment (Marine Fisheries Service Division)

- | | |
|---|---------|
| > Up-grade Dunmore East Laboratory (INF/02/04) | €30,375 |
| > Up-grade of Castletownbere Laboratory (INF/02/05) | €48,400 |
| > Scanmar Scanbas System (INF/02/06) | €49,610 |

Marine Environmental Monitoring & Assessment

- | | |
|--|---------|
| > Laboratory Downdraft System
(INF/02/01) | €28,270 |
| > Field Fluorometer
(INF/02/02) | €22,050 |
| > Multifunctional Workboat
(INF/02/03) | €57,665 |
| > Suite of autonomous
in-situ sensors (INF/02/07) | €32,169 |





Marine RTDI Infrastructures

Upgrade of key national marine laboratories and facilities to provide necessary capacity and infrastructure to support planned activities.

Marine RTDI Fund

The primary aim of Sub-Measure 3 of the NDP Marine RTDI Programme is the “*establishment of a Marine RTDI Fund to support project based RTDI in identified and targeted area*”

The Marine RTDI Fund, launched in 2001, consisted of 2 Marine RTDI Grant-Aid Programmes and 5 Supporting Initiatives:

Sub-Measure 3.1. The Applied (Industry) Marine RTDI Programme. (Launched in July 2002).

Aims to support and strengthen the RTDI capacity of indigenous industry in the marine sector by providing grant-aid to support in-house and co-operative RTDI projects.

Sub-Measure 3.2. The Strategic Marine RTDI Programme. (Launched in June 2002).

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Supporting Initiatives:

- 3.3. Desk Studies. (Launched in September 2001).
- 3.4. Fellowships. (Launched in September 2001).
 - > Postgraduate Fellowships.
 - > Post-doctoral Fellowships.
 - > Manahan Fellowship.
- 3.5. Sponsorship of High Level Appointments (HLA) in Gap Areas (preparatory actions only).
- 3.6. Demonstration Projects.
- 3.7. Marine RTDI Networking & Technology Transfer. (Launched in October 2002).



Further to the issue of calls for proposals for Desk Studies and Fellowships in 2001 and Applied and Strategic Projects in 2002, over €4.5 million has been allocated in grant-aid to marine RTDI research projects. Of this amount, circa €1.7 million has been paid out by way of advance payments in 2002:

- > 5 Applied Industry Projects (€331,913).
- > 4 Strategic Projects (€1,670,716).
- > 10 Desk Studies (€508,305).
- > 6 Scholarships (€660,755).
- > 8 Fellowships, including the prestigious Michael Manahan Fellowship (€1,385,048).
- > 12 Sponsorship/Networking Awards (€39,060).

A short description of these projects is contained in the following pages. More detailed descriptions of projects supported under the Marine RTDI Measure are available on request or on the NDP Marine RTDI website: www.marine.ie/marinertdi.





Marine RTDI Fund

The primary aim of Sub-Measure 3 of the NDP Marine RTDI Programme is the “*establishment of a Marine RTDI Fund to support project based RTDI in identified and targeted area*”.

Marine RTDI Fund Applied (Industry) Programme

The primary aim of the Applied (Industry) Marine RTDI Programme is “to facilitate and develop the RTDI capacity of indigenous marine industry (SMEs) through grant-aid support for in-house and co-operative RTDI”.

Applications for RTDI grant-aid are accepted from: (a) Individual companies (SMEs), (b) Companies (SMEs) acting in collaboration with other companies (SMEs) or (c) Companies (SMEs) acting in collaboration with third level colleges/public research institutes. All proposals must however be submitted by an SME as the lead partner. The maximum grant-aid payable under this scheme is €100,000/project.

Grant-aid rates, in compliance with State-Aid rules (State-Aid N773/2001 – Ireland. 02/08/2002. C(2002) 2959), are:

- > SME(s): 40% (S&E) and 45% (BMW) of eligible costs.
- > Grant-Aid to collaborative partnerships involving an SME(s) and a Public Research Performer: 75% of eligible costs. In this case, the grant aid is paid, via the SME to the Research Performer with the participating SME(s) covering remaining 25% of costs.

Following a first call for proposals in 2002 (deadline for submission of proposals: 26th September 2002) proposals received were independently assessed and six project proposals were approved, representing a grant-aid offer of €402,577.

However while auditing the successful companies prior to issuing the first payment, one of the applicant companies was found not to be an SME³ and the grant-aid offer was withdrawn. The total grant-aid awarded to the remaining 5 projects was €331,913 representing 43% of the total RTDI cost of €766,939.



The successful projects included:

Aquaculture

A novel On-growing System for Abalone.

Applicant: Awabi Teo

Grant-Aid €44,484

3rd Level RTDI Performer: Aquaculture Development Centre, NUI-Cork.

Technology & Scientific Development of turbot broodstock management and larviculture in Ireland.

Applicant: Turbard Iathar Chonamara Teo (Connemara)

Grant-Aid €97,236

3rd Level RTDI Performer: Aquaculture Development Centre, NUI-Cork.

Marine Technology

Validation of non-contact techniques for marine water characteristics.

Applicant: Spectral Signatures Ltd (Dublin)

Grant-Aid €23,631

3rd Level RTDI Performer: None.

High pressure seawater pump for use in wave energy converters (C-PUMP).

Applicant: Marine Technology Ltd (Galway)

Grant-Aid €100,000

Associate SME: J.Murtagh Associates.

3rd Level RTDI Performer: None.

Ocean Energy

Prediction of ocean wave energy for resonant extraction devices (POWERED).

Applicant: Wavebob Ltd (Wicklow)

Grant-Aid €66,560

3rd Level RTDI Performer: Hydraulics & Maritime Research Centre, NUI-Cork.



³ A Small and Medium Enterprise (SME) is defined as an enterprise which has fewer than 250 employees and has either an annual turnover of not exceeding €40 million or an annual balance sheet total not exceeding €27 million, and is not 25% owned by one or more companies that are not SMEs.



Applied (Industry) Programme

The primary aim of the Applied (Industry) Marine RTDI Programme is “*to facilitate and develop the RTDI capacity of indigenous marine industry (SMEs) through grant-aid support for in-house and co-operative RTDI*”.

Marine RTDI Fund Strategic Project ST/02/01

Biological Oceanography of Harmful Algal Blooms
off the West Coast of Ireland (BOHAB)
(Ref: ST/02/01)

Duration: January '03 – January '06 (36 months)

Grant Aid: €399,500



In the past three decades Harmful Algal Bloom (HABs) events have been recorded in Irish waters that have resulted in severe economic losses for both the shellfish and finfish aquaculture sectors. Where formerly a few coastal areas were affected, now virtually every coastal county in the country is threatened, in many cases over large geographic areas, for protracted periods and by more than one harmful or toxic phytoplankton species. Several of these phytoplankton species have been associated with the production of potent toxins.

Some algae produce toxins that can selectively kill fish by inhibiting their respiration, others can harm fish through oxygen depletion or physical clogging of gills. Other phytoplankton can occasionally present human consumers with a variety of illnesses following consumption of shellfish that have accumulated their toxins by filter feeding.

The strategic aim of this project is to determine and measure baseline ecological and biological oceanographic parameters in two geographic areas of high aquaculture importance (Killary Harbour and Bantry Bay) in order to develop the necessary data for the biological component of a conceptual HAB model.

Specific deliverables will include:

- > Map of harmful algal species as a function of water column parameters and establish a measure of variability and patchiness of these species to differing environmental conditions.
- > Compare the susceptibility of different types of local farmed fish and shellfish to toxic species as a function of environmental interaction.
- > Investigate the episodic nature of *Alexandrium* blooms to identify the environmental limits that control the germination of *Alexandrium* cysts and development of blooms.
- > Assess the toxicity of *Alexandrium* in the two focus areas.
- > Determine the distribution of cyst beds of *Alexandrium* and *Prorocentrum*, investigate substrate preference for cyst deposits, investigate population dynamics and process rates, identify the factors required in a predictive model of HAB incidence for all shellfish and finfish harmful species.
- > Resolve the mechanisms involved in near bottom toxicity (e.g. *Pseudonitzschia* and *Pectenidae*).
- > Study oceanographic events in relation to dinoflagellate cyst germination: upwelling and downwelling events, transportation of cysts/new germinated vegetative stages in coastal areas.
- > Investigate the application of satellite imagery to remotely study ocean processes in the two areas of study.
- > Design and implement a cost effective in-situ monitoring system with appropriate sensors on fixed moorings to observe HAB events.

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BOHAB

Biological Oceanography of Harmful
Algal Blooms off the West Coast of
Ireland (BOHAB).

Marine RTDI Fund Strategic Project ST/02/02

Isolation and purification of azaspiracids from naturally contaminated materials, and evaluation of their toxicological effects (Ref: ST/02/02)

Duration: January '03 – January '06 (36 months)

Grant Aid: €419,854



Over the past 8 years, azaspiracids (AZAs) have become a major problem to the Irish shellfish industry. These toxins accumulate in shellfish at levels which can cause human illness (Killary 1995). The standard bioassay is not able to detect toxins that occur at toxicologically relevant concentrations in shellfish. The use of liquid chromatography coupled to a mass spectrometry (LC-MS) has made it possible to detect small quantities of azaspiracids and in this way to help ensure the safety of Irish shellfish products.

The overall objective of this strategic project is the evaluation of the toxic effects of azaspiracids (AZAs) and the establishment of a “no-observable-adverse-effect-level” (NOAEL) of AZAs in shellfish. This priority was identified in the first risk assessment of AZAs in shellfish carried out by the Food Safety Authority of Ireland and the data obtained will contribute to the setting of a more scientifically based maximum allowable concentration of the toxin in

shellfish for use by regulatory authorities in order to protect human health.

Key elements of the project will include:

- > **Standards** will be isolated and purified for azaspiracid-1 to -3 and dinophysistoxin-2. Novel techniques may also be developed to aid the efficient isolation of azaspiracids and DTX-2, e.g. immuno-affinity columns or molecular imprints. The standards obtained will be made available via the National Reference Laboratory (Marine Institute) for monitoring purposes and toxicology studies.
- > **Reference materials** (shellfish matrix) must be produced that contain azaspiracids and/or DTX-2. The homogeneity and stability of these materials will be demonstrated during the project and must be satisfactory for the use of these materials in the proposed studies. The reference materials will be evaluated for use in monitoring, method validation and toxicology studies.
- > **AZP Toxicity** azaspiracid standards produced during the project will be used to conduct investigations into the acute and chronic effects of azaspiracids. A major component will be the evaluation of the NOAEL for AZAs.

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Azaspiracids

Isolation and purification of azaspiracids from naturally contaminated materials, and evaluation of their toxicological effects.

Marine RTDI Fund Strategic Project ST/02/03

Resource and Risk Assessment of Mussel Seed
in Irish Waters (Ref: ST/02/03)

Duration: January '03 – January '06 (36 months)

Grant Aid: €361,362



The Irish mussel (Mytilus edulis) industry consists of two sectors which operate very different production strategies – the bottom mussel sector relays seed and dredges the adult mussels from enclosed bays such as Wexford, Waterford, Cromane, Lough Swilly and Carlingford, the rope grown mussel producers grow seed on suspended ropes along the south west, west and north west coasts.

The estimated annual requirement for seed mussels is of the order 89,950 tonnes/annum of which 68,000 tonnes is sourced from the East Coast. Unlike other areas of local seed supply, the location of seed beds on the East Coast varies every year and settlement may only occur in the same area once every 10 years or so.

The broad aim of this strategic project is to determine the life-cycle, environmental factors and drivers of the mussel (*Mytilus edulis*) resource in Irish inshore waters, with particular focus on the south Irish Sea. The project will provide the basis for a quantitative and risk assessment of the abundance and sustainability of the existing mussel resource.

Key aspects of the project include:

- > Sustainability of the Irish bottom-mussel sector.
- > Recruitment dynamics.
- > Hydrographic patterns of the western Irish Sea.
- > Reproduction patterns in identified adult beds.
- > Temporal and spatial distribution of mussel larvae along the East Coast.
- > Feasibility/economic study on the potential of large-scale hatchery production.
- > Preparation of a draft management strategy to detail the optimum manner in which to effect the sustainable exploitation of the resource, including the hatchery option.

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Mussel Seed

Resource and Risk Assessment
of Mussel Seed in Irish Waters.

Marine RTDI Fund Strategic Project ST/02/04

The assessment of orange roughy (*Hoplostethus atlanticus*) stocks in the deep waters off the west of Ireland using acoustic survey techniques (Ref: ST/02/04)

Duration: January '03 – January '05 (24 months)

Grant Aid: €490,000



The orange roughy (Hoplostethus atlanticus) is a deep water (800 to 1,500m) fish associated with sea mounds and is found in the Atlantic, Pacific and Indian oceans. The species is slow growing and some individuals have been aged in excess of 150 years. It matures between the ages of 20–30 in Australia.

Orange Roughy forms dense aggregations and commercial fisheries exist in Australia, New Zealand, Namibia, the Mid-Atlantic Ridge and west of Scotland. A new fishery has been developed by Irish vessels off the west coast of Ireland, although French and Faeroes vessels have fished here since the mid 1990's. Irish landings of orange roughy represent 67% of the international catch in ICES Sub-Area VII.

The fishery is currently being pursued with no management measures in place. It is essential that assessment methods are developed, that provide the scientific advice required to underpin a management plan for the fishery.

The primary aim of this project are:

- (a) To undertake an assessment of orange roughy stocks in the deep waters off the west of Ireland and
- (b) To develop a marine RTDI capacity in the area of deep water fisheries acoustics.

Key deliverables will include:

- > A map of deep-water sea mounds in ICES Sub Area VII (in collaboration with the National Sea Bed Survey).
- > Assessment of orange roughy.
- > Comparative study of fished and non-fished areas off west of Ireland.
- > Acoustic surveys on Irish commercial vessels.
- > Sampling of orange roughy for length, weight and age determinations.
- > Estimate of stock biomass (for each sea mound).
- > Development of scientific advice for Irish Industry, DCMNR and EU.
- > Development of management plan for orange roughy.

Project Partners

Dr Emer Rogan

Dept of Zoology & Animal Ecology,
University College,
Cork.

E-mail: E.Rogan@ucc.ie

Mr John Breslin

Seabed Surveys International,
Cork.

For further information contact:

Dr Paul Connolly, Marine Fisheries Services Division, Marine Institute, Galway Technology Park, Parkmore, Galway. Phone. 091-730400:
Fax: 091 730470: Email: paul.connolly@marine.ie.



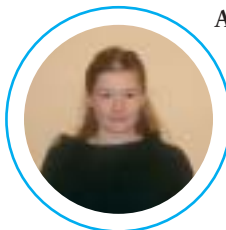


Orange Roughy

The assessment of orange roughy (*Hoplostethus atlanticus*) stocks in the deep waters off the west of Ireland using acoustic survey techniques.

NDP Marine RTDI Scholarships

The aim of the Marine RTDI Postgraduate Scholarship Award Scheme is *“to build Irish RTDI capacity and excellence in selected marine sectors through the provision of grant-aid for PhD scholarships”*. In 2002, 6 PhD Scholarships were awarded.

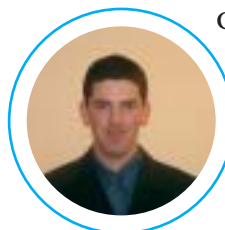


Aishling Lannin

B.Sc. Zoology, University of Glasgow, 2000.
MSc. Fisheries Management, Development and Conservation. NUI, Cork 2002.

The biology, dynamics and fisheries for hake (*Merluccius merluccius*) in the waters around Ireland. (PhD/01/001) National University of Ireland, Cork.

Grant-aid €118,084



Gavin Power

Denominated Degree in Marine Science NUI, Galway 1998.

The biology, Dynamics and fisheries of the Blue Whiting *Micromesistius poutasson* in the waters around Ireland. (PhD/01/004) Galway Mayo Institute of Technology.

Grant-aid €103,563

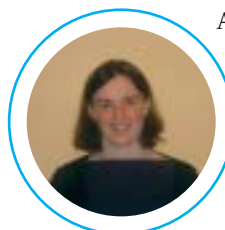


Lisa Borges

B.Sc. Marine Biology & Fisheries, University of Algarve, Portugal, 1995.
M.Sc – Science of the Sea – Marine Resources (Fisheries), University of Porto, Portugal. 1998.

The Impact of Discard Data On The Assessment and Management Of Fish Stock In Irish Waters. (PHD/01/002) National University of Ireland, Cork.

Grant-aid €120,623

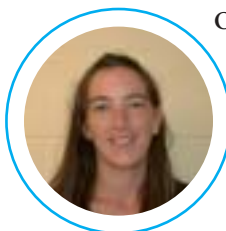


Aoife Ni Rathaille

B.Sc. – Marine Science, NUI, Galway 2001.

Modelling of *Alexandrium* blooms in Cork Harbour. (PhD/01/005) National University of Ireland, Galway.

Grant-aid €98,350

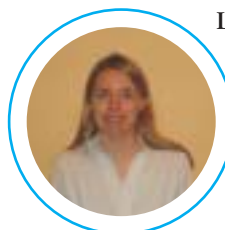


Oonagh Dwane

B.Sc. NUI, Galway (1999).
M.SC. NUI, Galway (2001).

The Larval Ecology of Selected Fish Species In The Waters Around Ireland. (PhD/01/003) National University of Ireland, Galway.

Grant-aid €101,998



Linda Drummond

B.Sc – (Hons) Zoology, NUI, Cork, 1995.
M.Sc – Marine & Fisheries Science, University of Aberdeen, 1998.

Health and disease in clams, *Ruditapes philippinarum*, in Ireland, with particular reference to brown ring disease. (PhD/01/006) National University of Ireland, Cork.

Grant-aid €118,137

NDP Marine

Post-Doctoral Fellowships

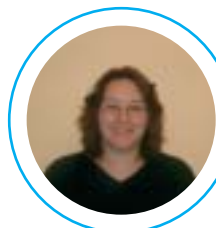
The aim of the Marine RTDI Post-Doctoral Fellowship Award Scheme “*is to build Irish RTDI capacity and excellence in selected marine sectors.*” In 2002, 7 post-doctoral fellowships were awarded.



Tadgh Creedon

B.Sc Mathematics & Statistics, NUI, Cork 1990.
M.Sc Mathematics, NUI, Cork 1991.
PhD Mathematics (Derivations that map into radical) NUI, Cork 1995.

Modelling and simulation of fish stock dynamics in the waters around Ireland. (PDOC/01/001) National University of Ireland, Cork.
Grant-aid €150,800



Lorraine Copley

B.Sc. Zoology. NUI, Galway 1993.
PhD. Studies on the ecology of the European Eel, *Anguilla anguilla*, with particular reference to the River Erne system. NUI, Galway 1999.

Sealice biology and interactions. (PDOC/01/002) Galway Mayo Institute of Technology.
Grant-aid €157,400



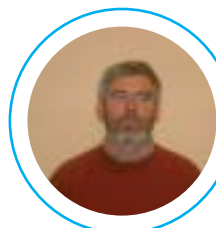
Ronan Brown

National Cert in Applied Biology, Athlone RTC, 1984.
Diploma in Aquatic Biology, GMIT, 1985.
M.Sc. Shellfish Biology, Fisheries & Culture, UCNW. 1990.

PhD. Studies on the European clawed Lobster, *Homarus gammarus* L., fisheries practices, resource management, cultivation and stock enhancement techniques with observations on the fishery and larval cultivation of spiny lobster, *Palinurus elephas* (Fabricus 1787). NUI, Galway 1999.

Investigations into the hatchery rearing of Cod (*gadus morhua*) in Irish conditions. (PDOC/01/003) National University of Ireland, Galway.

Grant-aid €210,000



Iarfhlaith Connellan

B.Sc (Hons.) Zoology & Geology. NUI, Galway 1975.
Post Graduate Research – Kiel University 1975–1977.
Research Fellow – Shellfish Research Laboratory. NUI, Galway 1977–1985.

Investigations into a reliable supply of scallop (*Pecten maximus*) for the inshore fishery and aquaculture industries. (PDOC/01/004) National University of Ireland, Cork.

Grant-aid €209,280



Emma Burbridge

B.Sc. Biology & Chemistry, NUI, Maynooth, 1997.
PhD. Biology: xylem differentiation and cell death: a signalling role for Hydrogen peroxide. NUI, Maynooth 2002.

Iodine in commercially used Irish seaweeds. (PDOC/01/005) National University of Ireland, Dublin.

Grant-aid €172, 700



Anne Marie Power

B.Sc. Applied Ecology, NUI, Cork 1995.
PhD. The ecology of Chthamaliid barnacles. NUI, Cork, 2000.

Monitoring and predicting the influence of climate change on the marine flora and fauna of the islands of Great Britain and Ireland using intertidal indicators. (PDOC/01/006) National University of Ireland, Cork.

Grant-aid €174,365



Alice Glassic

B.Sc. Chemistry , NUI, Galway 1996.
PhD – Characterisation of Cellobiohydrolase IB and b-glucanase from *laromyces emersonii* and endo-mannanase from *Asperigillus niger*.

An integrated bioscreening approach for the identification and cloning of high value-added biocatalysts of biotechnological importance from marine algae. (PDOC/01/007) National University of Ireland, Galway.

Grant-aid €210,503

Marine RTDI Fund Desk Studies

The primary aim of Desk Studies Scheme is “to provide grant-aid for desk research on identified and priority marine RTDI topics of relevance to the sustainable development of the marine resource”.

On September 27th 2001, an open call for 12 Desk Studies (together with detailed Terms of Reference) was announced. Competitive proposals received by the deadline of 14th December 2001 were evaluated by Expert Evaluation Panels and 10 Desk Studies were recommended for grant-aid with a total value of €508,305.

The successful desk studies cover a broad range of strategic issues including fisheries science (2), aquaculture (1), environmental management (2), tourism & leisure (2), resource mapping (1) and performance management and forecasting (2).

The output of these desk studies will be used to inform future projects towards sustainable marine resource management.

The successful Desk Studies included:

- > Identification and evaluation of appropriate marine S&T Performance Indicators
OIKOS Environment Resources, FRANCE/OST, Paris, FRANCE /CIRCA Group, IRELAND/CEISTM, PORTUGAL.
€65,000
- > Marine RTDI (Research, Technology, Development & Innovation) Foresight Review
CIRCA Group, IRELAND.
€17,000
- Disposal and re-utilisation of fish and fish processing waste (including aquaculture wastes)
Nautilus Consultants (Ireland) Ltd, Galway, / Nautilus Consultants Ltd., Edinburgh, SCOTLAND.
€30,800
- > A Review of the origins and appropriateness of the current fish stock assessment and management areas for the waters around Ireland
MRAG Ltd., London, UK.
€58,376



Beneficiaries from the 1st round at a workshop in Galway.

- > The use of Recovery Plans to rebuild depleted fish stocks – a review
MRAG Ltd., London, UK.
€47,622
- > Review and evaluation of marine environmental impact indicators and their application in Ireland
Boelens et al, IRELAND/Gray, NORWAY.
€57,200
- > Feasibility Study on the establishment of a Large Scale Inshore Resource Mapping Project
WGI Ltd, Galway/EcoServe, Dublin/MarCon Computations Ltd, Galway, IRELAND.
€89,453
- > Strategic review of the feasibility of seaweed aquaculture
Irish Seaweed Centre, National University of Ireland, Galway, IRELAND.
€39,797
- > Scoping study to assess the feasibility, potential use and methodology for establishing a national marine leisure infrastructure database to support planning and development in the sector
HMRC, NUI-Cork/Information Systems Group, NUI-Cork, Kirk McClure Morton (Belfast), IRELAND.
€54,622
- > Development of guidelines for the integration of marine recreational activities in the rejuvenation/regeneration of small harbours and ports
Brady Shipman Martin Planning Consultants, Dublin/Kirk McClure & Morton, Belfast, Northern Ireland/Fitzpatrick Associates, Dublin.
€48,435





Desk Studies

The primary aim of Desk Studies Scheme is *“to provide grant-aid for desk research on identified and priority marine RTDI topics of relevance to the sustainable development of the marine resource”*.

Marine RTDI Fund Michael Manahan Fellowship Award 2002

The Law and Policy of Marine Resources in Ireland

The Michael Manahan Fellowship (€100,000) is awarded every two years to an outstanding Irish scholar to promote research and development in the fields of Marine Science Policy, Socio-Economics or Law of the Sea.

The 2002 Fellowship was awarded to Dr Ronan Long of the School of Law, National University of Ireland, Galway, who becomes the first recipient of this prestigious Fellowship awarded by the Marine Institute under the NDP Marine RTDI Measure.

Dr Long read for his PhD at Trinity College Dublin (1998). He holds the Jean Monnet Chair of European Commercial Law at the School of Law, National University of Ireland, Galway (2000–2002) and lectures in EC Law, International Law, Planning and Environmental Law. He also teaches on the NUI Galway environmental science programme. Dr Long has an impressive academic record contributing to leading peer-reviewed journals as well as international conferences on the law of the sea, ocean management and the law and policy of the marine environment. He is co-author of the book “Enforcing the Common Fisheries Policy” and, from 1993 to 2000 worked in the Fisheries Directorate of the European Commission. He has also served as a Naval Officer in the Irish Naval Service.



From left to right: Dr Peter Heffernan, CEO, Marine Institute, Dr Ronan Long, Mrs Pat Manahan, Minister Dermot Ahern and Dr J.P.Crowley, Chairman, Marine Institute.

Manahan Fellow 2003–2004

Dr Ronan Long
School of Law
National University of Ireland
Galway

The Manahan Fellowship will allow Dr Long to focus his energies over the next two years (2003–2004) on the preparation of a reference book on the law and policy relating to the utilisation and management of marine resources in Ireland.

The award complements the establishment of the new Centre for Marine and Natural Resource Law and Policy at NUI-Galway which is supported under the Higher Education Authority (HEA) NDP Programme for Research in Third Level Institutions. The fellowship will enable Dr Long and NUI-Galway to strengthen strategic links between the Galway Law Centre and similar Centres for Marine Law around the globe.





Michael Manahan Fellowship Award 2002

The Michael Manahan Fellowship (€100,000) is awarded every two years to an outstanding Irish scholar to promote research and development in the fields of Marine Science Policy, Socio-Economics or Law of the Sea.

Marine RTDI Fund Networking & Technology Transfer

The primary aim of the Marine RTDI Networking & Technology Transfer Initiative is “to support, enhance and consolidate the performance of the Irish marine RTDI sector through providing grant-aid support for Networking and Technology Transfer Initiatives”.

3 categories of networking/technology transfer are supported:

- > Marine RTDI Workshops/Conference Grants.
- > Marine RTDI Travel/Mobility Grants.
- > Other Marine RTDI Networking/Technology Transfer Initiatives.

A 1st call for proposals was published in October 2002, with a submission deadline of 26th November 2002. Proposals received by the deadline were evaluated and 13 grant-aid offers made. Twelve grant-aid offers, totalling grant-aid of €39,060, were awarded. These included:

Workshops/Conference Grants

Sponsorship – 13th Irish Environmental Researchers Colloquium (Galway: January 2003)

Applicant: Environmental Change Institute, NUI-Galway

Grant-aid: €2,500

Sponsorship – 3rd European Phycological Congress (Belfast: July 2003)

Applicant: Queen's University Belfast (Marine Laboratory)

Grant-aid: €3,000

Sponsorship – 5th International Wave Energy Conference (Cork: September 2003)

Applicant: Hydraulics & Maritime Research Centre, NUI-Cork

Grant-aid: €5,000

Sponsorship – Workshop series on “Aquaculture Information for non-Experts”

Applicant: AquaTT UETP Ltd.

Grant-aid €4,960

Travel/Mobility Grants

Attendance/presentation – World Aquaculture Conference 2003 (Brazil: May 2003)

Participant: Mr D. Murphy (AquaTT UETP)

Grant-aid: €1,000

Attendance/presentation – All Energies Opportunities Conference (Scotland: May 2003)

Participant: Mr John Coleman, La Tene Maps

Grant-aid: €2,000

Attendance/presentation – 6th International Marine Biotechnology Conference (Japan: Sept 2003)

Participant: Dr Carmel Mothersill (DIT)

Grant-aid: €800

Other Marine RTDI Networking/Technology Transfer Initiatives

Further development of www.aquaculture.ie website

Applicant: Aquaculture Development Centre, NUI-Cork

Grant-aid: €2,000

Production of career promotion in aquaculture materials as contribution to PICES project (www.piscestt.com)

Applicant: AquaTT UETP

Grant-aid: €5,000

Contribution to development of database on Irish Marine SME Sector

Applicant: La Tene Maps

Grant-aid: €5,000

Further development of the Irish Sea Food website (www.irishseafood.com)

Applicant: Irish Seafood .Com

Grant-aid: €2,800

Contribution to Irish participation in German Carbonate Mound Coring Project

Applicant: Dr A. Wheeler, Environmental Research Institute, NUI-Cork

Grant-aid: €5,000

Full details of the Marine RTDI Networking & Technology Transfer Initiative Marine RTDI Networking & Technology Transfer Initiative can be found at:

www.marine.ie/marinertdi/networking-TT





Networking & Technology Transfer

The Marine RTDI Networking & Technology Transfer Initiative is designed as a flexible Marine RTDI Grant-Aid Scheme to support bottom-up, competitive and innovative marine RTDI networking and technology transfer initiatives.

Programme Implementation, Monitoring and Evaluation

Guidelines and regulations regarding the Implementation, Monitoring and Evaluation of the Productive Sector Operational Programme are set out in Chapter 4 of the Productive Sector Operational Programme (2000–2006) published by the Department of Enterprise, Trade and Employment (December 2000). The Marine RTDI Measure Programme Complement is contained on pages 59 – 66 of the above document.

Implementation

Responsibility for the implementation and management of the Marine RTDI Measure is devolved to the Marine Institute by its parent Department, the Department of Communications, Marine and Natural Resources. The structure of the Marine RTDI Measure is outlined on page 1 and full details of procedures relating to the various Sub-Measures, Programmes and Supporting Initiatives are published on the Marine RTDI website: www.marine.ie/marinertdi.

In the case of Sub-Measure 3 (Marine RTDI Fund) open calls for proposals are issued at regular intervals. Notice is published in the national press, circulated to e-mailing list and advertised on Marine RTDI Website. With respect to each call for proposals, full documentation is provided including Terms of Reference, Grant-aid rates, eligibility criteria, Guidelines for proposers, model grant-aid agreement, evaluation criteria and procedures and application forms.

Monitoring

A very comprehensive system of programme monitoring has been established to oversee the efficiency of implementation of the NDP Productive Sector Operational Programme (PSOP). This consists of a number of Panels and Committees:

Operational Programme Monitoring Committee (OPMC)

The implementation (expenditure, achievement of targets, etc.) of the various Measures under the PSOP is monitored by the Operational Programme Monitoring Committee (OPMC). Implementing Agencies (e.g. Marine Institute) are required to provide the OPMC with quarterly and half yearly reports to a specified format. Meetings of the OPMC are held half yearly and review progress:

- > 1st OPMC, Bunratty, 22nd November 2000.
- > 2nd OPMC Galway, 17th May 2001.
- > 3rd OPMC, Kilkenny, 8th November 2001.
- > 4th OPMC, Sligo, 2nd May 2002.
- > 5th OPMC, Dundalk, 31st October 2002.

RTDI Sub-Group

An RTDI Sub-Group, chaired by the Office of Science and Technology (OST), consisting of the Implementing Agencies responsible for the Productive Sector RTDI Measures, meets prior to each OPMC Meeting to address issues of common interest relevant to Research and Development (e.g. overhead rates, VAT on research). The RTDI Sub-Group will occasionally be requested to draft a position paper for the OPMC.

Natural Resources RTDI Group

A Natural Resources RTDI Group, comprising members of the Implementing Agencies responsible for the Natural Resources RTDI Measures (e.g. Marine, Environment, Forestry and Agriculture/Food) together with the Sustainable Energy Ireland Energy Programme meet regularly (4 – 6 months) to share experiences and *best practice* in programme implementation.



Operational Programme Monitoring Committee Meeting

NDP Marine RTDI Team

A Marine Institute NDP Marine RTDI Team meets quarterly to review progress and advise on implementation, monitoring and evaluation issues. The Team also monitors implementation at the project level and advises on actions to be taken.

Application of State Aid Rules.

As the Applied (Industry) Marine RTDI Programme and the Marine RTDI Networking and Technology Transfer Scheme entail awarding grant-aid to private sector companies for research projects proposed by and of direct benefit to these companies, these initiatives are subject to State-Aid Approval. Accordingly, notification to and approval by the European Commission is required.

State Aid Approval was sought from the European Commission for the Applied (Industry) Marine RTDI Programme and the Marine RTDI Networking and Technology Transfer Scheme in November 2001 and approval (Ref: State Aid N773/2001 – Ireland) granted on 2nd August 2002.

Evaluation

At the Programme level, monitoring is carried out by the OPMC. This includes a 6 monthly review of progress.

An independent analysis of progress (Mid-Term Review) of the implementation of Productive Sector Operational Programme will take place in 2003.

At the Measure and Project levels, monitoring is carried out by the Marine Institute (NDP Marine RTDI Team) on a quarterly basis.

Project evaluation procedures are described in Annex 1.



Mid-Term (2002) Targets

The Productive Sector Operational Programme Complement (2000) identifies Mid-term (2002/03) and Final (2006) output targets for the various Measures and Schemes supported by the NDP Marine RTDI Measure.

The Marine RTDI Measure Programme targets are described on pages 59 – 66 of the Programme Complement and Mid-Term (2002/03) targets are summarised below.

Financial Targets

The NDP Marine RTDI Measure expenditure profile⁴ is on target with 62% of the budget spent by 31st December 2002 (Annex 2) and a further €3.9 million (12%) earmarked or allocated.

In 2000, various mid-term and final output targets for the Marine RTDI Measure were identified and included in the Programme Complement (2000). The degree to which the envisaged Mid-Term Programme targets have been achieved is outlined in Table 1. From the table below it is clear that the Marine RTDI Measure is well on target. The slight shortcomings in achieving targets under the Marine RTDI Fund (Sub-Measure 3) is related to the fact that this Measure commenced in 2002 rather than 2001 as originally planned.

A new suite of Indicators

It is now accepted that the original targets represent a very crude measure of programme performance.

In 2002, a desk study “*the identification and evaluation of appropriate marine science and technology indicators*” was grant-aided and will be completed by 2003. Preliminary drafts of this report note the need to divide indicators into Input, Output and Impact indicators. Further, the report emphasises the point that the choice of indicator must be determined by what is being evaluated, such that in different circumstances different indicators may be appropriate:

- > Programme (how well the programme is achieving its stated objectives).
- > Cost/Benefit (is the programme delivering value for money) and
- > Benchmarking (how is programme performing with reference to other similar programmes).

The Marine Institute Marine RTDI Team is currently working to establish a more appropriate suite of indicators to evaluate Sub-Measure 3 (Marine RTDI Fund) based on “*best international practice*”.

Programme Targets

Sub-Measure	Mid-Term Target	Status (end – 2002)
Marine Research Vessel	Construction/delivery of Research Vessel	Achieved
Laboratory Infrastructure		
Laboratory up-grades	2	2
Other infrastructure supports	–	5
Marine RTDI Fund	No. Projects	No. Projects
Applied Research Projects	10	5
Strategic Research Projects	10	4
Desk Studies	5	10
Fellowships	15	14
High Level Appointments	1	Preparatory action
Demonstration Projects	5	0
Networking/Technology Transfer	20	12

Table 1.
Mid-Term Targets (2002/03) identified in the NDP Marine RTDI Measure Programme Complement (2000).

⁴ The Programme Complement (2000) anticipated that by 31st December 2002, some 65% of the allocated budget for the Marine RTDI Measure would be spent. This was reviewed and revised on 5th June 2002 to 61%.

Horizontal Issues

The National Development Plan identifies 4 horizontal or cross-cutting themes which must be addressed (as appropriate) in all Operational Programmes. These are Environment, Gender Proofing, Poverty Proofing and Rural Proofing. In addition, opportunities for greater North-South co-operation is included as a 5th horizontal theme.

As Sub-Measures 2 and 3 only commenced in 2002, comprehensive data on the cross-cutting themes is not yet available.

Environment/Sustainable Development

Sustainable development and environmental conservation/protection are essential components of sustainable marine resource development. Consequently all marine RTDI projects supported by the Marine RTDI Measure are consistent with the basic principles of sustainable development and environmental protection. All construction projects supported by the Marine RTDI Measure comply with planning and environmental regulations.

Gender Proofing/Equal Opportunities

The achievement of a more equal society for men and women through the mainstreaming of equal opportunities across all sectors is a guiding principle of the NDP. The baseline used for gender proofing in the Marine RTDI Measure is the statistic provided by the Higher Education Authority on the number of males:females graduating in Science in 2000 (Ratio: M:F – 1: 1.4). If one includes Engineering and Food Science graduates, the M:F ratio is 1: 1.2.

As Sub-Measure 3 (Marine RTDI Fund) only commenced in 2002 (recruitment of staff is still underway) a full gender breakdown is not yet possible. The one area where figures are available is with respect to Scholarships/Fellowships where the ratio of males:females is 5:9 or 1:1.8. Discussions are currently underway within the Marine RTDI Measure Team and the Natural Resources RTDI Group to define better measures of gender proofing and equality.

Poverty Proofing

A key objective of the NDP is the eradication of poverty through the creation of employment and business opportunity. Expenditure under the Marine RTDI Measure (and in particular the Applied Marine RTDI Programme) seeks to support and maintain economic growth through, (a) a better understanding of the marine resource potential (b) the application of S&T to solving problems, (c) securing a more favourable business environment for marine services and products and (d) enhancing an enterprise/innovation culture.

Rural Proofing/Rural Development

All investment in the NDP is underpinned by the stated objective of balanced regional development and Measures are asked to report expenditure/activity by Region/county. The Regional Units being the Border, Midland and Western Region (BMW) and the South and East Region (S&E); the county units being the 26 counties of which 16 have marine borders. These divisions are clearly not appropriate to the Marine RTDI Measure where (a) investment in the infrastructure (e.g. RV *Celtic Explorer*) benefits all Regions, coastal and offshore waters, (b) a lead partner may be based in one county, but the work/benefit is undertaken/accrues to a different county/counties, (c) work is carried out entirely offshore and cannot be attributed to any Region/county.

While expenditure is currently being assigned on a county basis, the Marine RTDI Team are working to define a more robust way of recording and allocating NDP Marine RTDI expenditure in the context of balanced spatial development.

North-South Co-Operation

The provision of enhanced marine RTDI infrastructures (e.g. *Celtic Explorer*) provides an important platform for future North-South Co-operation. Similarly, partnership with research institutions in Northern Ireland is encouraged under Sub-Measure 3, where Queens University Belfast (QUB) is a partner in the strategic RTDI project on seed mussels in the Irish Sea and QUB has received sponsorship under the Networking and Technology Transfer Programme towards the hosting of the 3rd European Phycological Congress in Belfast in July 2003.

Publicity/Dissemination of Information

The publication of information and dissemination of information on the Marine RTDI Measure is a key responsibility of the Marine Institute.

The Marine components of the National Development Plan 2000–2006 (including the Marine RTDI Measure) were officially launched by the Minister for Communications, Marine & Natural Resources on 3rd July 2001 at an official reception in Dublin Castle.

Website

A Marine RTDI Measure web-site (www.marine.ie/marinertdi) has been established and is regularly updated to provide all information relating to the NDP Marine RTDI Measure. The website hosts downloadable documentation including Application Forms, Guidelines for Applicants as well current listings of successful projects, events etc.

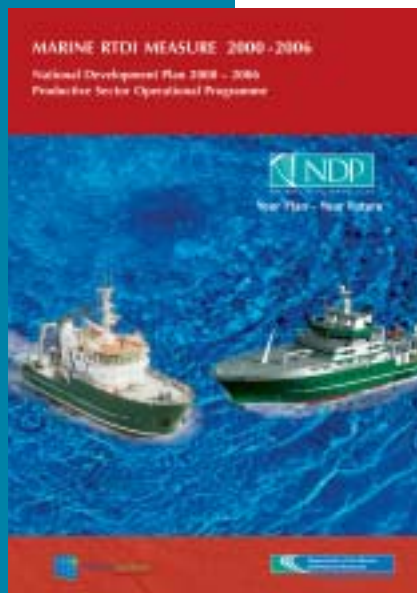
Publications

- > **Information Pack & Brochure.** An NDP Marine RTDI Measure information pack and brochure has been prepared. The Information Pack (with up-dated materials) is used for circulation at publicity events including seminars and conferences.
- > A 79 page **Guide to the NDP Industry RTDI Grant Aid Programmes Relevant to the Marine Sector** as published by the Marine Institute in August 2002 and launched at the BMW Regional Funding Awareness Day on 19th December 2002. The aim of the guide is to assist marine based industries to identify and assess the RTDI grant-aids available under the Productive Sector Operational Programme. Advice on how to choose the most appropriate RTDI support measure is offered and guidelines are provided on the key aspects of each measure and on how to submit an application.



Seminars/Workshops/Publicity Events:

- > Public Consultation Meetings – in order to facilitate feedback on its initial plans for the organisation and implementation of the Marine RTDI Measure, the Marine Institute organised three NDP Public Briefing Meetings in Galway (5th December 2000), Dublin (7th December 2000) and Cork (14th December 2000).
- > A special reception, hosted by the Marine Institute, was held in Government Buildings on 19th December 2000 to mark the authorisation by the Taoiseach for Ireland's largest ever research vessel, the *RV Celtic Explorer*.
- > A Workshop to announce the results of the 1st call for proposals (Desk Studies, Scholarships and Fellowships,) was held in Galway on 29th May 2002. The Workshop also provided guidance on eligible costs and financial reporting.
- > A special reception to announce the winner of the 2003–2004 Michael Manahan Fellowship was held in Dublin on 26th September 2002 and presided over by the Minister for Communications, Marine & Natural Resources.
- > BMW Region Funding Awareness Day – on 19th December 2002, the Marine Institute, in association with the BMW Regional Assembly, hosted a full day seminar on the “*Supports available for the Marine Sector under the National Development Plan*”.
- > Press Releases are issued regularly to the national press and specialist magazines and journals to publicise the various activities and initiatives supported under the Marine RTDI Measure.

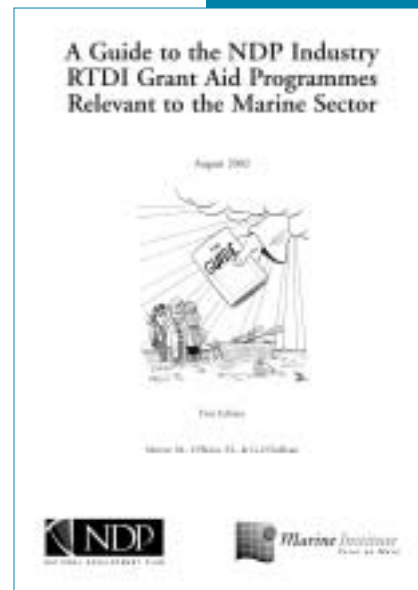


Marine RTDI Measure
2000-2006

<< National Development Plan
2000-2006 Productive Sector
Operational Programme.

A Guide to the NDP Industry
RTDI Grant Aid Programmes
Relevant to the Marine Sector.

>>



Information Seminar on
Supports Available for the
Marine Sector under the
National Development Plan.

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Evaluation Procedures

The aim of the Evaluation Process is to (a) ensure an open, fair and transparent assessment of competitive project proposals submitted in response to a published call for proposals and (b) to provide constructive feedback to project proposers.

Details of the evaluation procedures relating to individual programmes and initiatives are included in the Guidelines for Applicants.

List of Evaluators

Ms. Helena Acheson	Forfas	Ireland
Dr. Franck Berthe	IFREMER	France
Dr. Wayne Anderson	Food Safety Authority Ireland	Ireland
Dr. Stephen Brown	National Oceanic & Atmospheric Administration	USA
Dr. Jim Buchanan	Independent Consultant	Scotland
Dr. Grant Burgess	Heriot-Watt University, Edinburgh	Scotland
Mr. Ray Burke	Raymond Burke Consulting	Ireland
Dr. Ed Chin	University of Georgia	USA
Dr. Malcolm Clark	National Institute of Water & Atmospheric Research	New Zealand
Dr. Michael Crosby	National Oceanic & Atmospheric Administration	USA
Dr. Rhona Dempsey	Forfas S&T Indicator Unit	Ireland
Mr. Brendan Dollard	Enterprise Ireland, Dublin	Ireland
Mr. Kevin Donnelly	Enterprise Ireland, Dublin	Ireland
Mr. Steve Feist	CEFAS Weymouth Laboratory	England
Dr. M.L Fernandez	Centro Tecnológico del Mar	Spain
Dr. Richard Fitzgerald	Shorescape Ltd.	Ireland
Dr. Kevin Gaughan	Dublin Institute of Technology	Ireland
Dr. John Gordon	Scottish Association for Marine Science	Ireland
Dr. Manfred Höfle	GBF National Centre for Biotechnology, Braunschweig	Germany
Dr. Dan Laffoley	English Nature	England
Dr. Jane Lewis	University of Westminster	England
Prof. Brian McCraith	National Centre for Sensor Research, Dublin City University	Ireland
Prof. Sean Mc Namara	Dept. of Mechanical Engineering, NUI, Galway	Ireland
Mr. Alex Midlen	Colchester Borough Council	England
Dr. Carter Newell	Great Eastern Mussel Farms	USA
Mr. John Nicols	Independent Consultant	England
Dr. David Pugh	Southampton Oceanography Centre	England
Mr. James Ryan	Killary Salmon	Ireland
Dr. Jim Ryan	The Circa Group	Ireland

Each project proposal received is evaluated according to set criteria by an Evaluation Panel consisting of two independent external experts and one Marine Institute expert.

All project proposals (whether successful or unsuccessful) receive a written evaluation.

Forty-nine experts were involved in the evaluation process – this included 34 external experts (of which 21 were from other countries) and 15 Marine Institute experts.

Prof. Ray Seed	School of Ocean Science, UCNW	Wales
Dr. Kevin Sellner	Chesapeake Research Consortium	USA
Mr. John Slater	Letterkenny Institute of Technology	Ireland
Dr. Ole J. Torrissen	Institute of Marine Research	Norway
Dr. Randal Walker	University of Georgia	USA

Marine Institute Experts

Dr. Paul Connolly	Marine Fisheries Services
Dr. Peter Heffernan	CEO, Marine Institute
Caroline Hepburn	Corporate Services
Dr. David Jackson	Salmon Management Services
Dr. John Joyce	Marine Fisheries Services
Ms. Maria Lyons	Alcantara Marine Environment and Health Services
Dr. Philip McGinnity	Salmon Management Services
Dr. Evin McGovern	Marine Environment and Health Services
Dr. Terry McMahon	Marine Environment and Health Services
Dr. Francis O'Beirn	Marine Environment and Health Services
Dr. Michael O' Cinneide	Marine Environment and Health Services
Mr. Geoffrey O'Sullivan	Corporate Services
Mr. Joe Silke	Marine Environment and Health Services
Ms. Anne Wilkinson	Science Technology and Innovation Services
Dr. Guy Westbrook	Science Technology and Innovation Services



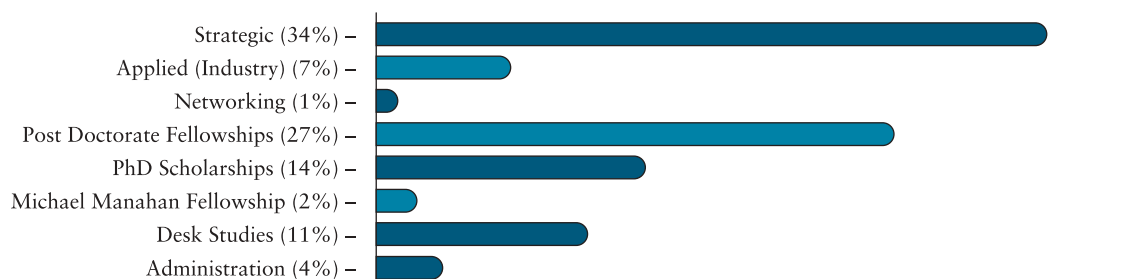
Expenditure Profile 2000–2002

	Grant-aid	2000	2001	2002	Total	%
Sub-Measure 1						
RV Celtic Explorer	31,697,000	8,432,944	12,318,260	9,111,860	29,863,064	94%
Sub-Measure 2						
Marine RTDI Laboratory Infrastructure	5,650,000	0	0	268,541	268,541	5%
Sub-Measure 3						
Marine RTDI Fund						
Projects	15,297,600	0	0	1,703,972	1,703,972	13%
Administration		0	57,600	158,157	215,757	0
Total	52,644,600	8,432,944	12,375,860	11,242,530	32,051,334	62%
Cumulative Total		8,432,944	20,808,804	32,051,334		
Cumulative %		16%	40%	62%		

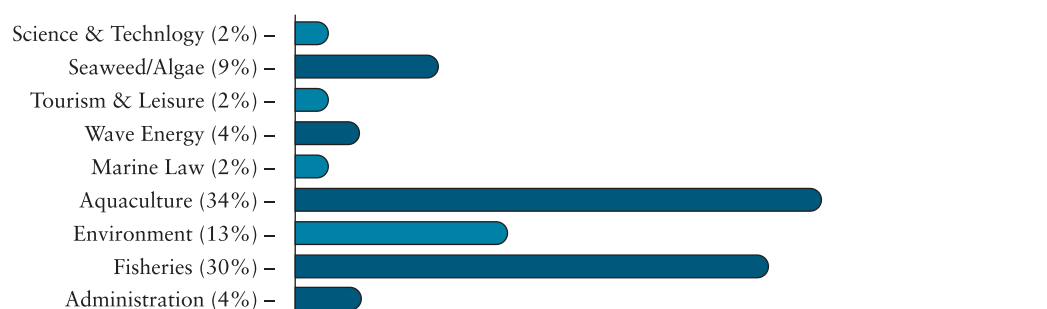
Regional Distribution of Funds (Including Administration)



% Allocation/Programme (Including Administration)



% Allocation/Sector (Including Administration)



Total Grant-aid Committed 2000–2002: €4,595,861
Total Administration 2000–2002: €215,757

Expenditure Profile – Marine RTDI Fund (Sub Measure 3)

	Grant-Aid €	2000	2001	2002	Total Exp	% to-date
Applied Marine RTDI						
IND/02/01	44,484	–	–	17,794	17,794	40
IND/02/05	97,236	–	–	38,894	38,894	40
IND/02/06	23,631	–	–	9,453	9,453	40
IND/02/10	66,562	–	–	26,625	26,625	40
IND/02/11	100,000	–	–	40,000	40,000	40
Strategic Marine RTDI						
ST/02/01	399,500	–	–	159,800	159,800	40
ST/02/02	419,854	–	–	167,941	167,941	40
ST/02/03	361,362	–	–	144,545	144,545	40
ST/02/04	490,000	–	–	196,000	196,000	40
Desk Studies						
DK/01/001	65,000	–	–	19,500	19,500	30
DK/01/002	17,000	–	–	17,000	17,000	100
DK/01/003	30,800	–	–	30,800	30,800	100
DK/01/004	58,376	–	–	17,749	17,749	30
DK/01/005	47,622	–	–	14,478	14,478	30
DK/01/006	57,200	–	–	17,160	17,160	30
DK/01/007	89,453	–	–	53,672	53,672	60
DK/01/008	39,797	–	–	11,939	11,939	30
DK/01/010	54,622	–	–	16,387	16,387	30
DK/01/011	48,435	–	–	48,435	48,435	100
PhD Scholarships						
PhD/01/001	118,084	–	–	35,425	35,425	30
PhD/01/002	120,623	–	–	36,187	36,187	30
PhD/01/003	102,061	–	–	30,599	30,599	30
PhD/01/004	103,563	–	–	31,069	31,069	30
PhD/01/005	98,350	–	–	29,505	29,505	30
PhD/01/006	118,137	–	–	35,441	35,441	30
PDOC Fellowships						
PDOC/01/001	150,800	–	–	45,240	45,240	30
PDOC/01/002	157,400	–	–	47,220	47,220	30
PDOC/01/003	210,000	–	–	63,000	63,000	30
PDOC/01/004	209,280	–	–	62,784	62,784	30
PDOC/01/005	172,700	–	–	51,810	51,810	30
PDOC/01/006	174,365	–	–	52,310	52,310	30
PDOC/01/007	210,503	–	–	63,151	63,151	30
Networking/Technology Transfer						
NTT/02/01	4,960	–	–	4,960	4,960	100
NTT/02/02	5,000	–	–	5,000	5,000	100
NTT/02/03	2,500	–	–	2,500	2,500	100
NTT/02/04	3,000	–	–	3,000	3,000	100
NTT/02/06	1,000	–	–	1,000	1,000	100
NTT/02/07	800	–	–	800	800	100
NTT/02/10	2,000	–	–	2,000	2,000	100
NTT/02/11	2,000	–	–	2,000	2,000	100
NTT/02/13	5,000	–	–	5,000	5,000	100
NTT/02/14	5,000	–	–	5,000	5,000	100
NTT/02/15	2,800	–	–	2,800	2,800	100
NTT/02/17	5,000	–	–	5,000	5,000	100
Michael Manahan Fellowship						
	100,000	–	–	33,000	33,000	33
TOTAL PROJECTS	4,595,861			1,703,972	1,703,972	

Notes

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