EGFSN Study

A Study of the Current and Future Skills Requirements of the Marine/Maritime Economy to 2020

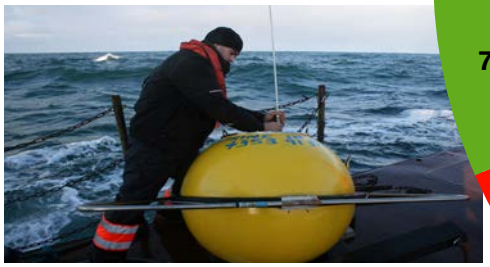
30th April 2015

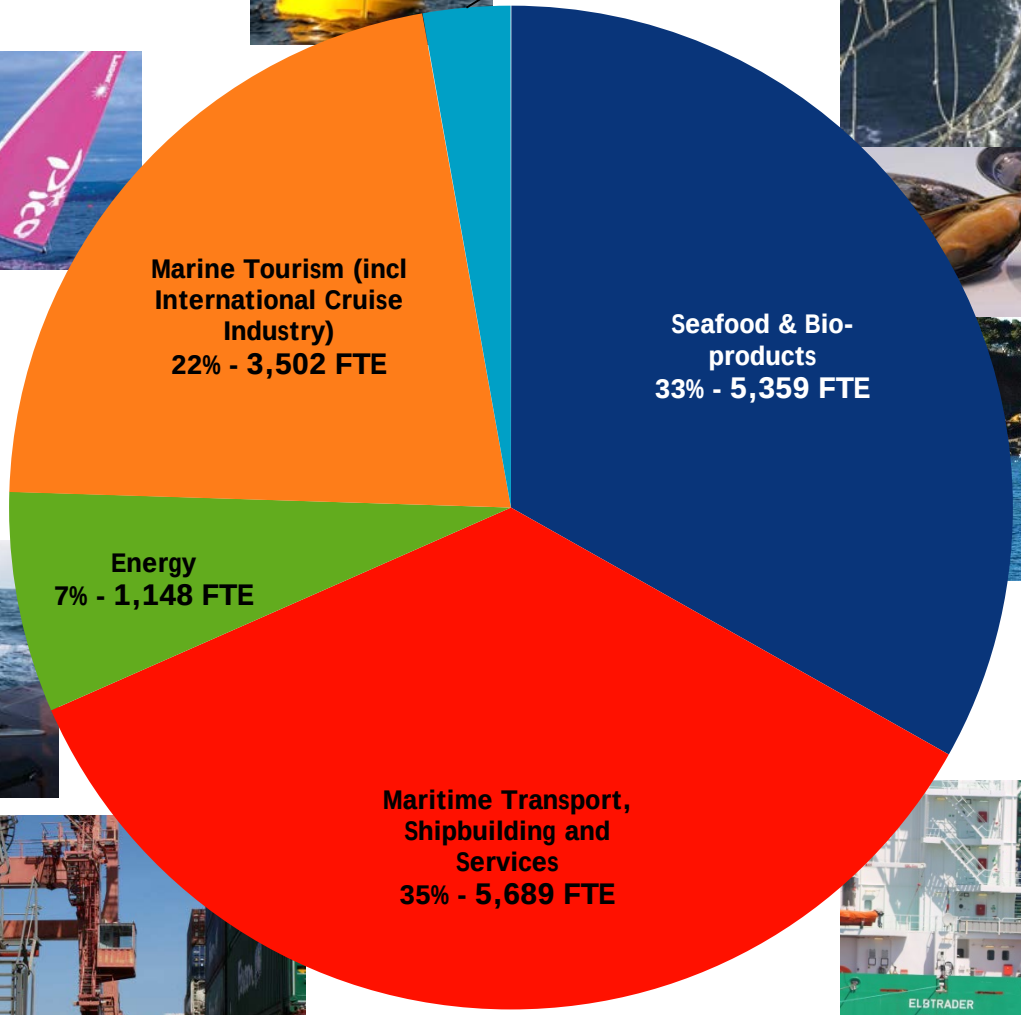
Department of Jobs, Enterprise and Innovation

An Roinn Post, Fiontar agus Nuálaíochta

Breakdown of the Marine Economy by Employment

2014 Employment Estimate:
16,155 FTE





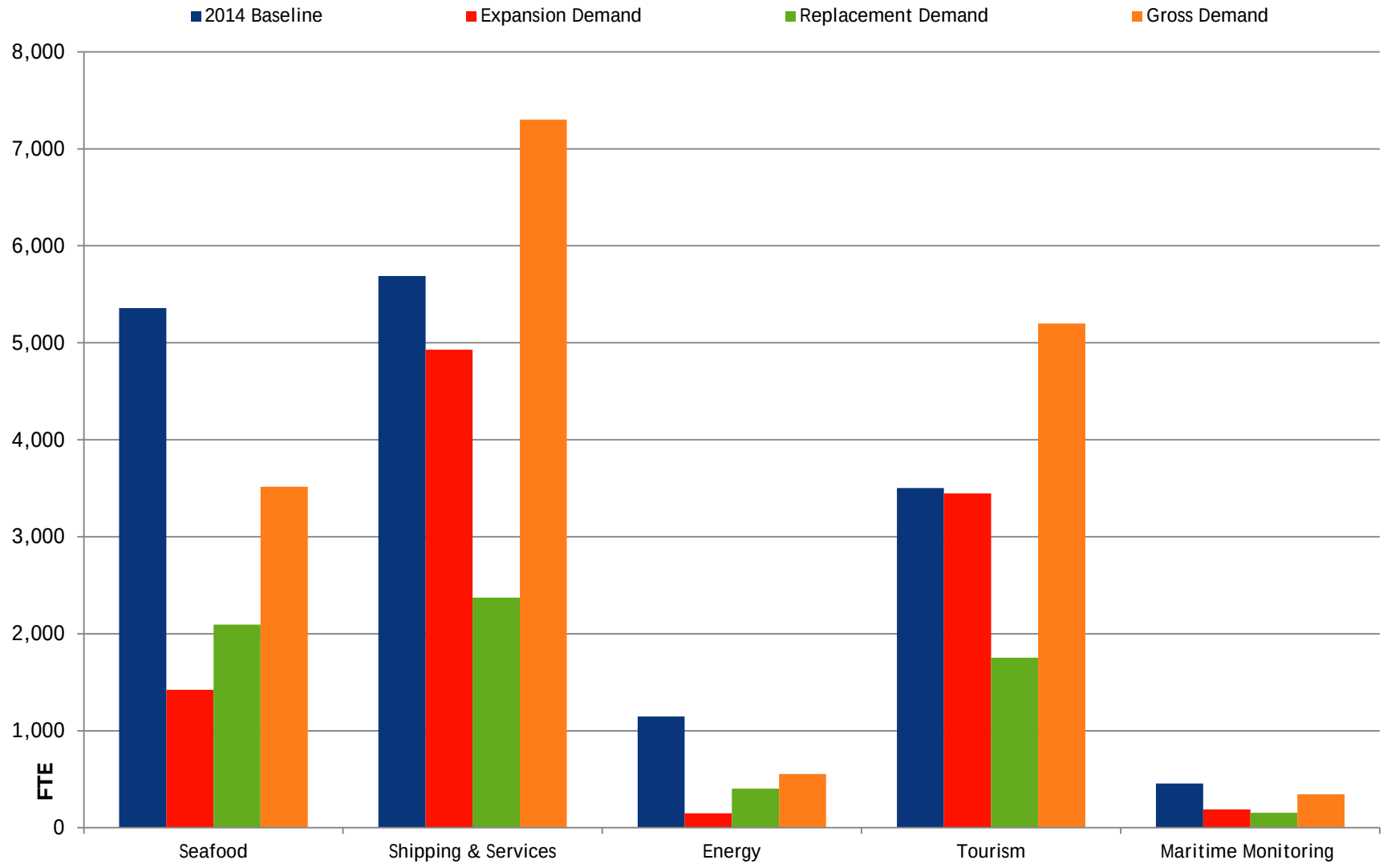
Overview of Marine Economy – ref year 2010 - is latest official data

No	Sub-Sectors of the Ocean Economy	Turnover €millions	Direct GVA €000's	Direct Employment (FTE)	2014 estimates
1	**Seafood & Bio-products**	**745**	**255,953**	**5,633**	**5,359**
1.1	Sea Fisheries	202	116,100	2,825	-
1.2	Aquaculture	123	46,855	918	-
1.3	Sea food Processing	390	80,008	1,586	-
1.4	Marine Biotechnology and Bio-products	30	12,990	304	-
2	**Maritime Transport, Shipbuilding and Services**	**1,658**	**539,624**	**5,689**	**5,689**
2.1	Marine Commerce	67	39,652	78	-
2.2	Shipping & Maritime Transport	1,422	422,061	4,633	-
2.3	Marine Manufacturing, Engineering & Construction	111	44,003	726	-
2.4	Marine Retail Services	58	33,908	252	-
3	**Energy**	**138**	**64,831**	**1,077**	**1,148**
3.1	Oil & Gas Exploration and Production	126	61,182	861	-
3.2	Marine Renewable Energy: offshore wind, wave & tidal	12	3,649	216	-
4	**Marine Tourism (incl International Cruise Industry)**	**858,**	**337,376**	**3,502**	**3,502**
5	**Maritime Monitoring & Surveillance**	**56**	**21**	**391**	**457**
5.1	High Tech Marine Products & Services (Marine ICT & Smart Ocean)	56	21	391	-
	Total Marine economy	**3,455**	**1,219**	**16,292**	**16,155**

Future Skills Demand for the Marine Economy by Sector

	Seafood & Bio-Products		Maritime Transport, Shipping & Services		Offshore Energy		Marine Tourism		Maritime Monitoring, Security & Surveillance		Total	
	No. FTE	% of 2014	**No. FTE**	**% of 2014**	**No. FTE**	% of 2014	**No. FTE**	% of 2014	**No. FTE**	% of 2014	**No. FTE**	% of 2014
2014 baseline	**5,359**	-	**5,689**	**-**	**1,148**	-	**3,502**	-	**457**	-	**16,155**	-
Expansion Demand	**1,423**	27%	**4,928**	**87%**	**150**	13%	**3,447**	98%	**190**	42%	**10,138**	63%
Replacement Demand	**2,094**	39%	**2,373**	**42%**	**403**	35%	**1,752**	50%	**155**	34%	**6,777**	42%
Gross Demand	**3,517**	66%	**7,301**	**128%**	**553**	48%	**5,199**	148%	**345**	75%	**16,915**	105%

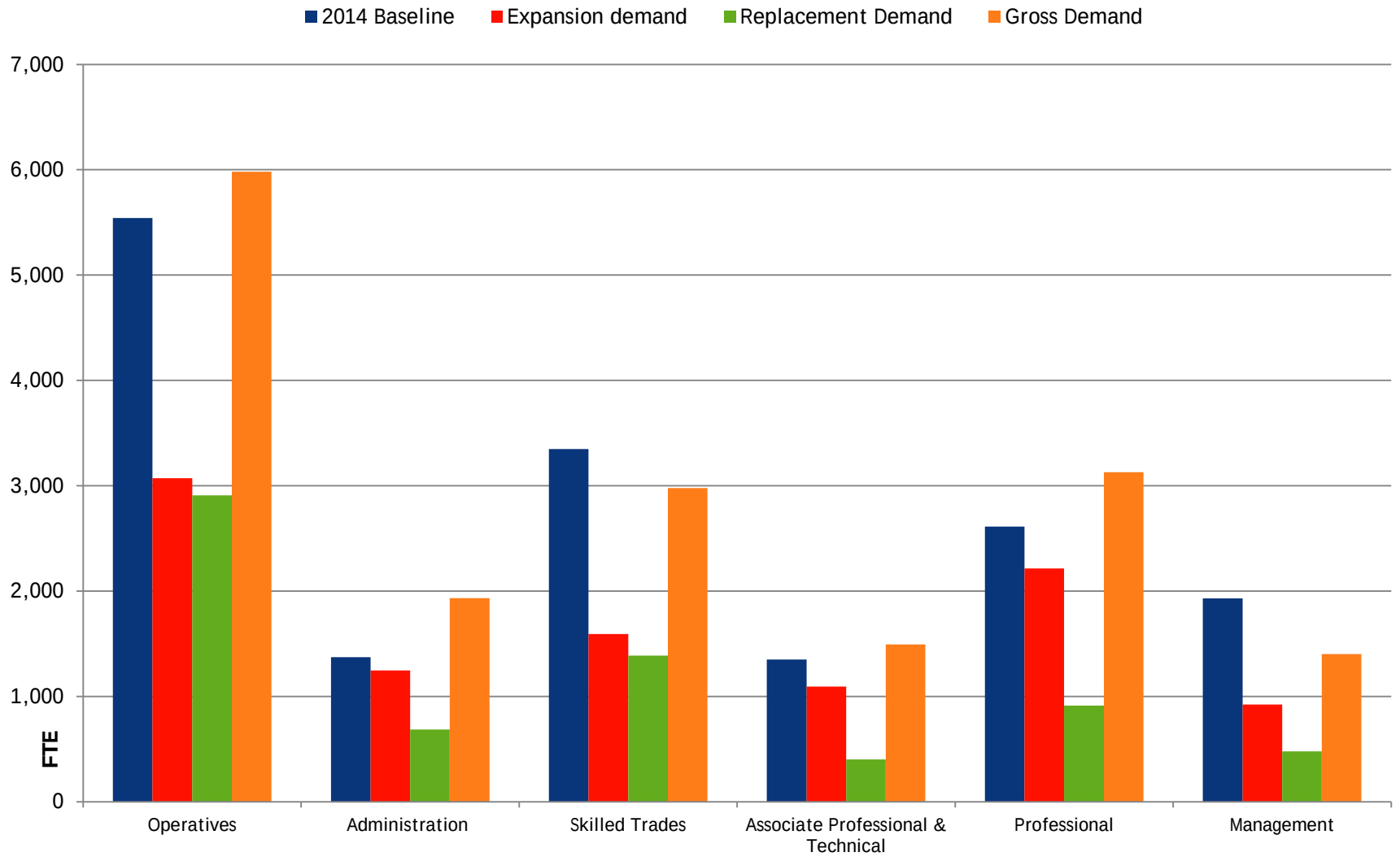
Future Skills Demand for the Marine Economy by Sector



Future Skills Demand for the Marine Economy by Occupation

	Operatives		Administration		Skilled Trades		Associate. Professional and Technical		Professional		Management		Total	
	No. FTE	% of 2014	**No. FTE**	**% of 2014**	**No. FTE**	% of 2014	**No. FTE**	% of 2014	**No. FTE**	**% of 2014**	**No. FTE**	% of 2014	**No. FTE**	% of 2014
2014 baseline	**5,541**	-	**1,373**	-	**3,348**	-	**1,351**	-	**2,612**	-	**1,930**	-	**16,155**	-
Expansion Demand	**3,072**	55%	**1,247**	91%	**1,591**	48%	**1,092**	81%	**2,214**	85%	**922**	48%	**10,138**	63%
Replacement Demand	**2,909**	52%	**686**	50%	**1,388**	41%	**401**	30%	**914**	35%	**479**	25%	**6,777**	42%
Gross Demand	**5,981**	108%	**1,933**	141%	**2,979**	89%	**1,493**	111%	**3,128**	120%	**1,401**	73%	**16,915**	105%

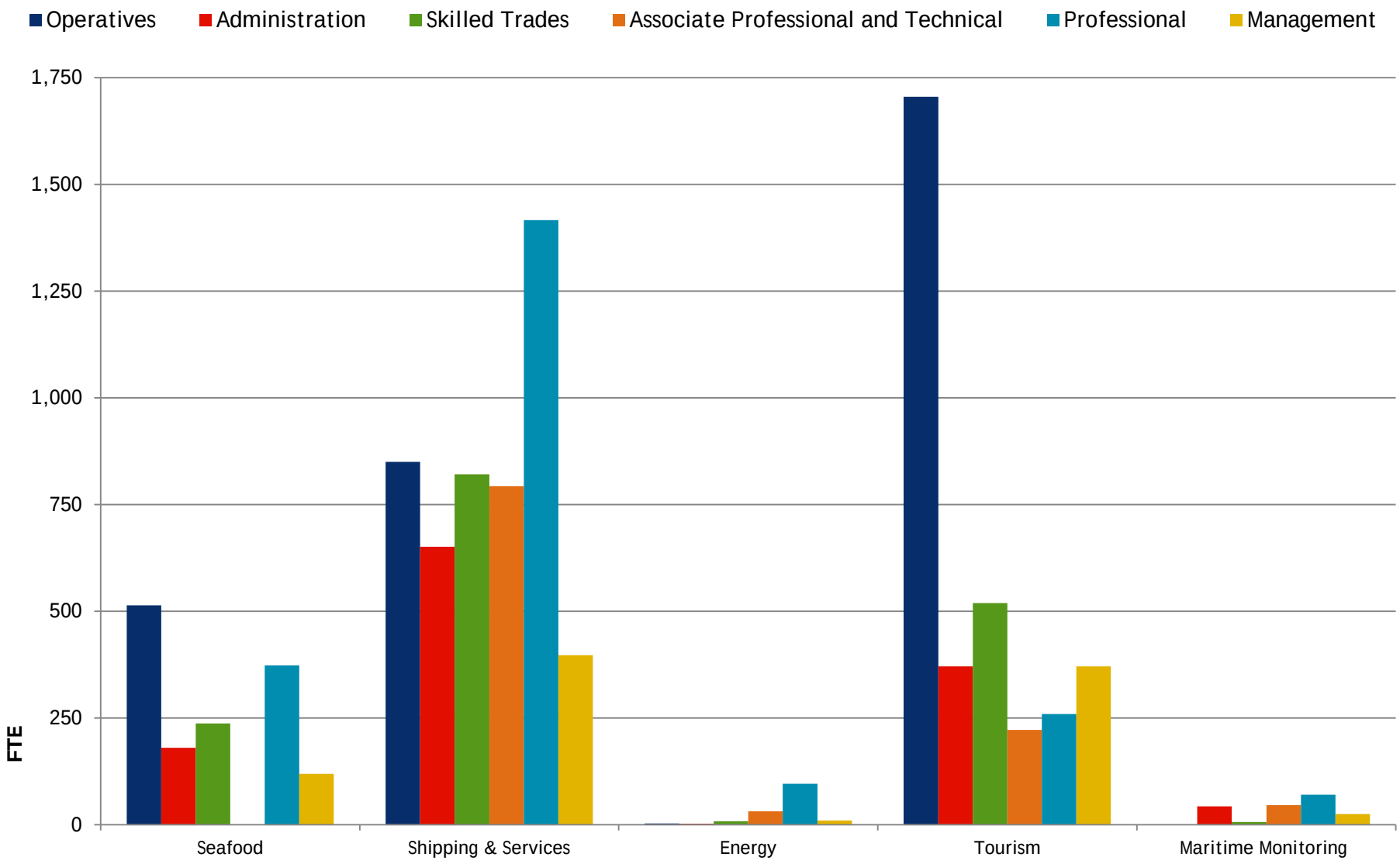
Future Skills Demand for the Marine Economy by Occupation



Job roles by occupation and sector in the Marine Economy

Occupation	Seafood and Bio-products	MTSS	Energy	Tourism	Maritime Monitoring
Operative Grades	General Operatives, Fish Filleters, Boat Crew, Deckhands, Riggers	Stevedores, Tug Operators, Crane Operators, Deckhands, Boat Crew, Riggers	General operatives, Riggers, Boat Crew	Bar Staff, Waiting staff, Cleaners, Drivers, Retailers, General operatives	General Operatives
Administration	HR staff, General Administrators, Receptionists	HR staff, General Administrators, Receptionists	HR staff, General Administrators, Receptionists	HR staff, General Administrators, Receptionists	HR staff, General Administrators, Receptionists
Skilled Trades	Radio Operators, Production Supervisors, Maintenance Technicians, Mechanics, Electricians, Skippers – Deck Officer, Fishermen, Divers	Harbour & Berthing Masters, Bunker Brokers, Pilots, Radio Operators	Mechanics, Electricians, Technicians: Maintenance; Fabrication; and Welding	Chefs, Tour operators/Guides, Life guards, Boat Builders, Instructors: Sailing; Wind surfing; Canoeing/sea kayaking; Adventure Sports; and Angling. Technicians: Maintenance; Marine engine; and Electricians	Mechanics and Electricians, Maintenance Technicians, Divers
Associate Professional & Technical	Production and Process Development technicians, Pollution Control Personnel, Safety Officers, Quality Assurance Technicians, Lab Technicians, Market Development Staff, Nature Conservationists	Marine Insurance Agents, Marine Underwriters, Ships Agents, Freight Forwarders, Commodity Traders, Charterers, Ship Brokers, Ship Chandlers and Equipment Suppliers	IT Technicians, Software Development Technicians, Hardware Developers	Engineering Technicians and IT Technicians	Web Developers, Programmers/ Software Developers, Technical Sales Staff
Professionals	Marine scientists, Marine biologists, Fishery Scientists, Microbiologists, Botanists, Earth & Ocean scientists, Geneticists, Food Chemists, Food Technologists, New Product Development Technologists, Food Process Engineers, Chemical Engineers, Environmental Scientists, Marine Spatial planners, Fish Veterinarians, Quality Auditors, Food Economists, Engineering Officer (Fishing Vessel)	Master Mariners and other Deck Officers, Engineering Officers, Naval Architects, Marine Surveyors, Hull Surveyors, Cargo Surveyors, Maritime Analysts, Shipping Accountants & Lawyers, Hydrographic Surveyors, Marine Planners	Marine Engineers, Geophysicists, Hydrographic surveyors, Production & Facilities Engineers, Environmental & Chemical Engineers, Structural & Mechanical Engineers, Power Systems, Smart Grid Engineers, Wave Scientists, Data Systems Analysts, Naval Architects, Marine Surveyors, Oceanographers, Naval architects, Master Mariners and other Deck Officers, Engineering Officers	Marketing and Public Relations Staff, Translators, Environmental Managers	Engineers:- Network; Telecoms; Software; Electronic; and Civil/Structural. Systems Analysts, Data Analysts, Geoscientists, Oceanographers, Marketing Managers
Management	Managing Directors, Plant Managers, Accountants, Production Managers, Legal and Marketing professionals	Directors Project Managers, Fleet Managers	Site Development Managers, Marine Operations Managers	Managers: Adventure Centre; Hotel and Catering', Marine Park; and Oceanarium	Entrepreneurs, CEOs, Project Managers

Expansion Demand by Occupation level for each Sector



SEAFOOD & BIO-PRODUCTS Overview

Sector	Key Points
Seafood & Bio-Products 5,633 FTE 2010 5,359 ↓2014 est. 15 companies interviewed with total of 798 employees = 15% of SF sector	• **Sea fisheries, Aquaculture, Seafood processing and Bio-technology** • Aquaculture is main potential growth area to 2020 • Current aquaculture production 36,000 tonnes of which salmon is 12,000 tonnes • One large company produces ~ 50% national salmon production • Ireland's salmon production peaked at 24,000 in 2001 • Has been a declining sector in Ireland but growing worldwide • Food Harvest target ~ 85,000 tonnes of aquaculture production by 2020 • Finfish (incl. Salmon) value = €6,000/tonne; shellfish = €2,200/tonne • On going progress with licensing issues essential for increased production • Tonnage targets translated to FTEs: Main skill issue – aging workforce • >50% of workforce in operative grades • 2 scenarios developed – 1. HOOW targets met (not deemed realistic by the industry). This would give rise to 3,517 FTE Gross demand = 1,423 Expansion and 2,094 Replacement demand 36% of Expansion Demand is for Operative Grades (57% of 2014 employment) while 26% of expansion demand is for Professional grades (7% of 2014 FTE) – indicating greater professionalisation of the sector 2. Licensing issues hinder growth in Aquaculture. This would give rise to 2,084 FTE Gross demand = All Replacement i.e. no growth in the sector

MARITIME TRANSPORT, SHIPBUILDING & SERVICES Overview

Sector	Key Points

Maritime Transport, Shipbuilding and Services
 	
5,689 FTE 2010
5,689 ↔ 2014 est.
 	
17 companies interviewed with total of 531 employees = 9% of MTSS sector
	• **Shipping & Maritime Transport, Marine Retail Services, Marine Manufacturing, Construction & Engineering and Marine Commerce**
	• Shipping & Maritime Transport is the largest component with 4,633 FTEs
	• Main areas of employment is nine State commercial ports
	• Employment decreased between 2007 -2010 reflecting the national economy
	• 82% of the 17 companies interviewed had roles difficult to recruit into as specialist skills are difficult to find – e.g. harbourmaster and berthing master, operatives with 'maritime' experience and pilots
	• Lack of awareness among school leavers of options for "maritime" careers
	• **International Shipping Services Centre (ISSC)** – the planned development of a purpose built centre in Dublin, modelled on the IFSC but for the shipping industry. The IMDO (Irish Maritime Development Office) estimate that over 3,500 jobs would be created and would require business skills combined with maritime knowledge e.g. maritime leasing and brokering skills
	• Scenario developed based on the sector meeting the HOOW targets which includes the establishment of the ISSC and creating 3,500 jobs. This would give rise to
	• 7,301 FTE Gross demand = 4,928 Expansion and 2,373 Replacement demand
	  • Most of the expansion demand would take place in the ship leasing component of the sector housed in the ISSC, the remainder in shipping & maritime transport driven by investment in the ports.
	  • The demand is concentrated on those with qualifications at Levels 6 – 8 on the National Framework of Qualifications (NFQ)

ENERGY – OIL & GAS and MARINE RENEWABLES Overview

Sector	Key Points
Energy 1,077 FTE 2010 1,148 ↑2014 est. 10 companies interviewed with total of 704 employees = 61% of Energy sector	**Offshore Oil & Gas** • Increase in exploration is anticipated from recent announcements from DCENR for a licensing round in 2015 and revised fiscal arrangements • Initial seismic surveys - minimal impact on employment and skills needed, if well drilling follows on then there will be a ramp up in activities for service vessels and port facilities • A discovery could have a big impact on employment and require professionals such as engineers with qualifications at NFQ Levels 8 and 9. • **Marine Renewables** – Offshore Wind, Wave and Tidal • Wave and tidal energy sectors are still at the demonstration stage • Ireland well placed to compete in this sector, some of the best demonstration sites in Europe, MRIA actively investigating options for sites to deploy demonstration projects • Employment opportunities - mostly for graduates, with little available for operatives, specialist skills are needed in early stages, once demonstration projects deployed - need for vessel operators and maintenance technicians • 2 scenarios developed – 1. HOOW targets met. This would give rise to: 553 FTE Gross demand = 150 Expansion and 403 Replacement demand The Expansion demand is in Marine Renewables with Oil & Gas expected to remain at the same level 2. Accelerated Growth in Energy Sectors. This would give rise to: 829 FTE Gross demand = 400 Expansion and 429 Replacement demand 100 of the 400 jobs will be for expansion of the Oil & Gas sector and 300 for Renewables. For both sub-sectors the majority of skills required are at NFQ Levels 9 – 10.

MARINE TOURISM & INTL. CRUISE INDUSTRY Overview

Sector	Key Points
Marine Tourism incl. International Cruise Industry 3,502 FTE 2010 3,502 ↔2014 est. 9 companies interviewed with total of 83 employees = 2.4% of Tourism sector	• Marine Tourism estimated to be ~ 10% of overall national tourism. • Marine Tourism defined here as water based, i.e. water sports, angling, seaside/resorts • Major development is Wild Atlantic Way with potential for increased marine tourism activities on its route. • EU has identified Cruise Tourism as promising activity for Europe. • Ireland has had a 200% increase in cruise liners in the last decade. • Scenario developed based on the assumption of the sector meeting the HOOW turnover targets. When turnover is translated into FTEs it equals • 5,199 FTE Gross demand = 3,447 Expansion and 1,752 Replacement demand • Most of the expansion demand is concentrated at NFQ levels 4 – 5 with ~ 50% in operative grades • The skilled areas include water sports instructors which are regulated by the relevant body and incorporated in the FE courses. • The expansion in Cruise tourism will result in an increase in the general tourism occupations.

MARITIME MONITORING, SECURITY & SURVEILLANCE Overview

Sector	Key Points

Maritime Monitoring, Security and Surveillance
 	
391 FTE 2010
457↑2014 est.
 	
9 companies interviewed with total of 124 employees = 27% of MMSS sector
	• MMSS is an emerging sector.
	• 50 companies operating in Ireland in this sector both FDI and indigenous.
	• Indigenous companies dominated by specialist SMEs
	• Companies engaged in development of High Tech Marine products and services: remote sensing systems, data management, modelling, simulation and forecasting, under water robotic systems
	• The high tech marine sector is one of the new growth areas for the ICT sector and will require skills on data handling, cloud computing and analytics.
	• Large global markets rapidly emerging in this area, new technology companies with high tech products & software solutions have the capacity to grow rapidly.
	• Scenario developed based on the assumption of the sector meeting the HOOW targets. When targets translated into FTEs =
	• 345 FTE Gross demand = 190 Expansion and 155 Replacement demand
	  • Most of the expansion demand is concentrated at NFQ levels 8-10. 78%, i.e. 149 of the 190 new post will require > NFQ Level 8. Which is line with the ICT Sector skills demand.
	  • The remaining new posts will require NFQ level 6-7.

Supply Side

- Higher Education mainly in NUIG, GMIT, NMCI (CIT) & UCC
  - NUIG & GMIT – Marine Science
  - NMCI – Maritime Transport
  - UCC – Renewable energy
  - UCD - Geoscience
- Further Education mainly BIM
  - BIM -Seafood
  - ETBs – Outdoor Education
- Safety Training (STCW)– BIM, NMCI & Private Providers (all approved by DTTAS (Dept of Transport, Tourism and Sport))
- Industry Sectoral training:
  - Institute of Chartered Shipbrokers
  - OPITO, GWO & IRATA (offshore industry)
- Water Sports Regulatory Bodies:
  - ISA – Irish Sailing Association
  - ICU – Canoeing Ireland formerly Irish Canoeing Union
  - Irish Surfing Association

Recommendations

National Overarching Marine Economy Recommendations

1. Establish a national Marine Discover Programme modelled on the SFI Discover Programme to raise awareness among primary, second and third level students about the range of careers in the Marine Economy
2. Monitor the Skills Needs in each sector of the Marine Economy on an ongoing basis to ensure a sufficient supply is available as the trigger points for growth are reached, e.g. aquaculture licensing, ISSC rollout, exploration drilling
3. Update the Marine Economy Data regularly to ensure accurate data

Sectoral Recommendations - Seafood

4. Develop a mentoring programme for the seafood sector
5. Develop a data-collection and sampling course for fishermen
6. Provide IT training for coastal communities and workers in the Marine economy

Where to locate our information:

Expert Group on Future Skills Needs

www.skillsireland.com

Department of Jobs, Enterprise & Innovation

www.djei.ie