The Blue Economy in the UK:
revitalisation and further opportunities

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Atlantic Action Plan Workshop,
4 June 2015

Turning Aspiration into Opportunity

- What is the Blue Economy?
  - – And how big
- What is driving Blue Growth?
  - – Global needs (eg energy, food)
- How should we respond?
  - – Opportunities along value chains

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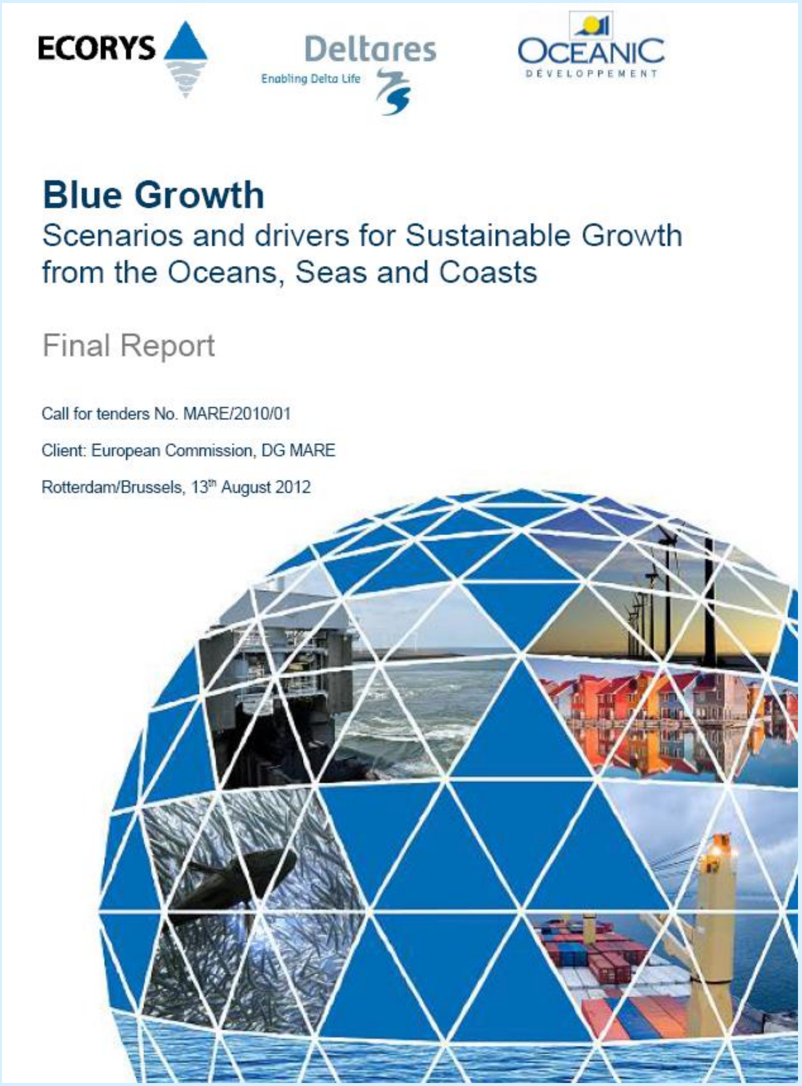
Macro-Economic Analysis


ECORYS
Deltares
Enabling Delta Life
OCEANIC
DÉVELOPPEMENT

Blue Growth
Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts

Final Report

Call for tenders No. MARE/2010/01
Client: European Commission, DG MARE
Rotterdam/Brussels, 13th August 2012

- Analysis can create the ‘big picture’
  - Shows the Blue Economy is important
  - Drives top-down policy
- How to influence micro-economic decisions?
  - Bottom-up investment by firms
  - New employment

Blue Growth Markets

REMCAP

Value-chain markets

- Vessel construction, propulsion & fuels
- Marine equipment & instrumentation
- Marine autonomous systems
- Maritime ICT ('Smart Ocean')
- Marine & maritime services

Market categories	Market segments			
Transport & logistics	Ports & logistics	Shipping & shipbuilding		
Leisure	Leisure craft, marinas	Cruise		
Defence & security	Naval	Surveillance	Coastal protection	Eco-systems
Energy resources	Oil & gas	Offshore Wind	Wave & tidal	Biofuels
Living resources	Fishing	Aquaculture	Blue biotech	
Mineral resources	Aggregates	Seabed mining		

Mature	Growth-phase	Pre-development

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UK Blue Economy Size

	Direct GVA £B	Direct jobs	Total GVA £B	Total jobs
Transport & logistics	13.59	265,500	33.91	685,801
Leisure	3.14	100,470	7.50	273,322
Defence & security	3.55	98,245	8.48	267,269
Energy resources	20.37	171,250	48.58	465,551
Living resources	0.81	31,633	1.93	86,055
Mineral resources	0.11	1,670	0.26	4,543
Vessel construction, propulsion & fuels	*1.41*	*37,000*	*3.60*	*81,000*
Marine equipment & instrumentation	*3.57*	*156,000*	*8.60*	*415,775*
Marine autonomous systems	*0.00*	*0*	*0.00*	*0*
Maritime ICT	*2.70*	*26,750*	*6.45*	*72,772*
Marine & maritime services	*2.54*	*46,550*	*5.97*	*135,582*
	51.79	935,068	125.29	2,487,670

- Based on an aggregation by MSE of:
  - Oxford Economics analysis of ports, shipping & maritime service (2011)
  - Oxford Economics update of above + marine equipment, ship/boat building, renewable energy & R&D (2012)
  - Crown Estate analysis of all sectors including oil & gas (2005)

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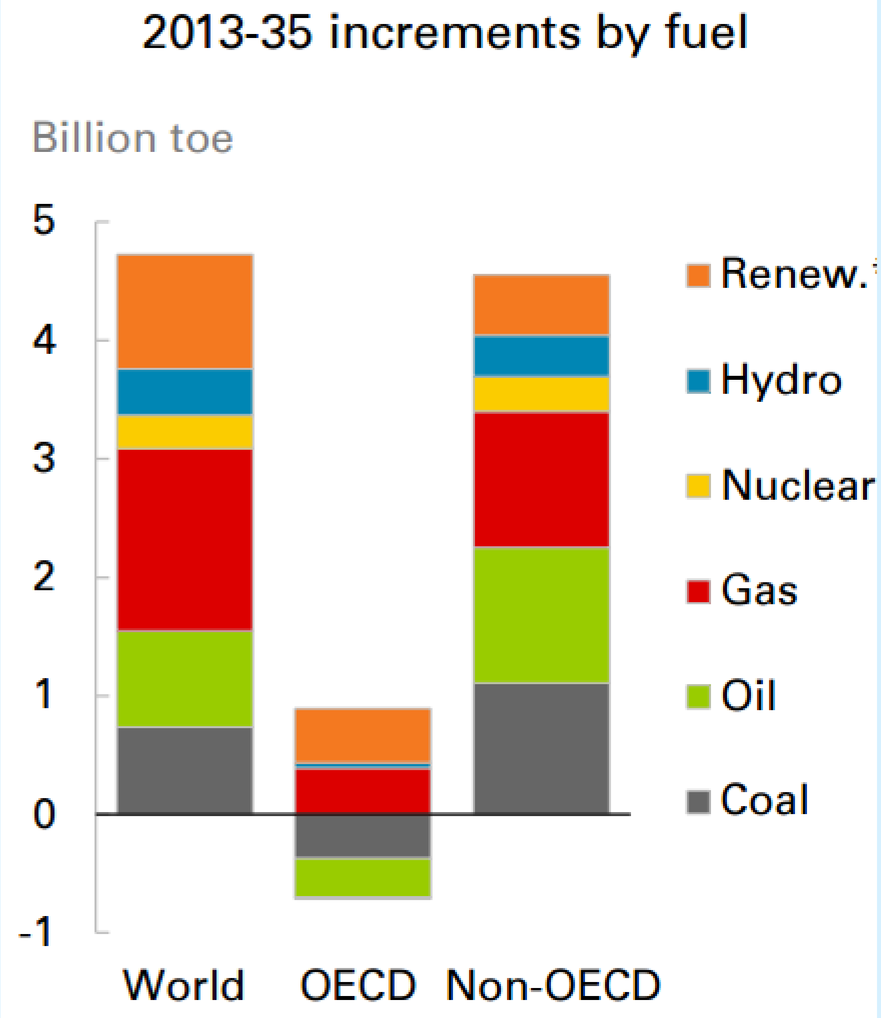
Blue Growth Sectors

- Three examples:
  - **Offshore & marine renewable energy**
  - Aquaculture
  - Autonomous systems value chain sector

Energy Demand Forecast (BP Energy Outlook 2015)



- OECD countries are forecast to displace oil and coal with gas and renewables
  - Significant role for marine & maritime
- Use that expertise to help minimise projected growth in oil and coal use in non-OECD countries

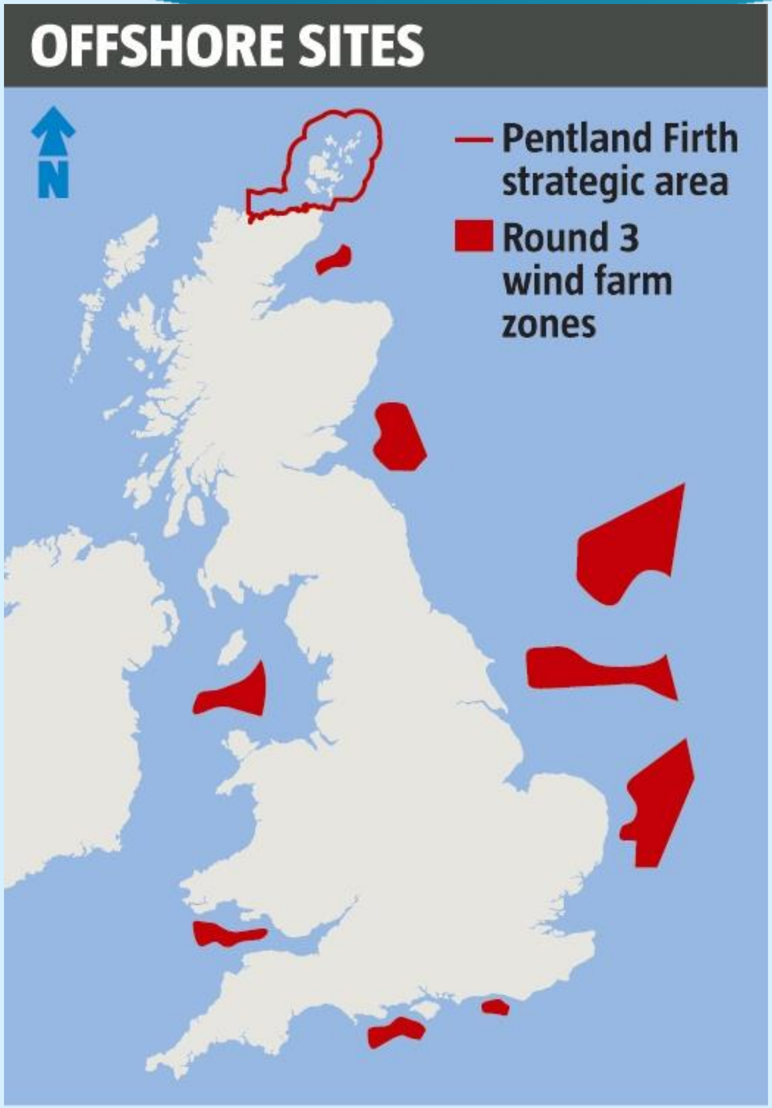
PÔLE MER BRETAGNE ATLANTIQUE

2. Where are we now?

On the Atlantic european coastal area

	IRELAND	UK	FRANCE	SPAIN	PORTUGAL
CURRENTLY INSTALLED	25 MW	3653 MW	---	---	2 MW
	---	3.8 MW	---	0.3 MW	0.7 MW
	---	5.2 MW	240 MW	---	---
TARGET 2020	555 MW	4200 MW	6000 MW	3000 MW	27 MW
	75 MW	700 MW		100 MW	6 MW
	16% of renewables	*15% of renewables*	*23% of renewables*	*20% of renewables*	*31% of renewables*

UK Offshore & Marine Renewables



- Offshore wind capacity:
  - 4 GW in operation
  - 12.7 GW under construction or approved
  - 5.2 GW in planning
- Wave & tidal capacity:
  - Currently at tech. demo. stage (10MW)
  - Swansea lagoon (320MW) awaiting planning decision
  - Cardiff lagoon (1.8 – 2.8 GW) at pre-planning

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Maritime Value Chains

Planning & feasibility → Design & engineering → Construction → **Installation & operation** → Decommission & EOL

FEED & procurement:
- Design, engineering, specification, contracting

Feasibility & risk:
- Environmental risk assessment, financial, consenting

Modelling & surveying:
- Resource assessment, physical & biological surveys

Main modules:
- Structure, mooring system, power train, export system, onshore facility

Sub-systems:
- Sub-structures, machinery, cables & terminations, controls & umbilicals, pipelines & risers

Components & materials:
- Instrumentation, valves, fittings, connectors, composites

Marine operations:
- Specialist vessels, intervention planning

Infrastructure:
- Support fleet, port facilities, repair logistics

Availability support:
- Condition monitoring, inspection, maintenance

Maritime Industrial & Science Base				
Vessels & marine systems	Autonomous systems & robotics	RTD expertise & facilities	Maritime ICT & big data	Maritime services & advanced skills

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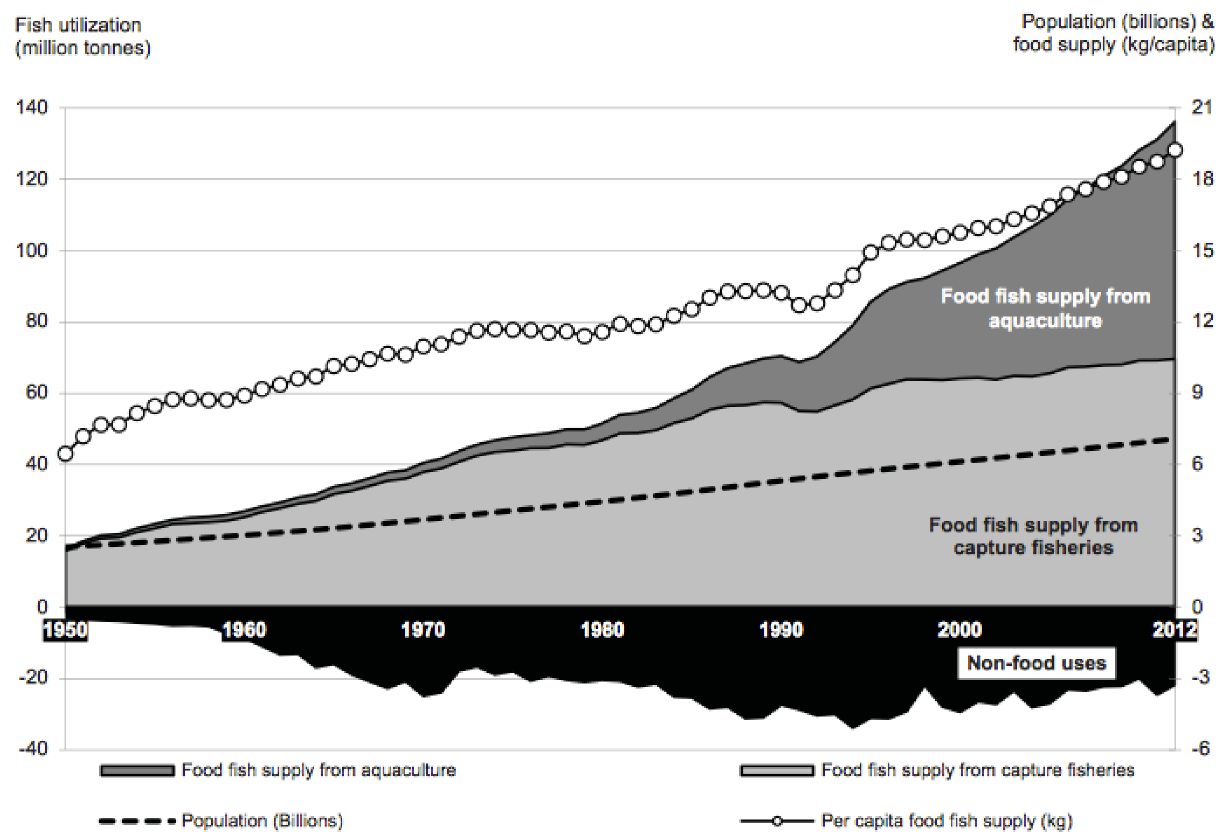
Global Aquaculture Trends (FAO)

Figure 1

World fish utilization and supply/Utilisation et disponibilités mondiales de poisson/ Utilización y suministro mundiales de pescado



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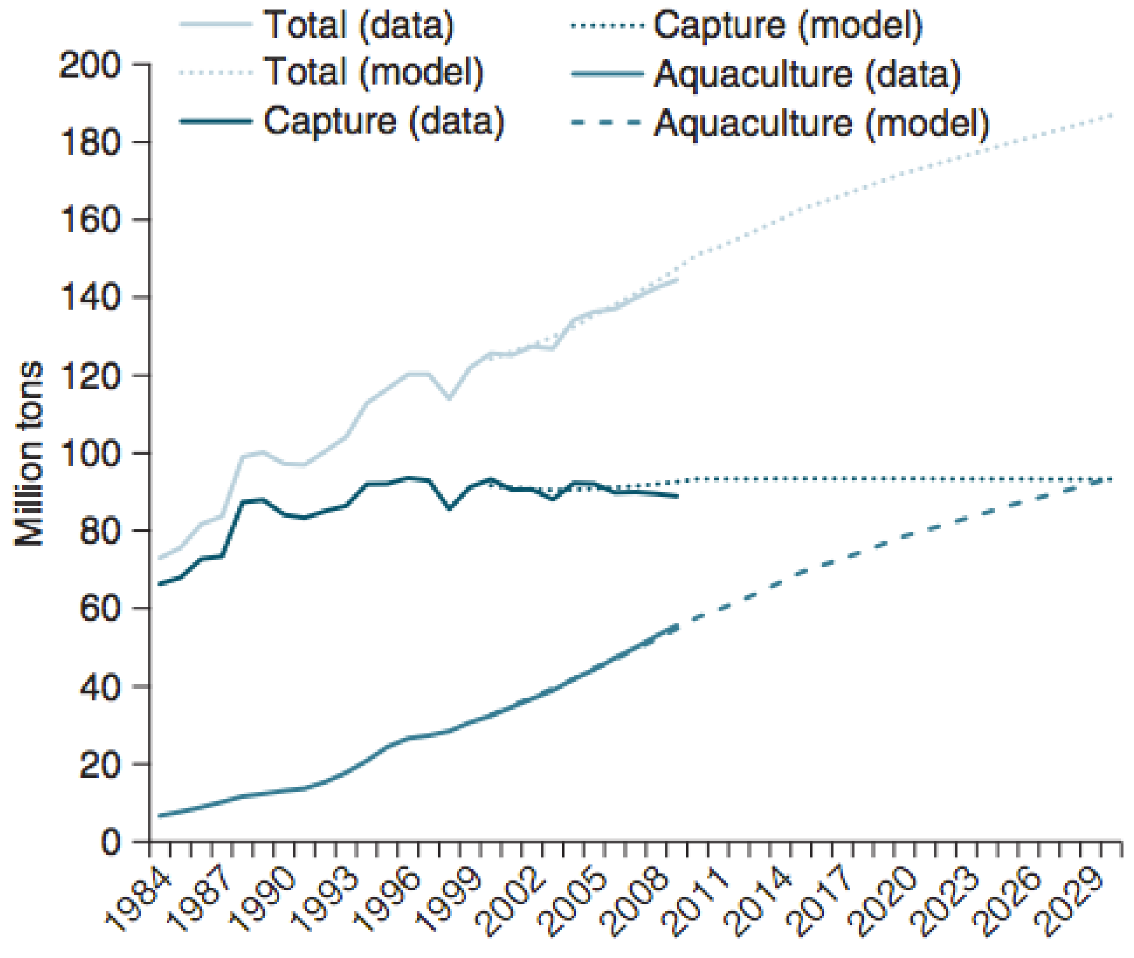
Future Opportunities



Sources: FishStat and IMPACT model projections.

- Aquaculture production to increase from 50MT to 90MT in 15 years
  - Around 8% growth pa
- Assumes level capture production
  - Only with improved productivity
- What are the business opportunities?

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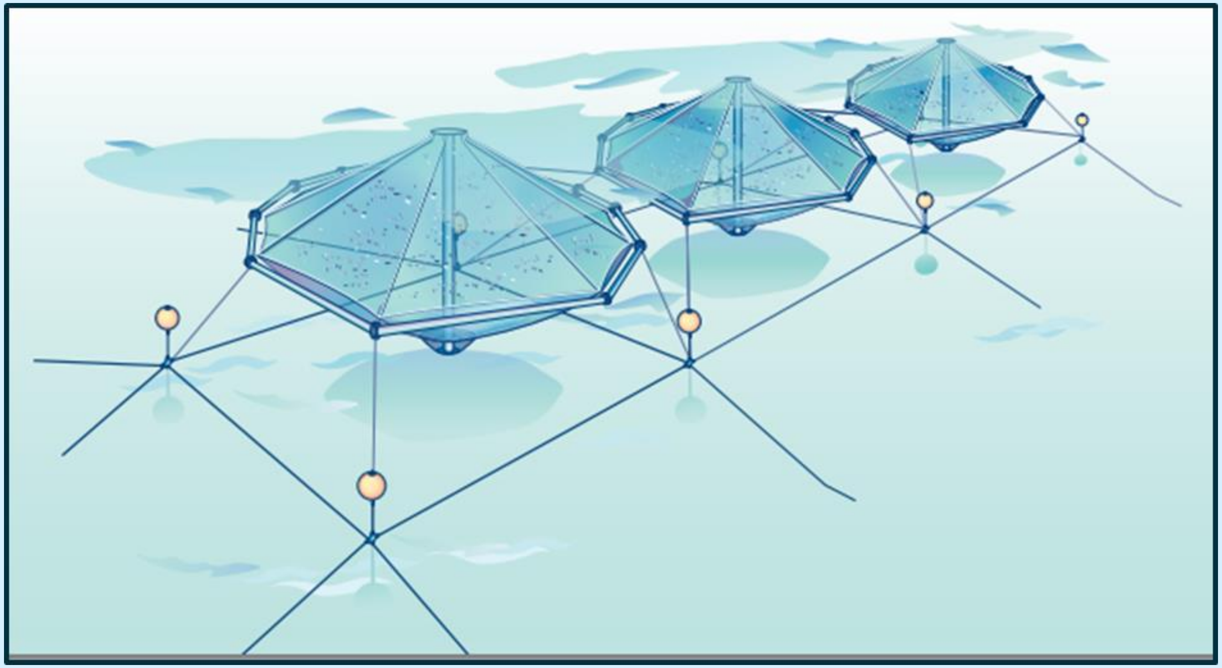
Offshore Aquaculture Opportunities

- Mooring & anchoring systems
- Deployment, maintenance, repair, retrieval
- Monitoring, controls, autonomy, unmanned platforms
- Operations support, feed supply, export to shore etc



Blue Growth Sectors

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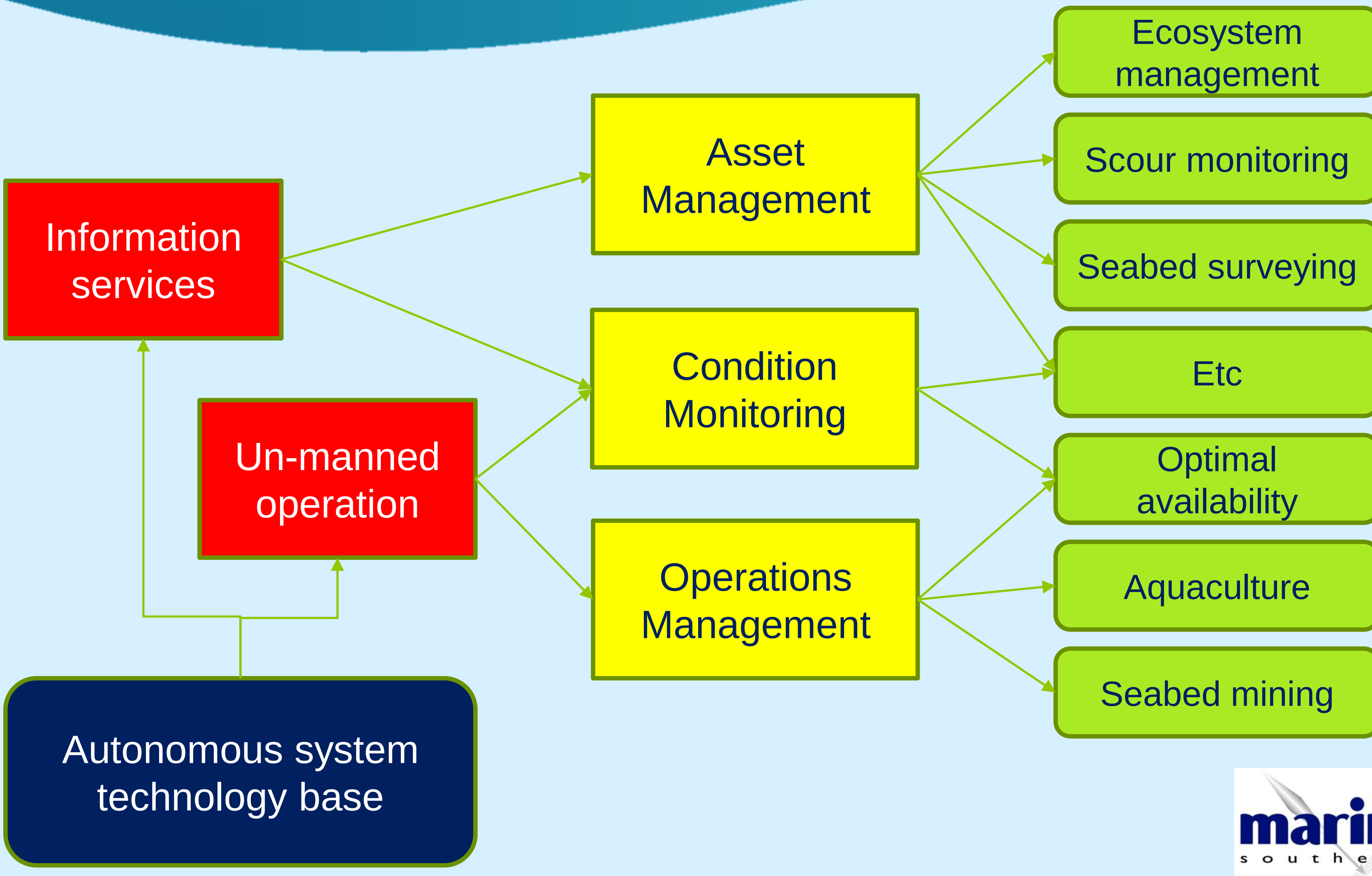
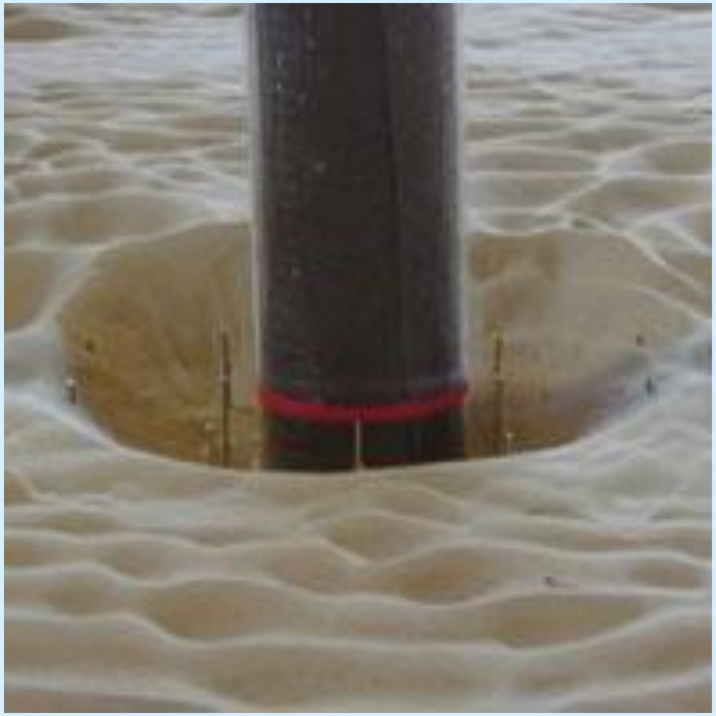
Autonomy in Blue Economy



Customer Solutions for Scour

- Autonomous scour monitoring:
  - Regular survey to detect trends
  - Low cost – no need for expensive ROV support vessel
- Exposures project will advance this technology
  - IT Innovation & MSE running a pilot exercise
  - Market solution using S&T base

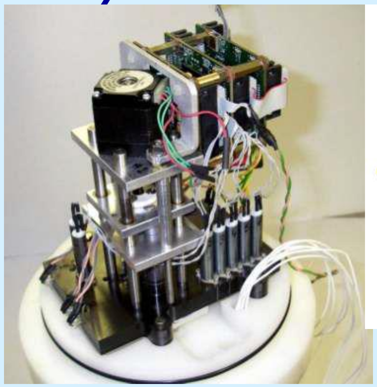


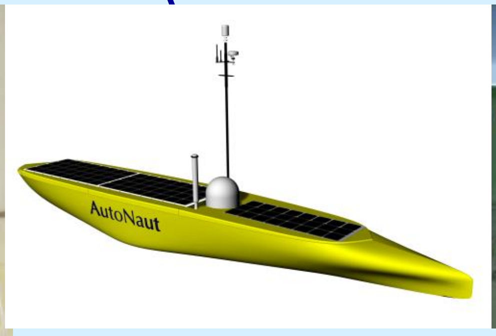
Autonomous Systems – Value Chain

Value Chain serving multiple end-user markets

Components (eg sensors) → Equipment & platforms → Integrated systems → Added-value services →

- Identification & tracking
- Spill response
- Asset management
- Seabed survey & mining
- Fisheries management





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How is UK positioned?

- Large, capable and diversified industry base
- Excellent science base and research infrastructure
- Good commitment to investment in national technology priorities
  - BUT
- Poor alignment with full extent of blue economy
- Investment in blue growth opportunities will be bottom-up. Need to mobilise SMEs
- Scope to join up Catapults (hubs) with existing maritime centres of capability (spokes)

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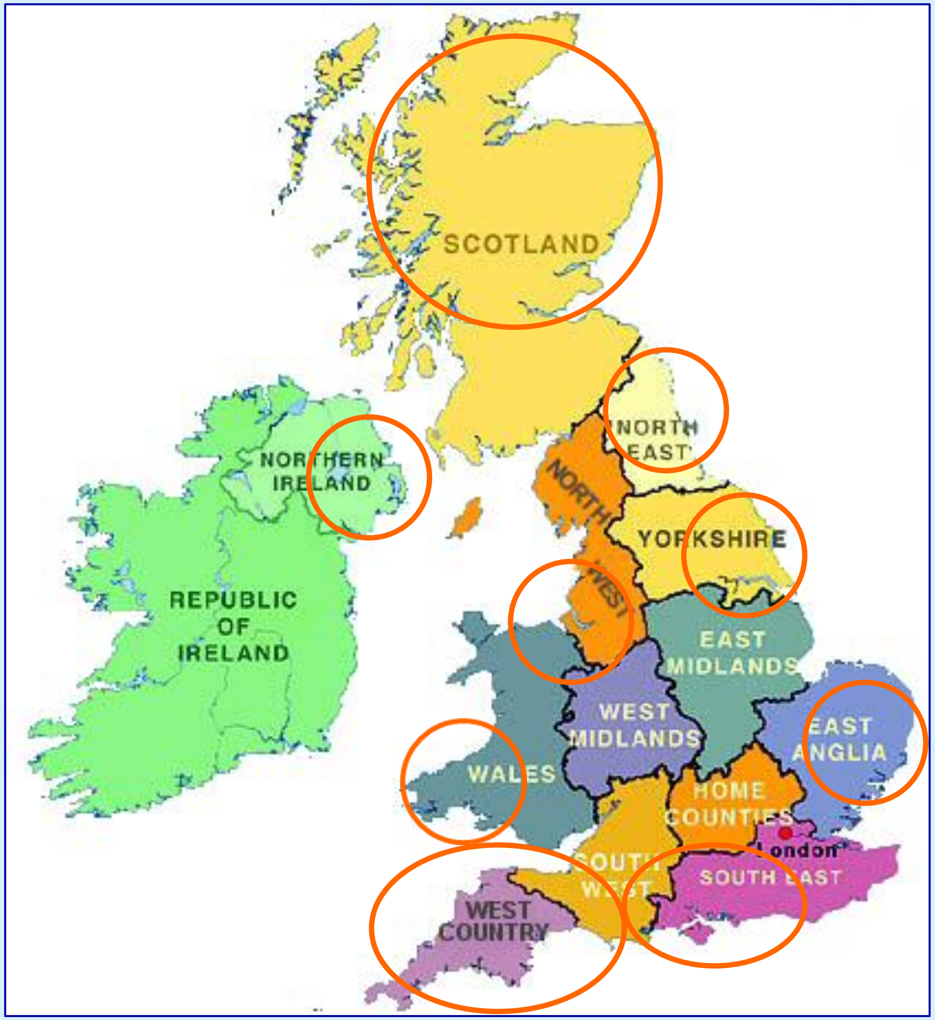
UK Blue Economy Capacity



- Largest in EU but fragmented:
  - Regions
  - Sectors
  - Government depts.
  - Science/Industry/SME
- Create a Blue Economy cluster alliance or Catapult
  - Capture bottom-up strengths
  - Deliver top-down goals
  - Achieve critical mass
  - Present unified capability
  - Provide spokes to existing Catapults

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Key Atlantic Regional Clusters

- Key cluster organisations already involved in Atlantic actions:
  - UK (MSE, CMN, Mersey Maritime, Marine Scotland)
  - Ireland (IMERC)
  - Portugal (OceanoXXI)
  - France (PMBA)
  - Spain (Basque energy & maritime)
  - Norway (MaritimT)

Concluding Remarks

- The Blue Economy is growing, offering business opportunities to a wide range of firms
  - Across diverse markets, beyond traditional ‘marine’ sector
    - Renewable energy, aquaculture (biotech, algae, shellfish, fin-fish), security (defence, ecology), smart logistics etc
  - Along value chains serving multiple end-user markets
- The UK is well-placed to exploit this potential
  - Strong industrial capacity
  - Strong science & technology base
  - Good international links
- But fragmentation is a major barrier
  - Extent of Blue Growth opportunity is not widely recognised
  - Integrated capacity is not promoted (stuck in silos)
- Atlantic Action Plan can support new projects & consortia
  - Focus on real customer needs with Blue Economy value chains
  - Utilise existing ‘hubs’ (eg Catapults) by linking to delivery organisations working in Atlantic blue economy

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Marine South East:
a cluster organisation supporting investment in the Blue Economy of the UK Solent region

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