



The Future for Scotland's Marine Economy

WORKSHOP

MASTS ANNUAL SCIENCE MEETING
13th September 2012



AGENDA FOR THE SESSION



- Welcome and Introductions
- Purpose of the Workshop – Outputs
- The Scottish Marine Economy
- Some Global Trends
- How Can Scotland's Marine Economy Grow in order to Meet Future Needs
- Are There Opportunities for Interactions and Synergies
- Constraints and How to Address Them

- **DISCUSSION POINTS:**
 - Sectors with long term growth potential
 - Interactions and synergies between sectors
 - Strategic national impetus and funding/enabling mechanisms, knowledge constraints – role for research



OUR GOAL



- This workshop is going to develop and publish a collective vision about:
 - Sectors of the marine economy we believe have high growth potential – current or new
 - Which could be individual – or which could be delivered by acting together with other sectors
 - The constraints we perceive, current or new, and our suggestions about addressing those constraints:
 - Which could be investment in research
 - Or investment in other ways: demonstration projects, business grants, etc

INTRODUCTIONS



Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean



- SARF Objectives:
 - To promote, encourage and support scientific research and development in aquaculture and related areas.
 - To enhance public understanding of aquaculture through the dissemination of research results in the public domain
- Focus on “and related areas”
- Considerable expertise amongst SARF Members

Could we go around the room?



THE MARINE ECONOMY

Scotland's Marine Environment

<http://www.scotland.gov.uk/Topics/marine/science/atlas>

Loch Slapin, Isle of Skye



© Marine Scotland

Gairloch



© Marine Scotland

St Ninian's Isle, Shetland



© Marine Scotland

Puldait, Orkney



© Simon Dupont, Marine Scotland

St Kilda



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Rockall

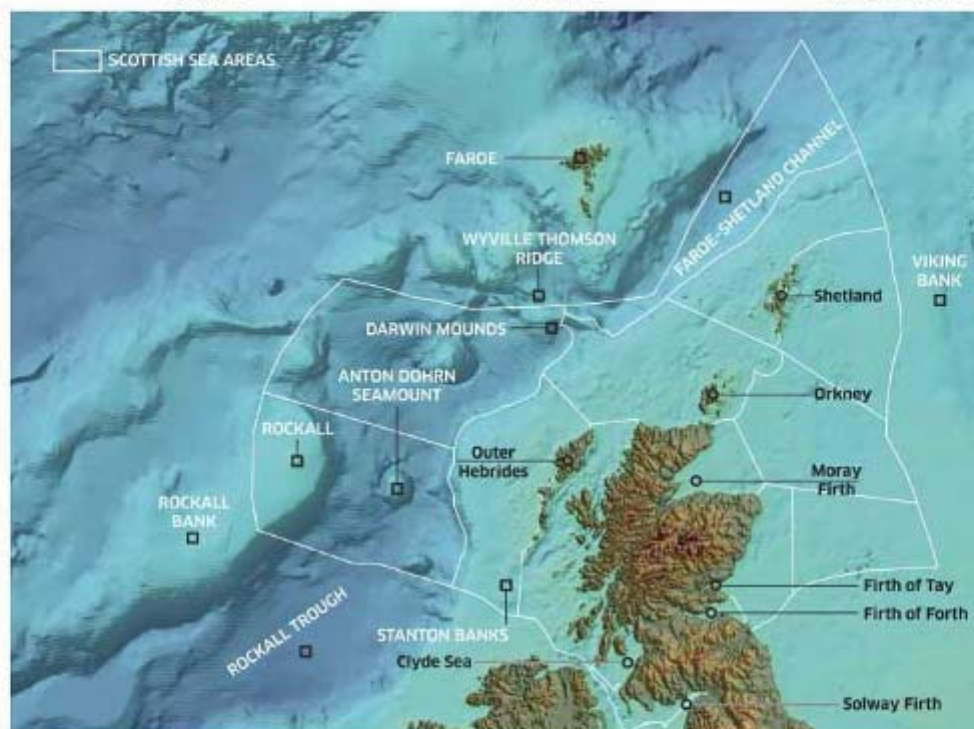


© Francis West, Marine Scotland

Hull



© NPA



Dunceby Head, North Scotland



© George Brown

Aberdeen Harbour



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North-East Scotland



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Clyde



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Caerlaverock, Solway Firth



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Groynesmouth, Firth of Forth



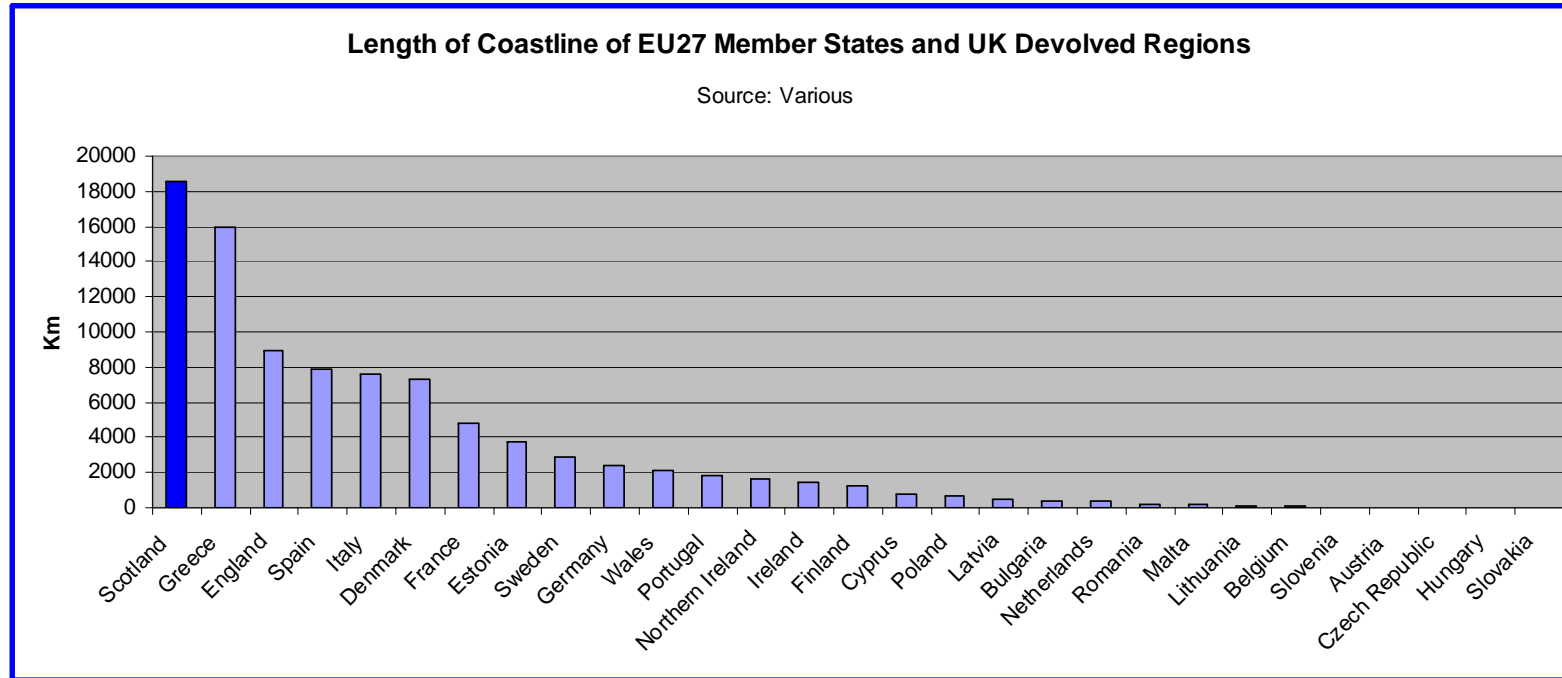
© NPA

Stonehaven Bay



© Marine Scotland

EXTENT



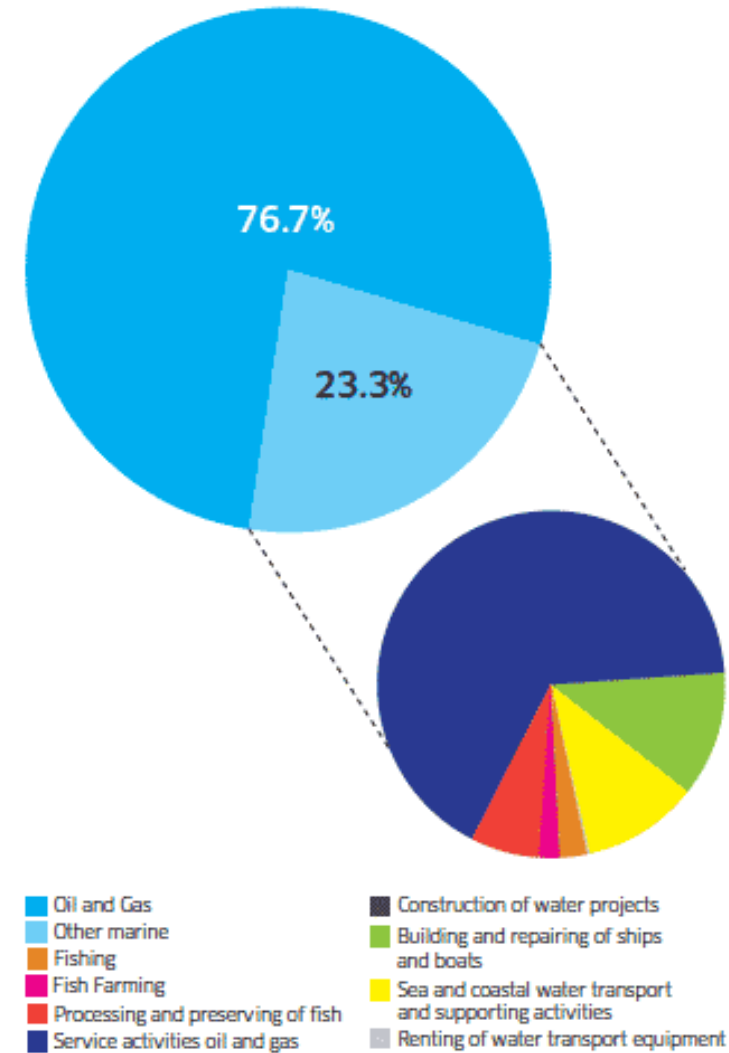
- Scotland has 20% of the entire coastline of Europe
- And about 1% of Europe's population



VALUE TO THE ECONOMY

■ Headlines:

- £17.4 billion in GVA
- 17% of total Scotland GVA
- 45,300 in employment



Scottish
Aquaculture
Research
Forum



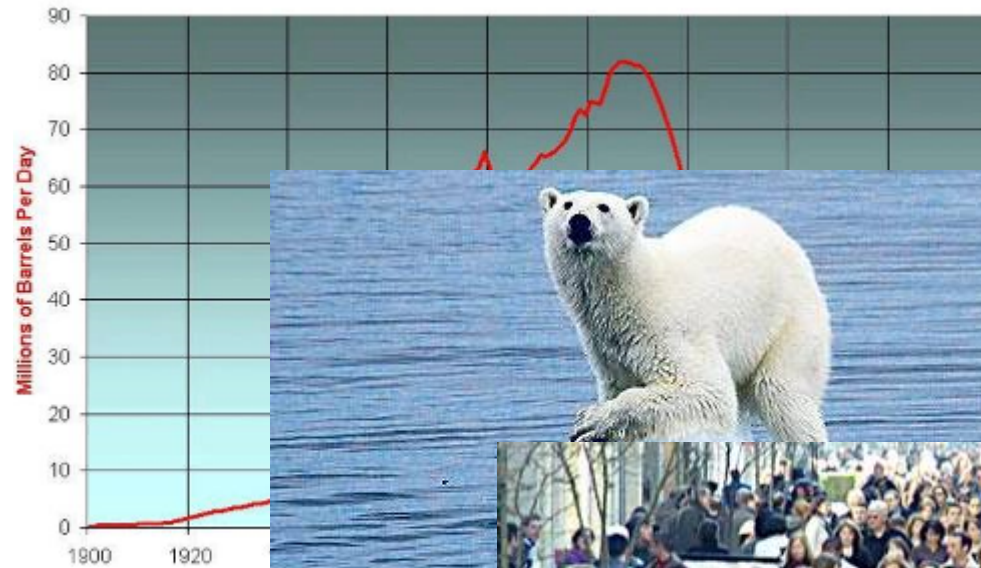
We will come back to individual sectors shortly 8



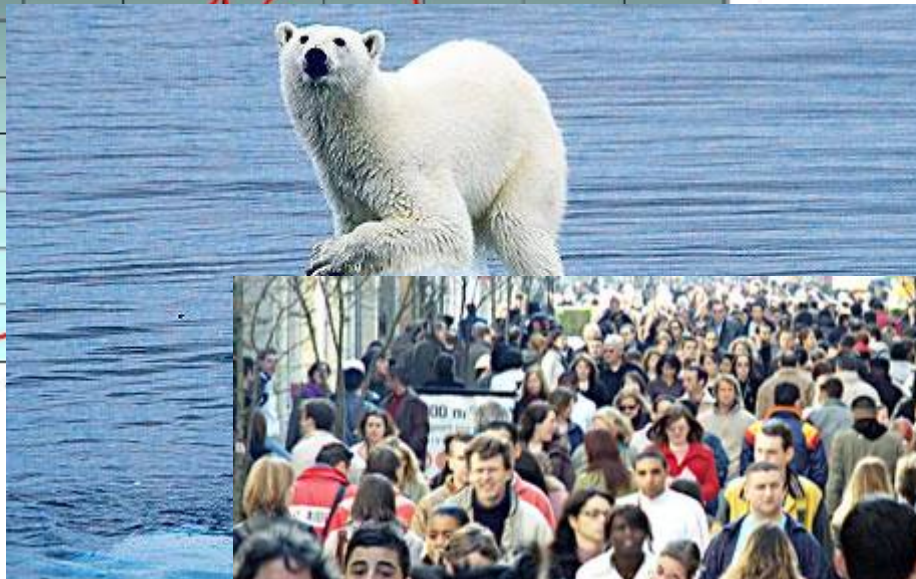
GLOBAL TRENDS

WHAT DOES THE FUTURE HOLD?

World Oil Production 1900-2080



Peak oil

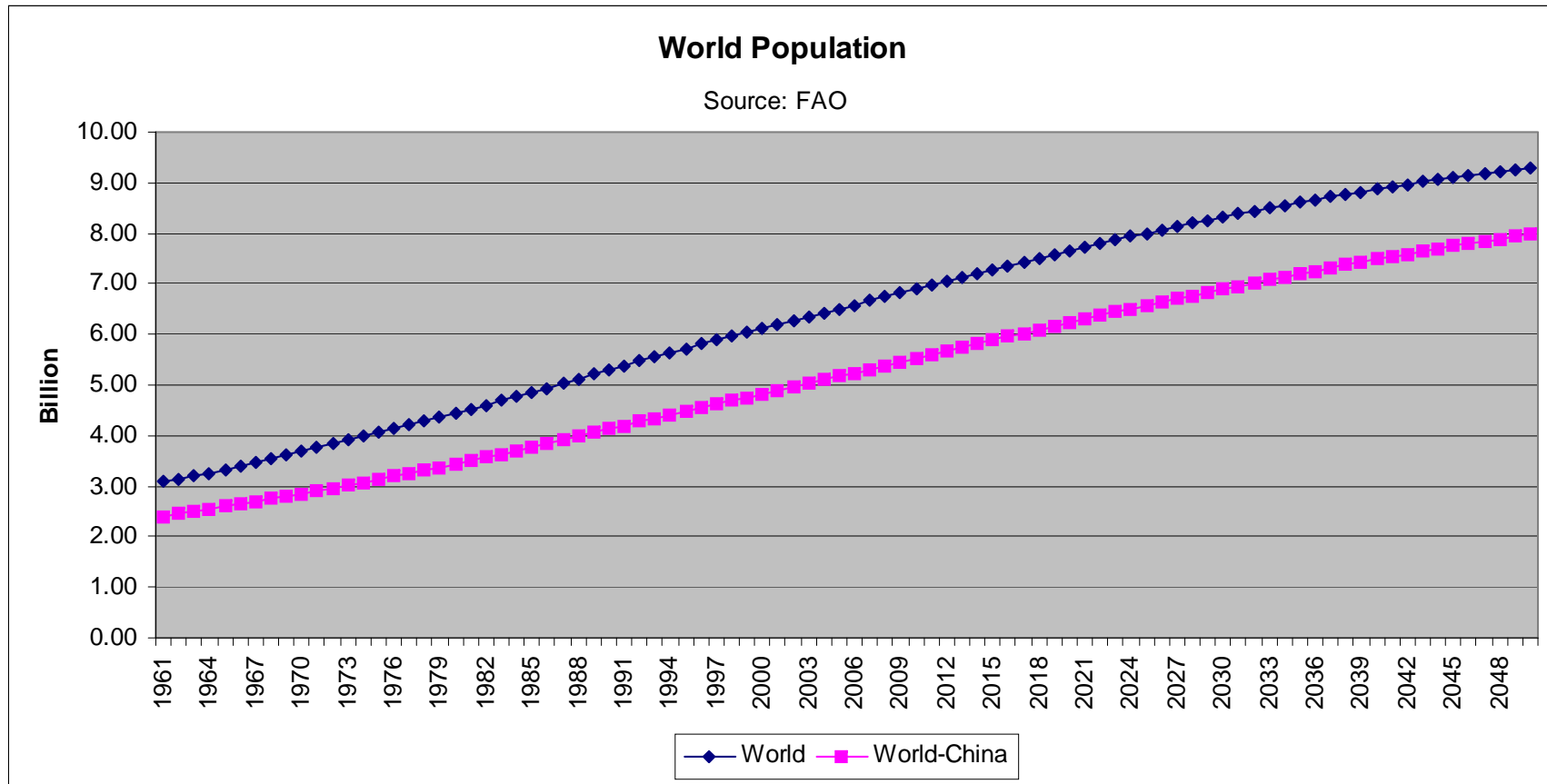


Climate change

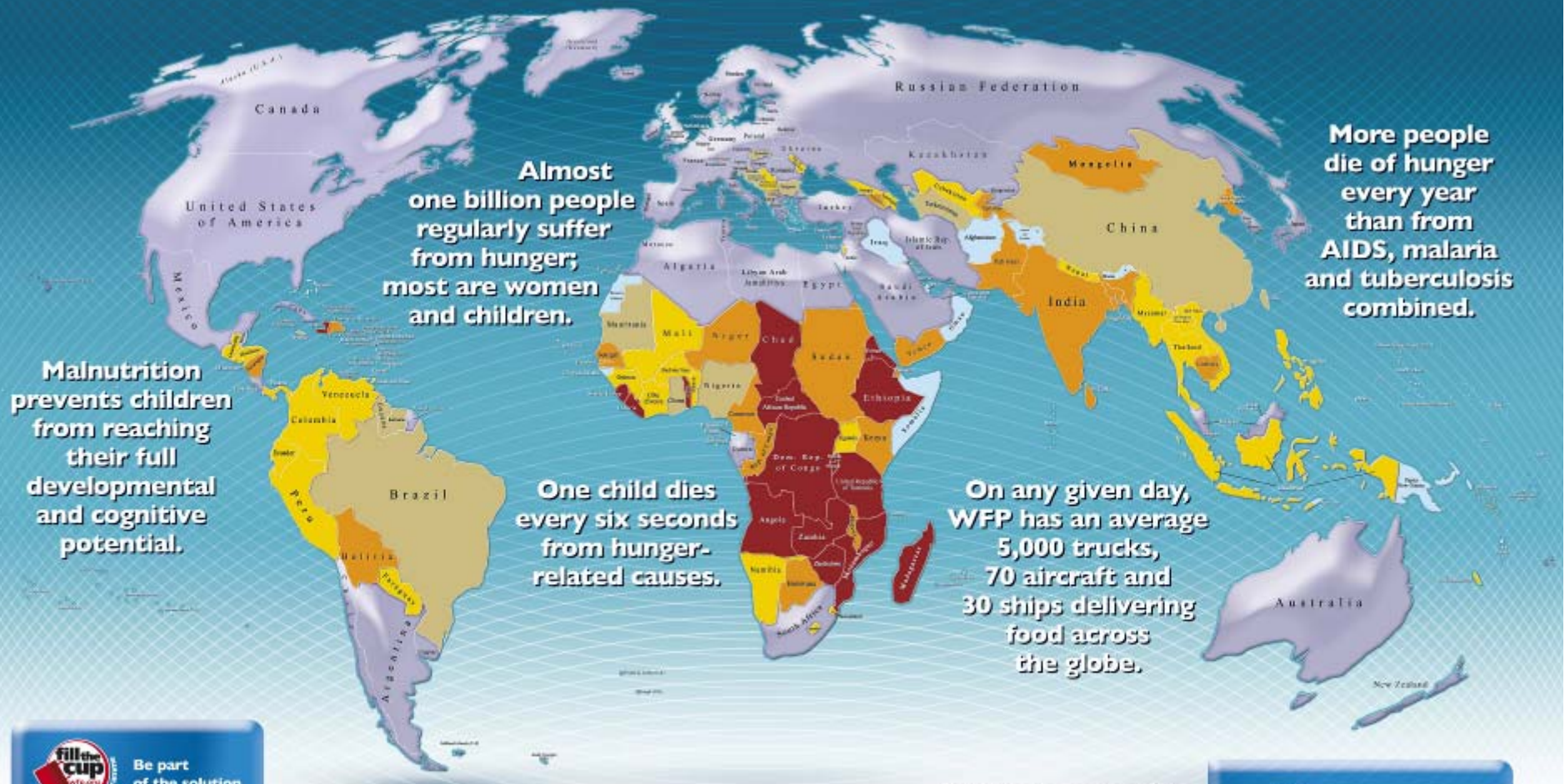


Population growth

POPULATION GROWTH



2009 Hunger Map



Be part of the solution

Category	1	2	3	4	5	
Undernourished	<5%	5-9%	10-19%	20-34%	≥35%	Insufficient data
Description	Extremely low	Very low	Moderately low	Moderately high	Very high	

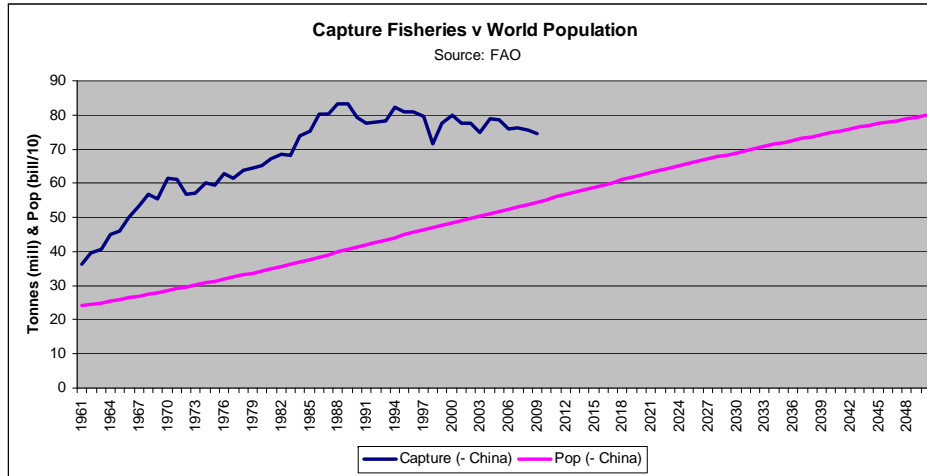


World Food Programme

Sources: The State of Food Insecurity in the World 2008, Food and Agriculture Organization of the United Nations and FAO/STAT.
© 2009 United Nations World Food Programme

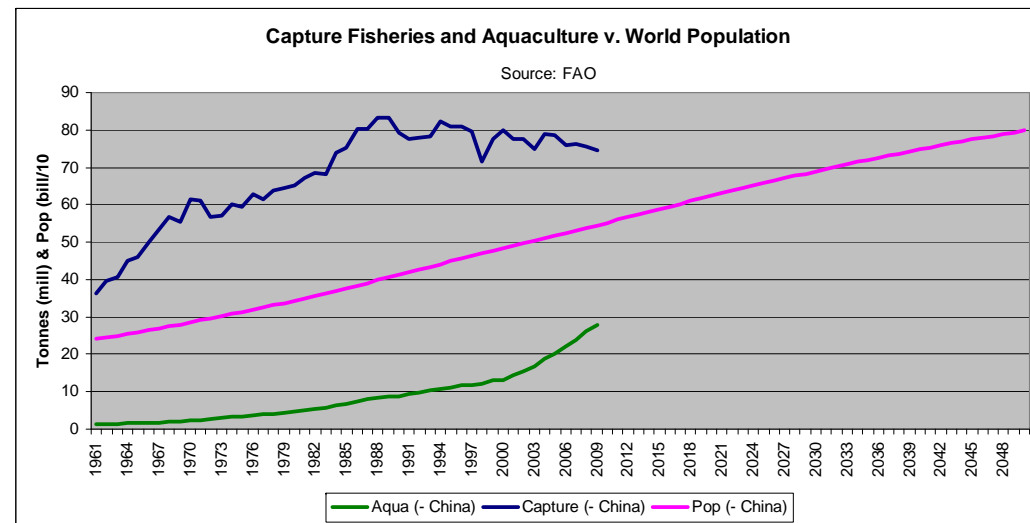
MARINE FOOD

Seafood as part of our diets

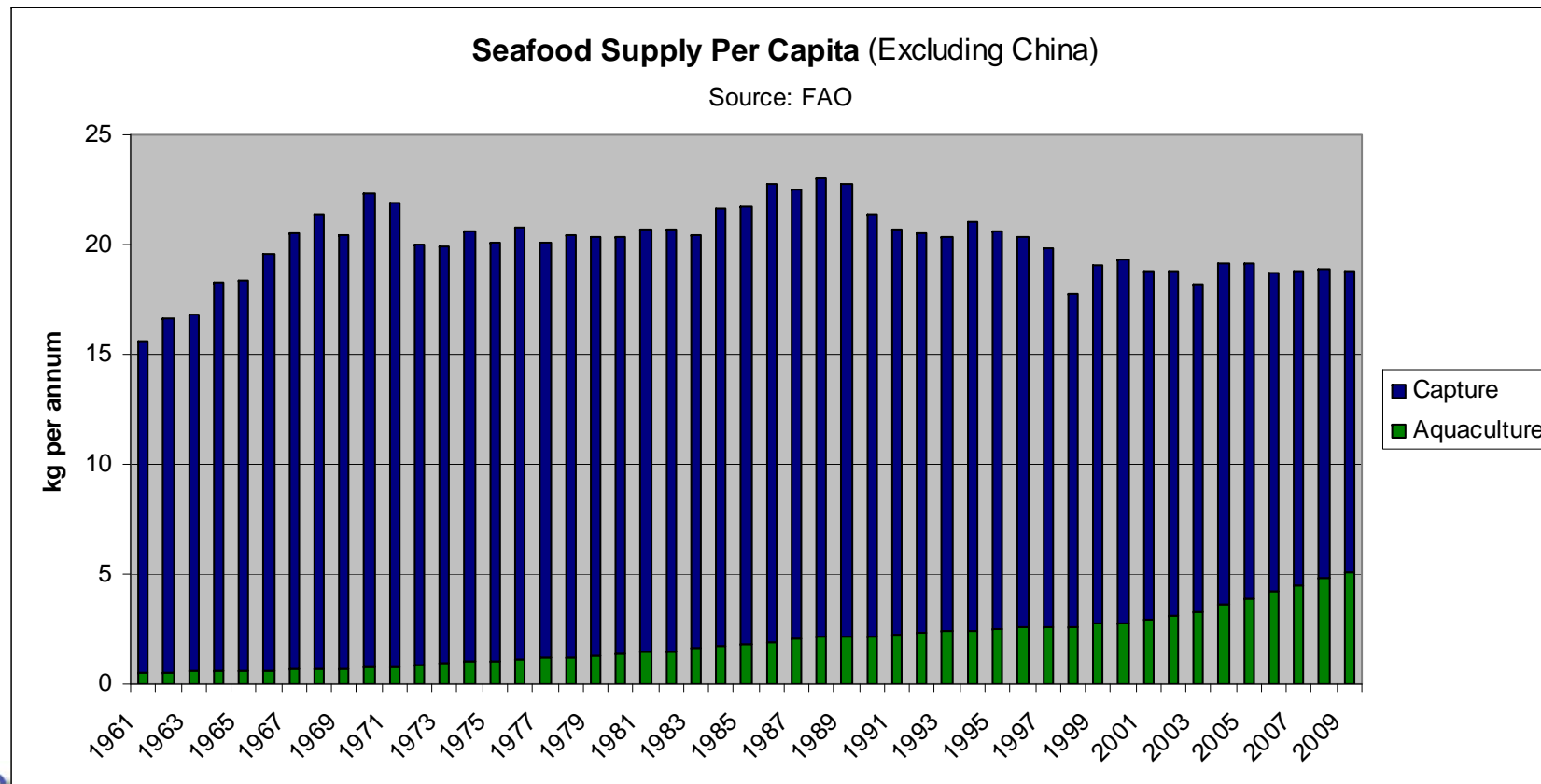


Plateau since mid 1980s

Importance of aquaculture



MARINE FOOD 2

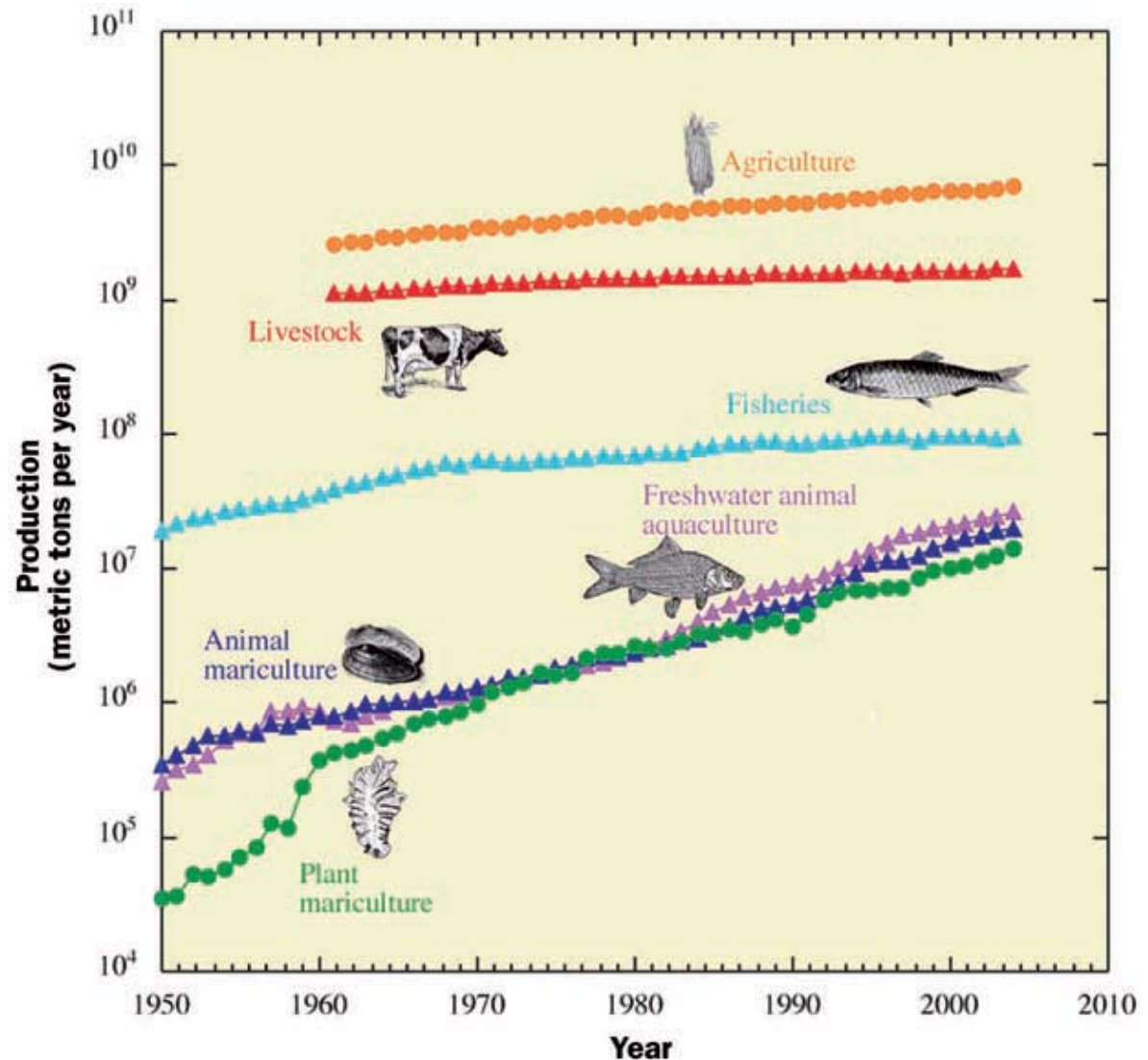


Holding our own because of aquaculture
But population is still growing....

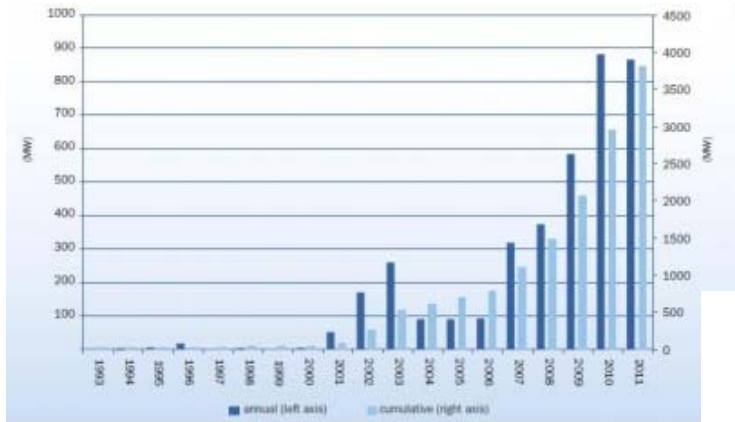
A MARINE AGRONOMY



- A view that the marine environment will become increasingly important
- Not just fish & shellfish
- Algae:
 - Food
 - Animal Feed
 - Bio-fuel
 - Speciality chemicals



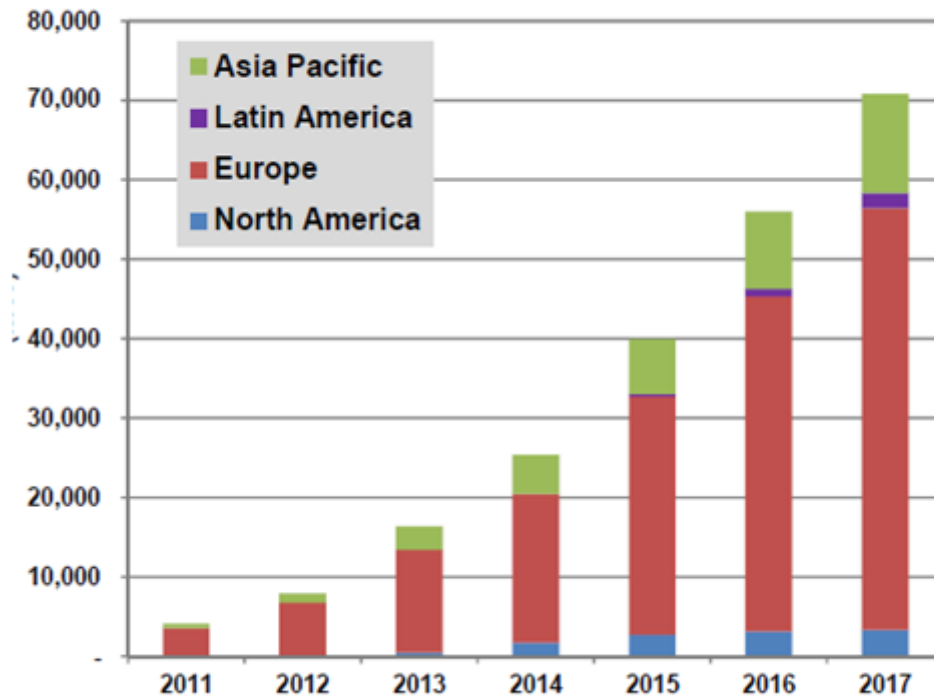
MARINE ENERGY



Historically growing fast

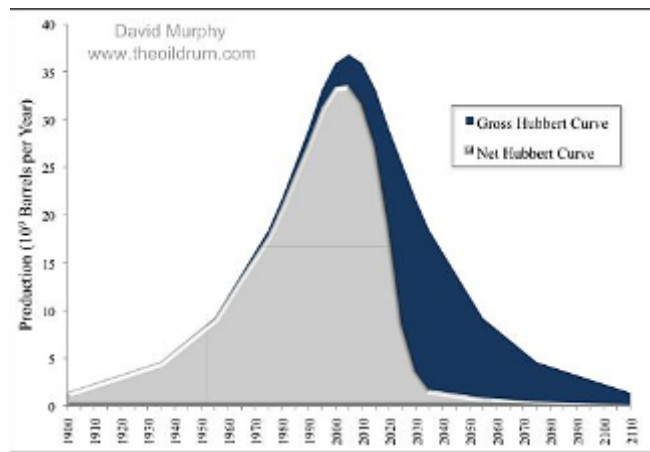
Projections for yet more growth

Offshore Wind Installed Capacity, Base Scenario, World Markets: 2011-2017



(from Pike Research's *Ten Trends to Watch...*)

Remind ourselves about oil





WHERE DOES THE SCOTTISH MARINE ECONOMY FIT IN?

DISCUSSION 1

- An opportunity to pause and discuss ‘sectors’ in Scotland’s marine economy
- We have perhaps identified FOOD, ENERGY (and perhaps chemicals) as clear drivers
- What else is strategically important in a “Productive Seas” sense?
- What have we not spoken about yet?
 - We’ll come on to specific ‘constraints and challenges’ later
 - But are there generic issues we need to speak about now?



DISCUSSION 1

2. Which of the following sectors do we think will grow significantly – and/or which of them should grow, if we had our way?

DISCUSS.

Will grow
anyway

Should be
actively
encouraged

	Will grow anyway	Should be actively encouraged
Coastal defences		
Renting of water transport equipment		
Aquaculture: salmon; marine trout; mussels; oysters; scallops;		
Commercial Fishing: inshore, deep water		
Processing and preserving of fish and fish products		
Sea and coastal water transport and supporting activities		
Marine leisure and tourism: natural heritage; tours; diving; sea angling; leisure craft		
Building and repairing of ships and boats		
Service activities incidental to oil and gas extraction excluding surveying		
Extraction of crude petroleum and natural gas		
Offshore renewable energy: wind; wave; tidal		
Offshore algae: bio-fuels; food; animal feeds; chemicals		
Offshore aquaculture: species?		
?		



INTERACTIONS AND SYNERGIES

CURRENT STATUS

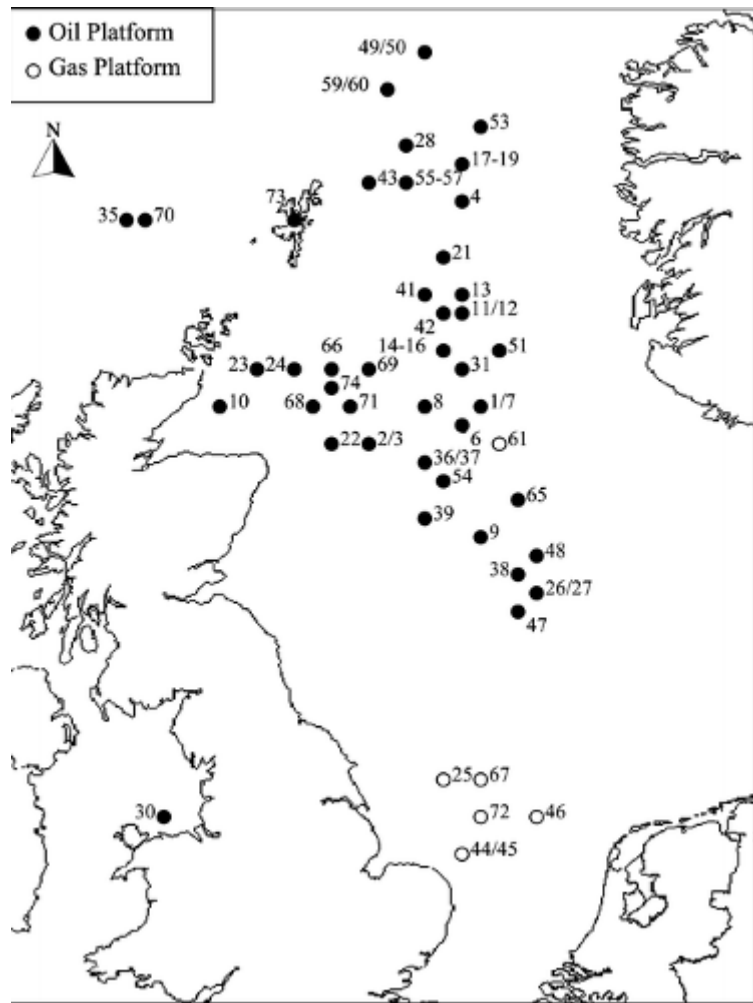
- No suggestion that there is anything amiss with the current status of all the sectors:
 - Salmon farming and shellfish farming in relatively sheltered sites, relatively close to the coast
 - A few newer salmon sites in slightly more exposed locations
 - Both successful, salmon especially (on a global scale!)
 - Both with a vision for growth, at least to 2020
 - Probably capacity for salmon to do so, in ‘familiar’ locations
 - Slightly more concern about sites for shellfish:
 - ‘Bathing Waters’ issues
 - Invasive species issues
 - Scotland leading the world in offshore renewables
 - Other sectors OK, within their current market situations
- But there really are only 2 or 3 ‘growth’ sectors: aquaculture, offshore renewables, and (hypothetically) offshore algae



MAIN POINT:
Not suggesting that any one sector needs to change right now – we are looking to the future.

Or is this true?
What did Discussion 1 reveal?

DISTANCES OFFSHORE

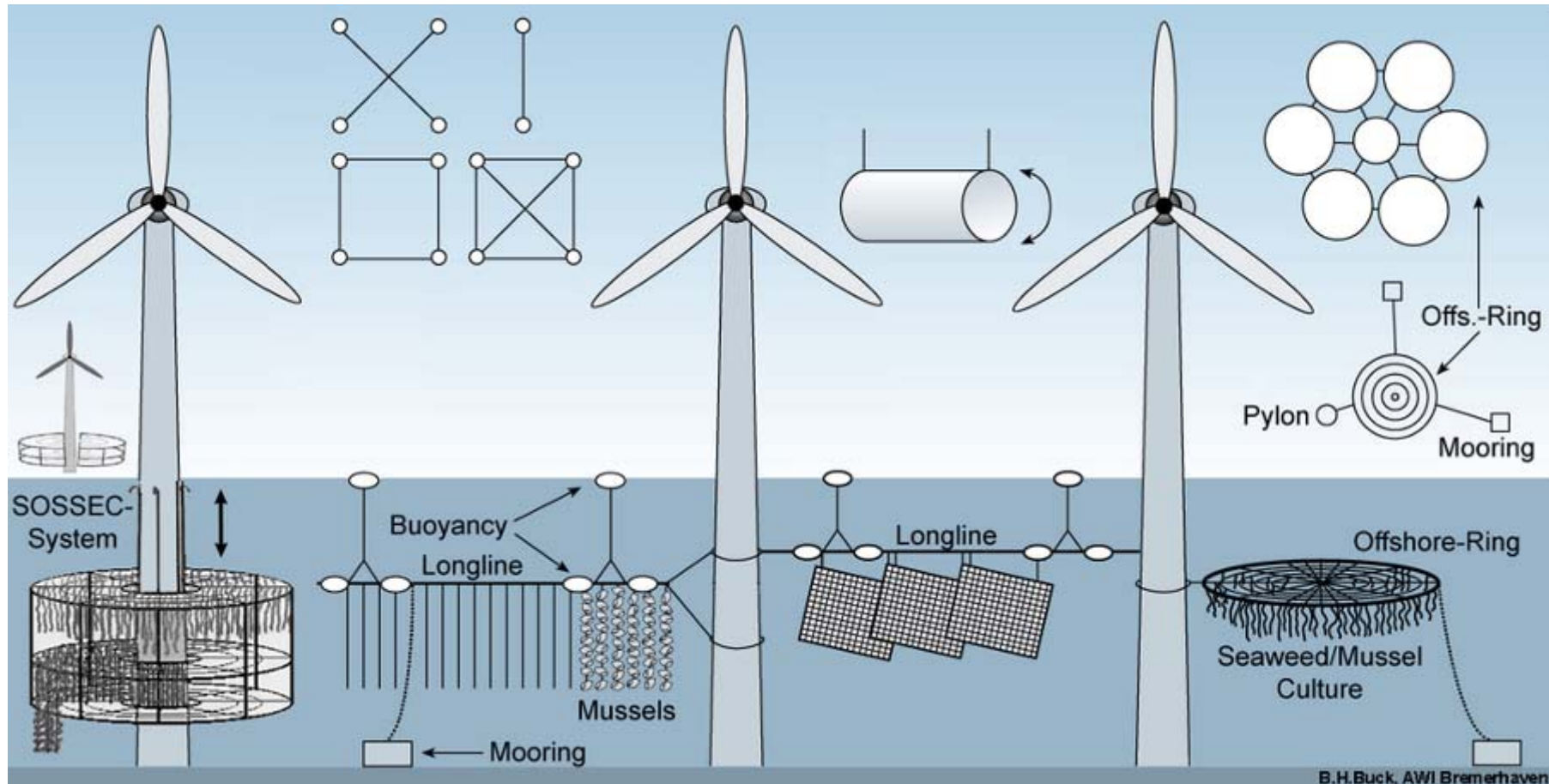


Oil & Gas



Offshore Wind Turbines

IDEAS THAT ARE BEING EXLORED (But not in Scotland yet)



INTERACTIONS AND SYNERGIES

- Much depends on what our discussions agreed the 'growth sectors' were
- They can continue to grow on their own – why interfere?
- But could they work together?

SOME THOUGHTS:

SECTORS	WHY	WHY NOT	PARTNERS
Finfish and Shellfish + Oil & Gas	Large potential; Away from public; etc	Too far away; Old oil infrastructure	Who???
Finfish (salmon) + Energy renewables	Large potential; accessible distance, discrete; replace lost fishing; <i>others?</i>	High energy seas = design + biological issues; feed sustainability; <i>others?</i>	No clear champion; existing multinationals eventually; role for fishermen?
Mussels + renewables (what type of renewable?)	Large potential; accessible distance, discrete; replace lost fishing; good growth in experiments; <i>others?</i>	High energy = attachment & management issues; <i>others?</i>	No clear champion; fishermen & vessels used to these conditions; skill transfer with shellfish farmers;

Just some ideas to stimulate discussion.....

DISCUSSION 2

1. We decided that **WHAT** were the decadal growth areas for Scotland. Is there any synergy between these and each other or any other marine sector, old or new?

DISCUSS:

- Identify pairs
- Why is there a chance of synergy, and why is it desirable?
- What could go wrong with this idea?





DISCUSSION 2 (Page 2)

SECTORS	ADVANTAGES	CHALLENGES	PARTNERS



CONSTRAINTS

HOW TO DRIVE NEW SECTORS FORWARD

- Business identifies a new opportunity and moves forward anyway
 - The State helps or hinders in terms of regulatory landscape
 - The State might share in the investment in innovation:
 - Funding for research
 - Funding for pilot scale development
 - Funding for commercial development – one-off
 - Funding for interim subsidy while sector develops

Government

This is obvious, for government, once it understands the proposition

OR

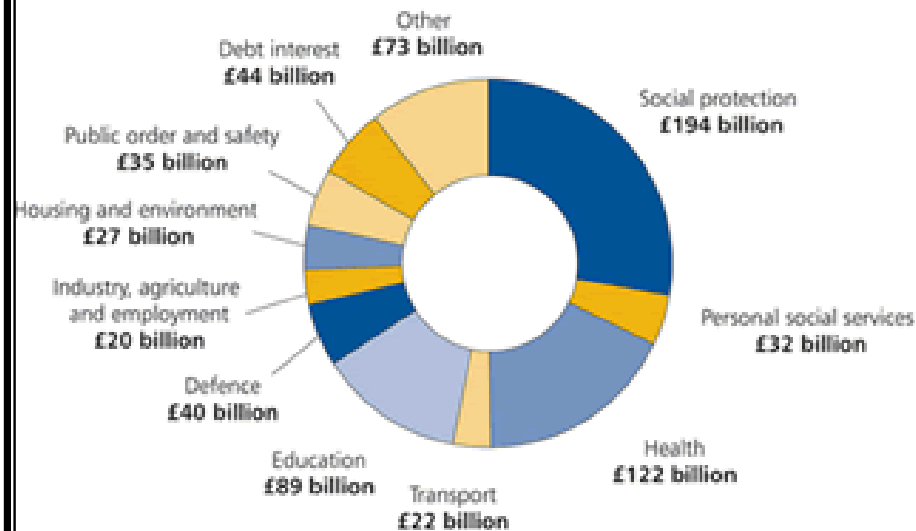
- Current business does not champion a new opportunity, although it clearly *seems* to exist
 - Too busy with ‘core business’
 - Would like to move, but too small to take a risk
 - Lack of skills
 - Lack of complete faith in the ‘idea’ – credibility gap
- OR
- Anything in between: which is the most likely scenario.

These scenarios are more challenging.
Government can help by:
a) Funding pure research
b) Funding applied research
c) Funding pilot studies
d) Encouraging knowledge-sharing

GOVERNMENT SUPPORT – R&D; INNOVATION; GENERAL

Government spending 2010-11

Total spending - £696 billion



Net Government Spending on R&D (2008/9)

- Research Councils £2.98 billion
- HE Funding Councils £2.27 billion
- Civil Departments £2.17 billion
- Defence £1.99 billion

TOTAL: £9.37 billion

TSB

- Avg. £0.23 billion p.a. (2008 – 2011)

Of which EFF:

- Avg. £0.02 billion p.a. (2007 – 2013)

EU Structural Funds

- Avg. £1.3 billion p.a. (2007 – 2013)

Key point is that there is capacity for government to fund innovation in the marine economy, in various ways – if we can demonstrate potential

DISCUSSION 3



1. We've identified **WHAT** as possible growth areas for Scotland's marine economy, whether **integrated** with others or independent. Why should government support development and innovation in these sectors:
 1. Through science funding
 2. Through pilot scale commercial development
 3. Through structural/development support mechanisms

DISCUSS:

- 4 reasons why government (or anyone else, even us) might be cautious about support or investing effort & resources
- For each, 3 things we should/could do to improve credibility/confidence or encourage seed/pilot investment



DISCUSSION 3 (Page 2)

Sector/Opportunity:

Knowledge or credibility or strategic investment gap	Action to Bridge Gap - 1	Action to Bridge Gap - 2	Action to Bridge Gap - 3
1.			
2.			
3.			
4.			

SUMMARY & OUTPUTS



- We have covered a lot of ground
- We have:
 - Identified growth areas in the Marine Economy for Scotland
 - Identified opportunities for synergy and integration
 - Identified constraints – and suggested some solutions
- Next Step:
 - SARF will collate and summarise your 3 hand-out sheets
 - SARF will prepare a short paper on the workshop
 - It will be published on the SARF website (as well as included in the MASTS event proceedings)
 - If appropriate, SARF will actively disseminate it to key Scottish Government policy teams

Thank you all, and a safe journey home

