



Blue Growth

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

Annex 3 General background scenarios

Call for tenders No. MARE/2010/01

Client: European Commission, DG MARE

Rotterdam/Brussels, 13 July 2012



Blue Growth

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

Annex 3 General background scenarios

Client: European Commission, DG MARE

Rotterdam/Brussels, 13 July 2012

About the Consortium



At Ecorys we aim to deliver real benefit to society through the work we do. We offer research, consultancy and project management, specialising in economic, social and spatial development. Focusing on complex market, policy and management issues we provide our clients in the public, private and not-for-profit sectors worldwide with a unique perspective and high-value solutions. Ecorys' remarkable history spans more than 80 years. Our expertise covers economy and competitiveness; regions, cities and real estate; energy and water; transport and mobility; social policy, education, health and governance. We value our independence, integrity and partnerships. Our staff is formed by dedicated experts from academia and consultancy, who share best practices both within our company and with our partners internationally.



Deltares is a leading, independent, research institute and specialist consultancy in matters relating to water, soil and the subsurface. We apply our advanced expertise worldwide to help people live safely and sustainably in delta areas, coastal zones and river basins. Deltares has the knowledge and resources to tackle water and subsurface issues worldwide in an integrated fashion. This means we never focus exclusively on technological issues. Our approach invariably takes account of ecological factors and administrative constraints such as spatial planning, with all the associated policy agendas, competing interests, and legal and economic processes. The integrated application of our various areas of sophisticated know-how, produces solutions that are more sustainable, optimally endorsed by the stakeholders and often, more economical.



Oceanic Développement was founded in 1992 at Concarneau - France, at the core of the European seafood industry, in one of the main fishing ports in France. The company expertise is focused on fisheries and the fishing industry. Since its establishment in 1992, the company gained experience and references on the following areas:

- Consulting: our consulting activity is covering all the fisheries and fishing activities, from the stock evaluation and catches to the marketing via processing, including Monitoring-Control-Surveillance and fishing port management;
- Technical assistance: Oceanic Développement manages scientific observers programs, catches control programs, MCS training programs;
- Expertise and know-how of the company are focused on fisheries sector only.

ECORYS Nederland BV
Watermanweg 44
3067 GG Rotterdam

P.O. Box 4175
3006 AD Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com
Registration no. 24316726

W www.ecorys.com

1 General background scenarios

The general background scenarios presented in section 3.1 of the main report were developed by a method that can be characterised as the 'Shell approach', explained in detail in Van der Heijden (1996). This scenario approach provides a way to incorporate external uncertainties in the strategic planning of organisations. It starts from the possible developments in the external world, i.e. the developments outside the control of the organisation. Within a framework that is constructed from selected trends (the ones which are both most relevant to the organisation and most uncertain), plausible storylines are developed for the different combinations of these selected trends. The storylines are combined in scenarios, which are then used as a testing ground for planned activities.

External drivers and trends for the maritime economic activities

External drivers are developments in the contextual environment (i.e. the environment that cannot be influenced) which are expected to determine the development of the subject. The drivers are organised in five main categories: Demography, Economy and market, Technology and science, Environment inc. climate change, Politics and institutions (see Table 1). In literature often a sixth main category is used: Sociology. Because in this study no relevant trends in that category could be identified, it is omitted. Within the five categories, important subcategories were identified in existing literature: EC (2008); EC-DGResearch (2009); EEA (2010); IEA (2009); Lennert and Robert (2007); Shell (2008); UK Government Office for Science (2011); UN (2007), US NIC (2008), included in Table 1 as subcategories. Then in the descriptions of each of the maritime economic activities (Annex 8) the relevance of these drivers and trends for the specific activity were identified.

Table 1 shows that Economy is clearly the most frequently mentioned category. Globalisation and increasing international competition are relevant for all economic activities investigated. They thereby provide a strong urge to look beyond the EU borders. In most, but not all, economic activities these drivers appear to be seen as a threat.

Political and regulatory commitments to sustainability are mentioned nine times. For some economic activities this driver is seen as a constraint or a source of an unequal playing field (e.g. in shortsea shipping), while for others it is a main incentive to growth, because it directly (as in environmental monitoring) or indirectly favours the economic activities (offshore wind, ocean energy).

Increasing scarcity of fossil fuels is a recognised and here re-confirmed driver for the majority (8) of the economic activities considered. As with sustainability, some economic activities are favoured by this trend (offshore wind, ocean energy), while others are affected adversely (desalination, tourism). The effect on the economic activities Oil and gas is ambiguous. Increasing scarcity signals the end of activities, but increasing prices are at the same time incentives to new explorations.

Seven of the drivers are mentioned in one economic activity only, and an additional two in two activities. This serves as an indication that the maritime economic activities have a quite diverse character. General conclusions and recommendations should therefore be treated cautiously.

Table1 External drivers for the sub-economic activities, their estimated relevance and certainty.

External drivers category	subcategory	nr of times mentioned	estimated degree of certainty*	Mature stage				Growth stage				(Pre-)development stage								
				Shortsea shipping	Offshore oil and gas	Coastline tourism and yachting	Coastal protection	Offshore wind	Cruise tourism	Marine aquatic products	Maritime monitoring and surveillance	Blue bio-technology	Ocean renewable energy	Marine minerals mining						
Demography	population growth	1	++																	
	ageing	3	++																	
	urbanisation	1	++																	
	increasing water and food scarcity**	1	++																	
	increasing international migrations	1	+/-																	
Economy and market	economic climate, economic crisis	5	--																	
	globalisation/increasing internat.	11	+																	
	striving after self-reliance	3	+																	
	increasing economic role Asia	2	++																	
	increasing price volatility	2	-																	
	increasing scarcity of raw materials	1	++																	
	increasing scarcity of fossil fuels	7	++																	
Technology and science	upcoming role Asia in R&D	1	+																	
	technology is driver for growth***	4	-																	
Environment, climate change	pressures on environment/space****	4	++																	
	climate change, sea level rise	4	+																	
Politics and institutions	increasing emphasis on sustainability*****	8	+/-																	
	increasing role of EU*****	5	+/-																	
	retreating public sector	1	+/-																	
	development of 'weak states'	1	+/-																	

* Certainty scores from literature and authors, see explanation in text.

**Increasing water scarcity as caused by increasing demand for water by increasing population and increasing per capita use. Not including stress caused by decreasing supply, result of climate change.

*** Technological development is important for virtually all maritime economic activities. In most cases technological development is driven by the sector itself, and thus is part of the Response Capacity.

Here the scope is restricted to world-wide, external technological developments that offer new growth potential, such as ICT, nanotechnology and DNA-technology.

**** Pressures on the environment/space: physical changes in the environment and reduced availability of space, as a result of socio-economic use and waste discharges

*****Both as result of policy and underlying public opinion.

*****EU policy is an external driver for non-governmental stakeholders, while for DG Mare it is part of both the contextual and the transactional environment. On balance the bias is on the external character, hence an external driver.

Relevance and uncertainty of the drivers and trends

For the construction of scenarios it is necessary to identify the external drivers which are both relevant and uncertain. Table 1 scores the external drivers on relevance and certainty. The indicator for relevance is the number of times a trend was mentioned in the economic activities, thus giving an impression at the combined level of all economic activities. The degree of certainty was derived from the literature cited where possible, and where not available estimated by the authors of the report. Relevant considerations in this step:

- Demographic trends: there is broad consensus in the literature cited on the general direction and pace of these trends.
- Economic and market trends are more controversial. In the long term, growth may be expected and the financial crisis will be overcome, but for the time horizon of 2025 developments are very uncertain, especially in Europe. Globalisation and striving for self-reliance are both quite persistent trends in themselves, therefore rated a '+'. The uncertainty arises where these two trends meet, counteracting each other. The increasing economic role of Asia is regarded as a relative certainty, at least for the coming decade; related to that, also increasing scarcity of fossil fuels and raw materials are regarded rather certain. Price volatility will depend on the way global governance will be shaped. That can develop in very different ways, also in the short term, therefore rated as '-'.
- Technology and science: the upcoming role of Asia seems clear (see amongst others the R&D mining results, section 2.4 of the main report), therefore '+'. New technologies on the contrary will still have to prove their (economic) viability for the economic activities, therefore rated '-'. Technological innovation is a relative certainty, but part of the Response Capacity, as explained above.
- Environment and climate change: pressures on the environment and on the available space are consequences of economic and demographic trends. As these are growing, so are the expectations for the resulting environmental pressures. A possible way to reverse the trend would be a transition to sustainable practices world-wide, and though this is a desired future state, it is not expected to be reached within the time horizon of this study. Climate change and sea level rise are expected to continue.
- Politics and institutions is overall the most uncertain category of drivers. By its nature it implicitly includes normative uncertainties, i.e. uncertainty in the ways the general public looks on the tasks and roles of EU-, national and local authorities.

From drivers and trends to scenario axes

- The top-5 for combined scores on relevance and uncertainty are: economic climate, technology, increasing price volatility, increasing emphasis on sustainability, and increasing role of the EU. These trends provide the differentiating factors between scenarios.
- The top-5 for combined scores on relevance and certainty are: increasing scarcity of fossil fuels, globalisation, increasing pressures on the environment, ageing population, and ex aequo: increasing role of Asia / climate change. These trends are included in all of the scenarios.

From the five most relevant and uncertain drivers, economic climate and increasing price volatility were combined, coupling for both drivers the worst and best situations. Technology is included in the storylines of the scenarios, as it often correlates well with economic development. The increasing role of the EU was not taken into consideration here, in order not to repeat discussions which are already sufficiently addressed. The resulting axes of the scenario matrix are: slowly recovering, strongly fluctuating world economy vs. stable worldwide economic development; and limited vs. strong emphasis on sustainability.



Sound analysis, inspiring ideas