EURO-BASIN
BASIN SCALE ANALYSIS, SYNTHESIS AND INTEGRATION

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Deliverable 7.3 Report on exploitation and management scenario workshop

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Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission)	X
RE	Restricted to a group specified by the consortium (including the Commission)	
CO	Confidential, only for members of the consortium (including the Commission)	

Deliverable 7.3 Report on exploitation and management scenario workshop
is a contribution to

Task 7.2 "Predict the distribution and production of key fish stocks based on climate change projections"

Task 7.3 "Develop a bio-economic model of fish commodities in the North Atlantic"

Responsible: Jose Fernandes

Start month 1, end month 24

1. Executive Summary:

A workshop to explore "*Scenarios about the futures of the North Atlantic basin and bio-economic modelling*", was conducted in Paris, 11-12 April 2013. The workshop was Milestone 37 of Euro-BASIN. In this section the final scenarios defined are presented. In the next section, the relevance of the scenarios for the Euro-BASIN project and to policy is discussed. The last section contains the main discussion points raised during the workshop, leading to the conclusions presented in sections 1 and 2.

We conceive scenarios as plausible futures that arise from particular human actions, which can be illustrated using bio-economic models. Each scenario allows the definition of specific parameters that are used as input to the model simulations; Output of the simulations are designed as communication tools. The scenarios are defined in the context of the tasks and models used in WP7, which can be considered in WP5 if adapted appropriately as discussed at the October 2013 Euro-BASIN annual meeting.

Three scenarios were defined at the workshop, based on expected trends of changes from the present state (the "baseline" scenario). These scenarios reflect tensions across two trade-offs: global vs. local world; and ecologically driven vs. economically driven world. The limited number of scenarios considered reflects the costs of running the models as well as in interpreting the results. The scenarios are in harmony with scenarios defined for other European projects such as Meece (www.meece.eu) and Vectors (www.marine-vectors.eu), but here we define them relative to a "baseline" scenario. These scenarios and story lines are:

- Baseline – Scenario based on the assumption of continuity of present trends, in terms of climate, fish population trends, fisheries management regulations, and economic constraints and regulations;
- Free trade – This scenario assumes an increasing trend towards a less regulated world, based on free trade, less subsidies and less regulation;
- Fortress States – This scenario assumes a return to strong national regulations, import taxes, decided by governments concerned by economic profits. Aquaculture technology is assumed to improve to increase supplies to meet local demand without imports of fish products.

- Global commons – This scenario assumes that global authorities will regulate fisheries in pursuit of ecologically sustainable goals. Small pelagic fish stocks are exploited at levels below MSY to enhance ecosystem productivity, in particular of higher trophic level fish stocks. Other stocks are exploited at MSY.

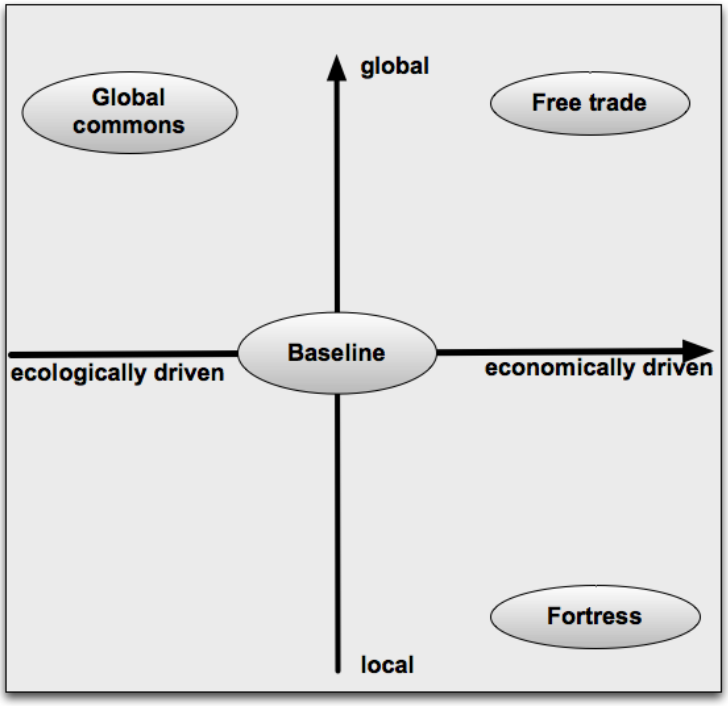

Figure 1: Definition of three scenarios in terms of changes from the baseline (current) trend. The vertical axis represents the spatial scale (local=national vs global) and the horizontal axis the trade-off between ecological and economic considerations.

While these are the scenarios defined at the workshop, we leave open the possibility of modifying them if additional knowledge or practical issues demand it. In terms of climatic emission scenarios, scenario RCP8.5 (Representative Concentration Pathway rising radioative forcing to 8.5 W/m² in 2100) has been selected for the EURO-BASIN project. It must be acknowledged that in the time-frame considered in the project (2040), there is little difference in the consequences between climatic scenarios.

The next step involves translation of these scenarios have into model parameters of the variables that can be managed. The parameters used are: Fishing mortality, EU and non-EU fish demand, aquaculture growth rate and efficiency, fishing costs/subsidies and taxes (Table 1). The main goal in setting values to these parameters is to provide contrasting scenarios.

Factors		Baseline (B)	Free trade (FT)	Fortress (F)	Global Commons (GC)
Fishing Mortality	Forage fish	1 * MSY	1.5 * MSY	1 * MSY	0.5 * MSY
	Other fish	1 * MSY	1.5 * MSY	1 * MSY	1 * MSY
Demand Increase	EU	1 * Population	1 * Population	1 * Population	1 * Population
	Out EU	2 * Population	2 * Population	1 * Population	2 * Population
Aquaculture	Grow rate	5% per year	7% per year	7% per year	5% per year
	Conversion F	1	0.8	0.8	0.6
Cost/subsidies (% catch value)		60	20	80	40
Taxes (% catch value)		50%	50%	200%	50%

Table 1. Scenarios defined in terms of factors that can be applied in the models. Note that the demand in EU is considered unchanged across scenarios. 2 Population means doubling of human population size between 2000 and 2040.*

2. Relevance to the project & potential policy impact:

The aim of the workshop was to define plausible futures in relation to the North Atlantic basin. Such scenarios define the framework for the integrated bio-economic model in WP7.3. The scenarios are expected to be relevant to WP5 in their own activities. For this reason, the leader of WP5 attended the workshop. The scenarios may also be of interest to WP8, and this was discussed at the October 2013 Euro-BASIN annual meeting. The conclusion was that the scenarios are a useful starting point for other packages and in the line with scenarios defined in other European projects. It was agreed that the objectives of the project are to present exploratory scenarios (as opposed to normative or predictive).

It was agreed that the workshop would help:

- To design a general framework to achieve the objectives of the WP7.
- To provide a framework to be used as a tool to investigate the functioning and sensitivity of the bioeconomic system.
- To better understand how the habitat (bioclimate) model results can be exploited by the economic network model, and define additional simulations needed of the bio-climate model.

The workshop was intended to present a coherent framework of results that would provide policy makers with a range of integrated plausible medium to long-term future fisheries scenarios under climate change. This framework is not expected to inform short-term management procedures for fish stocks in the North Atlantic.