Participatory selection of ecosystem services
Insights from
Lisbon Metropolitan Area, Portugal

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ACES A Community on Ecosystem Services
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Presentation outline

1. Context
2. Goal
3. Lisbon Metropolitan Area
4. Participatory approach
5. Results
6. Discussion

Context

- The importance and benefits of involving stakeholders in decision making are increasingly recognized

- Stakeholder participation should take place as early as possible and throughout the decision making process

Context

- It is still difficult to comprehensively assess a large suite of ES ➔ a selection of a narrower set of ES, on which to focus in a given assessment, is usually done

- Selection of ES is often done based on data availability, abundance of studies covering similar ES or on the state of development of existing tools

Context

Documented and tested procedures to select ecosystem services, namely through participatory processes are scarce

Why is this important?

Context

- The value of an ES is not only dependent on ecosystem structures, functions and processes but also on human preferences, cultural factors, institutions and other societal features

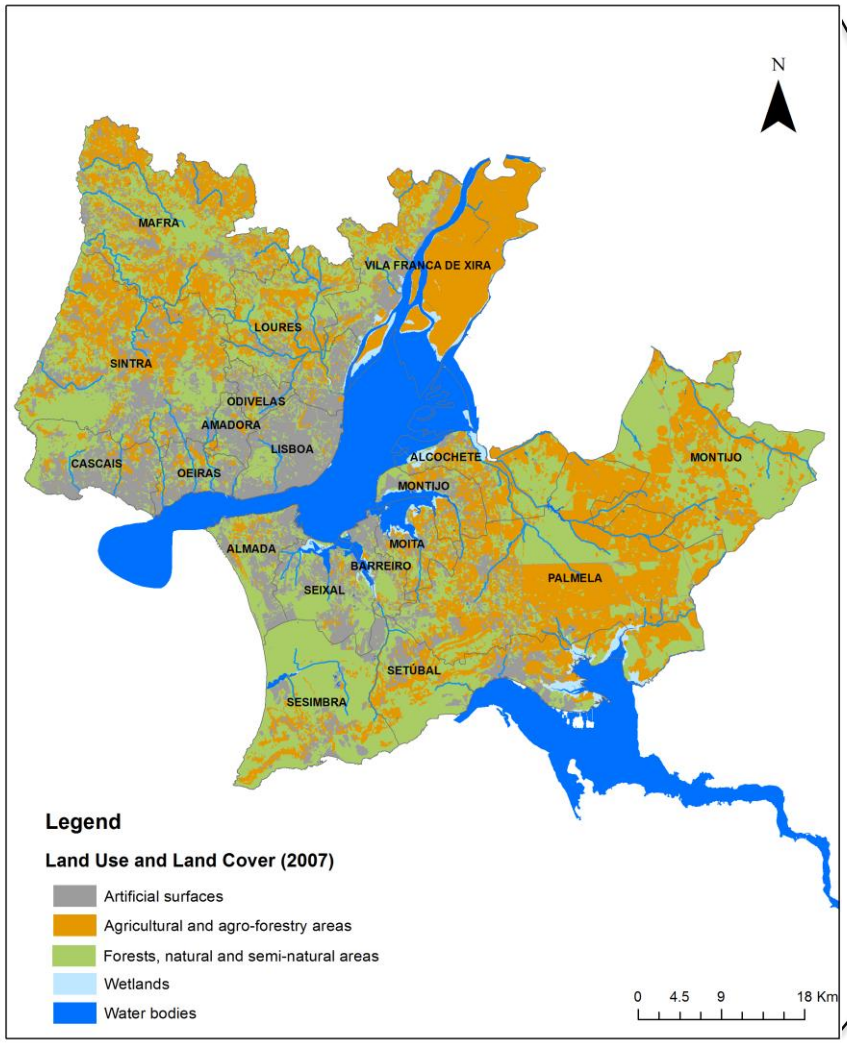
- It helps increasing the usefulness of ES assessments to stakeholders and policy processes, therefore increasing its impact on society

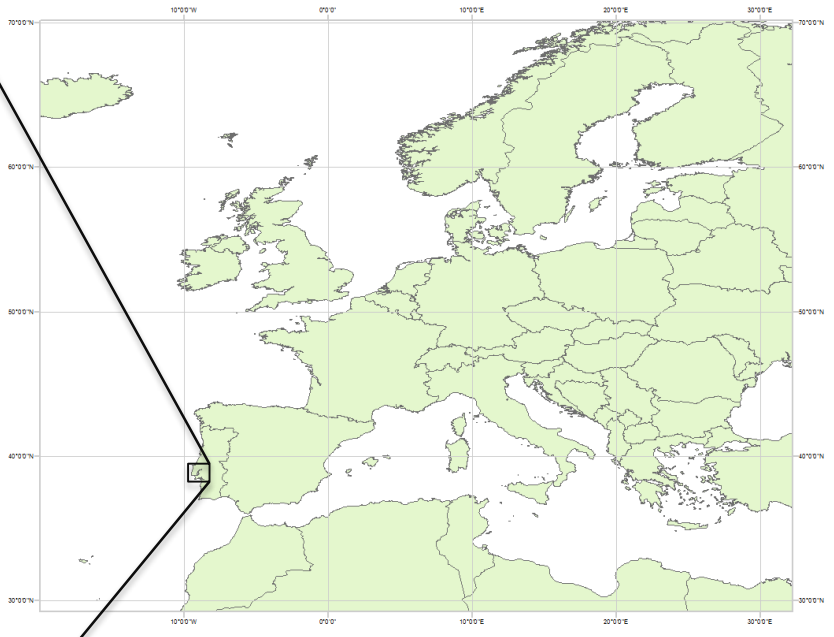
Goal

To explore a participatory approach for ES selection

This approach is designed to incorporate the views of different kinds of stakeholders in a planning context

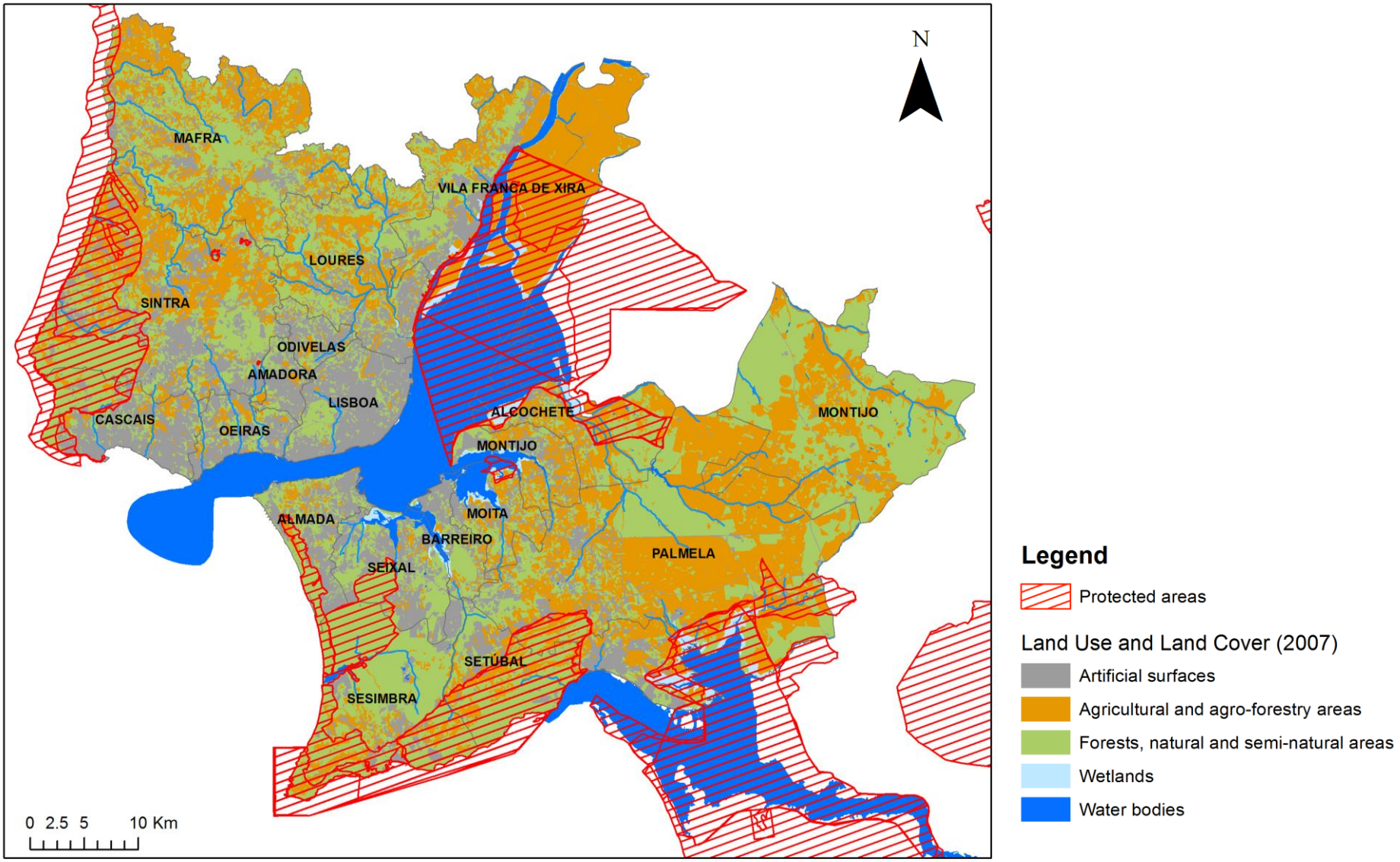
Lisbon Metropolitan Area





Source: Instituto Geografico Portugues

Lisbon Metropolitan Area



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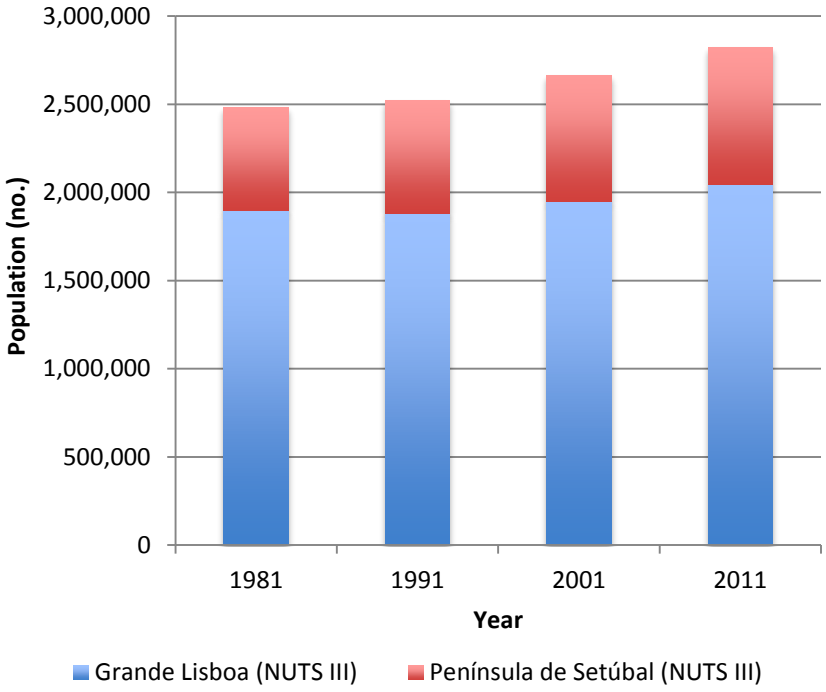
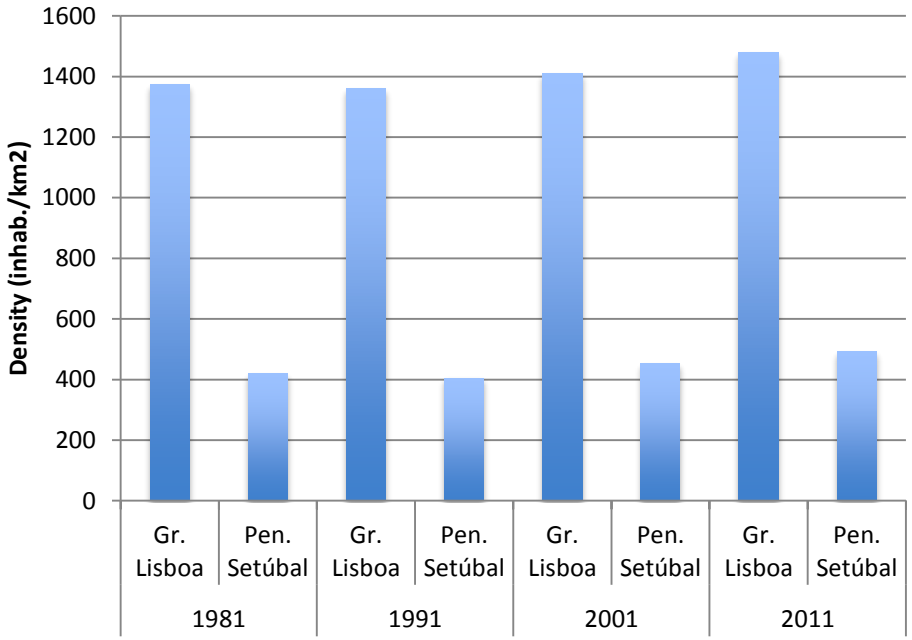
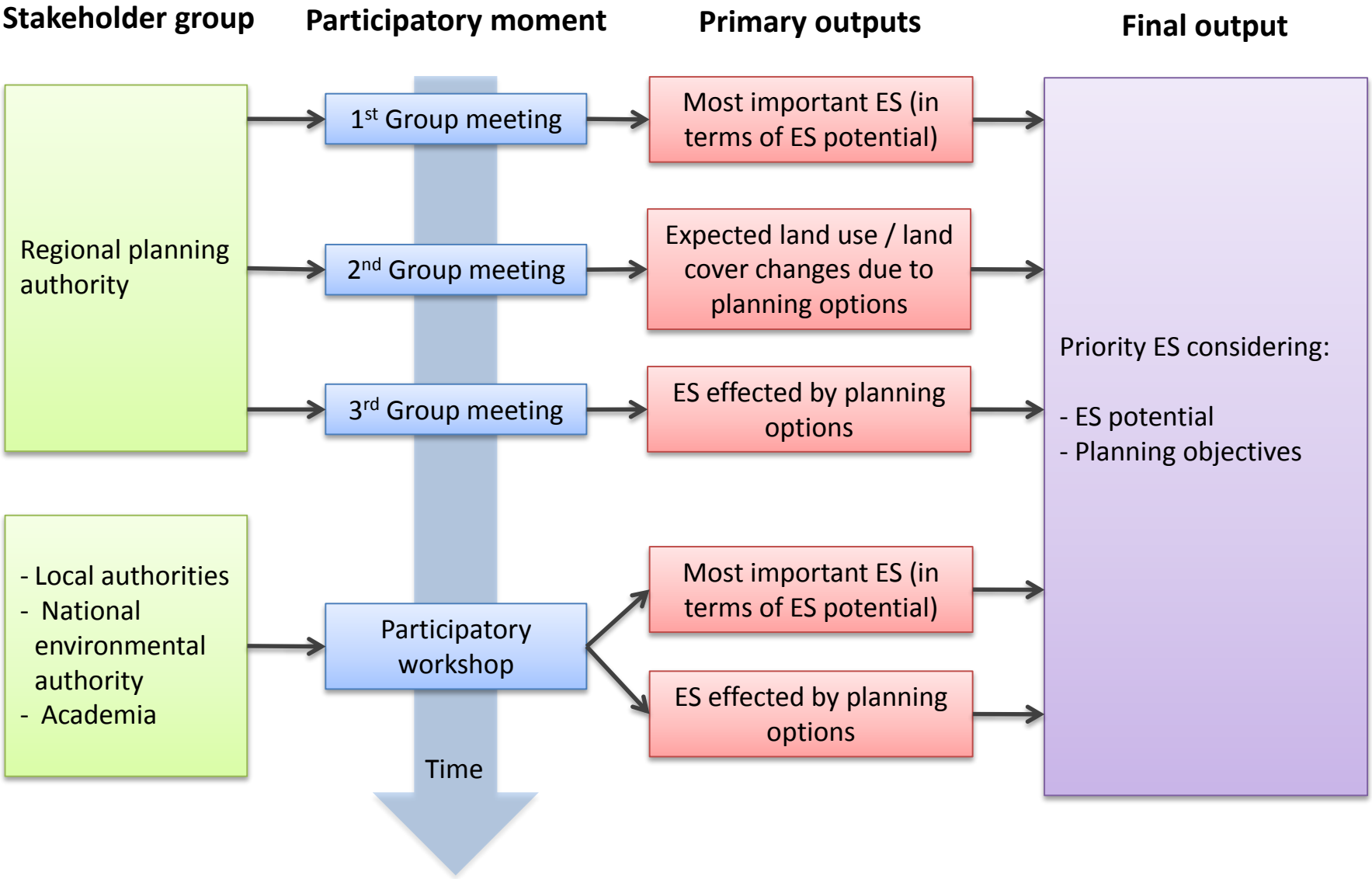
Lisbon Metropolitan Area





- Urban area that concentrates more people in Portugal: 2 821 876 inhabitants in 2011
- 3rd largest urban region in Iberian Peninsula after Madrid and Barcelona

Participatory approach



Results

Focus group

Section	Division	Group	Class	Number of votes	Aggregation (no. of participants)
Provisioning	Nutrition	Biomass	Cultivated crops	7	-
		Water	Ground water for drinking	5	-
	Materials	Water	Ground water for non-drinking purposes	4	-
Regulation and maintenance	Mediation of flows	Mass flows	Mass stabilisation and control of erosion rates	6	A (4)
			Buffering and attenuation of mass flows	4	A (4)
		Liquid flows	Hydrological cycle and water flow maintenance	7	B (6)
			Flood protection	6	B (6)
	Maintenance of physical, chemical, biological conditions	Atmospheric composition and climate regulation	Micro and regional climate regulation	5	-
Cultural	Physical and intellectual interactions with biota, ecosystems, and land-/seascapes [environmental settings]	Intellectual and representative interactions	Heritage, cultural	7	C (5)
			Entertainment	5	C (5)

Results

Focus group

Domains for Vision Implementation (and targets)	Lines of Action	Key Objectives	Ecosystem services (CICES code; + / - / ?)[a]	Comments
C. Sustainability and Synthony with Nature **Targets:** # Maintenance or increase of ERPVA area with land-use that favors nature and biodiversity conservation # 80% of quarry areas with exhausted geological resources with Landscape and Environmental Recovery Plan # Decrease in the population living in risk areas (flash flooding and landsliding) # Final energy intensity less than 137,4 tep/M€ # 31% share of renewables in total final energy consumption # More efficient mobility in terms of GHG # Complying with legal limits for air quality	C1. To ensure the functioning of the Metropolitan Ecological Network	To preserve biodiversity		
		To increase public use green spaces		
	C2. To ensure the functioning of the natural systems	To ensure the quality of the Tejo/Sado aquifer		
		Environmental reclaiming of contaminated soils		
		To diminish pressure on maritime and estuarine fronts		
	C3. To use and enhance resources in a logic of sustainability	To preserve soils with more agricultural and forest value		
		To enhance tourism in the rural space, ensuring synergies with the agricultural activity		
		To know, conserve and enhance the geological heritage		
	C4. To avoid and mitigate risks	To reduce population exposure to natural, technological and environmental risks		
	C5. To invest in energetic sustainability as a lever for innovation and competitiveness	To reduce dependence in fossil fuel sources		
		To reduce energetic dependence from the exterior, increasing supply security		
		To increase energy efficiency and the exporting capacity of high technological intensity based on renewable energies and energy efficiency		
	C6. To promote a more sustainable mobility	To reduce emission of atmospheric pollutants		
		To increase energy efficiency		

Results

Focus group

Section	Division	Group	Class	Examples
1. Provisioning	1.1. Nutrition	1.1.1. Biomass	1.1.1.1. Cultivated crops	Cereals (e.g. wheat, rye, barely), vegetables, fruits etc.
			1.1.1.2. Reared animals and their outputs	Meat, dairy products (milk, cheese, yoghurt), honey etc.
			1.1.1.3. Wild plants, algae and their outputs	Wild berries, fruits, mushrooms, water cress, salicornia (saltwort or samphire); seaweed (e.g. Palmaria palmata = dulse, dillisk) for food
			1.1.1.4. Wild animals and their outputs	Game, freshwater fish (trout, eel etc.), marine fish (plaice, sea bass etc.) and shellfish (i.e. crustaceans, molluscs), as well as equinoderms or honey harvested from wild populations; Includes commercial and subsistence fishing and hunting for food
			1.1.1.5. Plants and algae from in-situ aquaculture	In situ seaweed farming
			1.1.1.6. Animals from in-situ aquaculture	In-situ farming of freshwater (e.g. trout) and marine fish (e.g. salmon, tuna) also in floating cages; shellfish aquaculture (e.g. oysters or crustaceans) in e.g. poles
		1.1.2. Water	1.1.2.1. Surface water for drinking	Collected precipitation, abstracted surface water from rivers, lakes and other open water bodies for drinking
			1.1.2.2. Ground water for drinking	Freshwater abstracted from (non-fossil) groundwater layers or via ground water desalination for drinking

Results

Focus group

Ecosystem services	Effect	Planning objectives
1. Production	+	To consolidate and improve agricultural and forestry areas To re-orient urban demand to rehabilitation of existing urban areas To reinforce and diversify the supply of infrastructured areas for economic activities To invest in urban rehabilitation instead of new construction for housing
111. Biomass	+	To enhance tourism in the rural space, ensuring synergies with the agricultural activity
1111. Cultivated crops	+	Environmental reclaiming of contaminated soils
1115. Plants and algae from in-situ aquaculture	+	To transform AML in a pole of Sea research and exploitation
1116. Animals from in-situ aquaculture	+	To transform AML in a pole of Sea research and exploitation To increment in a sustainable way fishing and aquaculture activities
112. Water	+	To ensure the quality of the Tejo/Sado aquifer To preserve water quality and improve supply efficiency To improve efficiency in water consumption
121. Biomass	+	To preserve soils with more agricultural and forest value
122. Water	+	To ensure the quality of the Tejo/Sado aquifer To preserve water quality and improve supply efficiency
13. Energy	+	To reduce dependency in fossil fuel sources To reduce energetic dependence from the exterior, increasing supply security To increase energy efficiency and the exporting capacity of high technological intensity based on renewable energies and energy efficiency
2. Regulation and maintenance	+	To re-orient urban demand to rehabilitation of existing urban areas

Results

Focus group

- All effects considered positive ➔ not surprising given regional spatial plan's contents

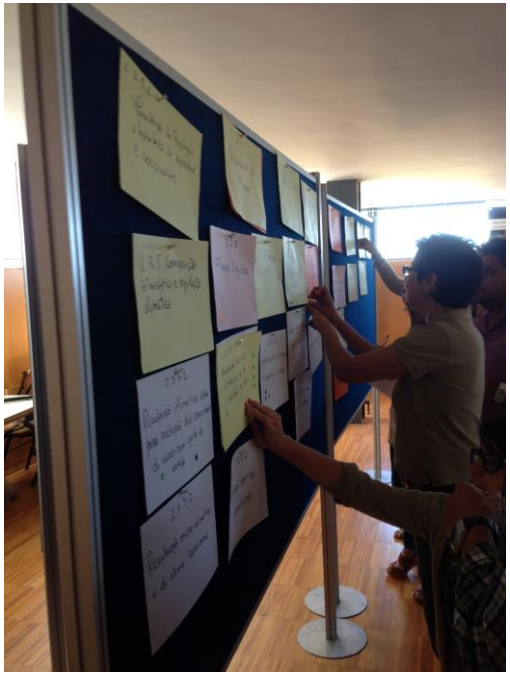
- It could be possible to identify potential trade-offs between ES, associated with planning objectives. In this case it is possible to identify planning objectives that will have synergistic (positive) effects on ES

- Some effects are actually more related with services provided by human systems than by natural systems (e.g. eliminate non-classical houses ➔ positive effect on disease control and aesthetic value

Results

Participatory workshop

- Pre-workshop questionnaire
- Training session
- Break-out groups
- Plenary voting



Results

Participatory workshop

Pre-workshop questionnaire

Section	Division	Group	Class	Votes (no.)
Provisioning	Nutrition	Water	Surface water for drinking	14
			Ground water for drinking	13
	Materials	Water	Surface water for non-drinking purposes	13
Regulation and maintenance	Mediation of flows	Mass flows	Mass stabilisation and control of erosion rates	14
		Liquid flows	Flood protection	16
	Maintenance of physical, chemical, biological conditions	Atmospheric composition and climate regulation	Global climate regulation by reduction of greenhouse gas concentrations	13
			Micro and regional climate regulation	16

Results

Participatory workshop

Pre-workshop questionnaire

Section	Division	Group	Class	Votes (no.)
Provisioning	Nutrition	Water	Surface water for drinking	14
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Results

Participatory workshop

Drivers vs. ecosystem services matrix

Driving forces	Affected ecosystem services (CICES code; + / - / ?)[a]
Expansion of agricultural area	
Decrease of forest area	
Expansion of industrial area	
Urbanization of non-urban areas	
Implementation of new transportation infrastructure (e.g. roads, railways)	
Dispersed settlements	
Espansion of green urban space	
Urbanization of river, estuarine and coastal margins	

Results

Participatory workshop

Most important drivers

- **Water consumption** (5/6 groups)
- **Expansion of urban green space** (3/6 groups)
- **Urbanization of coastal, estuarine and fluvial margins**
- **Territorial fragmentation**
- **Total energy consumption**
- **Passenger transport in own transportation** (2/6 groups)

Results

Participatory workshop

Break-out groups

- Besides **maintenance of the hydrological cycle and water circulation** there was no observed convergence into any ES

Results

Participatory workshop

Plenary voting

- Clearly converged on the services of **superficial and ground water for drinking**, followed by **mediation of liquid flows** (**hydrological cycle and water flow maintenance** was actually the only item to get votes from all stakeholder groups ➔ coherent with previous results)

Results

Participatory workshop

Plenary voting

- **Maintenance of physical, chemical, biological conditions** especially focusing on **Atmospheric composition and climate regulation** and more specifically on **Global climate regulation by reduction of greenhouse gas concentrations** also concentrated many participants' votes

Discussion

- Possible to identify priority ES for spatial planning, according to the views and opinions of a group of different types of stakeholders

- Identification of priority ES can be useful for:
  - spatial planning processes, usually faced with scarce resources and with the need to prioritize issues for decision making
  - Scoping process in SEA
  - Initial/rapid ES assessment

  This might not be the goal for other processes, it is dependent on the scope and goals of a given process or initiative

Discussion

- Use of CICES table
  - **Advantages:** allows flexibility ➔ stakeholders can refer to very specific ES (at class level) or to more general ES (ultimately at section level)
  - **Disadvantages:** not very user-friendly (too technical) ➔ for the context of this research, the use of not so technical ES classification systems (e.g. MA) could have facilitated the participatory process

Discussion

- Results of the case study represent the views of a limited number of stakeholder groups (with particular features like high educational level)

- In a real planning process, a broader number of stakeholder groups should be represented ➔ stakeholder mapping will vary according to context, scope, goals and other aspects of a given planning process

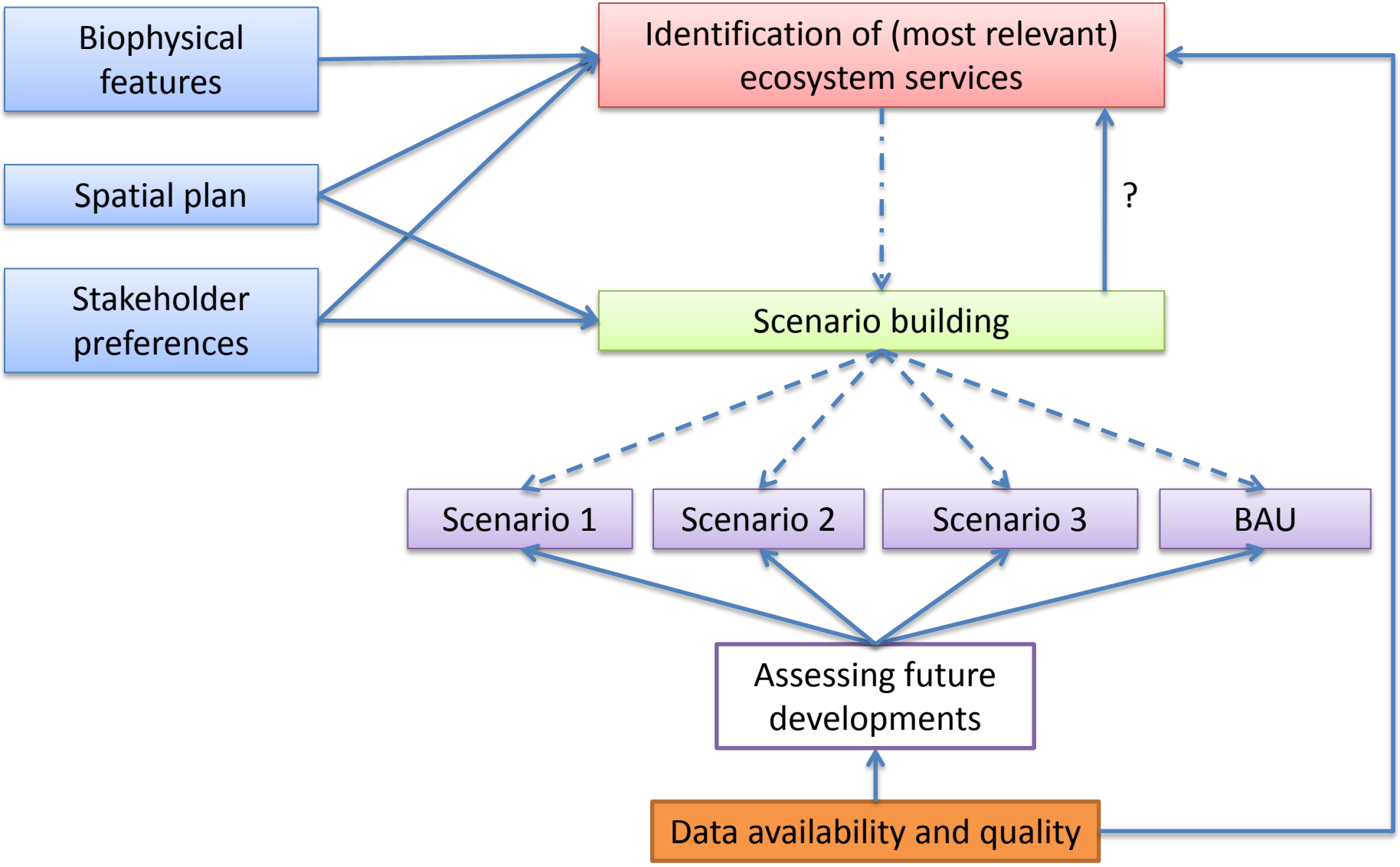
Discussion

Further steps:

- Preliminary analysis of results focused on agreements, looking at disagreements can also be revealing and useful for the planning process

- Integrating results of participatory process with a structured analysis of the regional spatial plan and the biophysical features of the region

Discussion


Biophysical features
Spatial plan
Stakeholder preferences
Identification of (most relevant) ecosystem services
?
Scenario building
Scenario 1
Scenario 2
Scenario 3
BAU
Assessing future developments
Data availability and quality

Thank you for your time!

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