Nature-based spatial planning through the concept of ecosystem services in Lisbon Metropolitan Area

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Presentation outline

1. Background
2. Lisbon Metropolitan Area
3. Assessing ecosystem services in Lisbon Metropolitan Area
Nature-Based Solutions and Ecosystem Services

• The concept of **ecosystem services (ES)** can help finding **nature-based solutions (NBS)** to the challenges that **spatial planning** has to address, like climate change or increasing urbanization

• ES are still poorly integrated in spatial planning practice
ES-related terminology practically absent from European policy and guidance framework for spatial planning (some references to notions related with the ES concept)

Background

Metropolitan regions

• Relevant for urban-rural analysis
• Regional scale:
  – Directly related with EU policies through the regional development and territorial cohesion policy (further emphasised by EU SD Strategy)
  – Frequently territorial delimitations follow more closely natural features (e.g. distinct landscapes)
  – Articulates national and local policies (strategic level but rather concrete)
ES-related terminology practically absent from Portuguese policy and guidance framework for spatial planning and poorly integrated in regional spatial plans (RSP)
Spatial planning practitioners/decision-makers:
(a) aware of the ES concept
(b) consider ES integration quite or very important
(c) perceive integration of the concept in RSP as fair or high

Lisbon Metropolitan Area

Source: Instituto Geográfico Português
• 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
Assessing ES in Lisbon Metro. Area

- Biophysical, social, economic features
- Planning documents
- Stakeholder preferences, opinions, perceptions

Identification of (priority) ecosystem services
Identification of main drivers of change

Scenario building

Scenario 1, Scenario 2, Scenario i, BAU

Analysis of changes in ES

Information

Procedure

Data availability and quality
Participatory selection of priority ES in Lisbon Metropolitan Area

- Focus group meetings with regional spatial planning authority
- Workshop with local authorities, national environmental authority and academia
### Assessing ES in Lisbon Metro. Area

<table>
<thead>
<tr>
<th>Ecosystem service</th>
<th>Planning objectives (P) / Drivers (D)</th>
<th>Effect</th>
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<tbody>
<tr>
<td>Water provisioning</td>
<td>(P) To ensure the quality of the Tejo/Sado aquifer</td>
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<tr>
<td></td>
<td>(P) To preserve water quality and improve supply efficiency</td>
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<td></td>
<td>(P) To improve efficiency in water consumption</td>
<td>+</td>
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<tr>
<td></td>
<td>(D) Water consumption</td>
<td>-</td>
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<tr>
<td>Mediation of flows</td>
<td>(P) To diminish pressure on maritime and estuarine margins</td>
<td>+</td>
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<tr>
<td></td>
<td>(P) To reduce population exposure to natural, technological and environmental risks</td>
<td>+</td>
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<tr>
<td></td>
<td>(P) Environmental reclaiming of contaminated soils</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>(D) Urbanization of coastal, estuarine and fluvial margins</td>
<td>-</td>
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<tr>
<td>Maintenance of atmospheric composition</td>
<td>(P) To improve the articulation of policies, planning and management of mobility</td>
<td>+</td>
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<tr>
<td>and climate regulation</td>
<td>(P) To support intra-regional mobility</td>
<td>+</td>
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<td></td>
<td>(P) To increase collective use and green spaces</td>
<td>+</td>
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<tr>
<td></td>
<td>(P) To preserve soils with more agricultural and forest value</td>
<td>+</td>
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<td></td>
<td>(P) To reduce emission of atmospheric pollutants</td>
<td>+</td>
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<tr>
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<td>(P) To increase energy efficiency of transport</td>
<td>+</td>
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<td>(P) To integrate soft modes in trips</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>(D) Expansion of urban green space</td>
<td>+</td>
</tr>
</tbody>
</table>

Mascarenhas A, Ramos TB, Haase D, Santos R. Ecosystem Services (under review)
Assessing ES in Lisbon Metro. Area

Metropolitan Ecological Network (MEN) as main NBS of the regional spatial plan

Source: CCDR-LVT
Assessing ES in Lisbon Metro. Area

Metropolitan Ecological Network (MEN) as main NBS of the regional spatial plan:

What are the effects of alternative LULC scenarios on the ability of the MEN to provide ES?

Source: CCDR-LVT; European Commission (CORINE)
Population as main driver of change:

*What are the effects upon ES of different trajectories and spatial patterns of population development?*

![Graph showing population trends](source: INE Portugal)
RSP: tackling low density urbanization through urban compaction (& urban renewal):

*What are the implications of a more compact model of regional spatial development for ES supply?*
Thank you for your attention!

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