Socio Economic Impacts of NBS

Lecture (online)

Learning Unit 14

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Introduction

The Socio-Economic Impacts of Nature-Based Solutions (NBS)

- Exploring how NBS contribute to the **triple bottom line** (environmental, social, and economic outcomes).
- The role of **EU-funded projects** in measuring and showcasing these impacts.
- Understanding impact through a SWOT analysis

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"Solutions that are **inspired** and **supported** by nature, which are **cost-effective**, simultaneously provide **environmental, social and economic benefits** and help build **resilience**."

Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.

European Commission

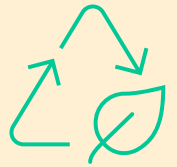
NBS Definition – EU

Reference: European Commission

Measuring Impacts

How Do We Measure the Socio-Economic Benefits of NBS?

- **Environmental Metrics**: Reduction in CO2 emissions, increased biodiversity, improved water quality.
- **Social Metrics**: Health and well-being improvements, community engagement, social cohesion.
- **Economic Metrics**: Cost-benefit analysis, job creation, property value enhancement, long-term savings.



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Triple Bottom Line (TBL)

Understanding the TBL

- **People**: Social equity, health benefits, and quality of life improvements.
- **Planet**: Environmental sustainability through enhanced biodiversity, pollution control, and resource conservation.
- **Profit**: Economic sustainability, including cost savings, job creation, and resilience to economic shocks.
- The **TBL** ensures that NBS are evaluated comprehensively, considering the full range of impacts.

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Measuring NBS Impact

EKLIPSE Framework

10 Climate resilience challenges considered in the impact assessment framework

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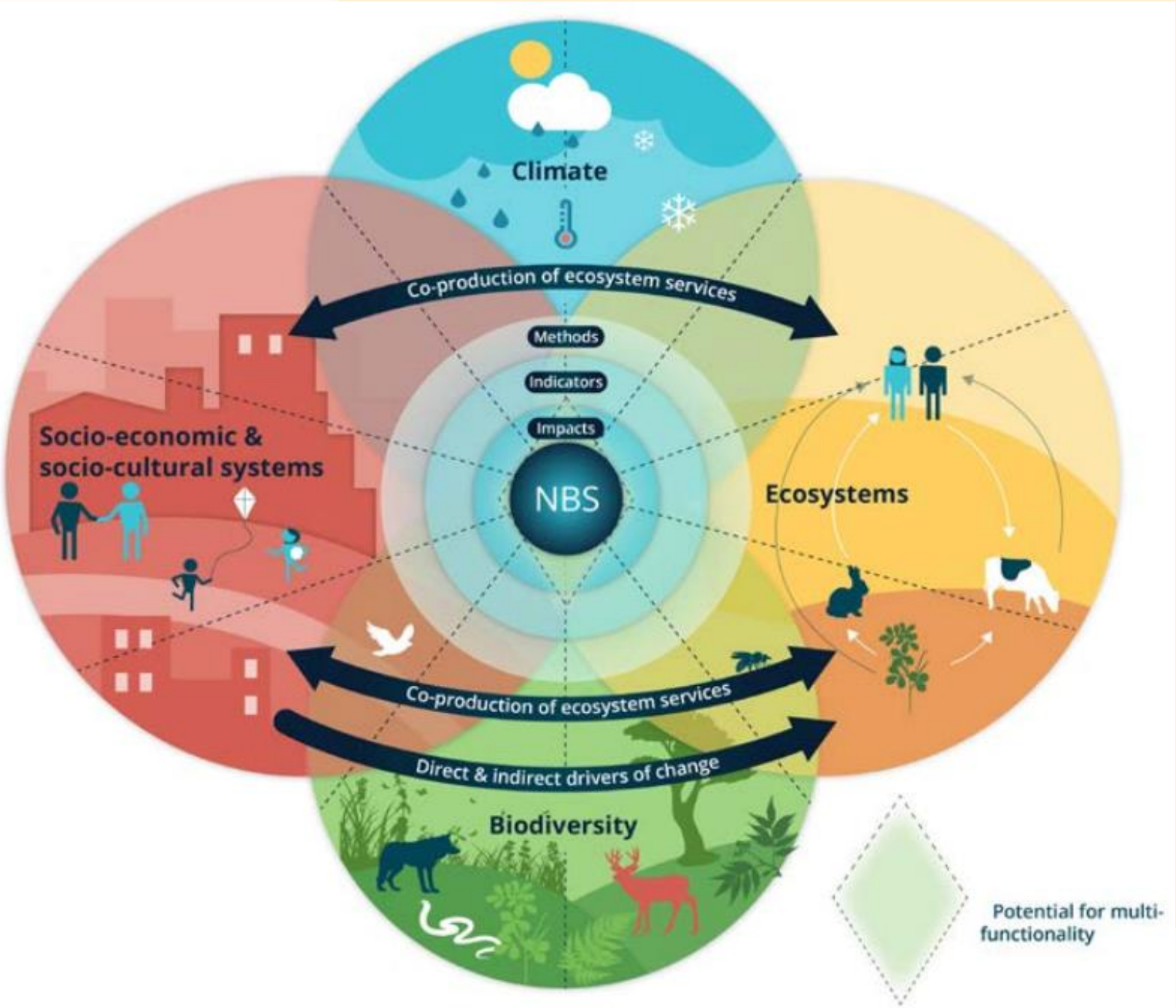
Measuring NBS Impact

EKLIPSE Framework



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Complexity & NBS

Complex Systems Thinking

- Cities and ecosystems are **complex systems** with interrelated components that function together.
- **Nature underpins the economy** by providing essential services (e.g., clean air, water, climate regulation).
- NBS are integrated solutions that enhance both **natural systems** and **human systems** (economic, social, and cultural).

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Research on Measuring Impact

EU-Funded NBS Projects Measuring Socio-Economic Impacts

1. **Green4CITIES**: Focuses on **green urban infrastructure**, its role in improving **biodiversity**, and the socio-economic impacts of green spaces
   LIFE UrbanGreen: Measures the long-term socio-economic benefits of NBS in cities, such as **cost savings** in flood management
2. **Natura2000**: Focuses on preserving biodiversity and its economic value land management, agriculture, and tourism sectors.
3. **Eklipse**: helps governments, institutions, businesses, and NGOs make better-informed decisions when it comes to biodiversity and ecosystem services in Europe.

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Social Impact

The Social Benefits of NBS

- **Improved Health and Well-being**: Access to green spaces reduces stress, improves mental health, and increases physical activity.
- **Social Cohesion**: NBS create spaces for community interaction, enhancing social bonds and collective action.
- **Cultural and Aesthetic Value**: Green spaces improve the aesthetic quality of urban areas, attracting tourists and enhancing the local community's identity.

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Economic Impact

Understanding the Economic Value of NBS

- **Job Creation**: NBS can create green jobs in sectors like landscaping, environmental monitoring, and urban planning.
- **Cost Savings**: Sustainable stormwater management through NBS can reduce costs associated with flood damage and water treatment.
- **Increased Property Values**: Well-maintained green spaces can increase property values and attract investment.

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Environmental Impact

How NBS Contribute to Environmental Sustainability

- **Carbon Sequestration**: NBS like reforestation and wetland restoration absorb CO2, helping mitigate climate change.
- **Biodiversity Enhancement**: Creating green corridors and restoring ecosystems increases biodiversity and supports ecosystem services.
- **Pollution Reduction**: NBS such as green roofs and permeable pavements help reduce urban pollution levels.

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In-Class Exercise 1:

TAKE FIVE

In-Class Group Exercise: Analysing the Impact of a Local NBS Project

- **Objective**: Students will assess the socio-economic impacts of an **existing NBS** project (e.g., urban green space, wetland restoration) in a European city.
- **Tasks**:
  - Identify the **environmental**, **social**, and **economic benefits** of the project.
  - Discuss the **challenges** in measuring these impacts and how to overcome them.
  - Present the findings to the class, including **recommendations** for improving the project's impact.

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Public Representation

How Public Perception Affects the Success of NBS

- Public perception is a crucial factor in the **implementation and maintenance** of NBS.
- **Barriers**: Public scepticism, lack of awareness, or resistance to change.
- **Solutions**: Education campaigns, community involvement in planning, and clear communication of benefits.
- Example: **ReGREEN** project in **Rome**, which included community engagement to build public support for urban greening initiatives.

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STRENGTHS

1. **Sustainability and Climate Resilience**: NBS provide long-term sustainable solutions to climate-related urban challenges, such as **flooding**, **urban heat islands**, and **biodiversity loss**.
2. **Cost-Effectiveness in the Long-Term**: NBS are often more **cost-effective** than traditional "grey" infrastructure in managing urban water, reducing energy costs, and mitigating climate impacts.
3. **Health and Well-being Benefits**: NBS improve public health by providing **accessible green spaces**, enhancing mental well-being, and promoting physical activity.
4. **Biodiversity Enhancement**: NBS can restore urban ecosystems, improve habitats, and support the restoration of **local biodiversity** in cities.

SWOT Analysis

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WEAKNESSES

1. **High Initial Costs**: Establishing NBS can require significant upfront investment for green spaces, urban forests, or green roofs. Example: Urban wetlands restoration requires high initial funding and expertise.
2. **Land Constraints**: Limited space in dense urban areas for large-scale green infrastructure. Example: High-density areas like **Paris** face challenges in integrating green spaces.
3. **Complex Management**: NBS require continuous monitoring, maintenance, and coordination across urban departments. Example: Maintenance of **green roofs** and **urban parks** can be resource-intensive.
4. **Public Resistance**: Some communities may resist changes, especially in areas with limited knowledge of NBS benefits. Example: In some cities, the installation of green infrastructure is met with scepticism due to loss of parking or changes to established spaces.

SWOT Analysis

OPPORTUNITIES

1. **EU Funding**: Multiple EU-funded programs (e.g., **Horizon Europe**, **LIFE Program**) support NBS projects focused on **sustainability**, **biodiversity**, and **climate adaptation**. Example: **CIVITAS** funds green mobility and infrastructure projects.
2. **Public-Private Partnerships**: Collaboration between governments, businesses, and local communities to implement and maintain NBS. Example: **ReGREEEN** fosters collaboration between multiple sectors to implement urban greening.
3. **Technology Integration**: Use of **IoT**, **AI**, and **big data** to monitor and optimize NBS for efficiency and effectiveness. Example: Smart sensors for **green roof systems** optimize energy use and stormwater management.
4. **Increased Public Awareness**: Growing recognition of the environmental and health benefits of NBS encourages investment and political will. Example: **LIFE-IP UrbanGreening** projects increased awareness of the social and environmental benefits of urban green infrastructure.

SWOT Analysis

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THREATS

1. **Climate Change and Uncertainty**: Changing climate conditions may challenge the effectiveness of NBS, particularly if not designed to handle extreme weather. Example: In cities like **Brussels**, urban flooding could reduce NBS effectiveness if extreme weather events are not accounted for.
2. **Competing Urban Priorities**: Urban governments may prioritize infrastructure development or housing over green spaces due to budget constraints. Example: **Madrid** has limited space for large-scale green infrastructure amidst growing population demands.
3. **Funding and Resource Limitations**: Even with EU funding, securing consistent investment for long-term NBS projects can be challenging. Example: Projects like **Sustainable Drainage Systems (SuDS)** require continuous funding for maintenance.
4. **Public Perception and Resistance**: Lack of awareness or reluctance to change can slow down the adoption of NbS. Example: In some urban areas, public resistance to the loss of traditional spaces (e.g., parking) for green projects can hinder NBS implementation.

SWOT Analysis

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In-Class Exercise 2:

TAKE FIVE

In-Class Group Exercise: Triple Bottom Line Analysis

- **Objective**: Students will work in groups to evaluate the **triple bottom line** (TBL) of a **proposed NBS project**.
- **Tasks**:
  - Discuss the **social**, **economic**, and **environmental** benefits of implementing a specific NBS (e.g., green infrastructure, tree planting, urban farming).
  - Create a proposal that balances all three aspects of TBL, offering potential solutions to improve the project's overall impact.
  - Present the analysis to the class.

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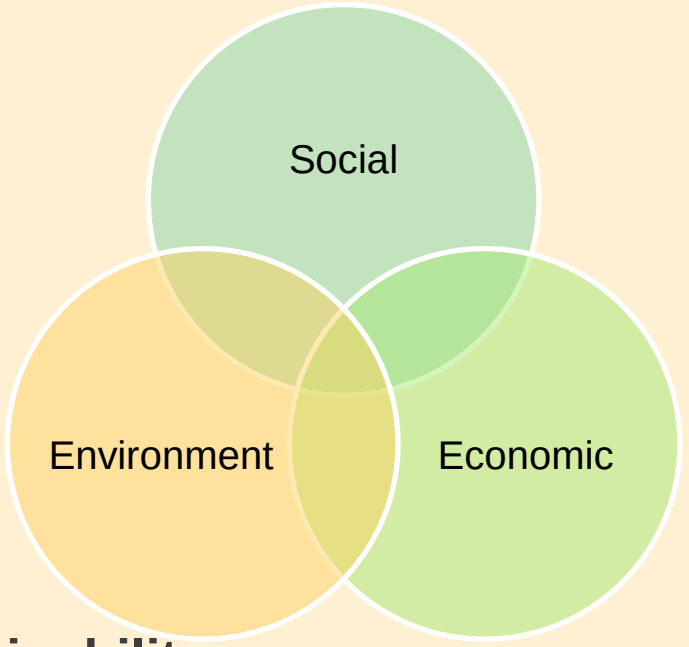
Holistic Assessment



Why a Holistic Approach is Essential for NBS

- NBS should be evaluated **holistically**, considering **long-term sustainability**, **community engagement**, and **economic viability**.
- The **triple bottom line (TBL)** approach ensures that all dimensions of the solution are considered before, during, and after implementation.
- **Complex systems thinking** allows cities to identify **interdependencies** between ecological, social, and economic systems.

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Case Example: The Green4CITIES Project

How Green4CITIES Measures the Socio-Economic Impacts of NBS

- **Example**: **Green4CITIES** integrates **green urban infrastructure** and measures its impact on **biodiversity**, **public health**, and **economic development**.
- The project assesses the **cost-effectiveness** of various NBS, such as **urban forests** and **green walls**, to provide benefits such as **cooling**, **stormwater management**, and **social inclusion**.

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Policy Support for NBS

Policies Supporting the Development and Implementation of NBS

- **EU Green Deal**: Supports NBS as part of the transition to a **carbon-neutral economy**.
- **Nature Restoration Law**: Aims to restore degraded ecosystems and integrate NBS in urban planning.
- **Horizon Europe**: Provides funding for **research** and **innovation** in NBS, including social, environmental, and economic assessments.

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The Future of NBS and Sustainable Cities

Envisioning a Future with NBS at the Core of Urban Development

- The growing importance of NBS in **smart cities** and **climate-resilient urban planning**.
- The future will see **greater integration of NBS**, **socio-economic impact assessments**, and **smart technologies** to create **sustainable, resilient cities**.
- Cross-sector collaboration will be key to maximizing the benefits of NBS.

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Conclusion

NBS as Catalysts for Sustainable Urban Development

- Nature-Based Solutions provide **environmental, social, and economic benefits** that are critical for the future of cities.
- By embracing the **triple bottom line**, cities can create **resilient, sustainable urban environments** that enhance quality of life and foster long-term economic growth.
- The **socio-economic impacts** of NBS should be carefully measured to ensure they deliver the maximum benefit for cities and their inhabitants.

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