

URBANIZATION, BIODIVERSITY AND ECOSYSTEM SERVICES

URBES I WORKSHOP REPORT

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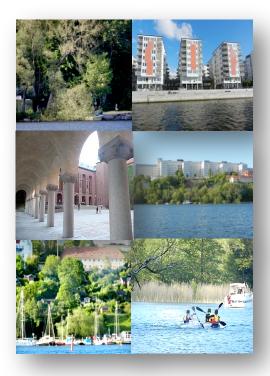
1. INTRODUCTION

In April 17th, 2013, the first of a series of three workshops took place in Kräftriket, Stockholm, in the project Urbanization, Biodiversity and Ecosystem Services (URBES). The purpose of the workshop was to investigate both new and persistent urban challenges and opportunities as they relate to the question how critical knowledge concerning urban ecosystem services can be brought into the core of urban planning, design and management. The aim is that these workshops leave both participants and organizers with new shared insights and experiences as well as practical suggestions on how to deal with the topics discussed. The first workshop generated a lot of useful material through the engaged participation by a diverse group of professionals and experts from the Stockholm area, providing the research team with a unique opportunity to become involved in the on-going professional debate on urban development in the Stockholm region. We are also grateful to the Stockholm Resilience Centre for providing support and venue for the workshop. This report summarizes the proceedings of the workshop.

1.1. CONTEXT

Nature is essential for cities. Cities depend on how ecosystem services support urban functions and human well-being. However, even if much has been written about ecosystem services, the impact on urban planning and policy-making processes is still limited. The URBES project (Urbanization, Biodiversity and Ecosystem Services) aims to bridge the knowledge gap on the links between urbanization, biodiversity and ecosystem services.

One part of the URBES project (Work Package 6) explores how urban policy-making, planning and strategy-making can contribute to urban natural environments that better meet the needs of people. It will study how ecosystem-based approaches practically can be integrated into such processes. This will be done by developing and discussing scenarios for Rotterdam and Stockholm, demonstrating the potential and requirements of urban ecosystem services. The aim is to understand how different opportunities and challenges can be balanced and in particular how promoting ecosystem services may conflict or work together with other urban development needs.





In Stockholm, three workshops are planned to take place during 2013:

- Workshop 1: Kick off
- Workshop 2: Urban land use scenarios
- Workshop 3: Strategies for urban ecosystem services

1.2. PROGRAM STRUCTURE, METHODOLOGY & OBJECTIVES

The purpose of the first workshop was to present the project to the participants, to introduce and discuss the concept of urban ecosystem services, to discuss what knowledge is currently missing in relation to urban ecosystem services, and to identify challenges and opportunities linked to integrating ecosystem services into planning and governance.

The workshop was prepared by conducting around 20 interviews with different professionals and experts in the Stockholm area. These interviews were then analyzed with a focus on knowledge gaps and challenges. The results of the interviews were presented during the workshop and the participants were invited to critically examine this material through group discussions. The group work sessions were moderated by Anna Kaczorowska and Jaan-Henrik Kain to facilitate the concise compilation of issues and concerns. A final deliberation in plenum was focused on summarizing and further discussing comments produced by each group. The workshop had fourteen participants (see Appendix 2) who engaged in intensive discussions around these topics.

The agenda for the workshop:

13:00 - 13:30	Introduction:
	- Who are we?
	- What is the project about
13:30 - 14:00	What are ecosystem services?
14:00 - 14:15	Short break
14:15 - 14:45	Feedback on interviews: Gaps and challenges
14:45 - 15:45	Group work on gaps and challenges
15:45 - 16:00	Coffee break
15:45 - 16:00	Reformulated knowledge gaps and challenges?
16:00 - 16:30	Gaps/challenges and ecosystem services
16:30 - 17:00	Summing up:
	- Coming workshop: land use scenarios
	- Time plan



2. SUMMARY OF WORKSHOP DISCUSSIONS

A.

The workshop started with a presentation of the participants and a short introduction of the URBES project in general (see http://urbesproject.org/) and of Work Package 6 in particular. The overall question for Work Package 6 is: How can critical knowledge concerning urban ecosystem services be brought into the core of urban planning, design and management? The work in the project is based on the assumption that land use scenarios can be a good way to support this.

B.

The second point of the agenda was to introduce ecosystem services as they are understood in the project. See Appendix 1 for a summary.

C.

The third item of the agenda included the feedback from the interviews of workshop participants and others prior to the workshop, with a focus on knowledge gaps and challenges linked to ecosystem services in urban planning and governance. These were sorted into four categories:

- 1. Urban conditions
- 2. How urban issues interlink
- 3. Coordination with other urban stakeholders
- 4. Policy-making or ethical guidance

This presentation was followed by group work, where the objective was to discuss:

- On which of the knowledge gaps/challenges can you agree?
- Where do you disagree?
- Additional gaps or challenges?
- What are the most important gaps or challenges?
- Who are the key actors or organizations?

A more extensive summary of the interview feedback and the additions from the discussions during group work is presented in the next section further below. The most important identified issues include:

- 1. To make the very theoretical concept of ecosystem services useful in urban planning and governance it needs to be linked to practice through more useful and concretized knowledge material and good examples. This is also important for increasing the value and influence of ecosystem services in urban policy-making.
- 2. Even if we have been working with urban green in different ways for quite some time (and done a good job with that),we still lack a holistic knowledge about what ecosystem services

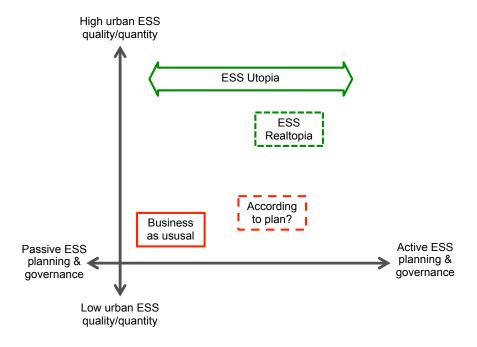


we have, about the importance of different urban areas for different ecosystem services, and also about what type and how much of them that are needed in the city. Here, it may be helpful to see the many ecosystem services as being parts of a larger system, to better understand the full added value for planning.

- 3. If the valuation of ecosystem services is a good thing: How to agree on what values? And we need to include both costs and benefits to understand when, where and how it is good to strenghthen ecosystem services.
- 4. The complexity of ecosystem services is a huge challenge both as a concept and in reality. They need to be understood as connected networks in need of support from interconnected institutions. Here, the sectorization of urban planning and governance is problematic, ranging from the gap resulting from the division of labour between Boverket (responsible for built up areas) and Naturvårdsverket (responsible for natural areas), down to the silos of municipalities (such as the planning office, traffic department, water department, etc).
- 5. The intense development pressures tend to drive urban development based on short term economic interests rather than on long term human wellbeing. There is a need for new "urban business models", turning property owners and building industry into key actors for sustainable urban development that recognizes social and ecological values.

D.

The final point of the agenda was to discuss the content of the next URBES workshop – Urban land use scenarios – where three land use scenarios for Stockholm will be presented and discussed.



Four scenarios defined by:

- a) how actively ecosystem services planning and governance is carried out
- b) how ambitious the city is in terms of quantity/quality of ecosystem services



The idea behind the scenario workshop was presented (for more details see Appendix: Scenario 1 - *Business as usual* – will illustrate the expected results if the development continues as today. Scenario 2 – *According to plan* – will show how the cities will develop if current plans and policies are followed and implemented. Scenario 3 – the more radical *Ecosystem service utopia* – will show the benefits and consequences of maximized ecosystem services supply. These three scenarios will be used to discuss the potential role of urban ecosystems in the future of the city, including the possibilities and constraints for integration of ecosystem services in urban development. Based on these discussions – where ecosystem services are discussed in the context of other development needs of the cities – a Scenario 4 will be developed to illustrate a future that is both desirable and feasible: the *Ecosystem service realtopia*. In the next step – before and during the third workshop – the project will develop possible strategies for bringing the city towards this future.

The ecosystem services planned to be included in the scenarios are:

- Food production
- · Energy supply
- Water supply
- Urban cooling
- Air quality regulation
- Carbon Sequestration
- Storm water retention
- Physical recreation
- Mental recreation

After this presentation, there was a quite intensive discussion – and also some disagreement among the participants – regarding the potential focus and value of the scenarios. One question was about the geographical boundaries of the scenarios: Should they be on the Stockholm region, the metropolitan area, Stockholm municipality or a city district? Some ecosystem services may be more interesting to discuss at a very local scale while others are more interesting from a regional perspective.

Also, it was argued that in the Stockholm region, there is maybe not a problem with supplying ecosystem services (apart from food and energy) since there is a lot of land. In Stockholm municipality they only build on 0.5‰ of their green areas each year. It was argued that there is a risk that we will not find any differences on the regional level between the three scenarios, since there is enough land (=green areas, even if we do not use them for ecosystem services), and the three scenarios will more or less use the same amount of green areas. A counter-argument from another participant was that this would mean that there is no difference between "business as usual" and the utopian scenario, which did not make sense.

It was suggested that it might be more interesting – and make more of a difference – to focus on a smaller study area instead, for example a section of the very dense part of Stockholm, since density increase the need for ecosystem services. Another suggested approach was to focus more on specific topics, such as food production, threatened green areas or segregation.



Yet another idea was to focus on a part of the region, such as Haninge, being one of Stockholm's regional cores where significant densification will take place (as established through RUFS). Does it work to build so densely in these cores and still find sufficient space for example storm water retention? One suggested way to deal with this was to look at the region but focus on the built-up areas of the Metropolitan Stockholm (Storstockholm) and its regional cores, but to also include its green wedges (such as the Järva wedge) to see how local development projects affect them locally but also how they relate to the regional level. It thus makes sense to look at one part of the region in more detail, and for the whole region to be satisfied with statistics and here maybe deal with some ecosystem services of regional importance, such as water supply. It also appears rewarding to explore how to work with ecosystem services on different scales. It is more interesting to look at how to supply ecosystem services than to look at regional statistics; to get numbers and examples on how both on a local, semi-regional and regional scale.

It may also be a good idea to link the scenarios more strongly to the different development trends identified in RUFS (such as "suburbanisation" and "polycentrism"), which seem to make quite a difference for ecosystem services.

Additionally, the interdependencies and needs for coordination between different municipalities with strong individual authority was highlighted as a very interesting issue.

The workshop was concluded by Anna and Jaan-Henrik thanking the participants for their active and constructive contribution, and with an assurance to take on board all the comments on how the scenario work should be developed to be the most useful for all participants during the coming workshops. The constructive but somewhat critical comments also led to a possible rescheduling of the second workshop to a later date than originally planned.



3. RESULTS FROM INTERVIEWS AND WORKSHOP DISCUSSIONS

The knowledge gaps and challenges identified through interviews and a group discussion has been sorted after what type of uncertainty they represent:

- External uncertainty, requiring more knowledge about urban conditions
- Causal uncertainty, requiring more understanding of how urban issues interlink
- Organizational uncertainty, requiring more coordination with other urban stakeholders
- Value uncertainty, requiring urban policy-making or ethical guidance

(after Abbott 2005, in turn drawing on Friend and Jessop 1969, and Mack 1971)

A. General gap

A1. The ecosystem services concept is too theoretical (too long reports) and undeveloped and therefore less useful. However, it is gaining ground, for example through a report by Naturvårdsverket (the Swedish Environmental Protection Agency: EPA) about ecosystem services (Sammanställd information om Ekosystemtjänster) and work by Stockholm Resilience Centre.

A2. Gaps between theory and practice need to be identified. To make the concept useful, we need examples of good practices, pilot projects, solutions and adapted material that can be used in practice. There is some progress, such as the Green Area Factor which is useful for communicating with different actors and for putting qualitative and quantitative demands on developers.

A3. The concept is also too complex when discussed as a whole package of services (cultural, provisioning, regulating and supporting) for a city or region. It becomes more understandable when narrowed down to particular ecosystem services.

B. Gaps in knowledge about urban conditions

B1. All the benefits of urban green areas are not widely known. We do not know <u>what</u> ecosystem services we have, not <u>where</u> they are and not enough about the importance of different urban areas for different ecosystem services. There is also a lack of understanding <u>how</u> to best manage them to "harvest" the benefits (examples: knowledge about food production, green wedges and supporting ecosystem services).

B2. We lack knowledge regarding the quantification, valuation and ranking of ecosystem services: what types of ecosystem services and how much of them are needed in the city. Also, the valuation of ecosystem services may be a good thing but how to agree on what values? Addionally, documents assessing the state of the environment should be updated periodically, because they expire and become less useful.



- B3. Is it good to implement the concept of ecosystem services in cities? We need to know more about the environmental performance of ecosystem services: how we can profit from them as well as their consequences/effects.
- B4. What are the costs for the city and for society? We do not know if developing ecosystem services will in fact destroy natural ecosystems (example: intensive energy crops) or result in unexpected dynamics between ecosystems. We need knowledge on how to quantify or assess ecosystem services: both costs and benefits. It is especially difficult to show non-monetary values (and costs?). There is a need for different forms of assessment (such as environmental impact assessment) when discussing development projects among different actors.

C. Lack of understanding of how urban issues interlink

- C1. Complexity: The thousands of urban ecosystem services need to be understood as connected networks. <u>How</u> can that be done and <u>who</u> (what organization) should do it, using <u>what</u> instruments (plans)? How do larger green structures interact and depend on small green areas, and vice versa? Even so, it is the most interesting and "profitable" to work with the potential of ecosystem services in the central areas of Stockholm.
- C2. How do ecosystem services link to overall urban development? How to support multifunctional land use and integrated solutions? The complexity of the integrated social, environmental and development (economic) context should be more discussed.
- C3. To promote the values of ecosystem services and in particular non-monetary values such as social benefits there needs to be a stronger connection between such services and social integration, and these connections need to be communicated to the politicians. What are the dynamics between social systems and ecosystems? Can social and ecological values be recognized and supported through new ("sustainable" or "smart") "urban business models"? How can we (and should we) profit economically from ecosystem services? We need integrating "urban business models" that link different stakeholders to promote collaboration and coordination for better management of ecosystem services.
- C4. How does all (C1-3) affect the planning process? There is a need for long term perspectives in planning with new tools and methods for using/valuing ecosystem services, supported through in "high profile" cases.
- C5. Today, urban policies do not reflect the development patterns in the region, since the private sector acts independently from the planning system, and heavily influences decision-making in its favour. Development mostly takes place in the central Stockholm or near/on environmentally sensitive areas in the region.
- C6. What are the links between needs for ecosystem services and needs for transport networks and areas?



D. Lack of coordination with other urban stakeholders

D1. There is a general problem is with "sector silos" on all levels: national, county and municipal (but possibly less so in some smaller municipalities). On the national level, there is a division of labour between Boverket (The Swedish National Board of Housing, Building and Planning) responsible for built up areas and Naturvårdsverket (EPA) responsible for natural areas. There is hence no national agency that has the responsibility for urban ecosystem services on how they link to urban development – this need to change!

D2. We are very good at dealing with ecological questions in Stockholm. Since 20 years, there are plenty of projects working with ecosystem services in the city, but we do not see them as such (example: soil cleansing of ground water). And now people say that ecosystems services are something new! But a contradiction: The understanding of ecosystem services is low and the management is poor. Even if there are many exhibitions and events promoting ecological solutions in Stockholm the knowledge about ecosystem services is not widely shared.

D3. Working between scales and among different actors requires better knowledge of the complexity of ecosystem services, but planning institutions are not ready or capable to promote ecosystem services. There is also a lack of correlation between plans and policies. We need to plan in a smarter way and use incremental (step by step) strategies. Municipalities also need to engage in implementing and managing ecosystem services.

D4. There are competing and contradictory interests among different actors in the urban development process – with considerable development pressures and little concern for the public good, including ecosystem services.

D5. Apart from the municipalities' role of regulating urban development, there is a need to improve the communication between actors in the planning processes. It is a challenge to spread knowledge about the values of ecosystem services. But very important since there is little municipal land and most of urban development is driven and managed by private developers.

D6. There is a lack of awareness of environmental benefits among land owners. This is probably a matter of different perspectives on time (and profit across time), where ecosystem services are mostly valuable in a long-term perspective. This links to the need for new "urban business models", where property owners and building industry should be seen as key actors. Too many constraints on private land can be too costly to develop it at all. Instead: flexibility and incentives may be a better way to move forward. For example, if property owners are taking care of the storm water within their areas, they should get some reduction of tariffs or other benefits.

D7. Practitioners and researchers should work more together to develop practical tools for creating good urban settings for social and ecological values. There is a need for interdisciplinary groups and institutions.



E. Missing urban policy-making or ethical guidance

- E1. A challenge is to raise awareness in society of the environmental benefits of promoting ecosystem services. Today, we are talking about green land use and climate change, but not about ecosystem services.
- E2. There is also a strong drive from (national) government for building new housing and from (municipal) government) for building social cohesion. One challenge is to make national and municipal policy working together. Another challenge is that politicians are tired of environmental projects, and are more interested in social cohesion. "We can't focus on everything on the same time". All the above results in a top-down-pressure to down -play environmental requirements in favour of housing and social cohesion.
- E3. However, increasing urban density seems to create a growing interest for ecosystem services (in Stockholm), and density can possibly be driving interests for planning of ecosystem services. Here, ecosystem services should be seen as parameter for calculating urban qualities.
- E4. It is easiest for authorities and politicians to accept the economic dimensions of the ecosystem services concept. Even so, there is little understanding of ecosystem services among politicians and other decision makers, and it is difficult to bring it into their thinking. This is problematic since the introduction of ecosystem services should come from the politicians as a direction for the city's departments. There is thus a need to bridge policy-making and experts/researchers, so that correct information (and in a suitable form) can be provided to policy-makers. Additionally, the communication between urban stakeholders and politicians should be improved.
- E5. Who is the core (=influential) person in decision making about ecosystem services in the city? Ecosystem services should be given higher significance in the planning process, and politicians and senior managers agree but say they cannot influence that. Instead, planners act to follow politicians giving priority to developers' interests. Ecosystem services (as a concept) tend to be excluded from planning documents.
- E6. Management of urban ecosystem services is poor. Monitoring is overemphasized but there is no action. There good policies and plans may exist but nothing happens and it is not clear who has the responsibility for managing ecosystem services in the city. What are the targets and who is accountable?
- E7. The weak political control of the exploitation of natural areas is problematic. For urban governance and planning, a priority is to manage the competition for urban land to provide space for all urban functions and infrastructure. Still, ecosystem services are a second priority issue.
- E8. There should be more constraints for developing ecosystem services since nature has a value in itself. We should not only think about what nature can do for us! Also, when applying ecosystem service thinking there may be a risk that we replace for example a beautiful park with green roofs, just calculating the services delivered.



4. REFERENCES

Abbott, John (2005). 'Understanding and Managing the Unknown: The Nature of Uncertainty in Planning.' *Journal of Planning Education and Research* 24: 237-251.

Friend, J. K. and W. N. Jessop (1969). *Local Government and Strategic Choice: An Operational Research Approach to the Processes of Public Planning*. London: Tavistock Publications Limited.

Mack, Ruth (1971). *Planning on uncertainty: Decision making in business and government administration*. New York: Wiley Interscience.



APPENDIX 1 – ECOSYSTEM SERVICES

Provisioning Services are ecosystem services that describe the material outputs from ecosystems. They include food, water and other resources.



Food: Ecosystems provide the conditions for growing food – in wild habitats and in managed agro-ecosystems.



Raw materials: Ecosystems provide a great diversity of materials for construction and fuel. **Fresh water:** Ecosystems provide surface and groundwater.



Medicinal resources: Many plants are used as traditional medicines and as input for the pharmaceutical industry.

Regulating Services are the services that ecosystems provide by acting as regulators eg regulating the quality of air and soil or by providing flood and disease control.



Local climate and air quality regulation: Trees provide shade and remove pollutants from the atmosphere. Forests influence rainfall.



Carbon sequestration and storage: As trees and plants grow, they remove carbon dioxide from the atmosphere and effectively lock it away in their tissues.



Moderation of extreme events: Ecosystems and living organisms create buffers against natural hazards such as floods, storms, and landslides.



Waste-water treatment: Micro-organisms in soil and in wetlands decompose human and animal waste, as well as many pollutants.



Erosion prevention and maintenance of soil fertility: Soil erosion is a key factor in the process of land degradation and desertification.



Pollination: Some 87 out of the 115 leading global food crops depend upon animal pollination including important cash crops such as cocoa and coffee.



Biological control: Ecosystems are important for regulating pests and vector borne diseases.

Habitat or Supporting Services underpin almost all other services. Ecosystems provide living spaces for plants or animals; they also maintain a diversity of different breeds of plants and animals.



Habitats for species: Habitats provide everything that an individual plant or animal needs to survive. Migratory species need habitats along their migrating routes.



Maintenance of genetic diversity: Genetic diversity distinguishes different breeds or races, providing the basis for locally well-adapted cultivars and a gene pool for further developing commercial crops and livestock.

Cultural Services include the non-material benefits people obtain from contact with ecosystems. They include aesthetic, spiritual and psychological benefits.



Recreation and mental and physical health: The role of natural landscapes and urban green space for maintaining mental and physical health is increasingly being recognized.



Tourism: Nature tourism provides considerable economic benefits and is a vital source of income for many countries.



Aesthetic appreciation and inspiration for culture, art and design: Language, knowledge and appreciation of the natural environment have been intimately related throughout human history.



Spiritual experience and sense of place: Nature is a common element of all major religions; natural landscapes also form local identity and sense of belonging.

From "The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB" (TEEB 2010).



APPENDIX 2 – ASSUMPTIONS OF SCENARIO-DEVELOPMENT

Business as Usual scenario:

The city is passive in ecosystem services planning and governance and also leaves the ambitions regarding ecosystem services to individual stakeholders, which typically leads to low levels of ecosystem services provision.

According to Plan scenario:

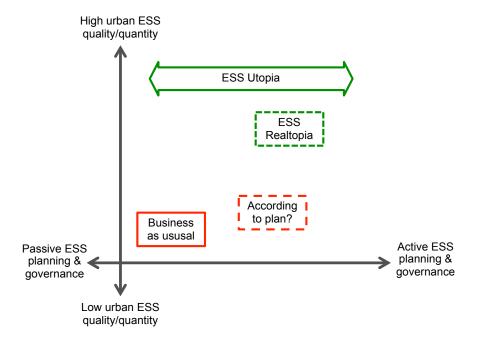
The city is seen as more active when pursuing existing plans and visions linked to ecosystem services and these plans and policies also contain certain ecosystem services ambitions.

ES Utopia scenario:

Is a reference point for understanding and discussion and is truly utopian in the sense that it is not – and is not intended to be – realistic. It portraits a radical implementation – and maximization – of urban ecosystem services, aiming to internalize into the city and its urban hinterlands as much as possible of hitherto externalized ecosystem services.

ES Realtopia scenario:

Is intended to be fully realistic while having high ambitions in both planning/governance as well as regarding urban ecosystem services. It aims to illustrate a best possible scenario, balancing and identifying trade-offs between urban ecosystem services and other urban functions, such as housing, infrastructure provision, culture and economic development.





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