

Projects

Science, Technology and Innovation

A circular arrangement of twelve yellow stars on a black background, representing the European Union flag, positioned over the letter 'r' in the word 'Projects'.

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A photograph of a lush green forest. A small stream flows through the center-left, surrounded by dense foliage and trees. A gravel path leads from the bottom right towards the background, flanked by trees and undergrowth. Sunlight filters through the leaves, creating dappled light on the ground.

Valuation of urban ecosystem services in Oslo

OpenNESS: Operationalisation of natural
capital and ecosystem services



Green policies can be rationalised using concepts such as 'natural capital' and 'ecosystem services', but these terms and their benefits can seem abstract to policymakers. In response, the international OpenNESS project is exploring methods that can compellingly illustrate their importance in local decision-making processes

Integrating natural capital and ecosystem services into urban management and planning



Photo: City of Oslo

Environmentally responsible practices are widely supported at the highest levels across the EU. Investing in natural capital to provide ecosystem services to society is an approach that would eliminate the dichotomy between immediate budgetary pressures and green legacies in local public policy.

Concepts and tools are available to help understand the financial and experiential benefits that green policies at local level can deliver. 'Natural capital' views the world's natural assets on a par with other types of capital and 'ecosystem services' are seen as equally important benefits to other types of utilities and services that are provided by public and private sector. The

OpenNESS (Operationalisation of Natural Capital and Ecosystem Services) project, launched in 2013, explores these principles locally and aims to translate them into practical frameworks for everyday use.

In the project's Oslo case study – OSLOpenNESS – the project's economists are collaborating with social scientists and ecologists to understand how ecosystem services can enhance urban municipal planning. "We're piloting economic and non-economic valuation methods which consider the importance of nature in the city," explain research partners David N. Barton of the Norwegian Institute for Nature Research (NINA) and Rasmus Reinvang from Vista Analyse. "These

include its contribution towards recreation and health, water management, flood control and biodiversity conservation."

NINA is collaborating with several OpenNESS partners, including social science consultancy Vista Analyse and various agencies from Oslo Municipality. Oslo is the city with the highest population growth in northern Europe as a percentage of its total population. Its precious green spaces are thus facing significant pressure from developers, making the OSLOpenNESS study both timely and relevant.

Where the city and its 650,000 human inhabitants must compete with nature, there are numerous trade-offs and important development and conservation

decisions to be made. One of the first tasks in the project was to raise awareness about the importance of urban ecosystems. The team applied different economic valuation methods in order to demonstrate the value of urban ecosystems and the services they provide.

According to a report co-authored by Barton and Reinvang published in February 2015, green space in Oslo is worth billions. This rapid appraisal employed six 'value transfer methods', which illustrate tangible relationships between the city's green and blue spaces, and connected them with the economics of citizens' welfare. Four of these were financial considerations, and two concentrated on qualitative improvements facilitated by green spaces. "Valuation techniques look at ways of mapping what's important for residents in parks, green spaces, bodies of water, rivers and the forest encircling the city," explains Barton. "Oslo is surrounded by the sizeable "Marka" peri-urban forest and the Oslofjord coastline. Oslo's geographical centre is actually in the forest." The study considers consumers' willingness to pay for urban green spaces, the importance of green infrastructure in property prices, time-use values of the forest when exploited as a recreational space, and the natural capital value of the over 700,000 trees located within built areas in the city.

"We've found that recreation, which represents one of the biggest cultural

ecosystem services in Oslo, is probably valued close to €1bn per year," reveals Barton. According to the researchers' estimates, the city's residents spend more than 70 million hours in the peri-urban forest per annum. These experiences can be valued by calculating what users' time is actually worth, in salaried terms, or through comparison to what access to a comparable facility, like a gym, would cost during these periods.

Nature also enhances property prices, according to the project's findings. By analysing apartments sold in Oslo over the last decade, and comparing the prices and characteristics of the properties themselves – particularly their proximity to nature and views of it – the Norwegian team

determined that such attributes significantly upped their values. "After computing all of these statistics, we found that being near parks and cemeteries, or offering seaside and forest views, actually has a significant impact on the cost of an apartment," says Barton. "We then took the estimates from our sample of about ten thousand flats sold, and extrapolated them to all the flats in Oslo to obtain an approximate valuation." Proximity to blue-green spaces may have a capital value in apartment prices in the order of €2bn.

Whilst conceding that their preliminary calculations are approximations, Barton contends that their fundamental premises are nonetheless valid and compelling. Once refined, he believes, such techniques can help to form credible economic cases for conservation in a dynamic period of urban expansion. "Valuation of ecosystem services is quite a new field in Norway," he explains. Nevertheless, the Norwegian government was one of the main co-sponsors of The Economics of Ecosystems and Biodiversity (TEEB) project. Recently, an official Norwegian report affirmed that ecosystem services is a useful concept among several other types of values for raising public awareness about nature.

After a rapid appraisal aimed at raising awareness, more targeted valuation studies are needed for decision support. Qualitative ecosystem functions such as the health impact of green spaces are far

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Photo: Bård Bredeesen, Agency of Urban Environment, City of Oslo



more difficult to value than recreation, as are regulating characteristics such as green spaces' absorption of flood water and pollution, and their creation of pleasurable microclimates. In 2015–2016 the Norwegian team will be conducting more detailed studies that will generate more accurate and reliable ecosystem service values for specific locations.

Pollination in the city and the support that urban nature can provide for beekeepers and wild bees are being surveyed. Another objective is to assess the value of trees that, due to limited light in Norwegian terrain, are often felled due to neighbour disputes or to improve views. “We’re going to concentrate on city trees along roads and gardens, and provide more detailed estimates of their value at street level for residents and as habitat for biodiversity,” says Barton. The project is also helping develop the municipality’s method for assessing the compensation value of city trees used to set fines for illegal felling.

Researchers are also collaborating with Oslo Municipality in developing the ecosystem services approaches in existing tools for municipal planning and management. The ‘blue-green factor’ (BGF) is a proposal for scoring properties’ green and blue structures in terms of how important they are for managing surface water. The BGF can

be used to set minimum targets for property developers in different parts of the city, OSLOpenNESS is developing the BGF to account for other ecosystem services such as pollination and recreation.

“It’s important that our work is policy or decision relevant,” summarises Barton. “Despite extensive mapping of ecosystem services, projects often struggle to attain the reliability and accuracy required to make ecosystem service values relevant for municipal planning. Guided by planners and communicators in Oslo Municipality, our emphasis has been on explaining the concepts in Norwegian, raising awareness through rapid economic appraisal of the most significant ecosystem services, and then focusing research efforts on planning tools where valuation can make a difference.”

Reinvang contemplates the concept of the modern city embedded in natural surroundings. “I believe a city and nature are not two different things. It is a symbiosis, where a sensitive and clever interaction between man, nature and the things we build is what enables a good and also effective city. It is a place for life and to live. It is time to let nature back into the city and civilization, and that is what OSLOpenNESS is about – if you ask me.”★



AT A GLANCE

Project Information

Project Title:

Openness: operationalisation of natural capital and ecosystem services
www.openness-project.eu

Case study: valuation of urban ecosystem services in Oslo

www.openness-project.eu/node/78

Project Objective:

The OSLOpenNESS case study aims to translate the concepts of natural capital (NC) and ecosystem services (ES) into operational examples. We conduct integrated assessment and valuation of urban ES, demonstrating how several different approaches can support urban management and decision-making in Oslo. The case study also scrutinises the potential and limitations of the concepts of ES and NC in an urban and Norwegian context

Project Duration and Timing:

2012–2017

Project Funding:

EU FP7 grant agreement no. 308428 and Research Council of Norway grant agreement no. 225015/E10

Project Partners:

The case study is a cooperation between the Norwegian Institute for Nature Research, a non-profit research foundation, and Vista Analyse A/S, a small enterprise and the City of Oslo, Agency of Urban Environment

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