

URBAN ECOSYSTEM SERVICES



GRORUD POND

PHYTOREMEDIATION OF CONTAMINATED SOIL

The heart of the new Grorud Park is home to Grorud Pond on the Alna River, a natural and inviting amphitheatre, perfect for a variety of activities. Adjacent to the park, a pilot project has been set up to use living plants to remove contaminants (including copper) from soil on site.

THE SITUATION

Today, Grorud Park, including Grorud Pond, is an important recreational area that contributes to improved mental and physical health of those who use the area, whether by taking walks, having picnics, or enjoying other activities. The pond and surrounding area promote development, learning and aesthetic experiences, in addition to playing an important role in the local place identity and profile. The area also contributes both supporting and regulating ecosystem services by being a habitat for biodiversity, as a water retention basin and by purifying water that flows down the Alna River.

THE CHALLENGE

When the pond was constructed, the challenge was what to do with the polluted bottom sludge

that had built up over decades of polluting runoff from RV 4.

THE SOLUTION

The solution was to establish a pilot project to use the ecosystem service of natural cleansing (phytoremediation) instead of the traditional method of excavation and removal to landfill. Bottom sludge contaminated by copper and polycyclic aromatic hydrocarbons (PAHs) was dug up and moved into a depression where fast-growing willows from the genus *Salix* were planted. As they grow, the plants absorb the pollution, cleansing the soil. The bushes can later be removed and burned. This is a simple and efficient way to clean up the pond.

PHYTOREMEDIATION

(regulating ecosystem service)

INVESTMENT

NOK **600,000**

Estimated cost for phytoremediation

TRADITIONAL ALTERNATIVE

NOK **3,750,000**

Estimated cost for excavation, transport and proper disposal of contaminated soil

RESULT

NOK **3,150,000**

I sparte kostnader

METHOD

Alternative cost

The cost of using ecosystem services was compared to the cost of traditional solutions



Oslo kommune



* Figures are based on Vista Analyses report "The value of urban ecosystem services: Four examples from Oslo", report no. 2014/46.

WHAT ARE URBAN ECOSYSTEM SERVICES?

ECOSYSTEM SERVICES ARE THE SERVICES AND BENEFITS PRODUCED BY NATURE THAT ARE ESSENTIAL FOR HUMAN LIFE

In an urban environment, ecosystems will be composed of a mosaic of green parks, lush backyards, allotment gardens, urban forests, wetlands, streams, rivers, lakes and old trees – all of which will improve the quality of life for city residents. In addition, urban ecosystems are important habitats for the rich biodiversity we find in the city. The Oslo area has the greatest number of different species in the country: 12,009 species have been found, of which 1,230 are considered threatened.

IMPORTANT SERVICES

Ecosystems provide us with a range of vital services that we call ecosystem services. These include provisioning services such as food, water and wood; regulating services such as flood control, water, soil and air purification; cultural services like recreation and learning; as well as supporting services such as primary production and a habitat for biodiversity. Well-functioning ecosystems

are thus essential for peoples physical and mental health. Vegetation improves air quality by capturing pollutants. Green areas provide opportunities for rest and recreation in a bustling urban environment, while also promoting physical activity. Many scientific studies have linked access to green areas to stress reduction and improved mental health.

MAJOR CONSEQUENCES

Any loss of urban ecosystems and biodiversity could result in significant costs in terms of reduced quality of life and poorer health for residents. In addition, the city will become less attractive for business and tourism. Natural ecosystem services, such as the purification of water, air and soil, as well as rainwater retention, can be complex and costly to replace, and in some cases it is absolutely impossible.



Pollination and seed dispersal



Water management



Counteract erosion



Local climate regulation



Water purification



Soil purification



Air purification



CO₂ uptake and storage



Noise reduction



Food production



Art/toys



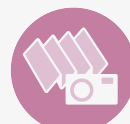
Fresh water



Recreation, mental and physical health



Aesthetics



Tourism



Education and cognitive development



Place identity and cultural heritage



Habitat for endangered species



Biological diversity