Operandum at a glace

Research for a more resilient Europe

OPERANDUM is a European research project that aims to demonstrate the efficacy of **sustainable solutions** inspired by nature to **adapt territories** to hazards derived from **extreme weather events**, such as floods, droughts, landslides and storm surges, making human communities more resilient to climate change.

Nature-Based Solutions

Using nature to adapt landscapes

The frequency of severe hydro-meteorological events is rising in many regions of the world as a consequence of **climate change**. Society must be ready to make landscapes more resilient. **Nature-Based Solutions (NBS)** are inspired and supported by nature and provide environmental, social and economic benefits, while helping to **build resilience against climate change**. OPERANDUM has been built to deliver **tools and methods** to demonstrate the efficacy of a variety of **locally-adapted** NBS, involving **multiple stakeholders** in the process, such as citizens, associations, business players and policy makers.

The Geospatial Information Knowledge Platform

The project offers a **Geospatial Information Knowledge Platform** (GeoIKP) as an online **open hub** to exchange knowledge about Nature-Based Solutions. This way, OPERANDUM provides the basis to strengthen **adaptation policies** whilst boosting **new business opportunities** to build more resilient landscapes and communities.

Find out more

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The project in numbers

10	26	4 +	14M
Open-Air Laboratories	International partners	Years (2018-2022)	Funding

International Open-Air Labs

10 areas to examine Nature-Based Solutions

OPERANDUM **tests the efficacy** of multiple NBS through 10 Open-Air Laboratories (OALs) distributed across the world. Based on the concept of **living lab**, the OAL is an original multidisciplinary framework that connects research institutes, enterprises and stakeholders to co-design, co-develop and co-deploy NBS. The OALs provide the framework to build **scientific evidence** of the efficacy of the NBS to mitigate the impact of hydro-meteo hazards, thereby enabling their replication and upscaling in other regions.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 776848.

OPERANDUM

OPEn-air laboRAtories for Nature baseD soluTions to Manage hydro-meteo risks

FINLAND

Lake Puruvesi

Lake Puruvesi

An OAL to test solutions against eutrophication

This Open-Air Laboratory is placed in the lake Puruvesi (Eastern Finland), specifically in the **lake Vehka-Kuonanjärvi**. As forestry is the main land use, this lake suffers from an **overabundance of aquatic plants** caused by an **excess of nutrients** and sediments, reducing the availability of oxygen and limiting life under water. Moreover, **heavy rain** and **snow melt** accelerate this leaching to the lake, thus threatening its biodiversity and ecological services.

HAZARDS

Eutrophication

Co-creation of the NBS

A whole area involved in the process

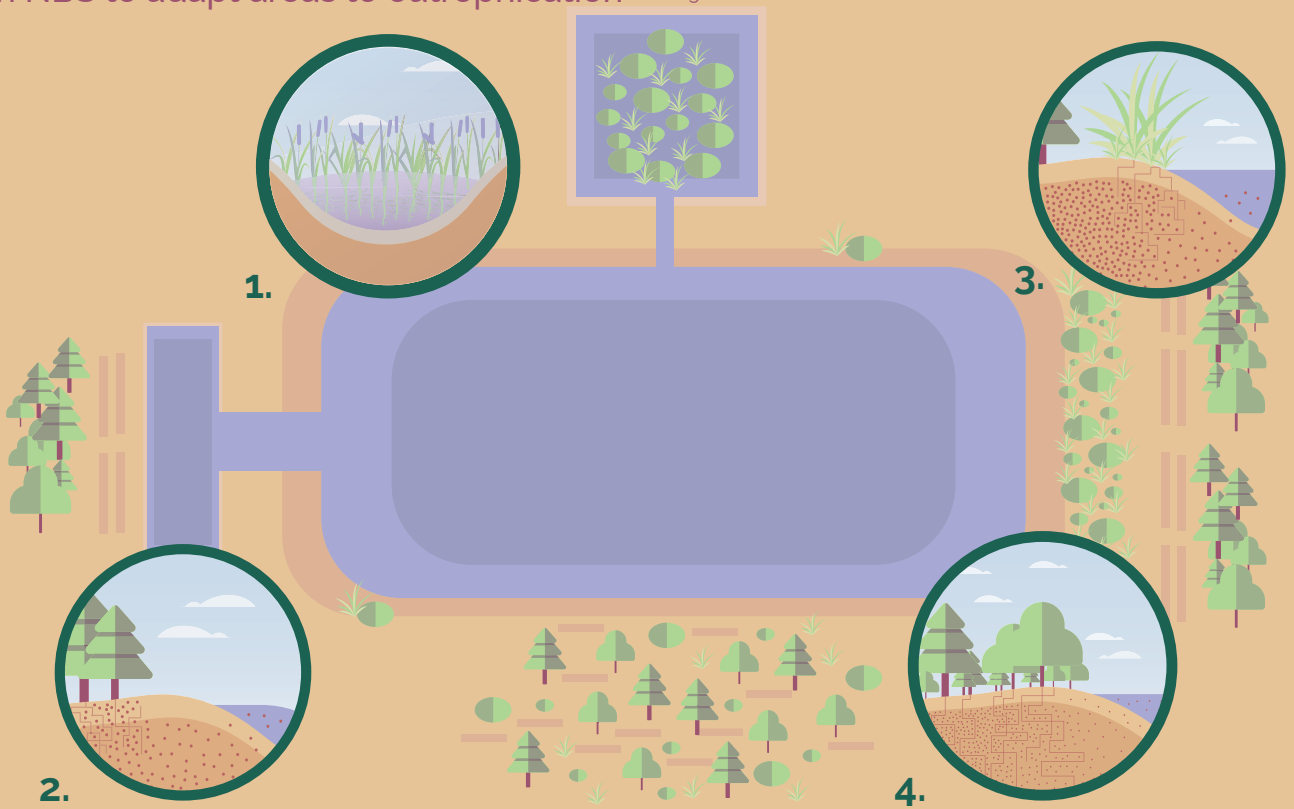
Ever since its planning and co-design sessions, Operandum has been collaborating with **local, regional and state partners**, such as the Pro-Puruvesi Association, the Local Forestry Association (MHY), the South Savonia ELY Centre, the Finnish Forest Centre and forest owners.

If you want to find out the updated results, visit www.geoikp.operandum-project.eu

Water protection structures and forestry management

An NBS to adapt areas to eutrophication

Operandum has built **protection structures** that capture **particulate nutrients** and **suspended sediments** before the flow reaches the lake, preventing an excessive aquatic plant growth.



1. Operandum is constructing **artificial wetlands** with deep-and-low areas, vegetation and microorganisms that **naturally filter** suspended solids and nutrients in **runoff water** that drains through a piping system.

2. **Overland flow areas** are buffer zones placed between forestry areas and the lake that retain sediments and nutrients by **slowing down water flow**.

3. Preserving **riparian green strips** helps both **mitigate** the negative effects of clearcutting forestry and enhance biodiversity. Trees and bushes at the lake margins **filter** sediments and nutrients from runoff water and **reduce soil erosion**.

4. To tackle with the sediment-and-nutrient leaching at its source, Operandum is fostering a **continuous cover forestry** practice to maintain **green covers** –instead of clearcutting—to help preserve water quality.