OPERANDUM at a glance

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
Adapting landscapes to climate change

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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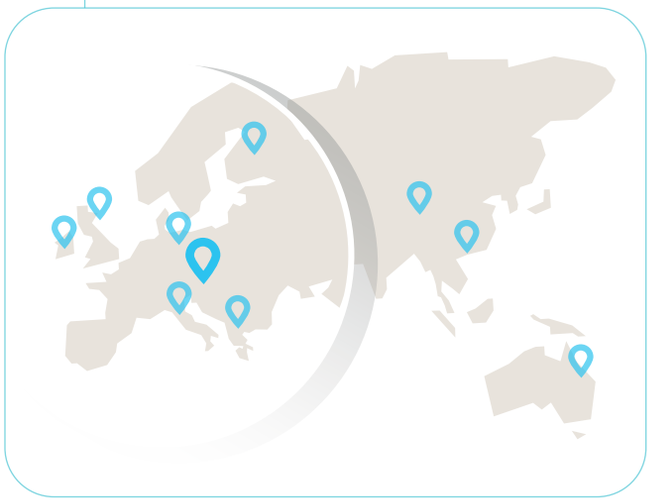
The project in numbers

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

IRELAND
Ringsend

University College Dublin
Ireland's Global University

Dublin City
Baile Átha Cliath

Ringsend

An OAL to test solutions against pluvial floods

This Open-Air Laboratory is situated in the Ringsend region in Dublin, Ireland. Surrounded by the **river Dodder**, this urban area generates around 10 % of the country's entire Gross Domestic Product.

However, the region is threatened by **extreme rainfall** that may lead to **pluvial floods**, as well as floods from the river and tides, because Ringsend has a low elevation. Indeed, recent floods have resulted in losses of property and infrastructure.

Co-creation of the NBS

A whole area involved in the process

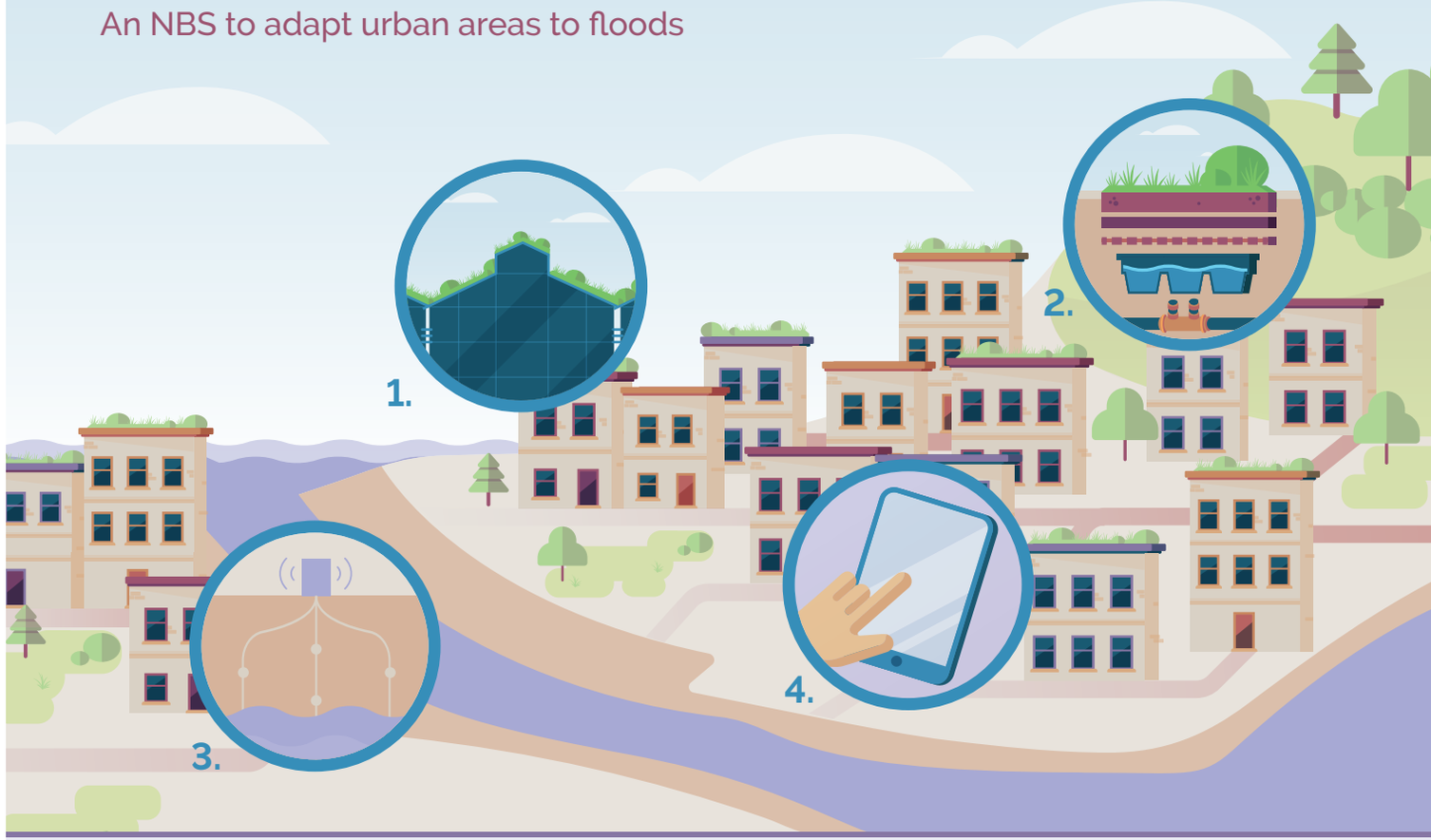
Operandum partners collaborated with **local stakeholders** like the Dublin City Council, the Flood risk department and the Climate Action Regional Office from the beginning of the process. These stakeholders also participated in the **co-design** of the solution alongside local companies, through a variety of workshops.

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

Green roofs and real-time monitoring

An NBS to adapt urban areas to floods

Operandum has deployed an **Internet of Things (IoT) green roof** to **absorb rainwater** and reduce urban floods.



1. The roof is covered partially with vegetation that **drains the rainwater**. In general, irrigation is not required to maintain it and it does not need high quantities of nutrients. It also provides **insulation** and **temperature control** to the building.

2. The green roof has **storage** for the drained rainwater that is continuously **monitored** to avoid collapses. As it prevents rainwater from going into the river, the green roof has the potential to reduce the water level depth in the river by up to 0.4 metres.

3. Operandum has also developed an **informed strategy** to manage floods based on **real-time monitoring** of the water level of the storage and the river.

4. The monitoring data will be stored in the GeoIKP platform, which will display the resulting **models** in a user-friendly way to first responders and authorities to contribute to a more **informed decision** making.