

## PROJECT OBJECTIVES



Demonstration of a **micro-hydraulic prototype** (35 kW) in the Porma Drinking Water Treatment Plant (DWTP) in Leon (Spain), based on the **innovative** integration of a **Pump as Turbine** (PaT) coupled to a **battery storage**



Development of an **intelligent management system** and a **monitoring platform** to control the energy generation and use



Quantification of the **energy recovery potential** along urban water cycle to achieve the **first European inventory** of the Small Hydropower potential



Contribution to the targets established by the EC to become a global leader in the **transition to clean energy** in the Directive 2009/28/EC or the "Clean Energy for All Europeans"



Replicating LIFE NEXUS approach to **30 follower facilities in Europe**



Providing practical knowledge and tools to end users, water managers and policy makers to enable them to **reduce the greenhouse gas (GHG) emissions** from urban activities



## WHAT IF URBAN WATER NETWORKS COULD BECOME A SOURCE OF RENEWABLE ENERGY



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## BOOSTING THE SUSTAINABILITY OF THE URBAN WATER CYCLE: ENERGY HARVEST IN WATER INDUSTRY USING MICRO-HYDROPOWER TECHNOLOGY



EUROPEAN LIFE PROJECT

LIFE17 ENV/ES/000252



## EXPECTED RESULTS #

**RENEWABLE ENERGY** Generation of **215 MWh/year of renewable electricity**, harvested from the energy currently dissipated by a **Pressure Reduction Valve (PRV)** located at the entrance of the DWTP.

**EMISSIONS REDUCTION** **100% Reduction of the GHG emissions** from the DWTP as the energy generated will cover the global demand on the installation. This will suppose **140 t CO<sub>2</sub> equiv. per year** of operation.

**WATER LEAKAGES REDUCTION** **0.5% Reduction of the water leakages** in the DWTP as a consequence of the improvement of the pressure control.

**FIRST EUROPEAN INVENTORY** Quantification of the **energy recovery potential** along urban water cycle in European cities.

**FEASIBLE SMALL HYDROPOWER PROJECTS.** Assessment of the **feasibility of European potential locations** considering the specific framework conditions of each country.

**PROJECT TRANSFER** Production of at least **30 replication studies in Follower facilities** (including Poland, Lithuania, Ireland and Spain).

**TRAINING** Celebration of **3 training seminars** in Poland, Lithuania and Spain.

**EVENTS** Celebration of **2 LIFE NEXUS** events in Poland and Spain.

**NETWORKING** Creation of a **Small Hydropower network**.

**SUSTAINABILITY** To allow authorities to increase the **competitiveness** and improve the sustainability of urban water provision services.

**DISSEMINATION** To disseminate Project results at national and international level through the Dissemination Plan.



Total Project budget: 1.158.188 €

EU contribution: 677.720 €

Duration: 01/10/2018 – 31/12/2021

With the contribution of the EU LIFE financial instrument

## PROJECT ACTIONS

Action A1 will address the creation of an innovative **Geodatabase** with geographical representation of potential energy recovery locations in European water networks.

**LIFE NEXUS prototypes** (PaT/energy storage and monitoring platform) will be designed in Action A2, then constructed in Action B1 and finally operated during 15 months in Porma DWTP in Action B2. **Technical and economic feasibility** of the innovative system will be evaluated.

E1. Coordination and management of the Project

E2. After-LIFE Communication Plan

A1. Assessment of Small Hydropower in European Urban Water Networks

A2. Administrative authorization and final prototype design

B1. Demonstration: prototypes construction and start up

B2. Demonstration: operation and evaluation

C1. Monitoring and measurement of the performance indicators

C2. Monitoring the socio-economic impact of the Project actions

D1. Dissemination planning and execution

Followers

Followers

Replication to LIFE NEXUS Followers

LIFE NEXUS boosting at European level and exploitation

B4.

Direct replication to **30 Followers facilities**, which will receive a custom report including the most suitable energy recovery technology, storage viability, initial investment, etc. (Action B3). Potential locations identified in the geodatabase (Action A1), will be assessed to quantify the energy recovery potential along European cities (Action B4).

**Environmental and socio-economic indicators** will be regularly monitored and compared over the baseline scenario (Actions C1 and C2). Dissemination actions will raise **awareness** and promote replication and transfer of results (Action D1). Actions E1 and E2 will involve Project **management** activities.

