→ Context and strategy

Generalitat Valenciana is faced with water supply difficulties related to an increase in demand and a decrease in resources. At the same time, the Spanish coast has large karstic resurgences, which are difficult to capture on land and give rise to undersea freshwater sources. However, issues of water catchment and variations in quality have so far prevented their industrial use. Suez Environnement, resource manager for Generalitat Valenciana, has carried out a first evaluation of the interest of these undersea sources, which feature very different levels of salinity.

From the point of view of sustainable development, the interest of capturing these undersea sources would be to decrease energy costs at desalinization plants. To qualify the flow, quality and technical possibilities of including these resources within the drinking water supplied by Generalitat Valenciana, it is essential to carry out a feasibility study integrating in-depth expertise of the karstic systems.

→ Budget

Estimation: 750,000 euros.

CONTACT

Sonia Gadea Fabra
Advisor on environment, water, urbanism and lodging of the Generalitat Valenciana
C/ Francesc Cubells, 7 (Edifici Portes de la Mediterrània) - 46011 - Valencia
Tel. : (+34) 9 61 97 35 75
Fax: (+ 34) 9 61 97 38 87
E-mail : gadea_son@gva.es

SPAIN

Feasibility of capturing freshwater from the sea for water supply of Mediterranean costal cities in view of a large-scale implementation: integration of undersea springs in drinking water supply projects

Presented by Generalitat Valenciana, Conselleria de Medi Ambient, Aigua, Urbanisme i Habitatge.

→ Project

The goal is to be able to integrate undersea sources in the Generalitat Valenciana drinking water supply projects. Since these sources are very specific, infrequently captured, difficult to approach and remain to be qualified (both in terms of quantity and quality), a substantial number of feasibility studies concerning their capture is necessary.
The goal is to validate the technical, economic and environmental feasibility of one or two undersea source catchment projects coupled to a Generalitat desalinization unit.

→ Implementation

The first phase consists in selecting two potential sources along the coast according to a multi-criteria analysis: proximity to a desalinization unit, cost of connection, expected flow with respect to need, average source salinity, catchment difficulties, source basin environment and hydro-geological context.
The second phase concerns operational studies of the sources selected: study of flow variations and salinity over a full hydrological year, environmental study of the source basin, analysis of hydro-geological functioning of the source, study of source catchment conditions and study of catchment impact on the marine environment.
Finally, a third phase will enable defining the catchment project operation on a large scale in terms of technical and economic impact (catchment, treatment and operating costs), as well as in terms of environmental and regulatory impact and benefits.

→ Expected results

» Implementation of a policy for developing and using water resources focusing on the identification of undersea sources as a strategic resource
» Environmental effectiveness of the project (focusing on energy and the eco-system), which would couple the catchment of freshwater resurgence in the sea to desalinization plants, resulting in less energy impact;
» An assessment of the hydro-geological and environmental expertise necessary, which will enable benefiting from project findings.

→ Partners

Generalitat Valenciana in association with Suez Environnement (represented by its Safege and Agbar subsidiaries and their local representatives) for the feasibility study; the Cetaqua Foundation, which will coordinate the Aquaplan, Aquagest Levante and Sedelam teams); Safege engineering Consultancy (France), Cetaqua (Spain) for Agbar and Beterson Water Services (France, Greece) with Prof. Argyriadis (assisted by Hydror for undersea diving).