

AT A GLANCE

TITLE: GLOBAQUA - Managing the effects of multiple stressors on aquatic ecosystems under water scarcity

PROGRAMME: FP7, Collaborative project (ENV.2013.6.2-1)

THEME: Water resources management under complex, multi-stressor conditions

DURATION: February 2014 – January 2019

COORDINATOR: CSIC – Spanish Council of Scientific Research

CONSORTIUM: 21 EU partners and 2 non-EU partners

WEB: www.globaqua-project.eu

THE CHALLENGE

Water and water-related services are major components of the human wellbeing. Currently freshwater systems are under threat by a variety of stressors (e.g.: organic and inorganic pollution, geomorphological alterations, land cover change, water abstraction, invasive species, etc...).

Moreover, the interaction between stressors can result in complex effects on organism with cascade events to water bodies' ecological status and their ecosystem functionality.

Water scarcity is a key driving force since has strong interactions on the effects of other stressors, and has become one of the most important drivers of change in freshwater ecosystems.

The joint occurrence of a numbers of stressors (chemical, geomorphological, biological) under water scarcity may produce novel and unfamiliar synergies and most likely very pronounced effects.

The GLOBAQUA project aims to study the effects of water scarcity in a multiple stressor framework to achieve a better understanding of how current management practices and policies could be improved by identifying their main drawbacks and alternatives.

THE OBJECTIVES

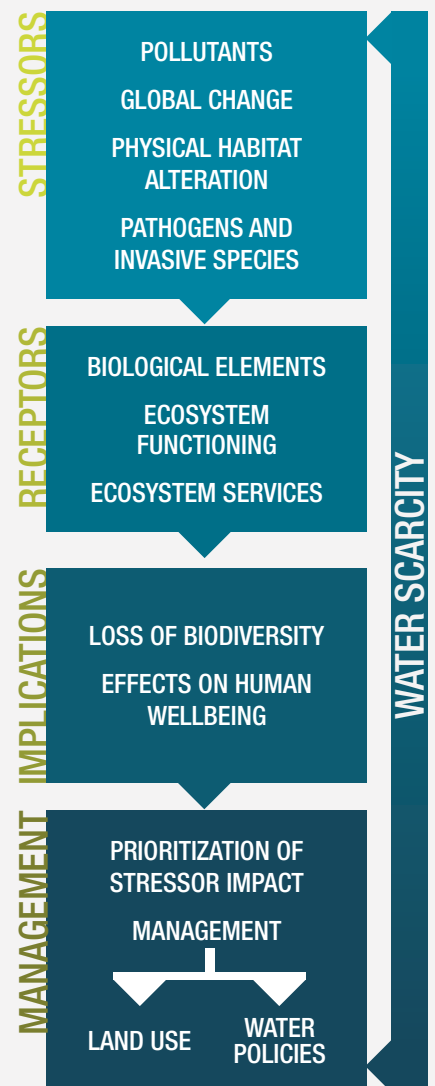
The specific objectives of GLOBAQUA are:

- to understand the mechanisms of multiple stressors acting in six selected case studies
- to analyse the effects of multiple stressors on biodiversity and ecosystem functioning
- to analyse the implications on the socio-economic development of the case-study regions
- to develop a modelling framework to assess scenarios affecting availability, quality and demand of water

EXPECTED IMPACTS

- improvement of the scientific knowledge on the relationships between multiple stressors by identifying potentially synergic linkages, and assessing how these interactions determine changes in the chemical and ecological status of water bodies
- improvement of the water management practices and policies considering the influence of multiple stressors especially within EU Water Framework Directive (2000/60/EC, WFD) and other related regulations

THE CONCEPTUAL FRAMEWORK



THE APPROACH

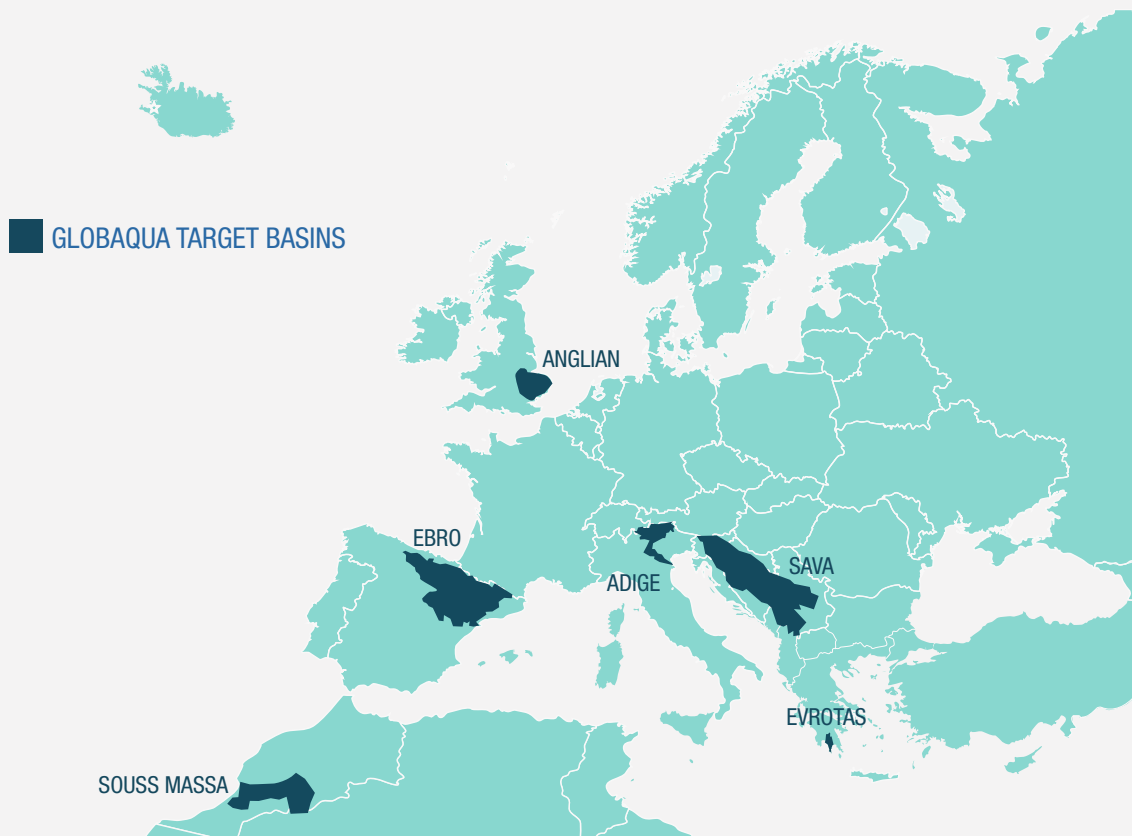
In order to assess the effects of water scarcity on aquatic ecosystems, GLOBAQUA focuses on six case-study river basins. Two basins in the Mediterranean European region (Ebro - Spain and Evrotas - Greece), and one basin in North Africa (Souss Massa - Morocco) were selected to obtain a perspective where water scarcity is the main problem. One continental basin (Sava – Slovenia, Croatia, Bosnia and Herzegovina and Serbia), one Alpine basin (Adige - Italy) and one UK river basin (Anglian River - UK) were included to have a European

outlook where water scarcity is a growing issue because of multiple uses and unequal distribution of precipitations.

Different sampling strategies are followed within GLOBAQUA: field campaigns to collect data on fate and behaviour of pollutants, biodiversity and ecosystem functioning, controlled field experiments on selected sites to test the effects of combined, and mesocosms experiments. Validated methodologies for chemical analysis of metals, priority and emerging pollutants in water, sediment and biota,

will be used. In addition, immunoassay and rapid screening test for the detection of contaminants will be performed.

Several modelling approaches will be used to estimate levels and economic values of ecosystem services, and to gain a better understanding of the hydrological processes at the catchment scale. An integrated methodology for identifying the environmentally and socioeconomically sustainable management of water resource ecosystem services will be performed in each case study.



THE CONSORTIUM

BELGIUM/ITALY

JRC - Joint Research Centre - European Commission

CANADA

INRS - Institut National de la Recherche Scientifique

GERMANY

LMU - Ludwig-Maximilians-Universitaet - Muenchen
EKUT - Eberhard Karls Universitaet Tuebingen
UFZ - Helmholtz Zentrum Fuer Umweltforschung

SPAIN

CSIC - Agencia Estatal Consejo Superior de Investigaciones Cientificas
UB - Universitat de Barcelona
ICRA - Fundacio Institut Catala de Recerca de l'aigua
UPV/EHU - Universidad del Pais Vasco

FRANCE

CNRS - Centre National de la Recherche Scientifique

GREECE

HCMR - Hellenic Centre for Marine Research
ATHENA - Athena Research and Innovation Center in Information Communication & Knowledge Technologies

ITALY

AEIFORIA srl
UNIPD - Universita degli Studi Di Padova
UNITN - Universita degli Studi Di Trento

MOROCCO

IAVCHA - Institut Agronomique et Veterinaire Hassan II

NETHERLANDS

ALTERRA - Stichting Dienst Landbouwkundig Onderzoek

TNO - Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek
WU - Wageningen University

SERBIA

IBISS - Institut za Bioloska Istrazivanja

SLOVENIA

JSI - Institut Jozef Stefan

SWEDEN

SMHI - Sveriges Meteorologiska och Hydrologiska Institut

UNITED KINGDOM

IMPERIAL - Imperial College of Science, Technology And Medicine

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