

## THE BIOBÍO RIVER BASIN

The Biobío Basin (24,371 km<sup>2</sup>) is the third largest Chilean river basin. It stretches from the continental divide in the east to the Pacific Ocean in the west. It is influenced by the temperate and Mediterranean climates from South and Central Chile, has a pronounced seasonality in precipitation patterns, and an exceptional value in terms of biodiversity (endemism). Its water resources are of strategic importance for Chilean development: in 2005, the basin provided ~30% of all electricity of the Inter-Connected System SIC, which covers the energetic demand of 43% of the national territory and 93% of the population.

Development in the basin is fast and on-going, but it needs to consider society's increasing environmental consciousness, which is reflected in the recent changes in legal and institutional settings. A major challenge for water management in the basin is to trigger the transition from a sectorial to an integrated approach and the establishment of equilibrium between ecosystem and societal needs in a context of increasing environmental change.

## WORK PACKAGE 3 – MONITORING

Locally obtained monitoring data are important for enabling researchers and decision-makers to apply theoretical knowledge on e.g. meteorological, hydrological, hydraulic and water quality processes to local conditions: field measurements combined with theoretical knowledge may allow researchers and decision-makers to quantify effects, check status or compliance, and gain insight in the characteristics of cause-effect relationships. As such, they allow for better management decisions.



In this context, TwinBas had foreseen for the implementation of monitoring efforts in the case study basins. However, it is also a fact that for many places in the world, important amounts of data may already exist. The TwinBas team considered it to be essential to collect, analyse, harmonize, and store in a structured way those existing data sets, which are relevant to the project activities, before the issue of additional monitoring efforts is addressed.

Existing meteorological data sets for Biobío have thus been gathered from more than 80 available stations. Two important characteristics of the meteorological data set collected for Biobío are: *i)* the large amount of data gaps in the time series; and *ii)* the almost complete absence of measuring stations at higher elevations.

Hydrological data (water levels, discharges) have been generated through fluviometric stations and contained in the national water-data bank. Data from 42 traditional stations were available, with the oldest time series going back to 1914. At present, 27 stations are still operational.

In a first stage, collected data sets were screened and structured in a georeferenced database for the basin and made available for the activities under other work packages. More recently, the ArcHydro data model has been implemented. A list of priority substances was established based on a screening of opinions among experts. As existing monitoring efforts are currently on-going and a new official water quality monitoring programme for the Biobío Basin is to be implemented in the near future under the Secondary Water Quality Standard, no important additional monitoring was undertaken under TwinBas. Instead, available data sets and knowledge were used.

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### ABOUT TWIN2GO

*Twin2Go reviews, consolidates, and synthesises research on adaptive and integrated water resources management in basins around the world. The aim is to draw insights relevant to policy and research on issues around adaptive water governance in the context of climate change, and to make them transferable to other basins. Twin2Go further promotes sharing of research results with practitioners and high level decision makers through effective dialogue.*

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