



Bringing INnovation to onGOing water management – A better future under climate change

Financing

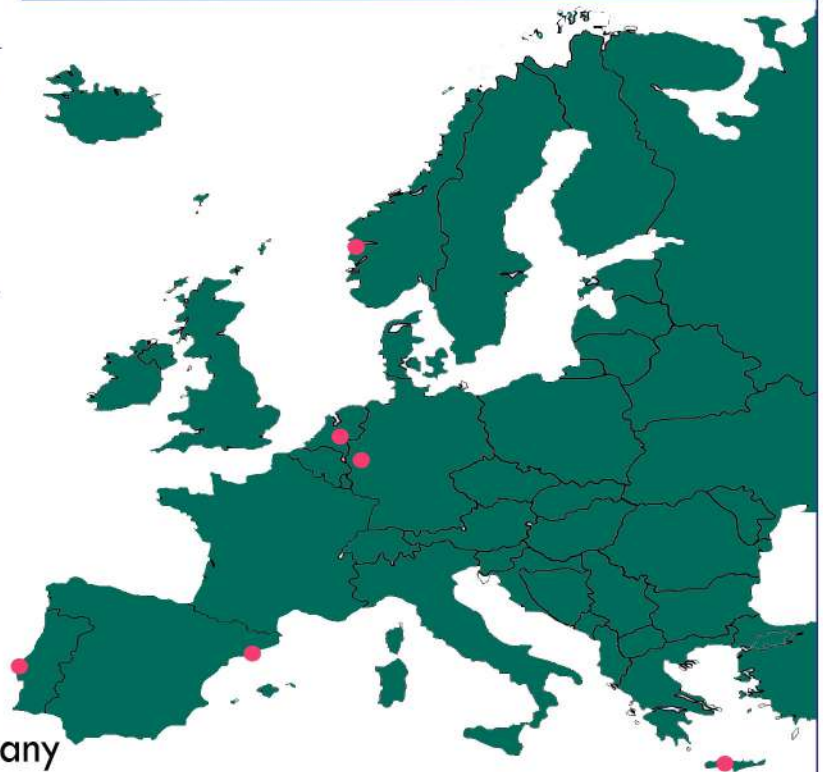


European Union's Horizon 2020 Research and Innovation programme under grant agreement No. 641739.

BINGO provided demand-driven solutions for specific climate related challenges, in particular for highly vulnerable water resources of strategic importance. It addressed average and extreme conditions of Climate Change scenarios in six areas across Europe, from North to South.

OVERALL BUDGET
7,822,422.50 €

START DATE:
1 July 2015
END DATE:
2019



ACTIONS PLANS

Pilot Tests

- Bergen, Norway
 - The Weluwe, Netherlands,
 - The Wupper River Basin, Germany
- Badalona, Spain,
 - The Tagus lower river basin, Portugal
 - The Troodos mountains, Cyprus



CONTACT INFORMATION

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»» **Goal** The project aimed both at reducing the uncertainty of near-term climate predictions and developing response strategies that may help society to better manage the remaining uncertainty. BINGO provided to sectors using water resources such as drinking water supply, agriculture, hydropower and water resources management, demand driven solutions for specific climate-related-challenges in Europe that focus on different geographical scales and are usable by a diverse spectrum of end users such as water managers, decision-makers, policy-makers and the society at large.

»» **Introduction** BINGO was a 4-year Horizon 2020 project that aimed at understanding the impacts of Climate Change on the water cycle in six research sites in Europe, with 10 year climate predictions, assessing the risks for socio-economic activities and providing adaptation solutions for stakeholders. The referred six research sites were chosen to represent challenges in terms of water management options and approaches and have been selected based on relevant criteria and covering a representative range of conditions.

Methodological The process of the work in BINGO followed the following methodology:

»» approach



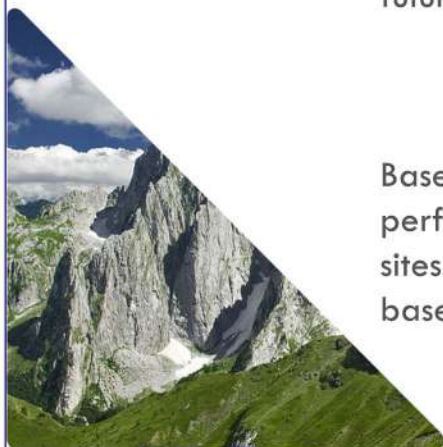
Climate predictions and downscaling to extreme weather

To study short- and long-term changes in climate, BINGO used climate models to simulate the present climate, as well as ten-year predictions and future projections.



Integrated analysis of the water cycle

Based on the data produced from the climate predictions, BINGO performed an integrated analysis of the water cycle for the 6 research sites. The analysis used a range of hydrologic and was done for the baseline situation (past and present) and for future scenarios that combine



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Methodological »» approach



Assessment of the impacts of extreme weather events:

In this phase was the assessment of impacts of climate change extreme events scenarios of droughts and floods at the research sites, based on the risk assessment procedure from ISO 31000. Three steps of risk assessment were performed: risk identification, risk analysis and risk evaluation.



Developing risk treatment and adaptation strategies for extreme weather events

A portfolio of adaptation measures was compiled from previous studies (e.g. PREPARED and CARPATHIAN CC) and shared with the research sites. A first assessment of the policy and governance situation was obtained by a round of interviews with key stakeholders, policy makers and policy experts. The reports of the first two rounds of interviews were compiled and analysed in a report. A Multi-Criteria-Analysis (MCA) was conducted to evaluate options using a broad range of indicators, related to socio-economic or other factors



Ensuring Excellence and Actionable Research

This engagement was prepared by inviting stakeholders to participate at face to face meetings, or workshops, which were designed as sequential meetings with specific targets to allow building connections and willingness to collaborate and co-produce relevant inputs all along the project

»» Results

Climate predictions and downscaling to extreme weather

For disseminating climate data in formats specific to individual BINGO has produced a data exchange platform "DECO". The project dynamically downscaled climate data between 1979 and 2015 (evaluation period), and from 2015-2024 (decadal predictions). The (1 km) resolution simulations were also produced for extremal episodes via the development of a classification algorithm (Meredith et al., 2018), greatly reducing computational expense. Bias correction via the CDF-transform was applied to all 12 km data. Using these data and observations, BINGO developed (i) precipitation and weather generators, and (ii) spatial maps of rainfall return levels and intensity-duration-frequency curves for all research sites.

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»» Results

Integrated analysis of water cycle

Descriptions of the sites and the hydrological systems, 20 hydro models and modelling of last 30 years and the future 85 years. Improved the forecasts of the impacts of climate change on floods and droughts including learning of the local processes which drive these

Assessment of the impacts of extreme weather events

Risks were evaluated considering each key sector and objective and then were reassessed integrating all key activities and objectives of analysis. The main outputs were tolerance levels acceptability discussion, vulnerabilities identification and grading, the extent to which Climate Change related hazards associated with decadal predictions increase the risk on socio-economic activities and people safeguard at each research site. Warning and action indicators were suggested in order to identify progression of Climate Change and the adequate time to implement certain adaptation measures.

Developing risk treatment and adaptation strategies for extreme weather events

BINGO delivered aggregated values in terms of benefits, cost simulations and social added values of adaptation strategies and measures per research site. These results were an important input to BINGO's work. The result of the economic and societal analysis was reported in an impact report related to specific measures for each research site. BINGO provided the recommendations and suggestions for implementing the best transition path for each site, dealing with concrete (detailed) results, with the focus on implementation and decision support. Additionally, a portfolio with adaptation measures was created, which can be consulted online. This tool allows the decision makers to share and select

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»» Results

Ensuring Excellence and Actionable Research

BINGO established a methodology and approach to ensure that the researchers and the local stakeholders will cooperate, building shared awareness and knowledge. Communities of Practice were the result a mutual learning setting where different people meet, ensure a common language and develop communication skills to establish productive relationships between researchers and non-researchers and create actionable research labs where complex problems can be addressed and developed to further actionable research solutions.

»» URL <http://www.projectbingo.eu/>

»» Related Websites

Introductory, general and testimonial videos
<http://www.projectbingo.eu/content/videos>

The BINGO e-book
http://www.projectbingo.eu/sites/default/files/Ebook_WEB.pdf

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