



Horizon 2020 Societal challenge 5:
Climate action, environment, resource
efficiency and raw materials

BINGO

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

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Deliverable 7.8 – Final version of the Exploitation Plan has been developed by SPI within Task 7.5 of WP7 – Dissemination, Communication and Exploitation. This Exploitation Plan is grounded on the added value and data generated by the project to ensure maximum benefit from it. The Exploitation Plan contains a strategy for the exploitation of the project outputs and results, which is focused on concrete tools and activities to reach the target audiences in order to ensure that the project outputs and results are used in further activities. In addition, the Exploitation Plans contains the next steps that are foreseen to be implemented in order to ensure the exploitation of the project results during and after its life cycle.

Evidence of accomplishment

Report

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List of Acronyms

PAB	Project Advisory Board
RS	Research Site
WP	Work Package

EXECUTIVE SUMMARY

This report defines the exploitable results developed by the project BINGO, their target groups' needs, and provides a strategically designed plan for their exploitation. The methodology for the development of the current exploitation plan included a canvas exercise, a demand analysis based on questionnaires to end users and several meetings with the BINGO partners. The final plan has defined 8 overall exploitable results, 27 research sites' exploitable results, 17 exploitation-specific tools and channels and 15 actions to be implemented.

The Final Exploitation Plan addresses the impact that the results produced by BINGO have had under the Water-2a-2014 topic several dimensions of sustainability including: Social, Environmental, Economic, Policy/Governance and Assets/Infrastructure. The target audiences include stakeholders from several water-related fields such as water supply/ management, urban drainage, coastal areas, civil protection, climate change adaptation, agriculture / irrigation and hydrology. The target stakeholders have been defined as:

- Scientific community
- Water professionals - Technical staff
- Water professionals - Decision makers
- Policy makers
- Stakeholder group (organisations, SMEs, NGOs)
- Society at large

A demand analysis has been produced in order to understand the needs of the end users. This exercise concluded, among other things, that it is important for the end users that the exploitable results are shared through interactive channels such as courses and workshops, as well as in structured formats such as guidelines.

As such, a number of tools and channels have been identified for the specific purpose of promoting the exploitation of BINGO's results. These channels include: ECCA 2019, explanatory videos, follow-up testimonial videos, website adaptation post-BINGO, Common Dissemination Booster (CDB), networking and creating synergies, conferences, publications (open access), meetings, technical factsheets, policy briefs, action plans, reports and guidelines. Additionally, there are three other channels which will be developed if there are available resources, and these are: workshops, a BINGO Book and a Post-ECCA conference.

Besides the research sites' results, which are specific to the each site or to sites with similar characteristics, the exploitable results have been collaboratively defined by all BINGO partners through a canvas exercise. Thus, the exploitable results are:

- Advice in Collaborative Management in Climate Change Adaptation
- Dynamical downscaling to 1 km scale – method, rainstorms
- Guidance on how to use hydro models and understanding impacts

- Full and comprehensive methodology for risk management
- Prioritisation between longlist of adaptation measures (process/method)
- Portfolio of adaptation measures
- Methods and guidelines to create well-functioning CoPs
- Canvas exercise applied to exploitation - methodology for collectively defining exploitable results

In order to take these results to their appropriate audiences, 15 actions have been designed and distributed amongst the partners, with specific timelines. The actions are the following:

Action 1 – Produce explanatory videos

Action 2 – Networking and fostering synergies

Action 3 – Prepare presentation templates to present BINGO's results at events

Action 4 – Disseminate exploitable results

Action 5 – Website adaptation post-BINGO

Action 6 – Publish results in scientific and non-scientific journals

Action 7 – Produce policy briefs

Action 8 – Produce informative documents, materials and sessions

Action 9 – Produce guidelines

Action 10 – Prepare technical factsheets

Action 11 – Produce reports

Action 12 – Host, share and maintain portfolio

Action 13 – Produce follow-up testimonial videos

Action 14 – Guarantee the sustainability of the CoPs beyond BINGO project lifetime

Action 15 – Organise WP6 content into a handbook

INTRODUCTION

This document is developed as part of the BINGO (Bringing INnovation to onGOing water management – a better future under climate change) project, which has received funding from the European Union’s Horizon 2020 Research and Innovation programme, under the Grant Agreement number 641739. The **Final Exploitation Plan** represents Deliverable 7.8 of Work Package 7 (WP7) – Dissemination, communication and exploitation. The initial version of the document was produced during Month 24 of the project. This version is the overall conclusion of BINGO’s Exploitation Strategy.

The present version of the report aims to (1) provide an update on the current status of the exploitable deliverables of the project in line with their previous editions, (2) name and enlist roles for each consortium partner in regard to their strategic approaches towards exploitation of the project deliverables into their non-commercial activities and (3) enlist and assure that exploitation actions are in line and coherent to all follow-up events agreed with each partner.

After the Introduction, this document is organised in the following sections:

1. **Exploitation approach:** in this section the exploitation approach is defined, as well as the expected impact of the strategy, the target audiences, a demand analysis and the tools and channels for exploitation.
2. **Exploitable results:** here, the exploitable results from each Work Package (WP) and the Research Site (RS) are presented in detail, including the definition of their end-users, the value proposition, the channels to reach the end-users, the external partners to involve, the actions to be undertaken in order for the result to be exploited and potential barriers for its exploitation.
3. **Final exploitation plan:** this section operationalises the strategy, defining specific actions and the partners involved.

1. EXPLOITATION APPROACH

The concept of exploitation differs from the concept of dissemination, although an effective exploitation strategy should include both dissemination and exploitation activities. In this regard, it is crucial to understand the concepts of dissemination and exploitation.¹

Dissemination is the public disclosure of the results by any appropriate means (other than resulting from protecting or exploiting the results), including by scientific publications in any medium.

Exploitation is the utilisation of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities.

Even though exploitation and dissemination are different concepts, an exploitation strategy is intrinsically linked to the development of dissemination activities. Thus, while dissemination is related to making the results of the project visible, the exploitation is responsible for guaranteeing the use of the project results in other activities during and after its implementation.

BINGO's exploitation strategy is focused on exploiting and spreading the project results so they can be used in diverse contexts and situations by relevant stakeholders, who will turn the project results into research and practical activities with added value and promote them to local, regional, national or international stakeholders. The current approach to the exploitation strategy was defined through consultation with all the partners, which concluded that the strategy would not be concentrating on developing a "business-focused" approach. Thus, the main aim of BINGO exploitation strategy is to spread the project outputs and results to the relevant stakeholders so that the knowledge that is generated by the project has a long running impact beyond the research sites and can be used in different activities and circumstances.

In this context, BINGO has developed a set of activities and tools to ensure an effective exploitation of the results during and after its implementation for the sustainability of the project. These tools and activities will allow the project target audiences to benefit from the project knowledge, which can lead to the development of different research and practical activities.

The main objectives of the BINGO exploitation plan are to:

- Define and implement a set of tools and activities to exploit the project results;
- Guarantee that the project results last even after the project ends;
- Inform the target stakeholders about the project developments and foster the creation of synergies;

¹ http://ec.europa.eu/research/participants/portal/desktop/en/support/reference_terms.html

- Ensure the uptake of project results into technical rules, guidelines and standards that facilitate different levels of exploitation;
- Encourage the target stakeholders to provide inputs regarding the project outcomes and results;
- Guarantee open access to BINGO scientific publications and research data;
- Ensure that the project developments are communicated to the target audiences regularly through the project dissemination activities.

Figure 1 shows the structure of the BINGO exploitation framework. Taking this thematic framework into account, the Exploitation Plan is structured as follows:

- Chapter 1 presents the **Exploitation Approach**
- Section 1.1. presents the **Impacts** of the BINGO project and the Exploitation Strategy;
- Section 1.2. presents the **Target Audiences** of the Exploitation Strategy;
- Section 1.3. presents a **Demand Analysis**, conducted for the Exploitation Strategy;
- Section 1.4. lists the **Exploitation Tools and Channels**, including the traditional BINGO dissemination tools and tools used specifically for the aim of Exploitation;
- Chapter 2 shows the project's **Exploitable Results** by **WP** and the **RSs**;
- Chapter 3 introduces the **Final Exploitation Plan**
- Section 3.1. defines a **List of Actions**, including General actions and Result-specific actions
- Section 3.2. defines the roles of the **BINGO partners** in the previously defined actions.

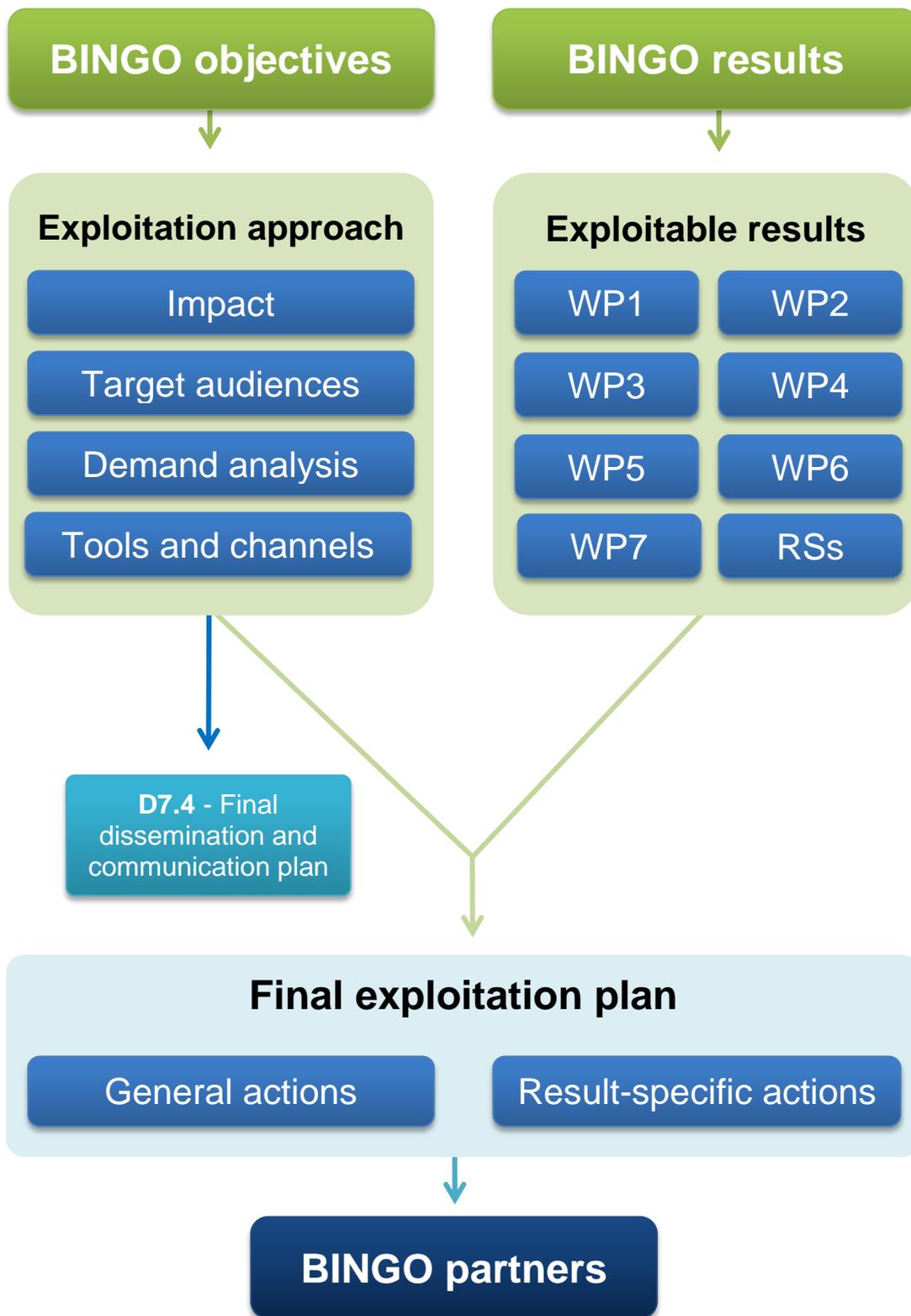


Figure 1. Exploitation Framework

1.1. Impact

BINGO has generated different types of data predictable to contribute/create positive impacts to the target audiences, which will be presented in the next section. These outputs have a significant impact on the water sector and on water-related sectors across Europe. The project provides decision-makers in charge for managing water systems with better and detailed knowledge of their water cycle under future climate of the next decade and with a portfolio of specifically selected and evaluated adaptation measures that are based on latest results from national, European and international research. To achieve this impact a set of tools and measures have been developed with the twofold objective to:

- Deliver co-produced solutions ready for implementation and tailored to the specific needs of the six BINGO research sites;
- Deliver approaches and methodologies with transferability potential to other sites in Europe and beyond, in order to have maximum impact.

BINGO achieved this impact by providing co-produced knowledge from actionable research developed in six representative research sites across Europe's climate regions and by actively involving both decision-makers responsible for managing the water cycle at these research sites and relevant stakeholders and multiplier organisations of the water sector and related-sectors, who can guarantee a rapid uptake and implementation of BINGO results.

The following table provides an overview on how BINGO contributed to accomplishing the expected impacts under the Water-2a-2014 topic.

Table 1. Impacts and BINGO contribution

Impacts	BINGO Contribution
<p>“More efficient management of water resources in Europe due to better knowledge of the water cycle under the future climate”</p>	<p>Improved prediction of future climate, including extremes and, in particular, of droughts (deliverables of WP2).</p> <p>Co-production of better prediction tools for impact assessment of climate change on water resources, and evaluation of future changes in quantity and quality of water resources (deliverables of WP3 and WP4).</p> <p>Adaptation/integrated management strategies, tailored to the local-scale, validated and based on natural and socio-economic constraints (deliverables of WP5).</p> <p>Effective dissemination and exploitation (based on an exploitation strategy) ensuring that the provided measures are transferred to end users (output WP6 and WP7).</p>
<p>“Contribution to management planning across the</p>	<p>Co-production of a portfolio of management practices and adaptation strategies with potential to be applied to similar conditions across EU (output WP5).</p> <p>Development and strengthening of the transferability of management practices/adaptation measures through the demonstrations to other EU sites</p>

Impacts	BINGO Contribution
<p>EU in support of European policies”</p>	<p>within similar climatic regions (output WP5).</p> <p>Building of a shared awareness and shared perceptions between researchers and stakeholders around challenges in order to support a knowledge alliance and “actionable” solutions and scenarios (output WP6 and WP7).</p> <p>Improved management planning in support of EU policy and regulations (e.g. EU Climate Change Adaptation Strategy; EU Water Framework Directive; EU Floods Directive; EU Biodiversity Strategy 2020; Blueprint to Safeguard Europe's Waters; EU2020 Strategy-“Innovation Union” and “Resource-efficient Europe”).</p>
<p>“Contribution in the longer-term to the development of reliable climate services in relation to the water cycle”</p>	<p>Development of better regional prediction approaches for extreme events and climate change for the EU (deliverables of WP2 and WP3).</p> <p>Development of better, more reliable and integrated methodologies for climate change and extreme events impact assessment (deliverables of WP3 and WP4).</p> <p>Co-production of a portfolio of management/adaptation measures to cope with climate change and extreme events (output WP5).</p> <p>Better prediction capacities for extreme events and climate change, as well as the future use of the new management measures will also contribute to the emergence of new climate related services in the market. Such services will be a crucial support for policy-makers to cope with climate change and extreme events. Through the development of new climate-related services, the future application of BINGO results will enable the creation of new jobs in this area.</p>

In addition, the following dimensions of sustainability were impacted by BINGO: Social, Environmental, Economic, Policy/Governance and Assets/Infrastructure.

➤ **Social Impact: public health and well-being, nutrition and regional development.**

Droughts and floods can have robust adverse effects on public health, either by shortage of drinking water supply or for crop production or by spread of water-borne diseases due to failure in sanitation. Therefore, the results generated by BINGO are of general interest to the society and are expected to continuously have a positive impact on it. For instance, there are relevant outcomes from the case studies in Cyprus, Portugal and Spain with a great potential of use by many other Mediterranean countries. Thus, specific dissemination and exploitation measures are implemented to approach target audiences in other countries and other initiatives that can benefit from BINGO outcomes.

The international contacts of the Project Advisory Board (PAB) members and the Supporting Organisations Cluster also facilitate the exploitation of the project results to a wider audience.

➤ **Social impact: social justice, vulnerability and affordability**

The climate change impacts are expected to be felt in a more intense way by the population that is more vulnerable, such as poor, elderly, uneducated people and people with disabilities. In this context, the climate change impacts are greatly influenced by how exposed and sensitive the

population and its adaptive capacity are. Therefore, the societies that are more vulnerable are also expected to be more affected by the impacts of climate change and least prepared for its negative consequences.

In this context, it is important to identify the most vulnerable regions, sectors and groups, and promote the exploitation of cost-effective adaptation measures in these areas to ensure that they are ready to deal with the climate change consequences. Hence, BINGO addressed this issue by giving a special focus on the economic, societal and policy implications (including matters of affordability and social justice) of possible measures throughout the whole sequence of tasks in WP5, ending with recommendations for implementing the best transition path for each site, and also with a set of recommendations that can be applicable in other regions with similar challenges. These recommendations are, therefore, exploited to the target audiences in order to ensure that they could have a positive impact in the most vulnerable regions.

➤ **Environmental Impact**

Droughts and floods have a shocking impact on ecosystems. Different factors such as insufficient water resources management, climate change and weather extremes have led to depletion, overexploitation or pollution of water resources, with consequences such as ecosystem decline, seawater intrusion in aquifers or generally impaired water quality with adverse effects on aquatic biota. In this context, the data generated by BINGO can contribute to easing the environmental impact of climate change and weather extreme events by providing a better understanding and prediction of future climate and weather conditions. The data generated by the project will be exploited to the different target audiences and is expected to further create impacts on different water-dependent sectors.

➤ **Economic Impact**

Droughts are a major threat to economic development since they degrade the living conditions of the populations affected by them, damage agriculture production and jeopardise the food security. In parallel, floods also have devastating impacts on land use, supply and transport infrastructure properties, and public health which in turn has economic implications to productivity. Therefore, the exploitation of results is crucial to enable better prediction, prevention, mitigation and management of droughts and floods.

➤ **Governance and Policy Impact**

BINGO can have an impact on good governance in the water sector, by enabling better decisions based on the data generated by the project. Thus, the exploitation of more reliable data about the specific climate and hydrological conditions for the research sites, as well as a portfolio of validated and demonstrated adaptation measure can lead to better governance regarding climate change.

In this context, BINGO provided support to decision-makers at local and regional level to better address policy and governance issues to cope with the expected impacts of climate change and extreme events, using the Water Governance Council's three-layer model as framework to address and elaborate policy and governance issues. With regard to existing policies, BINGO is in line with the main objectives of the EU2020 strategy, and particular supportive of the initiatives "Innovation Union" and "Resource-efficient Europe". Furthermore, BINGO accounted for the needs of water-relevant EU policies such as the Water Framework Directive and the "EU Biodiversity Strategy 2020".

➤ **Assets/Infrastructure Impact**

Weather extreme events can also have a negative impact on infrastructures (e.g. transport, water supply, sanitation, energy). Such infrastructures are often huge public assets, essential for human wellbeing, sustainability and economic development. The exploitation of a more detailed and specific knowledge on how certain infrastructures in the research site areas are at risk by climate change and weather extremes, as well as the exploitation of measures to mitigate these risks can lead to a better understanding of how stakeholders can deal with the negative impacts caused by climate change on infrastructures.

1.2. Target audiences

The identification of the exploitation target audiences allows an easier transfer of the project outcomes and results and the definition of more focused common and individual exploitation tools and activities. In this context, the exploitation tools and activities take into consideration the real needs and expectations of the abovementioned target audiences in order to guarantee that the project results are exploited and can have different uses considering their characteristics.

To reach the different stakeholders, BINGO has developed common and individual exploitation strategies, focused in the target audiences' specificities and the project results.

The exploitation target audiences are entities or individuals that can benefit from the project results. In order to guarantee the sustainability of the project and an effective exploitation of the knowledge produced, the BINGO results can provide water related solutions to several areas, as gathered by the shared Exploitation document.

The target audiences have been divided by two categories: by field and by type. This categorisation has been achieved by analysing the initial exploitable results definition, developed by the project partners. Through analysing these results, the audiences were grouped into different fields and types.

The audiences of the exploitable results, which will be presented later in this document, have been organised based on this aggrupation. This, however, does not mean that there are no other

audiences beyond the ones defined in this document which the project will address as well in the dissemination of the exploitable results.

The project has been built around 6 Research sites representing challenges in terms of water systems, strategic uses and management and key problems. Therefore the main exploitable results concern the fields presented in the figure below:

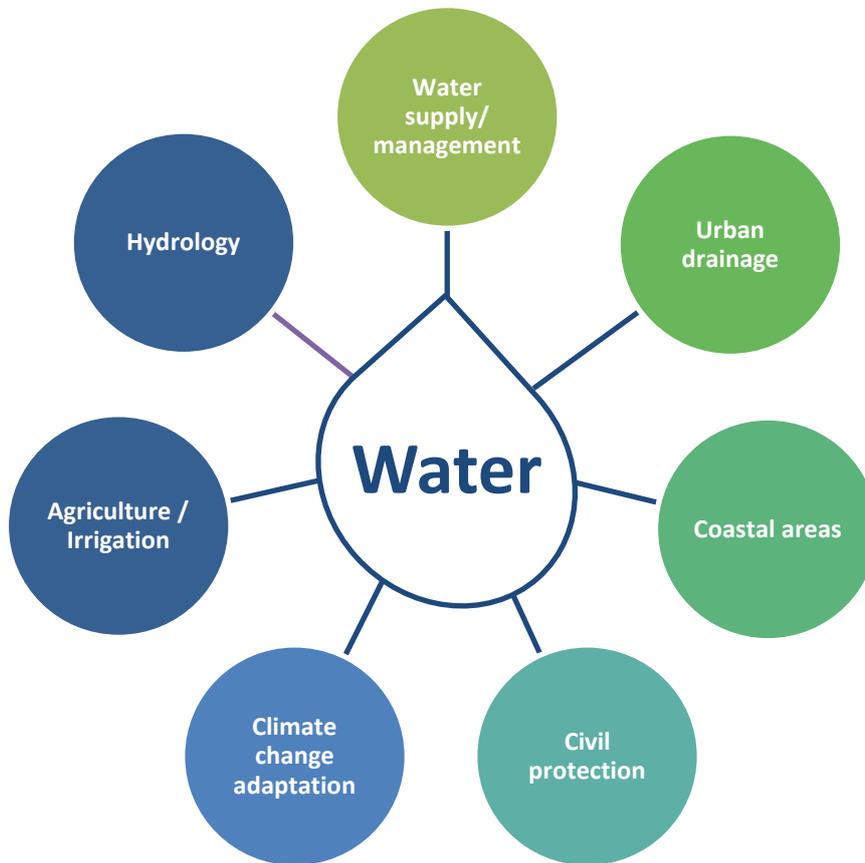


Figure 2 - Stakeholders' fields of activity

By looking closely to the outputs produced by BINGO, it is clear that they fit into the above seven main areas from which stakeholders can benefit from the exploitable results.

The project undertook climate change modelling, followed by water cycle modelling and evaluation of impacts and risks of future climate to representative activities and end users of water. BINGO engaged individual farmers in Cyprus and large water management organisations in Germany; water utilities in Portugal and Norway and municipalities in Norway and Spain. Soil moisture and wildlife protection were addressed in The Netherlands and specific field equipment designed and installed for onsite measurements. Cyprus followed the methodology and equipment used in order to better assess droughts. These are a few examples of the rich diversity of climate, water systems and land uses tackled from which a range of results were achieved within the fields of: hydrology, coastal areas, water supply, agriculture/ irrigation and urban drainage.

The project committed to deliver to society a portfolio of climate change adaptation strategies to be used by different stakeholders inside and outside the geographic context of the project (Climate change adaptation). BINGO has used participatory practices to identify risks and instigate adaptation measures. Within the adaptation measures to risk scenarios and, in particular regarding coastal areas, BINGO addressed civil protection issues related to floods.

BINGO approaches and results so far made clear the link between state-of-the art climate science and the real challenges that local stakeholder's face which is thus key to the joint specification and implementation of adaptation measures. The experience gained in the project clearly reveals the relevance of co-production for applied research products: the greater buy-in of assessments beyond just researchers the greater likelihood of well informed, science-based adaptation.

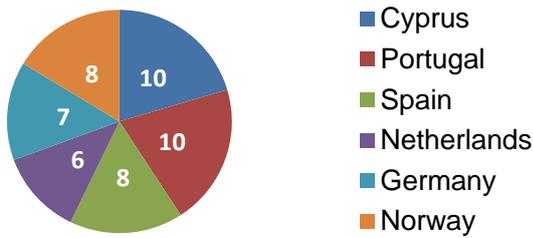
The types of stakeholders represent entities or individuals that can benefit from the project results in their professional activities or in their daily lives. In order to guarantee the sustainability of the project and an effective exploitation of the knowledge produced, BINGO has selected the following target audiences:

- **Scientific community:** These stakeholders include universities, research institutions, technology providers, consultants; Multidisciplinary context for a wide range of professionals; Critical assessment of deliverables
- **Water professionals - Technical staff:** Stakeholders which control all technical aspects of water systems other than management (e.g. irrigation water use association managers, water resources associations, urban and landscape planners)
- **Water professionals - Decision makers:** Responsible for planning and leading the work of a group of individuals (e.g. water suppliers, trade and industrial organisations)
- **Policy makers:** National and local governments - municipalities, environment and agriculture ministries, administrative staff, European committees, community leaders, water authorities, and planning institutions. No technical training expected
- **Stakeholder group (organisations, SMEs, NGOs):** Any organisation with an interest in the project, regardless of their amount of technical knowledge on the subject; Different needs depending on its nature
- **Society at large:** General public in particular of BINGO case study areas: all types of audiences and different levels of education, including next generation (e.g. students); No technical formation expected

These stakeholders are key in the sustainability of BINGO's results. Each of these stakeholder types has an interest in a particular BINGO outcome, thus, the strategies to engage and mobilise these groups of actors with the respective relevant BINGO results will be specific to the characteristics and needs of each group.

1.3. Demand analysis

In order to understand what kind of BINGO results the target audiences are interested in, and how to better transfer the knowledge produced in the project to external entities, BINGO has implemented a questionnaire aimed at collecting inputs relevant for the development of the exploitation plan. After analysis, these results have been integrated in the development of the following sections of the document.



There were a total of 49 responses: 10 from Cyprus, 10 from Portugal, 8 from Spain, 8 from Norway, 7 from Germany and 6 from the Netherlands as portrayed in Figure 3.

Figure 3 - Nationality of respondents

The respondents came from different backgrounds and fields, as there was an effort to diversify the sample to better understand the preferences of each type of stakeholder. With the exception of interested citizens, who only represent 5% of the sample, the types of stakeholders are evenly distributed, with a slight dominance of the water professionals (technical staff and decision makers) and stakeholder groups.

- Scientific community
- Water professionals - technical staff
- Water professionals - decision makers
- Policy makers
- Stakeholder group (organisations, NGOs, SMEs)
- Interested citizens

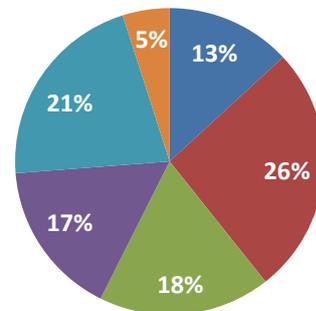


Figure 4 - Respondents per type of stakeholders

In terms of fields of activity, Figure 5 shows that there was a predominance of respondents coming from the water supply and management sector, climate change and environment (nature) and urban drainage. These are some of the most important fields for many of the BINGO exploitable results, as they are closely linked to the two major topics of the project – climate change and water management.

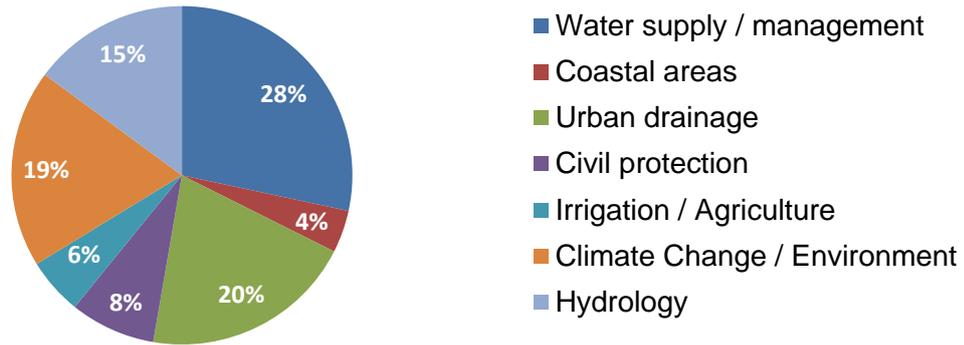


Figure 5 - Respondents per field of activity

What exploitable results interest different types of stakeholders?

Figure 6 show the responses of different types of stakeholders regarding their interest in the different BINGO exploitable results, in percentage. For better visualisation, the results are categorised as:

- A. Advice in Collaborative Management in Climate Change Adaptation
- B. Dynamical downscaling to 1 km scale – method, rainstorms
- C. Guidance on how to use hydro models and understanding impacts
- D. Full and comprehensive methodology for risk management
- E. Prioritisation between long list of adaptation measures (process/method)
- F. Methods and guidelines to create well-functioning CoPs

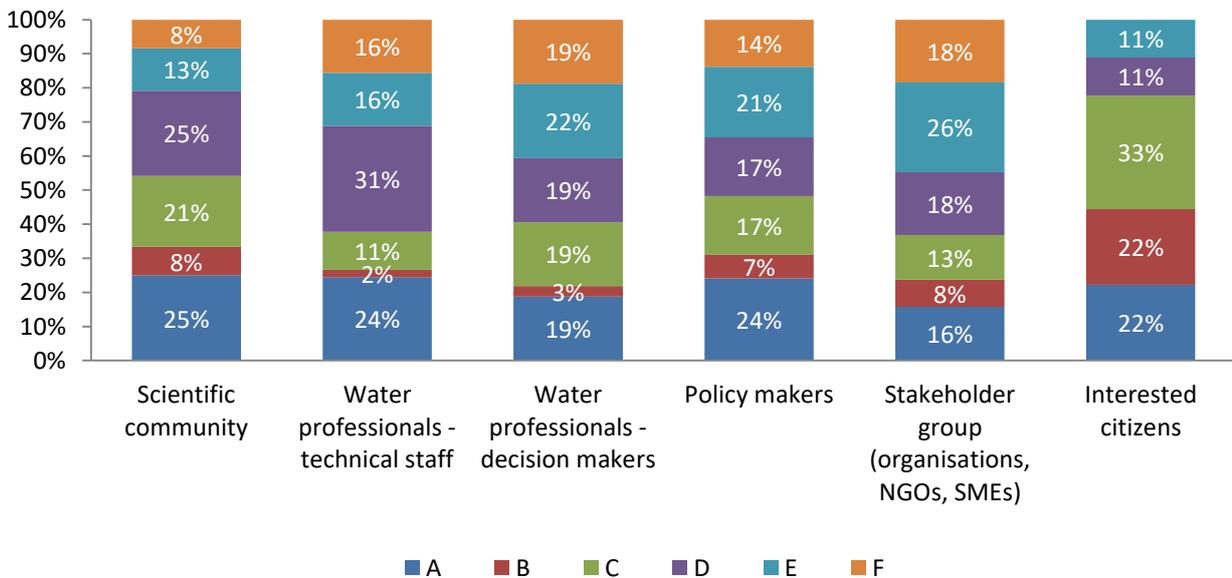


Figure 6 - Most interesting BINGO exploitable results by type of stakeholder (percentage)

The WP7 exploitable result was purposely left out of the questionnaire, as the end-users of such result are not in the categories of the general target audiences of all other exploitable results.

Each respondent could select up to 3 results which they considered interesting to their activity. Some of the questionnaire participants selected fewer than 3, other selected more than 3. All answers were taken into account.

According to the responses, the scientific community has portrayed significant interest in results A (25% responses), D (25% responses) and C (21% responses).

The technical staff, similarly, considered A (24% responses) and D (31% responses) as the most interesting results, with an emphasis on result D.

As for the decision makers, the most interesting result appears to be E (22% responses).

The policy makers have selected A (24% responses) and E (21% responses) as most appealing for their activity.

As for the stakeholder groups, the preferred results were E (26% responses) and D and F (both 18% responses).

Finally, for the interested citizens, a surprising conclusion from analysing their results was that the most favoured result was C (33% of responses), followed by A and B (22% responses each).

Turning these responses around, and looking at them per result, Figure 7 could help to understand to whom BINGO should communicate the different results.

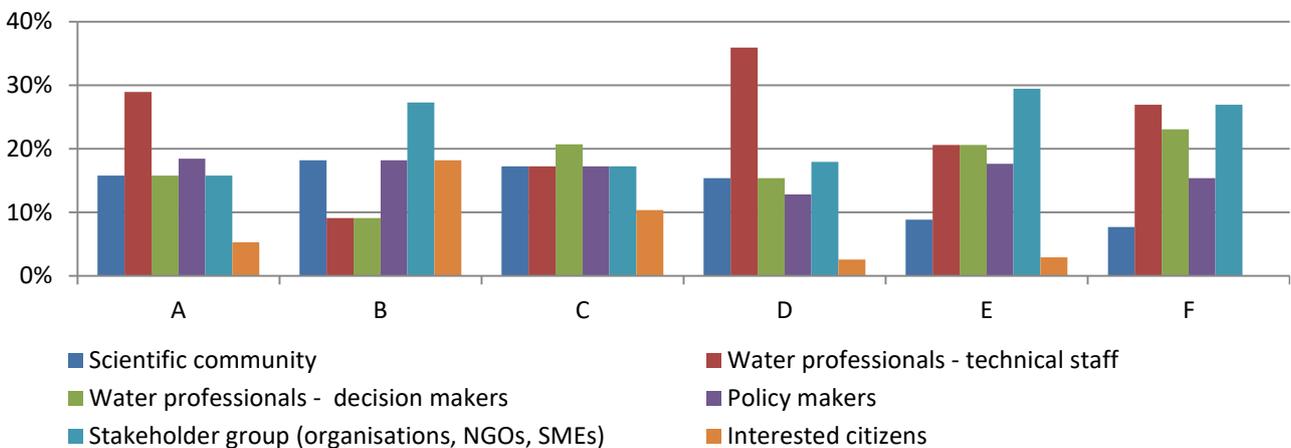


Figure 7 - Types of stakeholders' preference per BINGO exploitable results (percentage)

Through this visualisation, it can be concluded that:

- Result A is more interesting to the technical staff and the policy makers;
- Result B is preferred largely by the stakeholder groups, but also by the scientific community, policy makers and interested citizens;
- Result C is preferred by the decision makers, with all other types of stakeholders (except citizens) showing equal interest;

- Result D mostly interests the technical staff and the stakeholder groups;
- Result E is preferred by the stakeholder groups;
- Result F is particularly more interesting to the technical staff, decision makers and stakeholder groups.

Through which channels would different types of stakeholders prefer to receive the exploitable results?

When questioned on the best channel to receive the different exploitation results, the respondents have given a high emphasis on workshops as a channel for all results. This could be justified by the successful workshops organised by BINGO in the context of the WP6's CoPs.

Looking at the results displayed by Figure 8, besides workshops, guidelines are also a popular channel to disseminate BINGO exploitable results.

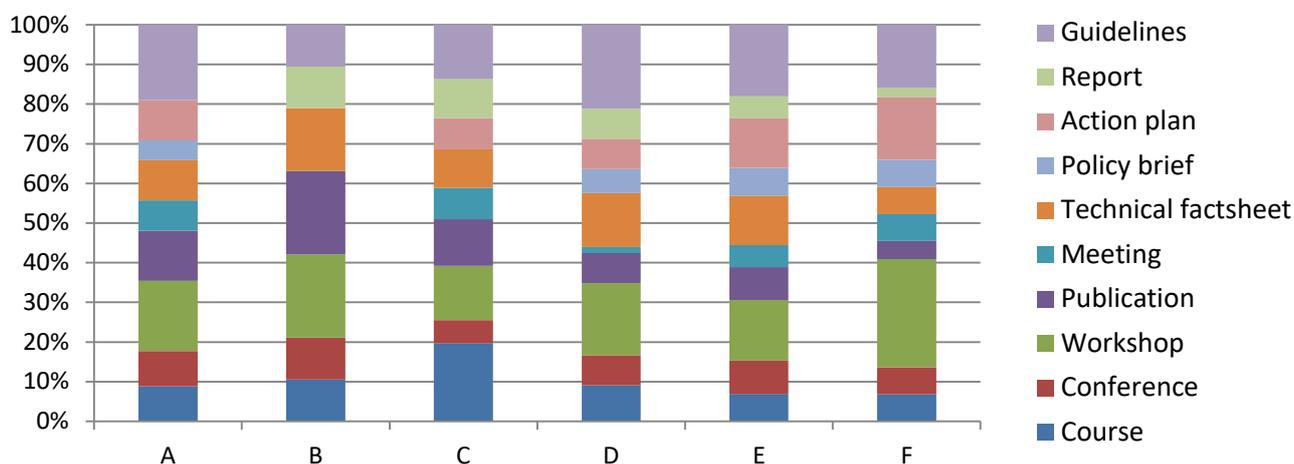


Figure 8 - Preferred channel by result

The analysis of the responses concluded that:

- For result A, the preferred channels are workshops and guidelines.
- For result B, the stakeholders have selected publications and workshops as the most appropriate for the dissemination of the result.
- For result C, a course was identified as the preferred channel, closely followed by workshops and guidelines.
- For result D, guidelines were the most prominent choice, followed by workshops.
- For result E, the preferred channels were equally chosen guidelines, followed by workshops.
- For result F, the overwhelming preference was workshops, followed by guidelines and action plan.

1.4. Exploitation tools and channels

1.4.1. BINGO traditional dissemination tools and channels

BINGO has defined a set of dissemination tools (for the disclosure of results) that have been carried out in a close relation with the exploitation activities. This common strategy is crucial to guarantee that the benefits of the project will last beyond its lifetime. In this context, the partners use these dissemination tools along with the defined exploitation activities to exploit the results and reach out to the different target audiences.

In this respect, the following tools have been defined as the most suitable for the dissemination and further exploitation of BINGO results:

1. **Project website:** www.projectbingo.eu
2. **Dissemination materials:** Development of posters, roll ups and brochures that emphasise the project and its results.
3. **Project news:** Development of press releases that focus on the project developments and outcomes and disseminate them through mailing lists and relevant media channels. Radio and TV channels are also adopted.
4. **Online dissemination:** BINGO results have been exploited through several resources which are made available in the project website (section “Deliverables”) and in the newsletters (section dedicated to the “project outputs”).
 - BINGO Newsletter No. 1: <http://www.projectbingo.eu/newsletters/newsletter1/>
 - BINGO Newsletter No. 2: <http://www.projectbingo.eu/newsletters/newsletter2/>
 - BINGO Newsletter No. 3: <http://www.projectbingo.eu/newsletters/newsletter3/>
 - BINGO Newsletter No. 4: <http://www.projectbingo.eu/newsletters/newsletter4/>
 - BINGO Newsletter No. 5: <http://www.projectbingo.eu/newsletters/newsletter5/>
 - BINGO Newsletter No. 6: <http://www.projectbingo.eu/newsletters/newsletter6/>
 - BINGO Newsletter No. 7: <http://www.projectbingo.eu/newsletters/newsletter7/>

Further newsletters and resources will be developed and uploaded throughout the project’s lifetime.

5. **Social media dissemination:** The results of the project are exploited through its social media accounts in Facebook and Twitter and in its LinkedIn group.
 - BINGO Facebook Page: <https://www.facebook.com/projectbingo.eu/>
 - BINGO Twitter Account: https://twitter.com/eu_bingo
 - BINGO YouTube Account: <https://www.youtube.com/channel/UC3sCqug->

[gkvauD9LVbUJoWw](https://www.linkedin.com/groups/8551302)

- BINGO LinkedIn Group: <https://www.linkedin.com/groups/8551302>

6. Audio-visual dissemination: BINGO has developed a set of short videos with testimonials from end users of each BINGO research site. These videos can be used as exploitation tools and are available in the section “Videos” of the project website and in its YouTube account.

In addition, the project has a [5 minutes animated video](#), explaining the main objectives and outcomes of the project.



Figure 9. Screen shots of the BINGO Animated Video

In addition, GIFs and infographics relating to specific deliverables have been and will continue to be produced and shared through online channels.

7. Scientific articles: The development of articles in scientific journals and posters by the BINGO partners focused on the results will allow their exploitation to the scientific community.

In this context, BINGO takes part in the H2020 initiative of Open Access to Scientific Publications and Research Data, and have agreed on a Data Management Plan (D1.5). Hence, the project gives free online access to all scientific publications developed in the scope of the project for any user, as well as the right to access and reuse digital research data, optimizing the impact of the knowledge generated by BINGO.

The BINGO outcomes and results can also be easily downloaded on the section “Deliverables” and “Publications” of the project website.

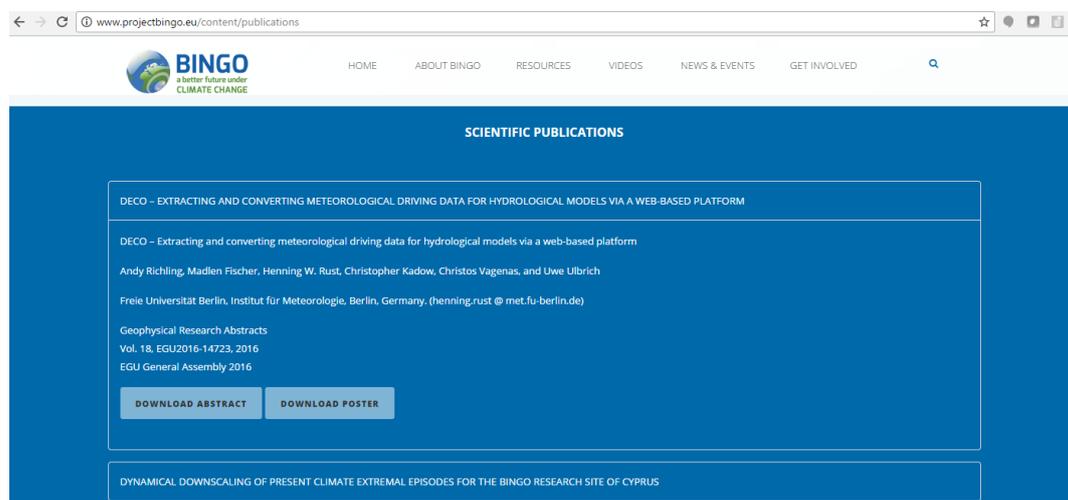


Figure 10. Screen shot of the project website – Publications

- 8. Basecamp:** Basecamp is an online tool which serves as a channel to share all the BINGO news and outcomes with the local stakeholders from the six research sites. It will now increasingly gain importance in the dissemination of the exploitable results.

1.4.2. Exploitation specific tools and channels

Besides the traditional BINGO dissemination channels, the project will use specific tools that will be of strategic importance in the exploitation of BINGO’s results. These tools include:

- **ECCA 2019**

BINGO’s final conference will be embedded in the European Climate Change Adaptation Conference 2019 (ECCA 2019), which will take place in 28-31 May 2019 in Lisbon. As such, ECCA 2019 is a unique opportunity to share the BINGO project’s achievements with the large audience of the conference and to give emphasis to the impact and exploitation in several stakeholder dimensions: scientific, governance, industry and society.

During the 3rd annual progress meeting, the project members engaged in an interactive exercise in order to define the BINGO messages in ECCA and how to fit them in the conference themes. As such, it was defined that BINGO is a process, not a product. The results of this exercise were then analysed and refined by the project coordination to serve as guidelines for the project’s participation in ECCA.

Additionally, a Group for Internal Revision (GIR) was selected, composed by high-level members of the project, and supported the revision of the abstract submission to ensure that BINGO’s

representation in ECCA is complete and that it engages in appropriate synergies with other relevant projects in sessions and presentations.

- **Videos**

In order to disseminate the results of the project to stakeholders and other target audiences, a set of 12 complexity-reducing animated explanatory videos of approximately 2 minutes each will be produced, presenting the BINGO deliverables and methodologies, bringing the outputs closer to the target audiences, from water and agriculture professionals to the general public. In this context, the videos are designed to be informative, straightforward, compact and entertaining. Additionally, they intend to establish and promote dialogue.

The videos must be well-designed in terms of reducing complexity and rendering information accessible via a simple narrative. The videos will be used at dissemination and engagement events of the project to present its achievements and kick-start discussion, and will also be displayed in the project website for the general public to view.

The topics of each video are still under discussion, but will mainly focus on the exploitable results presented in this document, as well as other BINGO results, not necessarily exploitable, but important to disseminate.

- **Follow-up testimonial videos**

As a follow-up of the first round of testimonials produced in each research site, the last CoPs will include a final collection of testimonials from the end-users who participated in the workshops. These will include questions to help wrap-up their experience with BINGO and their major take-away. The first video, from the Tagus CoP, is already being produced.

- **Website adaptation post-BINGO**

After the finalisation of BINGO, the website will be adapted in order for all the BINGO exploitable content to be easily accessible. This will provide a long-lasting, accessible tool for anyone which wants to reach the content created by BINGO. This website will also contain the contacts of the partners, in case any further support is needed, and will be maintained for 5 years.

- **Common Dissemination Booster (CDB)**

BINGO is part of a cluster in the CDB initiative of the European Commission. This service will allow BINGO to add value to its exploitable results as part of a group of projects with complementing results and similar communication objectives. The BINGO CDB cluster includes LIS-Water, HYDRALERTA, PLACARD, CLARA and IMPREX. Within this initiative, BINGO's cluster will receive support in:

- the identification of the results portfolio

- the development of the dissemination plan
- dissemination capacity building
- the dissemination campaign management

- **Networking and creating synergies**

The BINGO partners will be using their extensive professional networks to share the relevant results and reach important stakeholders with BINGO information they might need. In addition, the participation of BINGO partners in external conferences will also be key moments to share with third-party stakeholders the outcomes of the project and how it could be useful for them.

BINGO has started to develop synergies and will continue to join forces with other projects and initiatives related with the project at a national, European and international levels. For this purpose, BINGO has put in place a systematic scan of other H2020 projects and initiatives that share the same goals. A specific Task in the Work Programme – Task 7.4, led by KWR, oversees these activities. A concrete strategy to put into action and maximise the impact of these collaborations will be developed. It is essential to continue addressing initiatives in order to create synergies and exploit the project results among relevant stakeholders in the water and climate adaptation fields.

Below, the table shows some of the major synergies that BINGO has engaged in:

Table 2 - BINGO synergies

Name of the project	BINGO partners involved	Relevance for BINGO
MARSOL FP7 project (2013-2016)	IWW, LNEC	Disseminate the project to the members of this network and involve them in project activities including the registry in the Stakeholder Database.
ARC – Aqua Research Collaboration (2010-present)	LNEC, KWR, IWW, NTNU	Disseminate the project to the members of this network. Include a link on the project website to BINGO website. Description of the project on ARC Newsletter.
TRUST FP7 project (2011-2015)	IWW, LNEC, NTNU, KWR	Disseminate the project to the members of this network and involve them in project activities including the registry in the Stakeholder Database.
DESSIN FP7 project (2014-2017)	IWW, KWR	DESSIN innovative solutions in the urban water cycle that can increase the value of the services provided by freshwater ecosystems will be taken into consideration for the establishment of BINGO adaptation measures. D5.1 (M24) is a “Portfolio of risk management and adaptation strategies for the six research sites in BINGO”
PREPARED FP7 project (2009-2013)	KWR, Aquatec, LNEC, EPAL, IWW	BINGO has collected adaptation measures from PREPARED and include them in the Portfolio of adaptation measures for key sectors affected by climate change. Synergies with D5.1.
BEWATER FP7 project (2013)	Cyl	Water management options for climate change adaptation plans for 4 Mediterranean River Basins (Spain, Slovenia, Tunisia, Cyprus).

Name of the project	BINGO partners involved	Relevance for BINGO
ClimateAdapt	BINGO project	The European Climate Adaptation Platform aims to support Europe in adapting to climate change. All 6 countries are represented, either by the Ministry that integrates the Environment or the National Environmental Agency. BINGO's profile is on CLIMATE-ADAPT platform
PLACARD (H2020 Coordination and Support Action)	LNEC, SPI	Disseminate the project to the members of this network and involve them in project activities including the registry in the Stakeholder Database. The PLACARD project is also part of the core team for the communication of ECCA2019, which will be jointly organised with BINGO. Member of Common Dissemination Booster cluster.
EIP Water (initiative within the EU 2020 Innovation Union)	LNEC	Help to establish collaborative processes for change and innovation in the water sector. Disseminate the project to the members of this initiative.
RESCCUE (project co-funded by the Horizon 2020)	LNEC, SPI	Establish collaborations between the projects from the start to maximise synergies and share and exploit project results. The project is also part of the core team for the communication of ECCA2019, to be organised with BINGO.
BRIGAIID (H2020 project funded under grant agreement No 700699)	LNEC, SPI, KWR	Establish collaborations between the projects from the start to maximise synergies and share and exploit project results. Participation in several BRIGAIID events Joint sessions in ECCA 2019
IMPRES (H2020 project funded under the Water-2a-2014 call topic; 2015-2019)	LNEC	Establish collaboration between the projects from the start to maximise synergies, share and exploit project results. The BINGO project coordinator is part of the Advisory Board of IMPRES and vice-versa
Portuguese Water Partnership (PWP)	LNEC	Establish synergies and disseminate the project to the members of this network of organisations. Participation in the Tagus CoP
RISK-KIT (FP7 – Collaborative Project: 2013-2017)	IWW	Joint study on extreme storms in the Tagus estuary
STORMEx (COMPETE: 2010)	IWW	Joint study on extreme storms in the Tagus estuary
LIS-Water (Lisbon International Centre for Water)	LNEC, SPI	Member of Common Dissemination Booster cluster. Dissemination of BINGO and ECCA2019 in the LIS-Water - Centre of Excellence on Water partners and members network. Future Courses and Capacity building initiatives in Climate Change and Adaptation
HIDRALERTA	LNEC, SPI	Member of Common Dissemination Booster cluster.
CLARA (H2020 project funded under grant agreement 730482)	SPI	Member of Common Dissemination Booster cluster.
IWA International Water Association	LNEC, SPI	Dissemination of BINGO at the IWA Water & Development Congresses (Jordan, 2015) and at the World Water Congresses (Tokyo, 2018). Link with ECCA2019's

Name of the project	BINGO partners involved	Relevance for BINGO
		communication strategy
APRH	LNEC	Dissemination of BINGO and ECCA 2019 throughout the APRH associate members
APESB	LNEC	Dissemination of BINGO and ECCA 2019 throughout the APESB associate members
Portuguese Network of Cities for Climate Change Adaptation	LNEC	Dissemination of BINGO and ECCA 2019 throughout the RdMAAC Seminar and associate members
APDA	LNEC, EPAL	Dissemination of BINGO and ECCA 2019 throughout the APDA associate members

- **Conferences**

All of the BINGO results have been and will continue to be shared through the participation in conferences and events with a presentative aspect. These are channels which can have a specified audience, requiring a targeted presentation adapted to their specific needs.

- **Publications (open access)**

BINGO partners have been publishing their outcomes in scientific and non-scientific journals, available through open-access platforms. This will be maintained, providing a more reliable standing for BINGO's exploitable results.

- **Meetings**

Bilateral meetings are strategic for the exploitation of BINGO's results, especially when dealing with high-level stakeholders. Through meetings, the BINGO partners can provide personalised support and address the specific needs of the end-user.

- **Technical factsheets**

In order to address the needs of the water professionals in technical positions, many of the more technically-focused exploitable results, such as from WP2, will be adapted into one-page technical factsheets. This tool allows for a more concise highlighting of main points from the BINGO data and knowledge.

- **Policy briefs**

The development of policy briefs by the BINGO partners will be crucial to disseminate the project outcomes and results to policy makers in order to turn them into priorities of the political agenda regarding water management and climate change. The publications will be short, concise, and will present the BINGO relevant findings in an engaging and convincing manner.

- **Action plans**

For several of the BINGO exploitable results, action plans will be produced. These documents will allow for a better visualisation of the steps needed to follow a specific methodology. They will offer a detailed plan and/or strategy on how to achieve the goals promised by the methodologies.

- **Reports**

Reports will be developed in the scope of the BINGO project, and will be used to raise awareness toward the implementation of the methodologies produced by the project.

- **Guidelines**

Many of the exploitable results from BINGO are methodologies on complex scientific/technical issues, such as the results from WP2, WP3 and WP4, which need to be operationalised in paper. Guidelines will be developed as to help structure the operationalisation of these methodologies, becoming a useful tool for the stakeholders. BINGO will also develop detailed policy and governance guidelines to better adapt to future climate change impacts and extreme events for the six research sites (based mainly on the results of WP5 and WP6). BINGO partners will also develop targeted guidelines for the end users and researchers, aiming at providing the tools that could facilitate and promote the interaction between these two very relevant stakeholder groups (taking into consideration the results of WP6).

The following tools are under consideration, depending on available resources:

- **Workshops**

In the demand analysis, the most preferred channel for the dissemination of the exploitable results was through workshops. This could be linked with the end-users' previous experiences with the BINGO workshops, which were positive in all RSs. There is the possibility of organising workshops for specific stakeholder groups with the objective of transferring the exploitable knowledge produced by BINGO. However, due to costs, this option is still under discussion.

- **Book**

In order to compile all the BINGO process, results and outputs, as well as the abstracts that will be submitted by the project partners for ECCA 2019, a book could be produced. This book would be available as an eBook, as well as in physical form, if requested and if resources are available.

- **Post-ECCA conference**

The possibility of a post-ECCA BINGO conference is being discussed, focusing solely on BINGO outputs and knowledge transfer, discussing as well the possibilities of a BINGO follow-up project, activities or research. This conference would be an opportunity to have a solo BINGO platform to converge all the materials developed for the purpose of the exploitation of results, such as workshops as the book.

2. EXPLOITABLE RESULTS

BINGO generates different types of exploitable results, which are tangible or intangible outputs, such as data, knowledge and information.

The exploitable results produced by BINGO address the specific needs of the different target audiences and have a competitive advantage over the knowledge that currently exists. They are of great relevance to cities all across Europe and beyond, and have a significant exploitation potential.



The project results derive from activities from different work packages.

The following table presents BINGO’s exploitable results, explains how these address a certain need and why they have a comparative advantage over the already existing knowledge. The associated deliverables have been identified as well. The table was developed in agreement with the WP leaders to ensure that the exploitable results are implemented in accordance to the BINGO activities.

The BINGO project has produced two types of results:

- The ones which are site-specific, due to the local singularities, but can be possibly transferrable to sites with similar characteristics (example: hydrological models, maps, etc).
 - The ones which can be used outside of the scope of the BINGO Project, transferrable to other sites, projects or companies (example: methodologies, tools, guidelines, etc...).
- These results are mainly the methodologies which were applied in the BINGO project.

Figure 11. BINGO Work Plan

The first type results are the research site results, which are exploitable by the several local entities and are relatively project-specific, as they produced solutions to project-related issues in the sites where BINGO is being implemented. As such, they will be briefly presented in the subchapter “Research Site’s Results”. These results are already being exploited by local entities.

The second type results are the central part of this document – they refer to the BINGO outputs which are less obvious but can be used by bigger audiences. These results have been defined in collaboration with all the project partners and provide a deeper look into the work developed by BINGO. This type of exploitable results are, thus, the results which are transferrable to other

contexts, and include methodologies, strategies, models and approaches which were applied in the BINGO project and produced the first type of results.

As such, and to understand what results are, indeed, exploitable, and the actions needed to exploit them, the following activities were conducted:

When	Activity	Result
March 2018	<p>Each WP/RS team would insert what they viewed as the exploitable results from their work in a Google docs, including:</p> <ul style="list-style-type: none"> • What market/sector need does the product address? • What are the main advantages of the new solution? (direct/indirect) • What kind of product could it translate into? • Potential IPR issues • Target stakeholders • Barriers, risks and limitations to sustainability • How to overcome barriers risks and limitations • Related deliverable 	Initial compilation of exploitable results to start the analysis
<p>3rd Annual Progress Meeting</p> <p>Cyprus, 22-25 May 2018</p>	<p>Based on the previously selected results, a Business Model Canvas exercise was conducted, consisting of selecting one major result per WP and defining:</p> <ul style="list-style-type: none"> • End-user segments for the product/service (choose combinations of the sectors and types of stakeholders) • What may be the added value to the customer segment of the product/service? • What kind of activities may be provided? • Which would be the best channels to deliver the product/service? • Who would be the best/main partners to engage in the product/service development <p>As such, there was one person selected for each WP to lead the conversation within the groups. The partners were then divided into 6 groups, one per WP (excluding WP7), and discussed for 25 minutes, followed by a short presentation of the results per group.</p>	More accurate definition of the exploitable results, with discussion and co-design
September 2018	Conference calls to discuss and expand on the exploitable results for each WP and for the RS.	Refining the exploitation results details
September/October 2018	Demand analysis: selecting appropriate sample, sending questionnaires, receiving and analysing the responses.	More accurate understanding of the stakeholders needs and preferences, relating to specific exploitable results
October 2018	Discussion with partners on what are the actions which are realistically doable by each partner and definition of deadlines and resources.	Pragmatic action plan

As such, these are the results, which will be individually expanded on in the next subchapters:

Work Package	Exploitable result
WP1	Advice in Collaborative Management in Climate Change Adaptation
WP2	Dynamical downscaling to 1 km scale – method, rainstorms
WP3	Guidance on how to use hydro models and understanding impacts
WP4	Full and comprehensive methodology for risk management
WP5	Prioritisation between long list of adaptation measures (process/method)
	Portfolio of adaptation measures
WP6	Methods and guidelines to create well-functioning CoPs
WP7	Canvas exercise applied to exploitation - methodology for collectively defining exploitable results

2.1. WP1 – Coordination, management and IPR

European policy aims at “ensuring sustainability of all activities that impact on water, thereby securing the availability of good-quality water for sustainable and equitable water use”.

BINGO emerged out of this context and committed to develop a new and global approach of dealing with climate action and management of the integrated water cycle, incorporating its several dimensions, thus setting up a scalable model, to be followed by others, in Europe and all over the world.

BINGO envisaged at providing a step forward in helping governments to develop mechanisms for ensuring climate change adaptation policy coherence, in facilitating key sectors (water supply, energy production and agriculture) to integrate water issues in corporate risk management and in influencing the consumer to change consumption patterns. The project has been dealing, for more than 3 years, with a rich diversity of climate, land uses, identities, legal and institutional frameworks, different personnel backgrounds & organisations and levels of commitments/ roles within BINGO. The project delivers a portfolio of climate change adaptation strategies to be used by different stakeholders and outside the geographic context of the project.

Other specific results from WP1 offer a view to the entirety of the project, showing the integration of the work produced by the different WPs. As such, some of the exploitable results are the overarching methodologies and strategies used in order to promote integration and added value from all of the teams involved in the process of BINGO.

Below, the exploitable results are presented, explaining how they fulfilled the abovementioned promises and the specificities of each result.

2.1.1. Advice in Collaborative Management in Climate Change Adaptation

It is our belief that the coordination of such huge variety of people, knowledges, experiences, languages, interests, perspectives, etc. enables the WP1 -as Coordinators - to share experience, advice and provide guidelines into the broader scope of Collaborative Management in Climate Change Adaptation. Among others, key aspects may be summarised as follows:

- Engage actively everyone in a common goal, guiding and valuing all contributions;
- Get started in planning by ensuring commitment and full acceptance of managerial principles and structure;
- Promote good communication, acknowledgment of different perspectives and attainment of a “common framework”;
- Face difficulties from the start, enhancing collaborative problem solving, and coordination across different sectors and levels;
- Use of combined approaches to get information from highly technical and resource intensive to simple and inexpensive. Community-based participatory approaches can integrate perspectives and priorities, improving understanding of the social and locally specific consequences of climate change supported by sound science.
- Develop capacity to adapt and move forward throughout awareness, ability and action;
- Identify key success factors, assess and celebrate team achievements
- Prepare for long-term, learn and teach to manage and deal with uncertainty.
- Develop a virtuous ongoing cycle of preparation, response and revision.

Actions

- **Networking**

It is essential to utilise **networking** in this particular exploitable result to reach the relevant target audiences, as it will allow picking the interest of high-level stakeholders such as policy and decision makers which, in turn, can deliver the opportunity for person-to-person meetings and direct advising and support.

- **Prepare policy brief**

Based on the methodology for Collaborative Management in Climate Change Adaptation developed by BINGO, a policy brief on “How to be successful in addressing climate change” will be produced.

- **Prepare informative documents**

A set of informative documents will be produced, including a script and guidelines to be used for arts performance / water talks or other storytelling initiatives. The material will be tested in Portugal and Cyprus and made available to be used in several contexts beyond BINGO geographies.

- **Prepare explanatory video**

An explanatory video will be produced and widely shared online, briefly explaining the result, teasing the audience to want to learn more about it.

WP1 – Coordination, management and IPR

Advice in Collaborative Management in Climate Change Adaptation

Value proposition:

Help the target audience achieve their objective by choosing an adaptation path that:

- Minimises conflicts and enhances commitments
- Embeds the best knowledge
- Gets the best from all stakeholders
- Keeps the project moving and on track
- Keeps everyone motivated
- It's effective and cost-benefit balanced

End-user segments:

Field	Type of stakeholder
<ul style="list-style-type: none"> • Climate change adaptation 	<ul style="list-style-type: none"> • Scientific community • Professionals - Decision makers • Policy makers • Stakeholder groups • Professionals - Technical staff

Channels:

- Policy briefs for policy makers
- Person-to-person meetings for policy makers, decision makers and stakeholder groups
- Explanatory video for all stakeholders
- Guidelines for all stakeholders
- Participation in conferences and congresses for all stakeholders
- Advice and support for decision-makers

External partners for exploitations:

- IWA - International Water Association
- EWA - European Water Association
- Professional associations
- Communication agencies
- National, regional and local Administration
- National water services & water resources associations

Actions:

- Networking
- Prepare policy brief
- Prepare guidelines
- Prepare informative documents
- Prepare explanatory video

Barriers on exploitation and how to overcome them:

Efforts and resources needed to prepare the actions and the fact that the recipients (policy and decision-makers) are not easily available and the process of communicating new approaches takes time.

2.2. WP2 – Climate predictions and downscaling to extreme weather

The first step to understand how climate change is affecting water resources in the short-term (decadal) is to look and understand the climate predictions. This has been the role of WP2. Throughout its work, the WP2 team has collect and evaluate available present climate reanalysis and short-term (decadal) climate predictions and prepare the respective output for use in hydrological, hydrodynamics and water quality modelling for the six research sites. This meant an intensive iterative work with all the other partners to provide the necessary tools for the application of the dynamical and statistical downscaled results in hydrological and hydraulic models, suitably representing average conditions and extreme events, such as floods and droughts, at the regional and local levels, and thus providing the possibility to estimate high impact risks.

As such, the WP2 promised contributions have been:

- Improved prediction of future climate, including extremes and, in particular, of droughts
- Development of better regional prediction approaches for extreme events and climate change for the EU

2.2.1. *Dynamical downscaling to 1 km scale – method, rainstorms*

As an exploitable result, BINGO has developed a procedure for estimating ensembles of extreme hydrological events within the work of WP2.

Kilometre-scale climate-model data are of great benefit to both hydrologists and end users interested in studying the impacts of extreme precipitation. Such data are however rarely available due to the high computational expense associated with performing high-resolution simulations. BINGO has developed a method which identifies days with enhanced risk of extreme rainfall over a catchment, so that high-resolution simulations can be performed only when such a risk exists, greatly reducing computational expense while still well capturing the extremes.

With this method, end users can produce high-resolution data tailored to the specific needs of their research sites, thus enabling more realistic modelling of extremes and hence more precise predictions of the potential impacts of future extremes on their catchment.

WP2 – Climate predictions and downscaling to extreme weather

Dynamical downscaling to 1 km scale – method, rainstorms

Value proposition:

Deal better with floods of present/future and better communication of decisions and needs.

More accurate simulation of extreme precipitation events allows a more realistic modelling of the impacts extremes on a given catchment, and how this may be affected by climate change. This adds certainty to future planning and aids the long-term decisions-making process.

Other potential applications of this method, for example, could also be to identify the most suitable global climate models to downscale from a multi-model ensemble. For details, the reader is referred to the publication in HESS*.

End-user segments:

Field		Type of stakeholder
<ul style="list-style-type: none"> • Coastal areas • Civil protection • Climate change • Hydrology 	<ul style="list-style-type: none"> • Water supply • Urban drainage • Irrigation / Agriculture 	<ul style="list-style-type: none"> • Scientific Community • Professionals – Technical staff • Stakeholder groups • Policy makers

Channels:

- Scientific Publications
- Guidelines
- Technical factsheets
- Explanatory video

External partners for exploitations:

- Media
- Climate service centres
- Meteorology services
- National representatives of responsible institutions for floods
- Consultant companies

Actions:

- Simplify the guidelines for implementing the downscaling
- Prepare explanatory video
- Prepare examples, pilot studies, and success stories
- Prepare technical factsheets

WP2 – Climate predictions and downscaling to extreme weather (cont.)

Dynamical downscaling to 1 km scale – method, rainstorms

Barriers on exploitation and how to overcome them:

- The method cannot guarantee that 100% of extremes will be captured, though in excess of 90% is possible.
- If a future climate contains new weather patterns which in the past did not cause extremes, then these will not be captured.
- Additional realizations of different extremes under the same boundary conditions may produce more intense extremes. This is an issue that users should be aware of, though it is a general issue in climate modelling and not specific to our method.

Solution: The only solution to the first two minor limitations is via continuous high-resolution simulations. This is, however, highly computationally expensive. The third limitation is a general one in climate modelling and not specific to our method. It is best overcome via large ensembles, in particular for relevant individual large-scale weather situations.

Actions

In order to reach the stakeholders, the following activities should be developed:

- **Simplify the guidelines for implementing the downscaling**

The entire method and procedure has been published and described in detail in the journal “Hydrology and Earth System Sciences” (HESS). HESS is a transdisciplinary journal aimed at a diverse readership and the publication has thus been written in a jargon-free and reader-friendly manner. The publication is open access and has the following DOI – <DOI:10.5194/hess-22-4183-2018>. It can also be read for free at the following link: <<https://www.hydrol-earth-syst-sci.net/22/4183/2018/>>.

However, there is a need to simplify the method into a more operational paper for the implementation of downscaling to 1km scale which can guide the development of the exploitation tools (technical factsheets and further scientific publications) for dissemination to the targeted costumers.

- **Prepare examples, pilot studies, and success stories**

In order to better illustrate the application of the downscaling, examples, pilot studies and success stories will be developed and shared in scientific publications.

- **Prepare technical factsheets**

Based on the guidelines in the HESS publication, technical factsheets will be developed, targeted toward instructing the technical staff on how to use the methods developed by WP2. This tool will have the guidelines content adapted to the needs of the professionals which deal with the technical issues relating to hydrology and water-related fields.

- **Prepare explanatory video**

An explanatory video will be produced and widely shared online, briefly explaining the result, teasing the audience to want to learn more about it.

2.3. WP3 – Integrated analysis of the water cycle

WP3 has been dedicated to the integrated analysis of the water cycle for all six BINGO research sites, based on several hydrological, hydrodynamics and water quality models, in accordance to the specific conditions of each site and previous modelling.

As such, over 20 hydrology models have been applied (including further development, calibration and validation at most sites) so far, presented in the Deliverable 3.4, which is one of the major results of the project.

The analysis provided by WP3 has been done for the baseline situation and for future scenarios that combine climate change with land use change; the modelling work has provided a range of different situations for the water cycle.

In terms of contribution, WP3 has vowed to:

- Develop better regional prediction approaches for extreme events and climate change for the EU
- Develop better, more reliable and integrated methodologies for climate change and extreme events impact assessment
- Co-produce better prediction tools for impact assessment of climate change on water resources, and evaluation of future changes in quantity and quality of water resources

2.3.1. *Guidance on how to use hydro models and understanding impacts*

Hydro models are generally very helpful tools for stakeholders and scientists to better understand physical processes and to thus better predict impacts, e.g. due to climate or socio-economic change. However, hydro models need to be tailored, set-up, calibrated and validated to local characteristics, such as catchments, aquifers and combined sewer networks. In BINGO, this effort has successfully been applied for 15 sites in six European countries. However, running these models requires experience and knowledge of local process chains. Thus, BINGO stakeholders

were directly involved in the model set-up and application, e.g. as operational flood-forecasting model at German Wupperverband (local water board) or as groundwater model at Dutch Vitens (water supplier). External stakeholders who are interested in applying any of the hydro models used in BINGO are welcome to contact the relevant BINGO stakeholders and/or scientists.

It has been a valuable experience to apply the mostly scientific models together with stakeholders, as this combined approach allowed the development of better regional (locally tailored) model set-ups in order to assess the impacts of climate change, and thus of extreme events, such as floods and droughts. Also, for the first time stakeholders were able to assess the impact of climate change on their resources for the near future, i.e. 2024, by using decadal predictions. These stakeholders do now have an impact assessment based on BINGO (including risk analysis from WP4) available, which they can exploit by introducing measures (e.g. from WP5) to better cope with the impacts. Also, some stakeholders are developing measures to mitigate or even prevent these impacts.

The main end-users are the stakeholders involved in BINGO. This includes professionals from different sectors, such as water suppliers and water managers that deal with urban drainage, coastal aquifers, irrigation and civil protection. BINGO can serve as a blueprint for similar stakeholders of water bodies, which were not analysed by BINGO. Thus, other water managers could learn from the integrated BINGO approach and transfer it to their specific water related problem. Furthermore, the scientific community has benefited from BINGO, which has been shown by the large number of publications and presentations at conferences. Also, other scientists outside BINGO will benefit from the scientific advances made in WP3.

The private sector will also be able to benefit from the BINGO results. For example, due to climate change and the European drought of 2018, water suppliers do more and more ask for prognosis of water demand and availability. They can utilise specific work packages and methods from BINGO. This holds true for water managers in general, as the entire water cycle is affected by climate change and methods, models and experiences concerning the impacts in the near future are scarce.

WP3 – Integrated analysis of the water cycle

Guidance on how to use hydro models and understanding impacts

Value proposition:

- Benefit from BINGO's experience

From the experience in BINGO's WP3 work in hydro models, stakeholders can learn how to be more and better prepared to cope with climate change impacts, especially with extremes such as droughts and flood. Also, scientists have, for the first time, applied decadal predictions to bridge the gap between meteorological (days) to RCP (until 2050 or 2100) scenarios, which can be of extreme importance to other stakeholders who wish to use this guidance.

- Better understanding of impacts

Through the guidelines on how to use and understand the hydro models and their results, stakeholders can better develop an assessment of potential near future impacts of climate change, which in turn allows for an updated planning of water resources management. Furthermore, field work was conducted at most BINGO research sites. Here, the natural processes, which drive the local water cycle have been investigated and additional knowledge has been gained, e.g. on how runoff generation processes are affected by climate change and how this influences reservoir levels and management. This can support the understanding of the impact the climate change in specific sites.

- Situation specific recommendations

The understanding of hydro models will allow stakeholders to address their local needs by developing situation specific measures. In BINGO, these measures were derived based on model results and stakeholder discussions.

End-user segments:

Field	Type of stakeholder	
<ul style="list-style-type: none"> • Coastal areas • Civil protection • Climate change • Hydrology 	<ul style="list-style-type: none"> • Water supply • Urban drainage • Irrigation / Agriculture 	<ul style="list-style-type: none"> • Professionals - Technical staff • Scientific community • Professionals – Decision makers

Channels:

- Scientific publications for the scientific community
- Reports for the scientific community and the technical staff
- Participation in Conferences for the scientific community
- Guidelines for the technical staff
- Explanatory video for all stakeholders

External partners for exploitations:

- Cities -> national experts, organisations (IWA), water boards
- Institutions
- Authorities, local water manager

WP3 – Integrated analysis of the water cycle (cont.)

Guidance on how to use hydro models and understanding impacts

Actions:

- Create guidelines on the use of hydro models
- Prepare explanatory video
- Publish in journals
- Prepare report

Barriers on exploitation and how to overcome them:

The main barrier for exploiting BINGO results is the complexity of the approach with multiple disciplines (see work packages in BINGO) involved. Concerning WP3, it will be necessary that interested end-users set-up and apply a hydro model in order to analyse near future climate change impacts on their water resources of interest. As it takes local process understanding as well as technical experience to set-up a model and to be able to interpret its results, interested end-users would need to invest in educating their employees or to outsource this work to engineering companies or research centres.

Actions

- **Create guidelines on the use of hydro models**

In order to better promote the state-of-the-art results of BINGO for WP3, it is crucial to make them accessible to different kind of end users. As such, the knowledge resulting from WP3 needs to be available in a simple format which can allow it to be adapted into different formats, according to the type of audience. Therefore, the knowledge will be organised in guidelines on the use of hydro models and the understanding of its impacts.

- **Publish in journals**

For this result, the following tools need to be developed in order to reach the different audiences: Scientific Publications, Reports, Presentations and Workshops. These materials should be based on the guidelines which will be created, and should be widely disseminated according to their target audience.

- **Prepare report**

For the dissemination of the exploitable result of WP3 to both the scientific community and the technical staff, a report on the utilisation of the hydro models in BINGO project will be produced.

- **Prepare explanatory video**

An explanatory video will be produced and widely shared online, briefly explaining the result, teasing the audience to want to learn more about it.

2.4. WP4 – Assessment of the impacts of extreme weather events

Through the work of WP4, BINGO has been able to assess the impacts of climate change extreme events scenarios of droughts and floods at the research sites, based on the risk assessment procedure from ISO 31000. Following the work from WP2 and WP3, this WP has focused on human activities, namely: water and energy supply, public health, agriculture, tourism and urban activities.

Thus, the WP4 promised contribution was:

- Development of better, more reliable and integrated methodologies for climate change and extreme events impact assessment

In addition, the work developed by WP4 also has had an important role in the assistance in the decision-making process, relating to water resources and risk management.

2.4.1. Full and comprehensive methodology for risk management

Risk is defined as the effect of uncertainty on objectives therefore risk management is decision under uncertainty. BINGO focuses on effects of climate change over water dependent human activities. Water is the central resource in BINGO. Climate change is the driving force for adaptation.

But what are the objectives of climate change adaptation? Trying to answer this question raises many other questions, and to answer them an obvious approach to follow is adopting a risk management framework. This framework aims to answer questions such as:

- Are we focussing on an economic sector (e.g. agriculture), public services (e.g. public water supply), or avoiding society disruption?
- What are we referring to?
- Who is responsible for taking action?
- What are the adaptation objectives: assure water, food and energy security or avoiding economic losses, or human losses, or image damage (companies, politicians)?
- For which period of time are we adapting?
- What do we know to take decision?
- What do we not know?
- What can happen?
- If climatic phenomena occur what will be the consequences?
- It is likely to happen or not?
- Is the risk high?
- What level of risk is acceptable and what level of risk is intolerable?
- What actions can we take to reduce the risk?
- Who are we, politicians, and sectoral professionals?
- And when should we implement the necessary measures?
- When is it worthwhile attending to the effort required?

As the main output, it can be stated that the risk management approach structures all the necessary information to answer the questions set above, from defining objectives, identifying actors, climate change projections, assessing how the impact on water resources affects human activities,

identifying the vulnerabilities upon which is possible to act to reduce the risk, evaluating the level of risk, deciding upon the significance of the risk. It can also be stated that it promotes and facilitates communication among different fields and different levels of actors.

Implementation of a risk management framework fulfils the promised contributions as it:

1. provides the foundations necessary to assist integrating risk assessment into climate change adaptation by providing means to evaluate and prioritise risks to support decision-making, strategies definition and inter-sectorial conflicts management;
2. assists to establish internal and external reporting and communication mechanisms to facilitate communication among risk managers, stakeholders, technicians, scientists, decision-makers and all other intervenient in the process.

Some exploitable results are characteristic of the specific research site. As an example it is said that in Portugal the need for improvement of the top political/ institutional practices is evident, as it was identified as being the most relevant vulnerability factor. This outcome can't be generalised.

By providing support on structuring relevant information, including the definition of objectives and analysis of the impact of climate changes upon those objectives, it improves the knowledge of socio-economic water related key stakeholder's perception of risk imposed by climate change extreme events, and the need to define strategies and find the resources to overcome the difficulties and accomplish the objectives. It also provides support on defining those strategies. By using designed events, plausible impacts become more realistic and understandable to stakeholders.

By applying a risk assessment approach in different sectors of different research sites, in northern and southern countries, it improves knowledge of impacts of climate change extreme events in key European activities and sectors (Agriculture, Public Water Supply, Water resources management, Urban Drainage Management).

Although some of the methodologies are already existent, it is often new the application of risk management methods to cope with the impacts of climate change.

It also assists on the development of metrics to define success or failure of socio-economic water related key stakeholder's activities and objectives, allowing strategies adjustment along time.

WP4 – Assessment of the impacts of extreme weather events

Full and comprehensive methodology for risk management

Value proposition:

- New application of risk management methods to cope with impact of climate change;
- Improve knowledge of impacts of climate change extreme events in key European activities and sectors (Agriculture, Public Water Supply, Water resources management, Urban Drainage Management)
- Improve knowledge of socio-economic water related key stakeholder’s perception of risk imposed by CC extreme events as well as of their objectives, strategies and resources;
- Improved knowledge for decision making of socio-economic water related key stakeholders, as for example the identification of the elements at risk under some CC scenarios
- Develop metrics to define success or failure of socio-economic water related key stakeholder’s activities and objectives

End-user segments:

Field		Type of stakeholder
<ul style="list-style-type: none"> • Coastal areas • Civil protection • Climate change • Hydrology 	<ul style="list-style-type: none"> • Water supply • Urban drainage • Irrigation / Agriculture 	<ul style="list-style-type: none"> • Scientific community • Professionals - technical staff • Policy makers • Professionals - Decision makers • Stakeholder groups (organisations, SMEs, NGOs)

Different realities were reached in the BINGO project. Some stakeholders had already adopted a risk management framework prior to BINGO (e.g. EPAL). For the majority, a risk management approach was quite new. Introducing a risk approach into an organisation or a society is not always welcome.

Decision under uncertainty is not appreciated by people in charge, no matter its ranking position. Policy makers, professionals, stakeholders, all categories of parties would rather know exactly how climate changes would evolve and what their consequences are.

All types of end-users, from top to bottom, need to understand what is at stake when decision under uncertainty needs to be taken. Introducing a risk culture still has a long path to be pursued before being adopted.

At sectorial level, where economic impact is directly felt; a risk culture might be more easily adopted, although acknowledgment of their benefits still has to be developed.

At top political level, where direct contact with the reality of the risks is often inexistent, a risk culture could be extremely helpful to support decision in adapting and combining several different conflicting or competing sectors for the same resources. To reach such end-users will be the most challenging job.

WP4 – Assessment of the impacts of extreme weather events (cont.)

Full and comprehensive methodology for risk management

Channels:

- Consultations and meetings
- Policy brief
- Guideline
- Scientific publications
- Explanatory video

External partners for exploitations:

- Consultant firms
- Universities

Actions:

- Organise the WP4 exploitable knowledge into a simplified methodology
- Networking
- Publish in journals
- Prepare explanatory video
- Prepare policy brief

Barriers on exploitation and how to overcome them:

1. Lack of a risk management culture (decision under uncertainty) at all society levels;
2. Overlapping of individual sectorial risk management processes with social risk management processes (e.g. water resources management versus public and agricultural water supply);
3. Difficulties in establishing a risk criteria (decision upon risk level tolerance)

In terms of solutions, the following have been identified.

For barrier 1: Through information/ communication using simple illustrative images of the different risk management steps and benefits or added value;

For barrier 2: Showing evidence - Identifying overlapping or conflicting domains and demonstrating sequential interference among them;

For barrier 3:

- At stakeholder level: provide technical assistance to stakeholders on defining concrete specific objectives; on translating those objectives into “measurable” representative variables (quantitative or qualitative) and finally in deciding whether the values of those variables introduce an intolerable risk, an acceptable risk if managed; or a minor risk;;
- At political level: this is the most difficult one, as it requires potentially controversial decisions upon relative importance of impacts on people or goods and economic sectors. Many politicians might be reluctant to do so, therefore is difficult to indicate how to overcome it, as it also depends on the political background of the research site.

Actions

In order to reach the stakeholders, the following activities should be developed:

- **Organise the WP4 exploitable knowledge into a simplified methodology**

The methodology which WP4 created for risk management in climate change adaptation needs to be organised and presented in a document which can be adapted into the different exploitation channels. This includes preparing this knowledge to allow guidance on simple graphic/diagram/flow chart translation of risk assessment sequential steps.

- **Prepare policy brief**

A policy brief, detailing the most important information for policy makers relating to this result, will be developed.

- **Publish in journals**

In order to establish this result in the scientific community, and increase its reputation as a reliable product, further scientific publications will be produced and published.

- **Networking**

There is a need to make available to the abovementioned partners the exploitable results for their use and dissemination. To reach high-level actors and create the opportunity for meetings and consultations, it is important to keep networking.

- **Prepare explanatory video**

An explanatory video will be produced and widely shared online, briefly explaining the result, teasing the audience to want to learn more about it.

2.5. WP5 – Developing risk treatment and adaptation strategies for extreme weather events

In WP5, there is the culmination of all the work developed in WP2, WP3, WP4 and WP6. It has been:

- developing specific risk management and adaptation strategies for each of the six research sites,
- producing an analysis of the economic and societal implication of the climate change induced impacts and of the proposed measures for each research site,
- providing support to decision-makers at local and regional level to better address policy and governance issues to cope with the expected impacts of climate change and extreme events and help them to plan the implementation of new/adapted measures to address expected impacts
- developing methodologies to support and facilitate the more general applicability in situations, regions and communities beyond the research sites (in close co-operation with the activities in WP6 and the CoP).

As such, these have been the promised contributions from WP5:

- Adaptation/integrated management strategies, tailored to the local-scale, validated and based on natural and socio-economic constraints
- Co-production of a portfolio of management practices and adaptation strategies with potential to be applied to similar conditions across EU
- Development and strengthening of the transferability of management practices/adaptation measures through the demonstrations to other EU sites within similar climatic regions
- Co-production of a portfolio of management/adaptation measures to cope with climate change and extreme events

2.5.1. Prioritisation between long list of adaptation measures (process/method)

Growing risk of extreme weather events is a global threat. Their expected aggravation by climate change is scientific consensus. Still there is a demand for smart adaptation strategies, methods to define best fitting measures for risk reduction and their case study application to collect evidence. The BINGO project covers research on methods to manage and treat risks from weather extremes, including the application of the risk management process in case studies.

In the BINGO project risk owners and stakeholders joined in Communities of Practice to discuss and select potential adaptation measures and strategies to manage risks posed by extreme weather events. Both a socio-economic cost benefit analysis and a governance analysis were used to

identify fitting measures to the risks posed by climate changes and the governance context in which they have to be implemented.

This approach can be applied throughout Europe as part of the development of climate adaptation strategies.

The approach developed in BINGO requires the participation of all relevant stakeholders in all sectors mentioned in the table above. It is most likely, however, that policy makers/ decision makers will take the initiative to apply this approach. They are therefore the most likely end-users for this service.

Actions

In order to reach the end-user segments, the following activities should be developed:

- **Produce guidelines**

The methodology to prioritise the adaptation measures will be translated into guidelines, for easier access.

- **Produce policy briefs**

Based on the method developed by BINGO for the prioritisation between long list of adaptation measures, policy briefs will be developed as to reach the policy makers with the essential information.

- **Networking**

Use professional network to identify and contact potential end-users.

WP5 – Developing risk treatment and adaptation strategies for extreme weather events

Prioritisation between long list of adaptation measures (process/method)

Value proposition:

Adaptation strategies that are both grounded in scientific analysis, supported by stakeholders and effective on a broad range of socio-economic criteria.

End-user segments:

Field		Type of stakeholder
<ul style="list-style-type: none"> • Coastal areas • Civil protection • Climate change 	<ul style="list-style-type: none"> • Water supply • Urban drainage • Irrigation / Agriculture 	<ul style="list-style-type: none"> • Professionals - Decision makers • Policy makers • Stakeholder groups • Professionals – Technical staff

Channels:

- Site specific stakeholder meetings
- Policy briefs
- Guidelines
- Participation in conferences
- Open access publications

External partners for exploitation:

Although the BINGO-partners can do much of the analytical work, it is recommended to involve local partners in the exploitation. Local partners can provide data and assist in the socio-economic cost benefit analysis and the governance analysis. Also, managing the CoPs can best be done by a local partner with sufficient knowledge of the cultural, political and social context of the target area.

Actions:

- Produce guidelines
- Produce policy briefs
- Networking
- Participation in external conferences

Barriers on exploitation and how to overcome them:

The development of adaptation strategies doesn't happen in a vacuum. Socio-economic and governance analysis are usually politically sensitive. BINGO partners can benefit from their independence of the local context.

2.5.2. Portfolio of adaptation measures

The database is a collection of adaptation measures that can be implemented at the research sites to deal with the expected climate change impacts.

The main aim of the Portfolio is to help the CoP stakeholders choose between the many different adaptation options that are available to deal with the impacts of climate change. By linking the measures to specific risks and sectors, and by specifying the character of the adaptation measures (structural/soft).

CoP stakeholders can make a first selection of relevant adaptation measures for their region. They can discuss the feasibility of these measures in the specific context of their region as a first starting point in the development of regional adaptation strategies. In this context the tool shall serve for the development of adaptation strategies.

The portfolio contains measures that can be relevant for different sectors. The information is mostly directed at policy makers and decision makers.

Actions

- **Host, share and maintain Portfolio**

The online portfolio has to be hosted, shared and maintained beyond the scope of the BINGO-project.

- **Dissemination of the Portfolio**

The portfolio will be disseminated widely during and after the BINGO project. This action will involve all BINGO partners.

- **Prepare explanatory video**

An explanatory video will be produced and widely shared online, briefly explaining the result, teasing the audience to want to learn more about it.

WP5 – Developing risk treatment and adaptation strategies for extreme weather events

Portfolio of adaptation measures

Value proposition:

The online portfolio is a unique database of collected measures for climate change adaptation, with their advantages and disadvantages and governance needs may be used as training material. It can, thus, produce better trained personnel, which in turn will deliver better informed decision making. It can also be used as a starting point for the development of adaptation strategies. Finally, it can be used as a platform for sharing practical experiences with implementing adaptation measures, as these experiences can be linked to the portfolio.

End-user segments:

Field		Type of stakeholder
<ul style="list-style-type: none"> • Coastal areas • Civil protection • Climate change 	<ul style="list-style-type: none"> • Water supply • Urban drainage • Irrigation / Agriculture 	<ul style="list-style-type: none"> • Professionals - Decision makers • Policy makers • Stakeholder groups

Channels:

In this case, there will be one channel available, which is the online database that was created as part of Deliverable 5.1. However, an explanatory video will also be developed, explaining the use of the online platform.

External partners for exploitation:

- CoP participants

Actions:

- Host, share and maintain Portfolio
- Dissemination of the Portfolio
- Prepare explanatory video

Barriers on exploitation and how to overcome them:

The tool is presenting information at a high level, and not so much in depth. Also, at its inception it only contains measures based on their relevance for the BINGO sites. Solution: Manage expectations - this database is not designed to help find a solution to a problem directly, but it is an initial step in identifying the type of measures that can be applied and their requirements. Also, the portfolio is a living platform that can be expanded in the future.

2.6. WP6 – Ensuring excellence and actionable research

WP6 has ensured an effective participation of the different end users, water managers and decision makers in BINGO activities. It focused on offering a set of tools designed to ensure that researchers and end users/ decision makers will cooperate, building shared awareness and knowledge and leading to high level research designed to give answers to the society's needs. This has been done through the creation and animation of a cross-cutting CoP as a mutual learning setting. The promised contributions of WP6 were the following:

- Effective dissemination and exploitation ensuring that the provided measures are transferred to end users
- Building of a shared awareness and shared perceptions between researchers and stakeholders around challenges in order to support a knowledge alliance and "actionable" solutions and scenarios

2.6.1. Methods and guidelines to create well-functioning CoPs

The two reports D6.4 and D6.6 fulfil the promised contributions of WP6, by summarising all the outcomes of communication among researchers and end users concerning the experiences, solutions and practices at the six research sites and compiling actionable research problems/challenges exploitation and development aiming at problem-solving cooperation between researchers and end users.

In addition, D6.5 offers an operationalised-style report, detailing the guidelines designed to create, feed and enhance better “win-win” collaborations between researchers and the players in society that are in need of solutions derived from research.

In order to make the promised outcomes more accessible and user friendly the BINGO project will investigate the options to team up with an e-book /online-learner site to make it more accessible.

WP6 – Ensuring excellence and actionable research

Methods and guidelines to create well-functioning CoPs

Value proposition:

- More involvement of stakeholders – Improved knowledge of how this can be done through using the tools in the guidelines.
- Improved consensus building – Using the techniques and tools developed in the project the users can add to their tool box of available options.
- How to get started using CoPs – An e-learning book will give the users an easy to access book with step by step guidelines on how to create, build and maintain a CoP.
- More efficient operation of the CoP – Using target specific tools to achieve the goals and overcome obstacles so that the experience and time management will improve.
- Adapting research to stakeholders’ needs and ideas – Actively using the tools to build a successful CoP will automatically be end-user focused and align with the needs and ideas of the stakeholders

End-user segments:

Field	Type of stakeholder
<ul style="list-style-type: none"> • Not sector specific 	<ul style="list-style-type: none"> • Professionals - Decision makers • Professionals - Technical staff • Scientific community (social scientists) • Policy makers • Stakeholder groups

Channels:

Since the needs from each end-user type are similar, they need a simple way to understand how to implement successful CoPs:

- Deliverable 6.5
- Online materials (infographics, gifs)
- Handbook
- Policy brief
- Testimonials from the CoP end-users
- Explanatory video

Actions:

- Dissemination of Deliverable 6.5 and online materials
- Prepare explanatory video
- Reorganising/ working on D6.4, D6.5, D6.6 into a handbook format
- Production of testimonial videos

Barriers on exploitation and how to overcome them:

There is no task under bingo to take the outcome of WP6 (specifically D6.6 and D6.4) and rework it into a book. This requires some resources that we probably have within the BINGO team, but clearly also some we do not have. The first step in overcoming this obstacle is to outline to detailed activities and skills needed for each activity. Secondly there needs to be a cost estimate with each activity in order to investigate the possibility for how far we can take this within the BINGO project.

Actions

In order to reach the stakeholders, the following activities should be developed:

- **Dissemination of Deliverable 6.5 and online materials**

The materials already developed for this exploitation result should continue to be widely disseminated among the BINGO networks.

- **Reorganising/ working on D6.4, D6.5, D6.6 into a handbook format**

The three deliverables should be compiled into a handbook format, for further integration of the results and overall easier access to information.

- **Production of testimonial videos**

During the last round of CoPs, the local partners will be asked to produce short testimonial videos as follow-up of the first round of videos produced in the beginning of the project.

- **Production of explanatory videos**

A 2-minute video will be produced and widely disseminated, describing the guidelines from D6.5.

2.7. WP7 – Dissemination, communication and exploitation

WP7 has been responsible for dissemination and communication and ensuring that the results of the project are exploited and have a lasting impact in Europe. This means that it has been working on how to empower stakeholders across Europe to take up the project results.

As such, the main promised contributions have been:

- Effective dissemination and exploitation (based on an exploitation strategy) ensuring that the provided measures are transferred to end users
- Building of a shared awareness and shared perceptions between researchers and stakeholders around challenges in order to support a knowledge alliance and “actionable” solutions and scenarios

2.7.1. *Canvas exercise applied to exploitation - methodology for collectively defining exploitable results*

The BINGO project has produced several outputs from the work of different teams. Some of these results are limited to the project itself and/or served to solve issues relating to the research sites, and thus not the target for potential exploitation due to their local specificities. However, among the many results, there were some which could be used by other entities and, thus, exploited.

Finding the exploitable results might not be easy and some of them might not even be that explicit and require a more profound look to the work of each team. This deeper look sometimes is hard to

be achieved by the team members who have produced the results themselves, and, thus, an external perspective is sometimes of great value.

As such, WP7, together with WP5 and WP6, has developed an exercise to promote the discussion among project members from different teams to define exploitable results for each WP. This exercise consisted of using a “business model canvas” as the basis for the discussion.

The steps for defining the exploitable results have been:

- 1) Initial list of exploitable results developed by each WP representative (in an “Exploitation Working Group”)
- 2) Canvas exercise in 3rd project meeting
- 3) Detailed discussion with each WP for adjustments
- 4) List of actions

For the “canvas exercise” there was one person selected for each WP to lead the conversation within the groups. The partners were then divided into 6 groups, one per WP (excluding WP7), and discussed for 25 minutes, followed by a short presentation of the results per group.

Their objective was to look at all the results from that WP and, from that, defining the major exploitable result and then answering the following questions:

- End-user segments for the product/service (choose combinations of the sectors and types of stakeholders)
- What may be the added value to the customer segment of the product/service?
- What kind of activities may be provided?
- Which would be the best channels to deliver the product/service?
- Who would be the best/main partners to engage in the product/service development

Actions

- **Produce simple explanation materials**

The guidelines will be translated into simple explanation materials, such as infographics and gifs for online dissemination.

- **Produce report**

A report will be produced, detailing the utilisation of this methodology in the BINGO context.

- **Produce action plan**

An action plan will be developed, identifying step-by-step the actions needed to apply this methodology in the context of a project.

WP7 – Dissemination, communication and exploitation

Canvas exercise applied to exploitation - methodology for collectively defining exploitable results

Value proposition:

- Gathering different perspectives on the several outputs of BINGO
- Involving all the partners in the exploitation discussion
- More comprehensive definition of the exploitable results and how different target audiences could use them

End-user segments:

This result is not field-specific. As such, it could be useful for innovation, scientific and technological projects which have different teams producing different results. The Horizon 2020 projects and other consortium-based projects are good candidates for implementing this methodology.

Channels:

- Simple explanation materials
- Report
- Action plan for implementing the methodology

Actions:

- Produce simple step-by-step explanation materials such as infographics
- Produce action plan
- Produce report

External partners for exploitation

In this specific result, the major partner for disseminating it would be the European Commission. As the funding entity of several scientific and technological projects, it is in their interest to ensure the maximisation of the exploitation of the outputs from each project. This may be a useful tool for projects to apply in order to understand what they can offer to other entities.

Barriers on exploitation and how to overcome them:

This methodology may need for all the project members to be able to understand and comment on each other's work. This means that in multidisciplinary projects, in which the disciplines are too different, it may be a challenge. In order to discuss the exploitable results, they need to be relevant to the ecosystem of the project.

2.8. Research Sites' results

These results are site-specific, and can continue to be exploited by the local stakeholders. To achieve these results, the methodologies presented in the previous section were applied.

TAGUS		
BINGO exploitable result	Output	Target stakeholders
Tagus two main sub-basins water availability and uses	A routine for coupling into complex decision support systems	<ul style="list-style-type: none"> • Water authorities • Water managers • Irrigation entities • Public supply entities
Hydrological and hydraulic models for simulations of floods in river Trancão	Inundation maps	<ul style="list-style-type: none"> • Water Authorities • Municipalities • Civil Protection • Researchers • Technicians
Lower Tagus aquifers numerical flow model	Piezometric maps	<ul style="list-style-type: none"> • Water authorities • Water managers • Irrigation entities • Public supply entities
	Groundwater availability maps	
Recharge model of Lower Tagus and Ota-Alenquer aquifers	Groundwater recharge and availability maps	<ul style="list-style-type: none"> • Water authorities • Water managers
Up-estuary saline intrusion	Salinity intrusion maps	<ul style="list-style-type: none"> • Water authorities • Irrigation entities • Public supply entities
Hindcast simulations of inundation of the Tagus estuary margins during extreme events	Inundation maps	<ul style="list-style-type: none"> • Scientists • River basin councils • Water authorities
BADALONA		
BINGO exploitable result	Output	Target stakeholders
Coupled 1D/2D drainage model	Hazard maps, update of the existing urban drainage master plan and specification for a Flooding Early Warning System	<ul style="list-style-type: none"> • Municipality • Urban drainage planners and operators
Sewer's sediment transport module	Decision Support Knowledge for cleaning operations	
Water quality marine model	Hazard maps and specifications for a CSO Early Warning System	<ul style="list-style-type: none"> • Urban drainage managers • Beach managers • Municipalities • Citizens
Definition of risk management process related to flooding and CSO	Risk maps and methodology for risk management process related to flooding and CSO	

Rainfall intensity, duration, spills curves ("RIDS" curves) for the 2 monitored catchments in Badalona RS	To be applied as part of a CSO Early Warning System	
Effectiveness evaluation of adaptation strategies through a Cost Benefit Analysis and intangible benefits monetisation	Decision Support System for adaptation strategies selection	<ul style="list-style-type: none"> • Scientists • Municipality • Urban drainage planners and operators
VELUWE		
BINGO exploitable result	Output	Target stakeholders
Insight in evapotranspiration for low vegetation	Better unsaturated zone module for groundwater models	<ul style="list-style-type: none"> • Water authorities • Municipalities
Insight in evapotranspiration of different tree species	Results can be used as an addition to models that (want to) take evapotranspiration into account (such as the Azure model for the Veluwe)	<ul style="list-style-type: none"> • Professionals in water resource management • Scientist (hydrologists)
CoP approach: getting stakeholders involved in a research project	Veluwe CoP will continue after the BINGO-project and CoP-approach can be applied to other issues in the region.	<ul style="list-style-type: none"> • Professionals involved in water resource management • Policy makers
Land-use and water use scenarios for Veluwe	Maps and tables with possible land and water use changes for 20 year period.	<ul style="list-style-type: none"> • Water authorities • Policy Makers • Scientists
WUPPER		
BINGO exploitable result	Output	Target stakeholders
New hydrological algorithms	Improved flood forecasting models	<ul style="list-style-type: none"> • Beneficiaries • Communities • Municipalities • Decision-makers
Land-use and water use scenarios available	Tool to identify possible adaptation measures for reservoir management; quantification of impact due to increment of degree of sealing in terms of surface runoff	
Improved reservoir management, drinking water abstraction management, flood forecasting, stormwater management	Tool to identify possible adaptation measures for reservoir management (to ensure water availability) and flash-floods	
Hydrological models implemented at the site	Improved trend analysis and statistical parameters to identify past and future trends and climate-related anomalies	<ul style="list-style-type: none"> • Scientists • River basin councils • Decision-makers

TROODOS		
BINGO exploitable result	Output	Target stakeholders
Methodology for downscaling extreme rainfall events for Cyprus	Improved modelling of extreme events for Cyprus	Scientists
Flood maps for Nicosia under climate change and land use change	Improvement of flood management plan	Water authorities Nicosia municipalities
Methodology for monitoring and analysing water balance components of pine forests in semi-arid mountain environments	Improved modelling of climate change impacts on forests and water resources	Scientists
Water balance components of forests along Troodos hillslopes in wet and dry year	Improved climate change adaptation plans for Cyprus	Forest authorities Water authorities
Improved hydrologic model for northern hillslopes of Troodos Mountains	Improved climate change adaptation plans for Cyprus	Water authorities
Analysis of adaptation options for domestic water supply for downstream communities of Peristerona Watershed	Ensure continuity of water supply of rural communities in downstream Peristerona Watershed	Community councils Water authorities
Analysis of adaptation options for irrigation water supply for downstream communities of Peristerona Watershed	Improved use of irrigation water resources	Water authorities Agricultural authorities Irrigation associations

These results are already being used on-site, and should continue to be disseminated within the local communities. In order to ensure the continuing of the exploitation of these results, the following actions will be implemented:

- **Local dissemination**

Keep working at a local level in the dissemination of BINGO's results in the specific RS. Through local conferences/events/workshops and professional connections, involve and mobilise site-specific stakeholders in knowing and applying BINGO's outputs.

- **Ensuring CoPs sustainability**

The CoP enables a mutual knowledge sharing process that leads to the creation of more adequate approaches and solutions and allows for the dissemination and exploitation of BINGO outcomes and results. Thus, it is crucial to stimulate the share of research and fields of knowledge among the CoP in order to ensure the exploitation of the project results.

3. FINAL EXPLOITATION PLAN

The final exploitation strategy aims to ensure that the outcomes and results of the project are exploited also after its life cycle. It is crucial that the strategy is adapted to the different stages and developments of BINGO, and that as the project achieved results there is a stronger focus on the development of exploitation tools and activities.

Based on the exploitable results, and what needs to be done in order for them to reach the stakeholders, a list of actions was developed, which describe objectives, eventual costs and possible funding, the responsible partners, and the deadline for the implementation of these actions.

Then, taking into account the list of actions, specific roles are distributed to the BINGO partners, indicating what each one needs to operationalise.

As mentioned previously in this document, the strategy for exploitation does not have the objective of pursuing a business model type of strategy. This decision was taken after discussions among the whole consortium during the 3rd Annual progress meeting. The partners have decided that there was no interest for the consortium to have a post-BINGO service or product for profit, as the nature of the partners involved in the BINGO process is quite different – while there are some private companies, there are also universities and public institutes, all key entities for the methodologies of BINGO. Thus, the actions proposed have the objective of putting the exploitable results in front of the stakeholders in formats appropriate to their needs, and keeping the materials accessible in the post-BINGO period, not providing profit-directed service/product. The gross of the actions will be taken within the project timeline, while the partners are engaged in BINGO, and will allow the results to be easily exploitable post-project with little effort.

3.1. List of Actions

The main goal of BINGO exploitation strategy is to ensure the sustainability of the project results and to enable the target audiences to have access to the project results. Thus, BINGO results are expected to enable the end users to deal with relevant scenarios with regard to climate, extreme events, water quality and quantity changes including droughts and floods.

The exploitation of the results is expected to occur in different dimensions, namely through the development of exploitation activities, in order to maximise the exploitation of BINGO's results. In this respect, the following exploitation activities have been identified as key activities for the effective exploitation of the project outcomes.

These actions are listed below, in a format which can be easily operationalised:

Action 1	
Produce explanatory videos	
Objective	Raise awareness to the BINGO exploitable results
Description	<p>Develop a set of 12 complexity-reducing animated explanatory videos presenting the BINGO deliverables and methodologies, bringing the outputs closer to the target audiences, from water and agriculture professionals to the general public.</p> <p>At the moment, there are 6 videos being produced which will tell the BINGO story – what was done and what was achieved.</p> <p>The following 6 videos will focus on the exploitable results and will work as a teaser for the materials produced to exploit the results.</p>
Costs and funding	Included in the project budget
Responsible partner	SPI and all WP leaders
When	Until May 2019

Action 2	
Networking and fostering synergies	
Objective	<p>Reach further stakeholders;</p> <p>Create opportunities for meetings and consultations to present exploitable results adapted to the specific stakeholder needs.</p>
Description	<p>The BINGO partners are encouraged to engage with their professional networks in order to mobilise them to want to know more about the project's results and how they can use them in their activities. This means the participation in conferences, congresses, workshops, meetings and all opportunities where the BINGO results would be useful for the actors involved.</p> <p>Networking allows to share directly the methodologies developed by BINGO and to make the public aware of the success of the BINGO methodology. The successful results should continue to be disseminated.</p> <p>BINGO has started to develop synergies and will continue to join forces with other projects and initiatives related with the project at a national, European and international level. For this purpose, BINGO has put in place a systematic scan of other H2020 projects and initiatives that share the same goals. A specific task in the Work Programme – Task 7.4 led by KWR - oversees these activities. A concrete strategy to put into action and maximise the impact of these collaborations will be developed. It is essential to continue addressing initiatives in order to create synergies and exploit the project results among relevant stakeholders in the water and climate adaptation fields.</p>
Costs and funding	Costs related to participation in events – included in the project budget
Responsible partner	All partners
When	Continuous

Action 3	
Prepare presentation templates to present BINGO's results at events	
Objective	Ensure the dissemination of BINGO's results
Description	<p>The project partners attend, on a regular basis, relevant national and international scientific conferences, thematic events and workshops, in which they disseminate the project outputs through their presentations, posters, and use of dissemination materials. In addition to the presentation of the project activities and results, the partners will make use of these specialised events to establish collaboration opportunities and network connections with their peers and further target audiences.</p> <p>For these presentations, a template should be produced for each exploitable result, which can be adapted to the specificities of each event.</p>
Costs and funding	No costs identified
Responsible partner	All WP leaders and RS managers
When	Until May 2019 – to be used in ECCA 2019

Action 4	
Disseminate exploitable results	
Objective	Bring the BINGO exploitable results to the key end-users to promote their exploitation
Description	<p>Based on the outcomes of the activities conducted in the 6 research sites, BINGO will develop success stories in simple, professional and attractive communication formats. These success stories will demonstrate convincing results of the BINGO project, and disseminate to large audiences how the research sites improved through the application of the project outputs.</p> <p>For this effect, a Group for Internal Review (GIR) has been established to ensure BINGO's representation in ECCA 2019 is done in a convincing and consistent way, so that the audience will understand and remember the BINGO story and the added practical value that its results can bring for water management.</p> <p>In addition, all of the products arising from these actions will contribute to the construction of these success stories and the BINGO overall story. This story will be told through the identified channels. The strategy to disseminate the exploitable results is also supported by the D7.4 Dissemination and Communication Plan. All partners are involved in the dissemination of these results.</p> <p>The materials produced for the dissemination will be accessible, disseminated and maintained after the conclusion of the project.</p>
Costs and funding	Included in the project budget
Responsible partner	SPI with support from all partners
When	Continuous

Action 5	
Website adaptation post-BINGO	
Objective	Make the BINGO results easily accessible and available
Description	After the finalisation of BINGO, the website will be adapted in order for all the BINGO exploitable content to be easily accessible. This will provide a long-lasting, accessible tool for any entity which needs to reach the content created by BINGO. This website will also contain the contacts of the partners, in case any further support is needed.
Costs and funding	Included in the project budget
Responsible partner	SPI with support from all partners
When	July 2019

Action 6	
Publish results in scientific and non-scientific journals	
Objective	Ensure the reliability of BINGO outputs so that stakeholders can trust and apply them
Description	<p>BINGO partners have been publishing their outcomes in scientific and non-scientific journals, available through open-access platforms. This will be maintained, providing BINGO's exploitable results a more consistent standing.</p> <p>This is particularly important for the more technical/scientific project results, such as the ones from WP2, WP3 and WP4, which have as a target audience the scientific and technical communities.</p> <p>Pilot studies, success stories and examples should be developed to help to visualise the effectiveness of the application of such methods and can be used for further scientific publications.</p>
Costs and funding	Included in the project budget
Responsible partner	All partners, particularly FUB, IWW and LNEC, the leaders of WP2, WP3 and WP4.
When	Continuous

Action 7	
Produce policy briefs	
Objective	Share the BINGO results in a policy-oriented format, allowing for a more concise focus on the most important issues for policy-making.
Description	<p>BINGO partners will develop policy briefs, containing a concise summary of the main messages of the project, as well as policy recommendations to deal with them. The policy briefs will be developed so as to address policy makers and to contribute to turning BINGO's outputs into priorities of the political agenda regarding climate change and the impacts of weather extremes in the water cycle (results from WP4 and WP5). This action will be developed with the support and guidance of professionals of communication, through BINGO PAB member Luisa Schmitt (PhD, journalist).</p> <p>For the WP1 exploitable result, a policy brief on "How to be successful in addressing climate change" will be produced.</p>
Costs and funding	Included in the project budget
Responsible partner	LNEC, KWR and SPI, with BINGO /PAB Luisa Schmidt
When	March/April 2019

Action 8	
Produce informative documents, materials and sessions	
Objective	<p>Community's awareness on Climate change & water issues</p> <p>Dissemination of BINGO's exploitable results in easily accessible formats</p>
Description	<p>For the WP1 exploitable result, script and guidelines will be produced to be used for art's performance / Water talks or other storytelling initiatives. This role playing exercise aims at raising awareness to the importance of citizens' cooperation & commitment to adapt. The material will be tested in Portugal and Cyprus and made available to be used in several contexts beyond BINGO geographies. Examples of possible users are Schools (basic, arts), Senior Universities, Municipal Forum's, ONGs, etc.</p> <p>For the WP4 exploitable methodology, 10 minute sessions will be produced adopting simple image based communication tools, to be presented at key events that gather stakeholder groups, policy makers and decision makers.</p>
Costs and funding	Included in the project budget
Responsible partner	LNEC associated with SPI and CYI
When	June 2019

Action 9 Produce guidelines	
Objective	Materialise and refine the methodologies developed by BINGO
Description	<p>Many of the exploitable results from BINGO are methodologies on complex scientific/technical issues, such as the results from WP2, WP3 and WP4, which need to be operationalised in paper. Guidelines will be developed as to help structure the operationalisation of these methodologies, becoming a useful tool for the stakeholders.</p> <p>BINGO will also develop detailed policy and governance guidelines to better adapt to future climate change impacts and extreme events for the six research sites (based mainly on the results of WP5 and WP6).</p> <p>BINGO has already developed guidelines for the end users and researchers, aiming at providing the tools that could facilitate and promote the interaction between these two very relevant stakeholder groups (taking into consideration the results of WP6).</p>
Costs and funding	Included in the project budget
Responsible partner	All WP Leaders
When	March 2019

Action 10 Prepare technical factsheets	
Objective	Create an appropriate channel for the dissemination of the result to professionals (technical staff)
Description	Based on the guidelines in the HESS publication, a technical factsheet will be developed, targeted toward instructing the technical staff on how to use the methods developed by WP2. This tool will have the guidelines content adapted to the needs of the professionals which deal with the technical issues relating to hydrology and water-related fields.
Costs and funding	Included in the project budget
Responsible partner	FUB
When	March 2019

Action 11 Produce reports	
Objective	Reach out to the scientific community and the technical staff
Description	For the dissemination of the exploitable result of WP3 to both the scientific community and the technical staff, a report on the utilisation of the hydro models in BINGO project will be produced. WP7 will also produce a report, detailing the utilisation of this methodology in the BINGO context.
Costs and funding	Included in the project budget
Responsible partner	IWW and SPI
When	January 2019

Action 12 Host, share and maintain Portfolio	
Objective	Keep online portfolio of adaptation measures relevant and up to date
Description	The portfolio has to be hosted, shared and maintained beyond the scope of the BINGO-project.
Costs and funding	Included in the project budget
Responsible partner	KWR (or other BINGO Partner)
When	Continuous

Action 13 Produce testimonial videos	
Objective	Showcase the success of the CoPs
Description	As a follow-up of the first round of testimonials produced in each research site, the last CoPs will include a final collection of testimonials from the end-users who participated in the workshops. These will include questions to help wrap-up their experience with BINGO and their major take-away. The first video, from the Tagus CoP, is already being produced.
Costs and funding	Included in the project budget
Responsible partner	Research site's managers
When	April 2019

Action 14	
Foster and facilitate the sustainability of the CoPs beyond BINGO project lifetime	
Objective	Prove the success of the BINGO methodology
Description	<p>The CoP enables a mutual knowledge sharing process that leads to the creation of more adequate approaches and solutions and allows for the dissemination and exploitation of BINGO outcomes and results. Thus, it is crucial to stimulate the sharing of research and fields of knowledge among the CoP in order to ensure the exploitation of the project results. The sustainability of the CoP will be fostered and facilitated through the following measures:</p> <ul style="list-style-type: none"> • Active communication with the CoP members in between and after the implementation of workshops through Basecamp - online collaboration platform, and other communication channels (depending on local context and preferences); • Promote the continuation of regular communication between the BINGO partnership through Basecamp and face to face meetings, so that all partners are up-to-date on the developments in each research site; • Mobilisation and involvement of further potential end-users (beyond the research sites) in the CoPs. <p>In the last CoP of each RS, strategies for the continuation of the CoPs, including a new format of CoP, will be discussed.</p>
Costs and funding	Included in the project budget
Responsible partner	Local partners, with support of NTNU
When	Continuous

Action 15	
Organise WP6 content into a handbook	
Objective	To have more accessible content to be used in other formats for better dissemination
Description	Collaboration between the scientist and professional production company to decide the communication form and shape of the handbook.
Costs and funding	Implementation dependent on costs and funding. Costs will be assessed.
Responsible partner	NTNU, LNEC, CYI and SPI
When	June 2019

3.2. Partners' role in Exploitation actions

Considering that BINGO exploitable results address precise needs of the different stakeholders, there will be an individual strategy and activities defined according to the profile of each partner.

In this context, each partner has developed a detailed exploitation strategy that contains a plan on how they intend to exploit the knowledge from this project. Each of the individual exploitation plans is integrated into the overall exploitation plan, taking into account the particular strategy and market positioning of the partners involved. All the partners are committed to the exploitation of the project results beyond its closing date in order to ensure the sustainability of the results.

The dissemination and exploitation measures proposed above aim to serve as general guidelines for the partners' individual role in the exploitation of the project results:

- To guarantee the overall continuity and sustainability of the BINGO results;
- To promote the successful transfer of the BINGO results to the target audiences, ensuring their support and promotion;
- To use the available dissemination materials and online tools to disseminate and exploit the project outcomes and results;
- To attend specialised international conferences and disseminate the project outcomes and results.

The table below presents the individual strategy and activities that each partner has defined in order to exploit BINGO outcomes and results:

LNEC	
Action 1	Support the production of the videos by providing the necessary materials for the content
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of BINGO's WP1 results Prepare template presentation of BINGO's WP4 results Prepare template presentation of BINGO's story/overall project
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 5	Support the website adaptation for the post-BINGO
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 7	Coordinate the action with all the involved partners. Produce and disseminate policy brief on "How to be successful in addressing climate change" and the policy brief on the risk management methodology for policy makers.
Action 8	Produce informative documents and materials for the dissemination of WP1 result to stakeholder groups and communities Produce materials and organise the informative sessions for the WP4 exploitable result for stakeholder groups, policy makers and decision makers
Action 9	Materialise the WP1 methodology into guidelines Materialise the WP4 methodology into guidelines
Action 13	Support the production of follow-up testimonial video for Tagus CoP
Action 14	Mobilise and maintain Tagus CoP
Action 15	Support with finding budget for the handbook Support the development of the WP6 exploitable result handbook

KWR	
Action 1	Support the production of the videos by providing the necessary materials for the content
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of BINGO's WP5 results
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 5	Support the website adaptation for the post-BINGO
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 7	Produce policy brief on the developed measures and/or methodology for their prioritisation for the policy makers
Action 9	Materialise the WP5 methodology into guidelines
Action 12	Host and maintain the online portfolio
Action 13	Produce follow-up testimonial video for Veluwe CoP
Action 14	Mobilise and maintain Veluwe CoP

IWW	
Action 1	Support the production of the videos by providing the necessary materials for the content
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of BINGO's WP3 results
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 7	Produce policy brief on the developed measures and/or methodology for their prioritisation for the policy makers
Action 9	Materialise the WP3 methodology into guidelines
Action 11	Produce a report on the application of the hydro models in BINGO

AQUATEC	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of the dissemination materials with the success story of Spain Research Site
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results Support with understanding how BINGO's results can be applied industrially/commercially
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 13	Produce follow-up testimonial video for Badalona CoP
Action 14	Mobilise and maintain Badalona CoP

NTNU	
Action 1	Support the production of the videos by providing the necessary materials for the content
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of BINGO's WP6 results Prepare template presentation of the dissemination materials with the success story of Norway Research Site
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 13	Produce follow-up testimonial video for Bergen CoP
Action 14	Foster the sustainability of the CoPs, by mobilising the CoP's managers to keep active communication between and after workshops and involving other end-users.
Action 15	Organise results from WP6 into a handbook format

InterSus	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 7	Support KWR in the production of policy brief on the developed measures and/or methodology for their prioritisation for the policy makers

FUB	
Action 1	Support the production of the videos by providing the necessary materials for the content
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of BINGO's WP2 results
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 9	Streamline the guidelines from the HESS journal publication
Action 10	Prepare a technical factsheet

SPI	
Action 1	Coordinate the production of the videos
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of BINGO's WP7 results
Action 4	Coordinate the production of the dissemination materials
Action 5	Adapt and host BINGO's website for post-project period (5 years)
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 7	Support the production of the policy briefs
Action 8	Support the production of informative documents, materials and sessions
Action 11	Produce report for WP7 exploitable result
Action 12	Disseminate the online portfolio
Action 13	Coordinate the production of the testimonial videos
Action 15	Support with assessing costs, design and finding a production company Support the production of the handbook on CoPs

CYI	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of the dissemination materials with the success story of Cyprus Research Site
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 13	Produce follow-up testimonial video for Troodos CoP
Action 14	Mobilise and maintain Troodos CoP
Action 15	Support the production of the handbook on CoPs

IACO	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results Support how BINGO's results can be applied industrially/commercially
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Troodos CoP

EPAL	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results Support how BINGO's results can be applied industrially/commercially
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Tagus CoP

CIMLT	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Tagus CoP

Ajuntament de Badalona	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 14	Mobilise and maintain Badalona CoP

Aigues de Barcelona	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Badalona CoP

Vitens	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Veluwe CoP

Wuppverband	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 3	Prepare template presentation of the dissemination materials with the success story of Germany Research Site
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results Support with understanding how BINGO's results can be applied industrially/commercially
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 13	Produce follow-up testimonial video for Wupper CoP
Action 14	Mobilise and maintain Wupper CoP

DGADR	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Tagus CoP

AMB	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Badalona CoP

ProGLD	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Veluwe CoP

BERGEN K	
Action 2	Engage with professional networks to increase BINGO's stakeholder network
Action 4	Support the production of dissemination materials and disseminate BINGO's exploitable results
Action 6	Produce and publish scientific/non-scientific papers on BINGO's results when possible
Action 14	Mobilise and maintain Bergen CoP

3.3. Timeline

Actions	Responsible partners	Dec	Jan	Feb	Mar	Apr	May	Jun	Post-Bingo
		M42	M43	M44	M45	M46	M47	M48	
Action 1 – Produce explanatory videos	SPI WPLs								
Action 2 – Networking and fostering synergies	All								
Action 3 – Prepare presentation templates to present BINGO’s results at events	WPLs								
Action 4 – Disseminate exploitable results	SPI All								
Action 5 – Website adaptation post-BINGO	SPI All								
Action 6 – Publish results in scientific and non-scientific journals	All								
Action 7 – Produce policy briefs	LNEC, KWR,SPI								
Action 8 – Produce informative documents, materials and sessions	LNEC, SPI, CYI								
Action 9 – Produce guidelines	WPLs								
Action 10 – Prepare technical factsheets	FUB								
Action 11 – Produce reports	IWW SPI								
Action 12 – Host, share and maintain portfolio	KWR								
Action 13 – Produce follow-up testimonial videos	RSMs SPI								
Action 14 – Guarantee the sustainability of the CoPs beyond BINGO project lifetime	RSMs NTNU								
Action 15 – Organise WP6 content into a handbook	NTNU,LNEC, SPI, CYI								

 Production/implementation



Available/accessible post-BINGO

4. MONITORING AND EVALUATION

To ensure the successful implementation of the exploitation strategy, accurate monitoring and assessment of the exploitation actions will be implemented. This will allow the identification of obstacles or limitations in the implementation of the strategy and plan for adjustments.



Figure 12 - Monitoring process

SPI will monitor the implementation of the exploitation actions, as the coordinator of WP7. Therefore:

- All partners should prepare their exploitation actions according to the final exploitation plan;
- All partners should register the implementation of the actions in the reporting excel file;
- All partners should save evidence of the actions were implemented;
- All the materials and products from the exploitation actions should be made available to SPI for dissemination/publication.

In order to measure the success of the implementation of the exploitation plan, the following Key Performance Indicators (KPI) will be taken into account:

Qualitative Indicator	Source and methodology	Target End BINGO	Target 1Y Post BINGO
Number of total visits to BINGO website	Google Analytics (detailed statistics about the visitors)	20 000	25 000
Number of news published on external channels	Registry of dissemination activities	70	75
Number of members of social network accounts	Social networks registry	2 000	2 500
Number of relevant external events with partners participation	Analysis of the partners' individual plans	60	70
Number of synergies with other initiatives	List of relevant initiatives identified and proof of contact	35	40

5. ANNEX

End-user questionnaire for demand analysis

In which sector(s) do you work in?

Water supply	Urban drainage	Irrigation / Agriculture
Coastal areas	Civil protection	Climate change
Hydrology	Other (which?):	

Which type of stakeholder are you?

Scientific community	Water professionals - Technical staff	Water professionals - Decision makers
Policy makers	Stakeholder group (organisations, SMEs, NGOs)	Interested citizens
Other (which?):		

Which type of BINGO outputs would be useful for your activity?

Please select a maximum of 3 outputs and indicate their priority (1 max priority – 3 min priority)

a. Advice in Collaborative Management in Climate Change Adaptation
b. Dynamical downscaling to 1 km scale – method, rainstorms
c. Guidance on how to use hydro models and understanding impacts
d. Full and comprehensive methodology for risk management and assessment
e. Prioritisation between long list of adaptation measures (process/method)
f. Handbook/book “Effective CoPs – The do’s and don’ts”
g. Other (which?):

For each of the selected outputs, indicate the preferred channel to receive it.

Please select a maximum of 3 channels per output.

Output (a,b,c, d,e,f,g)	Preferred channels (max 3) <i>Example: Course, Conferences, Workshops, Publications (scientific, non-scientific), Meetings, Technical factsheets, Policy briefs, Action plans, Reports, Guidelines, etc...</i>