



NBRACER
Nature Based Solutions
for Atlantic Regional Climate Resilience

HORIZON Europe Research and Innovation actions in support of the
implementation of the Adaptation to Climate Change Mission
(HORIZON-MISS-2022-CLIMA-01)

Initial Exploitation Plan

Deliverable D8.4

Version n°3

Authors

Sidonie Gras (IID-SII)
Giulia Bussoletti (IID-SII)



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About NBRACER

The impacts of climate change on people, planet and prosperity are intensifying. Many regions and communities are struggling to avoid losses and need to step up the effort to increase their climate resilience. Ongoing natural capital degradation leads to growing costs, increased vulnerability, and decreased stability of key systems. Whilst there has been noticeable progress and inspiring examples of adaptation solutions in Europe, the pressure to make rapid and visible progress has often led to a focus on stand-alone, easy-to-measure projects that tackle issues through either direct or existing policy levers, or sector-by-sector mainstreaming. But the dire trends of climate change challenge Europe, and its regions, needs exploration of new routes towards more ambitious and large-scale systemic adaptation. The European Mission on Adaptation to Climate Change (MACC) recognizes the need to adopt a systemic approach to enhance climate adaptation in EU regions, cities, and local authorities by 2030 by working across sectors and disciplines, experimenting, and involving local communities.

NBRACER contributes to the MACC by addressing this challenge with an innovative and practical approach to accelerating the transformation towards climate adaptation. Transformation journeys will be based on the smart, replicable, scalable, and transferable packaging of Nature-based Solutions (NbS) rooted in the resources supplied by biogeographic landscapes while closing the NBS implementation gap. Regions are key players of this innovative action approach aiming at developing, testing, and implementing NbS at systemic level and building adaptation pathways supported by detailed and quantitative analysis of place-specific multi-risks, governance, socio-economic contexts, and (regional) specific needs.

NBRACER works with ‘Demonstrating’ and ‘Replicating’ regions across three different Landscapes (Marine & Coastal, Urban, Rural) in the European Atlantic biogeographical area to vision and co-design place based sustainable and innovative NbS that are tailor-made within the regional landscapes and aligned with their climate resilience plans and strategies. The solutions are upscaled into coherent regional packages that support the development of time and place specific adaptation pathways combining both technological and social innovations. The project is supporting, stimulating, and mainstreaming the deployment of Nature-based Solutions beyond the NBRACER regions and across biogeographical areas.

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Summary

As part of Work Package 8, task 8.2 on Engagement and Exploitation, this first deliverable **D8.4 Initial Exploitation Plan** sets a foundation for the exploitation and valorisation of the results in the duration and end of the project.

On the methodology, this task focuses on maximising the impact of the project during and beyond its lifetime and sets a strategic plan to adequately protect the project Intellectual Property (IP), bring the project commercial results closer to market uptake, as well as making sure that the non-commercial results are valorised by ensuring their sustainability and maximising their impact after the project close. It assesses the most appropriate routes to exploitation periodically from M1, considering emerging results and progress, as well as considering changes in the boundary conditions of the IP as they evolve during the project lifetime. This first deliverable will be followed by the establishment of a **Replication Repository** (D8.7), linked to the NBRACER transformative adaptation guide (D7.4), in which the success factors for replication will be identified to assess the replicability potential (tested in the RRs) of the project outputs. A second and final workshop will be carried out to determine the final Key Exploitable Results (KERs) of NBRACER and evaluate their Technological Readiness Level (TRL) evolution. The **Final Exploitation Plan** (D8.8) will be submitted in M46 and will include the complete Intellectual Property Rights (IPRs) exploitation strategies, the Replication Repository, final business models and/or valorisations methods. The IP & Exploitation Manager and Deputy (IID-SII) will coordinate all exploitation matters and supervise IPR management.

On KERs, the first step of the exploitation strategy for NBRACER was to determine whether results were part of a long-term approach, and whether they could be commercialised or valorised. The KERs identified during the proposal phase as well as during the first exploitation workshop are as follows:

- **1 Integrated balanced portfolio of solutions and pathways for scaling up** (in 1/marine and coastal, 2/urban, and 3/rural landscapes);
- **2 Toolboxes**, 1 for **the landscape characterisation and modelling of BDV and ESS** and 1 for **regions on economic development, finance and business support**;
- **1 Conceptual framework** to assist on the **design of NbS** at multiple scales and landscapes;
- **1 Open-source GIS-based decision support tool** delivering across scale place-based of trade-offs and synergies of solutions portfolios based on climate scenarios using European standards and data portals.

This Initial Exploitation Plan concludes by offering several recommendations concerning negotiating IP access rights and valorisation for exploitation between partners, and necessary steps to ensure that project IP is properly protected. Tailored recommendations are also provided for partners, based on their specific area of expertise relative to project results. Ultimately, the collaborative efforts of all partners will be valuable in ensuring that the exploitation of results is maximised. Finally, paths forward on IID-SII's next steps in the coming year were laid out.

Keywords

Nature-based Solutions, Exploitation, Valorisation, Intellectual Property, Out-scaling, Pathways, Climate Resilience, Replicability, Replication Repository

Abbreviations and acronyms

Acronym	Description
EP	Exploitation Plan
NbS	Nature-based Solutions
IP	Intellectual Property
IPR	Intellectual Property Right
FTO	Freedom To Operate
GA	Grant Agreement
BDV	Biodiversity
ESS	Ecosystem services
GIS	Geographic Information System
IEM	IP & Exploitation Manager
IPR	Intellectual Property Rights
KER	Key Exploitable Result
DR	Demonstrating Region
RR	Replicating Region
PMB	Project Management Board
RSB	Results-Strategy-Beneficiary
TRL	Technological Readiness Level

Definitions

Word	Definition
Exploitation	Using results in developing, creating and marketing or improving a product, process, or service, or shaping a policy that could have a positive impact on the public's quality of life (European Commission: European Research Executive Agency, 2024).
Intellectual Property (IP)	Intellectual Property (IP) refers to creations of the mind (Invention, Literary and artistic work, Symbol, Name, Image, Design).
Intellectual Property Right (IPR)	Intellectual Property Rights (IPRs) are legal rights that protect the creation of the human mind. They are commonly divided into two categories: industrial property rights (patents, trademarks, industrial design) and copyrights and related rights.
Background IP	Background IP is supplied by a beneficiary at the start of the project. Background IPs are inputs (any data, know-how or information, including any rights such as intellectual property rights) to the project.
Foreground IP	Foreground IP is produced by a beneficiary during the project's tenure and within the project scope. Foreground IP are the results of the projects.
Ownership	The proprietor of the invention is known as the owner and has the right to restrict others in their use of the IP it owns. Ownership types include individual and joint ownerships.
Freedom to Operate	Freedom to operate (FTO) means that for a given product or service, at a given point in time, concerning a given market or geography, no intellectual property (IP) from any third party is infringed.
Trademark	Trademarks are signs used in trade to identify products and services. More specifically, a trademark is a symbol your customers use to pick you out. It may consist of any sign, particularly words, including personal names, designs, letters, numerals, the shape of goods or their packaging, or sounds, provided that they can be represented on the register and are capable of distinguishing the goods or services of your undertaking from those of other undertakings.
Patent	A patent is a legal title that can be granted for any invention having a technical character provided that it is new, involves an 'inventive step', and is susceptible to industrial application. A patent can cover how things work, what they do, what they are made of and how they are made. Anybody can apply for a patent. It gives the owner the right to prevent others from making, using or selling the invention without permission.
Copyright	Copyright is the term used to describe the rights that creators have over their literary, scientific and artistic works. The rights arising under copyright can be classified into two categories: economic rights and moral rights. Economic rights generally confer copyright holders the right to authorise or prohibit the making and distribution

of copies as well as communication to the public. Moral rights generally confer authors a right to claim authorship, as well as a right to object to a distortion or mutilation of their work, which would negatively affect their honour or reputation. Copyrights are territorial rights, which means that they only produce effects in the territory where they are registered.

Table 1: Definitions

1 Introduction

1.1 Context

Task 8.2 Engagement and Exploitation aims at maximising the impact of the project during and beyond its lifetime and sets a strategic plan to adequately valorise project results and protect the project's Intellectual Property (IP). The task is led by the IP & Exploitation Manager (Sidonie Gras, IID-SII) and Deputy (Giulia Bussolletti, IID-SII), who define a strategic plan on how the project's results will be owned and used, to ensure their sustainability and maximise their impact after the project close.

At M7 of the project (April 2024), a preliminary identification and characterisation diagnosis of targeted project results was conducted. More concretely, IID-SII organised a first exploitation workshop to which around 30 partnering organisations participated: starting with an informative session on Intellectual Property Right (IPR) rules and conditions according to the Horizon Europe framework, a brainstorming session followed during which partners reviewed their entity's background IP, determined potential foreground IP and, among these, identified exploitable results and their contribution to achieving them.

Throughout the project, exploitation objectives will be encouraged and collected via strategic discussions with all NBRACER partners who work together to select the most adapted IPR solutions based both on exploitation objectives and constraints (costs, registration formalities, duration of protection, etc.). Particular attention will be paid to results with joint IP ownership.

For each possible exploitable result, potential beneficiaries have been identified among regions and local communities, scientific communities, researchers, academics, EU and regional policymakers, NGOs and charities, and farmers and the related agroindustry.

The last months of the project will be dedicated to the development and formalisation of exploitation and valorisation strategies. It will start with a second exploitation workshop (around M36) to help evaluate the Technical Readiness Level (TRL) for the key project results and will elaborate strategic planning roadmaps to favour the market uptake of the project results, as well as the potential for replication and upscaling. This will result in the final Exploitation Plan (D8.8), which will be built based on all the information gathered throughout the project. The partners will further be encouraged to continue exploitation discussions after the project.

1.2 Deliverable Objectives

1.2.1 Overview

Work Package 8 (WP8) on ‘Communication, Networking and Engagement’, incorporates exploitation of results to support out-scaling and accelerate market uptake and replication of the project innovations. As part of WP8, task 8.2 ‘Engagement and Exploitation’ accounts for the exploitation activities and intends to boost the project exploitation, by identifying all project results, background and foreground IP, as well as partners’ objectives, and constraints, and guarantee the internal and external freedom to operate.

The Exploitation Plan (EP) will set a strategic plan to define exploitable NBRACER results or ways to further disseminate and replicate Nature-based Solutions (NbS) during and after the end of the project. The purpose of this task is to find a common agreement with the partners on how the project results will be owned and used to maximise their impact. It will provide general recommendations on both joint and individual exploitation strategies in terms of commercial opportunities, IPRs, knowledge management, and business model options for Key Exploitable Results (KERs). More specifically, this task and EP will enable the project partners to identify their key results, compare them to the market and implement their IP & exploitation strategy, as highlighted in *Figure 1*.

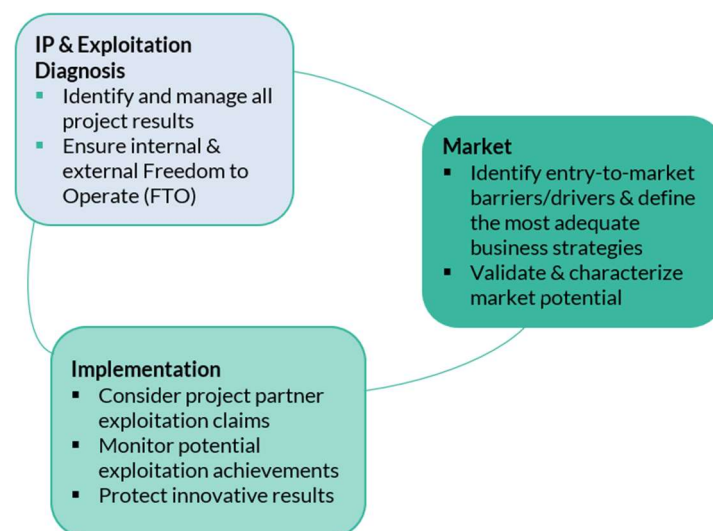


Figure 1: Value of an Exploitation Plan for project partners

1.3 Methodology

Task 8.2 on Exploitation will produce three reports throughout the project:

1. Initial Exploitation Plan (D8.4, M14)
2. Replication Repository (D8.7, M46)
3. Final Exploitation Plan (D8.8, M46)

The Exploitation Plan follows a three-phase approach developed by (and to be applied by) IID-SII:

Phase 1: IP diagnosis – Identification and characteristic of all exploitable results (M1-M24)

This phase initiates the IP and exploitation dialogue with the partners, informs them about key issues to consider, and allows for gathering of information required to set the basis of the project exploitation strategy. Background IP, Foreground IP, organisation goals and barriers, and ownership questions are raised with the partners (Results-Strategy-Beneficiary methodology). The outputs of the IP webinar, the exploitation workshop and exchanges with partners for further details feed into a collaborative IP repository (see *Figure 5* in Annex 1 for overview) and contribute to the drafting of the initial EP version and initial exploitation strategies. These are, of course, expected to evolve as the maturity of the project and its results increase. IID-SII also strongly incentivises partners to assess a Freedom-To-Operate (FTO) search as partners are the most knowledgeable with regards to their specific field.

Phase 2: Market potential for successful commercialization/exploitation (M24-M48)

Building on a stakeholder analysis, this stage is concentrated around the out-scaling of the KERs and potential additional commercialization of foreground IP results. Such results will be identified, elaborated and analysed in accordance with the respective partners, who will be contacted by IID-SII in order to hold regular bilateral meetings. Beneficiary goals and risks (see Section 3.1) will be taken into account during this process.

Phase 3: Implementation – Exploitation strategies & IPR (M36-M48)

Implementation consists in ensuring the protection of any IP, facilitating discussions between partners (in case of any joint ownership), and planning out more concrete exploitation and valorisation strategies for the KERs especially, but also for any further foreground IP created throughout the life of NBRACER. A final workshop will help evaluate the TRL evolution for the key project results and elaborates strategic planning roadmap and implementation plans to favour the market uptake of the project results. This roadmap will be outlined in the final Exploitation Plan (D8.8).

1.3.1 Results-Strategy-Beneficiary methodology

The first co-creative exploitation workshop facilitated by IID-SII relied on the Result-Strategy-Beneficiary (RSB) developed by LGI Sustainable Innovation and adapted to the project scope by IID-SII. This methodology is based on an adapted version of the 6-3-5 brainwriting method and includes individual and collective sessions.

The strategy considers the existing IP of the project partners that can be brought to NBRACER, the expected results of the partners and identifies all of the potential beneficiaries to define the most adequate strategy for each pair of “result-beneficiary” association. As a part of the exploitation plan, the IP strategy ensures a common agreement on how the project results will be owned. IPR management will define the appropriate measures and methodologies for managing and protecting the IP. This will ensure that all project results are formulated and compiled either into open access (dissemination) or protectable form (exploitation).

The exploitation workshop was organised on 24 April 2024 (M7) via Microsoft Teams to connect and Mural to brainstorm points and ideas. Together with about 30 attendees (of which 4 DRs, 2 RRs and 8 knowledge partners), the workshop began with an hour-long informative presentation on IP during which the concepts of exploitation and IP in the context of Horizon Europe projects were introduced. Once the foundations needed for the three-hour collaborative workshop were laid out, the group was split into two groups and parallel sessions were run in virtual breakout rooms.

The RSB methodology was adapted to this virtual context, which led to the collection of information from the partners on the background and foreground IP, ownership, goals and risks, as well as beneficiaries and the goals and risks associated to them, and finally, initial exploitation strategies. The outputs of the workshop served to draft this initial exploitation strategy and to consider the potential barriers and drivers for the implementation of the exploitation plan. The key exploitable outputs of the exploitation workshop fed into a collaborative IP repository set up to centralise all IP related information for the results possible of protection and exploitation.

1.4 Management

1.4.1 Exploitation & IP Repository

The IP Repository was set up as a collaborative tool to collect and review all information related to IP and exploitation matters from the partners. The repository will be maintained and updated by IID-SII to track the evolution of the KER and other results that may become important outcomes of NBRACER. Key definitions, methodology, date and updates will be regularly reviewed to facilitate the exploitation process in the lifetime of the project. The file is made available to all partners to review and for IID-SII to update through the NBRACER Teams. A first appearance is also visible as *Figure 5* in Annex 1.

1.4.2 IP & Exploitation Manager and Deputy

The IP & Exploitation Manager (Sidonie Gras, IID-SII) and Deputy (Giulia Bussoletti, IID-SII) were appointed to organise and follow up on the process towards exploitation of the project's results. The IP & Exploitation Manager and Deputy are thus the authors of this deliverable, and the project coordinator reviewed such report.

To ensure the exploitation strategy is implemented, IID-SII will liaise regularly with the Project Management Board (PMB) and all NBRACER partners. Meetings with PMB enables the accountability of WPL and RCs. On a periodic basis, the PMB is asked to review the IP repository, using it as a tool to track necessary tasks. If there are any updates, they can communicate it to the IP & Exploitation Manager and Deputy, who will make sure to update the IP Repository.

All participants of NBRACER should be aware of the importance of protecting their results and follow these guidelines:

- When planning a new publication or result: the lead partner should inform other partners by email 30 days in advance and ensure that there is no content conflict with other results and other dissemination activities planned by other partners.

- Before disseminating any result: the lead partner should check with other partners by email that it has not already been planned (for a publication, patent, or other).
- IID-SII will manage the IP Repository regularly, based on input from partners informing IID-SII by mail or through Teams, every time they have an update/new result.
- In case of claim, question or conflict about IP or dissemination of project results: partners should get in touch with PMO (Deltares and IID-SII) and include the IP & Exploitation Manager and Deputy.
- Since the PMB participates in the NBRACER bi-monthly meetings, partners will be regularly reminded to present any innovation that could be exploited.

For future planning, individual bilateral meetings will be conducted with partners to understand how each organization works when it comes to protecting the results and foresee possible joint ownership regimes.

2 Intellectual Property Rights Diagnosis

2.1 Background IP

NBRACER partners presented Background IP to the project during the preparation of the Consortium Agreement. *Table 2* summarises the Background IP with information taken from the Consortium Agreement and additional information that was shared during the first workshop facilitated by IID-SII. The Background IP is categorised into 3 types in the IP repository:

1. Software/Database/Tool;
2. Knowledge/skills which includes expertise, information, data etc.;
3. Methodology, which is linked to the way and steps that something is done.

Partner	Background IP Type	Background IP Description from the exploitation WS organised by IID-SII
Deltares	Software/Database/Tool	“Delft3D FM” suite: hydrodynamics simulation suite of softwares
	Software/Database/Tool	“wflow”: simulation software for hydrological processes
	Software/Database/Tool	“iMOD”: Groundwater modelling software
	Software/Database/Tool	“Quick Scan Tool, Pathways Generator & CRC-TOOL”
	Software/Database/Tool	“FloodAdapt” tool
	Software/Database/Tool	“Ruimte Scanner/LandUse Scanner”
	Methodology, Knowledge/Skill	Development of Dynamic Adaptation Pathways for building climate resilience
	Methodology, Knowledge/Skill	System of systems methodology for building multi-hazard spatially defined impact chains
	Methodology	DeepDemonstration and Sensemaking Methodologies
	Software/Database/Tool	“Climate-KIC.cognitive city”: software to rapidly implement innovation activities

CKIC	Software/Database/Tool	Transformation Capital: an innovation programme and tool for systemic innovation for sustainable finance movement
	Software/Database/Tool	EIT Climate startup ecosystem: open-access database to map start-up ecosystem
	Methodology, Knowledge/Skill	Climate-KIC Climate Impact and Startup Impact Frameworks
	Methodology, Knowledge/Skill	Climate-KIC education and learning training methods and frameworks
WR	Knowledge/Skill	NbS categorisation approach
	Knowledge/Skill	Research on impact of NbS on regional wealth, wellbeing and natural quality
	Knowledge/Skill	Data on impact of NbS on resilience, biodiversity and other socio-economic and natural aspects
TECNALIA	Software/Database/Tool	SIRVA (Scalable Integrated Risk and Vulnerability Assessment Tool for Climate Change Adaptation)-HAVURI: vulnerability & risk assessment dashboard software
	Software/Database/Tool	Resilience Pathway Visualisation Tool (RPVT): web-based software tool to visually construct implementation pathways for resilience measures
FIHAC	Methodology, Software/Database/Tool	Tools & methods to monitor NbS
	Knowledge/Skill	Approaches to build scenarios to test the efficiency of NbS
VITO	Software/Database/Tool	“Bodemwaterbalansmodel”: soil-water balance model
	Software/Database/Tool	“Klimaatportaal”: Climate Portal
	Knowledge/Skill	Existing data on NbS and their impact
	Knowledge/Skill, Software/Database/Tool	ESS calculation data (including INCA tool)
	Software/Database Tool	“Natuurwaardeverkenner”: ESS calculation tool
WF Province	Knowledge/Skill	GIS layers on water and water-management related topics
AcclimaTerra	Knowledge/Skill	NbS educational & communication tools
	Knowledge/Skill	Conceptual framework of NbS in the region
Bordeaux INP	Methodology	Tools & methodologies for characterisation of aquifers
	Methodology	Tools & methodologies for characterisation of artificial recharge sites
	Methodology	Tools & methodologies for monitoring of artificial recharge in aquifers
	Methodology	Tools & methodologies for modelling of mass, pressure & energy transfers in aquifers
MEOSS	Software/Database/Tool	“MEO-WaterReserve” 1&2 software: algorithm for detecting and quantitative monitoring of surface water bodies using optical and radar satellite data
	Software/Database/Tool	“OCS-Agri” software: algorithm for the characterisation of land cover (crop types) using optical and radar data

	Software/Database/Tool	"CNN4FieldExtraction" software: plot delimitation algorithm
	Software/Database/Tool	"Space4Irrig" (1&2) software: algorithm for detecting irrigated plots using optical and radar data
CMCC	Software/Database/Tool	Data/model/software codeveloped/developed solely by CMCC in collaborative projects with other partners or institutions.
ICLEI	Software/Database/Tool	UrbanByNature Programme: facilitated capacity-building programme promoting exchange among cities, researchers, SMEs and NGOs to build bridges with the Nature-Based Solutions communities across Europe, Asia, Latin America, and other interested regions.
	Knowledge/Skill	CitiesWithNature/RegionsWithNature: Partnership initiatives that support regional and subnational government officials and other stakeholders to enhance ecosystem restoration, biodiversity conservation and nature-based solutions in their regions
Friesland	Software/Database/Tool	Groundwater Atlas + hydrological models
	Knowledge/Skill	FK2050 (Province of Fryslân + Wetterskip Fryslân)
	Software/Database/Tool	"Klimaat-effectatlas": the climate effect atlas – a national toolbox
VLM	Knowledge/Skill	Nature development (natuurinrichting)
	Methodology	Integrated design of NbS with multidisciplinary teams (landinrichting)
	Knowledge/Skill	Agricultural land expert (manure bank, beheersovereenkomsten, grondenbank)
	Knowledge/Skill	Supporting coalitions for climate adaptation (Water-Land-Schap)
	Software/Database/Tool	"Klimaatmaatregelendatabank": database of NbS for VLM)
	Software/Database/Tool	"Klimaatleidraad": guideline for climate smart design for VLM
	Software/Database/Tool	"Klimaatinventaris": overview of implemented NbS for VLM)
	Software/Database/Tool	Natuurwaardeverkenner (with VITO)
SMEAG	Knowledge/Skill	Gravel pit data

Table 2: Background IP offered by NBRACER partners

2.2 Key IP Considerations and Guidelines

Access rights within NBRACER are now determined by the Grant Agreement and Consortium Agreement. *Figure 2* illustrates the conditions that appear in the Description of Actions, in the GA.

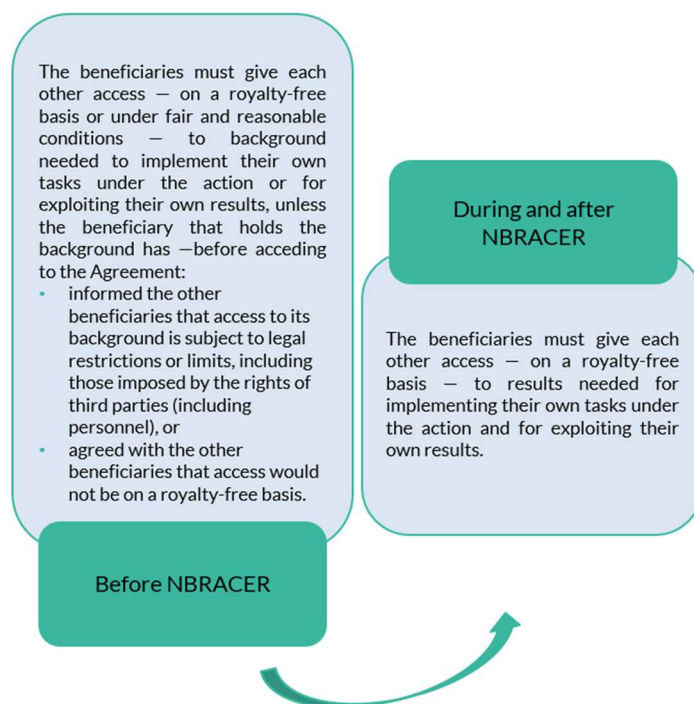


Figure 2: Key IP Guidelines for NBRACER

2.3 Key Exploitable Results

Horizon EU results can be grouped into exploitable and non-exploitable results, the latter pertaining to the dissemination portfolio of results. As exploitation and dissemination work hand in hand, it is important to identify these results early in the project to ensure what the objectives are for the various results and adapt the strategy and resulting path of actions to the desired outcomes. Within the exploitable results category, some results will be commercially exploitable and some non-commercially exploitable, and this will lead to a range of exploitation options, as illustrated in *Figure 3*.

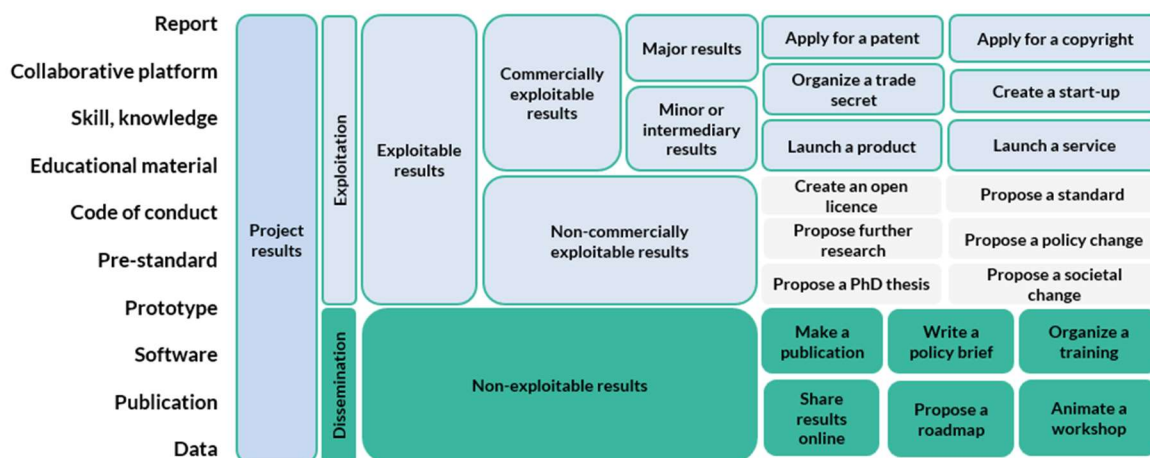


Figure 3: Types of project results and exploitation routes

In such projects, the KERs would typically constitute the focus of the results that will be applicable beyond the project lifetime. At this stage, the intention is to prioritise our focus on the principal outputs of the NBRACER project.

KERs from the NBRACER project are holistically contributing to solutions and pathways to scaling up NbS in Europe. Each result pertains to a different aspect of NbS implementation at a larger European scale, and will all be disseminated at different levels as they will be made available through open source to encourage further scientific research and use of NBRACER resources:

- **1 Integrated balanced portfolio of solutions and pathways for scaling up** (in 1/marine and coastal, 2/urban, and 3/rural landscapes);
- **2 Toolboxes**, 1 for **the landscape characterisation and modelling of BDV and ESS** and 1 for regions on **economic development, finance, and business support**;
- **1 Conceptual framework** to assist on the **design of NbS** at multiple scales and landscapes;
- **1 Open-source GIS-based decision support tool** delivering across scale place-based of trade-offs and synergies of solutions portfolios based on climate scenarios using European standards and data portals.

Integrated balanced portfolio of solutions and pathways for scaling up

Throughout the duration of the project, the demonstrating and replicating partners, as well as the knowledge partners will be developing solutions and pathways for scaling up NbS in their marine and coastal, urban and rural landscapes. Of the work carried out and the lessons learned, an integrated balanced portfolio of the solutions and pathways (that have been assessed and validated) will be created to make such information readily available for information sharing and future implication and scaling up. This will be especially important due to a lack of demonstrated portfolios of NbS solutions across Europe, along with the implementation gap between knowledge and practice, and the correlated guidelines and recommendations on market uptake of sustainable solutions (hence, the supplementary necessity of the KER “Toolbox for regions on economic development, finance and business support”). The three different landscape portfolios will be elaborated via D2.3 for marine and coastal, D3.3 for urban, and D4.3 for rural, with the transfer of lessons learnt feeding into the Replication Repository (D8.7).

Possible exploitation of this portfolio could be through advisory services from the partners of the project, or other external communities of practice such as within NetworkNature, UrbanByNature, the Global Covenant of Mayors for Climate & Energy (ICLEI), the IUCN, etc., to integrate the solutions in their service of scaling up NbS. In the meantime, the project plans to produce policy briefs, write publications and propose further research based on the results of the work on upscaling NbS for the different landscapes.

Toolbox for landscape characterisation and modelling of BDV and ESS

A toolbox will be produced for the characterization and modelling of biodiversity and ecosystem services in the context of T5.3, specifically with the elaboration of D5.3. Such toolbox will be used to disseminate the methodology and standards established throughout the project. The objective of such toolbox is to standardise and harmonise assessments across marine and coastal, rural and urban landscapes, thereby enabling consistent, comparable data that supports strategic, EU-aligned decision-making. This toolbox aims to help policymakers and national/regional/local

stakeholders identify high-potential areas for NbS on a landscape basis and visualise ecosystem benefits, fostering better-informed investments and public engagement. Additionally, it would support EU biodiversity and climate targets by guiding resource allocation toward interventions with the greatest impact potential and enabling systematic monitoring of NbS effectiveness. Overall, it will facilitate scalable, evidence-based solutions that address both conservation and socio-economic objectives across Europe.

Some initial ideas to exploit this toolbox available through an open license will be for it to be utilised by advisory services specialised in the implementation of mapping and modelling. Trainings within the scientific community could also enable researchers to fully understand the standard and how to implement it in their research. To further increase the understanding of the proposed standard, publications will be essential.

Toolbox on economic development, finance, and business support

From an economical and business support standpoint, a toolbox is an anticipated result of the project related to T6.5 and elaborated via D6.6. The product will be made for regions to help them in navigating the integration of NbS in their communities, helping them make the right decisions economically, and ecologically.

With the toolbox produced, the partners responsible for this result could provide advisory services and trainings to the regions to present the different solutions. The toolbox can further be a resource for the partners who are advising the regions. In order to continue to promote the toolbox and extend its lifetime after the project, publications are expected in addition to possible advisory services.

Conceptual framework for design of NbS at multiple scale and landscapes

A conceptual framework for the design and implementation of NbS will be developed in the context of T5.1 and elaborated via D5.1, in which the definition of the main spatial functional units to report statistics, performance indicators and management needs will be established. Based on the successes and challenges experiences throughout the project, the framework will be a guiding resource for designing and setting up future NbS.

Possible exploitation of this framework could be through trainings using the resulting resource through an open license as a reference. The training would be geared towards the scientific community, policymakers, regions and communities to provide them with key knowledge and recommendations for spreading appropriate NbS in the targeted landscape.

GIS-based decision support tool

In the context of T5.5 – Portfolio and Pathway decision support, an open-source GIS-based decision support tool will be developed. Users of this GIS-based tool will be able to make educated decisions on NbS solutions to implement, based on comparisons of different solutions for the location of possible implementation. The tool will compile climate scenarios from European standards and data portals, allowing users to use one tool, rather than multiple and verifying their choice.

Several possible exploitation routes can be taken for this tool, including the dissemination of the methodology for application into other tools or products, as well as advisory services for using the tool. Having training will further enable users to fully understand the tool and use it appropriately to make their decisions. The results could further be shared online to show how decisions were made, providing evidence of research.

2.4 Replication Repository

With the goal of involving at least 150 regions in the adaptation mission by 2030, NBRACER aids in enhancing governance, policy development, guide towards funding and contributes to establishing common standards, setting quantitative targets, defining measurable indicators, and creating evaluation tools for NbS. These resources are intended to support assessment of progress, effectiveness, and multiple benefits at both national and EU levels. Building on these developments, NBRACER's transformative adaptation guide (developed in WP7) will be designed for distribution to all regions supported by the European MACC, especially via the guidance of the P2R (Pathways2Resilience) project that runs in parallel with NBRACER and is led by project partners, as well as through the Climate-ADAPT platform. Additionally, NBRACER's long-term exploitation plan (WP8) will leverage ICLEI and CKIC's ongoing programs beyond the project's duration.

This being said, the **NBRACER Replication Repository (D8.7)** will be developed as a key component of the project's exploitation strategy, in which the success factors for replication will be identified to assess the replicability potential (tested in the RRs) of the project outputs. This repository will serve as an information resource for both partners and the public (the dissemination level of the deliverable will in fact be public), tracking and documenting the project's exploitation progress and approaches. Throughout the project, it will be actively updated with knowledge transferred from Demonstration Regions (DRs) to Replication Regions (RRs), including success factors for replication. Linked to the NBRACER transformative adaptation guide, the repository will evolve into an integral part of the exploitation strategy, finalized at the end of the project. Afterward, it will remain a valuable reference, capturing the successes and challenges experienced by DRs and RRs in implementing NbS.

2.5 Measuring Success

The IP & Exploitation Manager and Deputy will ensure to facilitate periodic meetings with the various partners. Further bilateral discussions as well as final workshop on TRL will be organised to prepare the Final Exploitation Plan due in M46 of the project. Exchanges between various partners, status updates on development of innovation and protections as well as assistance for the partner questions and needs will be addressed throughout the duration of the project.

3 Stakeholder Analysis

Beneficiaries of the NBRACER project are groups identified by the partners who will benefit from the project results beyond the duration of the project. Potential beneficiaries were identified during the first exploitation workshop, and their motives were analysed to understand their goals

and the risks they may face in exploiting the results. The 5 most prominent beneficiaries recognised during the workshop fall along those with the ability to influence and position the regions to adapt to changing climate through NbS:

- a. **Regional & local communities:** This group represents the public that is part of these communities and regions. They are clusters that will benefit most directly from the changes implemented due to NBRACER. The successful results of the project will widely benefit them and their well-being.
- b. **Scientific communities:** These encompass research and development groups, research centres and universities that acquire knowledge through research or pass on knowledge through teaching. They will be able to use the results from NBRACER to educate individuals and exchange with NBRACER based on the results and findings of the project.
- c. **Policymakers:** The group is responsible for putting policies or restrictions in place, for the good of people and the environment. Policy makers can use the results from NBRACER as bases for hanging policies, or potentially creating new ones.
- d. **NGOs and charities:** Such groups educate on the importance of nature and climate adaptation as well as implementing or tracking it as they can. NGOs and charities will be able to pass on the knowledge acquired by the project, as well as putting some elements of the results in place.
- e. **Investors:** This group enables projects in research and innovation to be possible, as well as enabling the implementation of research-based results. They will be able to finance results of NBRACER and to continue implementing the results beyond the lifetime of the project.

3.1 Potential Beneficiary Goals and Risks in the exploitation of NBRACER results

3.1.1 Beneficiary Goals

The following *Table 3* reflects the exploitation goals that were identified during the first exploitation workshop from the perspective of the various beneficiaries following NBRACER results and activities.

Stakeholder Category	Exploitation Goals of Beneficiaries
Regions & Local Communities	• Climate resilience • Satisfied citizens • Having administrations informed and involved • Reducing risks, socio-economic loss, improving well-being • Increase regional resilience
Scientific/Academic Communities	• Evidence of effectiveness of NbS • Continue to receive funding • Development of knowledge & knowledge sharing • Awareness raising • Contribute to collaborative engagement practices

	• Sharing of lessons learned on co-designing and replicating NbS at landscape-scale
EU Policy-makers	• Science-based technical support • Mainstreaming NbS in existing rules and regulations • Guidance on process steps on how to enable regions to become resilient using NbS
Regional policymakers	• Having objective information on costs and benefits of NbS • Increase awareness and knowledge of climate adaptation • Having tools and vision for a more resilient region
NGOs & Charities	• New collaborative experiences around NbS • Make objective impact assessment available for their donors
Investors	• Information about return on investments in NbS as well as business models • Improve perception of NbS benefits via monitoring • Improve knowledge to increase and improve investments in NbS • Evidence of impact to encourage private investment

Table 3: Exploitation goals for beneficiaries of NBRACER results

3.1.2 Beneficiary Risks

The following *Table 4* reflects the identified exploitation risks from the perspective of the various beneficiaries following NBRACER results and activities.

Stakeholder Category	Exploitation Risks of Beneficiaries
Regions & Local Communities	• Having a multiplicity of projects • Lack of political will of regional authorities to choose NbS or climate adaptation initiatives • Political issues • Complex administration
Scientific/Academic Communities	• Knowledge not providing societal solutions to challenges • Knowledge not being shared in appropriate channels and not being used to its maximum potential • Challenge of adapting different contexts (environment, social, political)
EU Policy-makers	• Lack of cooperation • Conflicting laws in at EU vs national level
Regional policy-makers	• Mismatch of different objectives, interests and needs • Lack of cooperation and integrated approach • Lack of stakeholder support even with supporting data
NGOs & Charities	• Funded projects failing to achieve objective results
Investors	• More interest in projects with less impact due to higher financial yield • Reluctance to invest in NbS due to risks and track record

Table 4: Exploitation risks for beneficiaries of NBRACER results

4 Recommendations

4.1 Overall Guidelines

IP Protection

Following the Horizon EU rules, partners must explore the options of protecting project results and the obligation to protect such results if they can reasonably be expected to be commercially exploited.

In the case that a project partner does not intend to exploit a result, transfer offers, possibly to other partners, must be considered. It is important to note that the European Commission may take over the ownership of the result, if it is left unprotected, as illustrated in *Figure 4*.

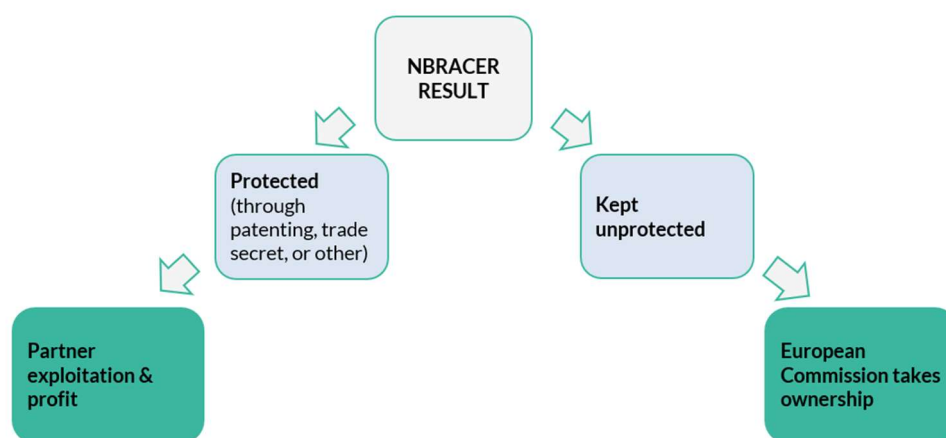


Figure 4: Possible outcomes for protection of NBRACER exploitable results

Beyond IP protection, partners should ensure that an external party does not patent something that would place them under an IP infringement scenario.

Exploitation and dissemination

It is important to strike an adequate balance between exploitation and dissemination of the results. Where patenting has been identified as an IP protection strategy, attention must be paid in order not to publish results or knowledge that could be considered as valuable input into the patent application and process.

Tools

IP management tools, such as the IP Repository, have been set up to monitor and discuss these issues throughout the project. In addition, the two deliverable versions will serve as a clock to foster and advance these conversations for the duration of the project.

Freedom To Operate (FTO)

FTO means that for a given product or service, at a given point in time, concerning a given market or geography, no IP from any third party is infringed. This also refers to searches on IP rights

databases (such as patent databases) aimed at determining whether a product's commercialisation could infringe third parties' rights.

As recommended during the exploitation diagnosis process, we strongly encourage the partners to pursue FTO searches after their own patent search, after light patent research has been conducted by IID-SII.

Patent

The early identification of foreseen patents serves as a starting point for discussions on joint exploitation strategies among partners. Further discussions need to occur among partners as the project evolves. Although partner strategies might differ, it continues to be important for information to remain confidential in case patenting becomes a possibility at a later stage. If partners do not wish to lead patent applications, they could decide to either join a patent application with other partners or transfer their IP rights to the interested party(ies). Discussions will be encouraged with partners who might be interested in patenting their results.

Trade secret

Trade secrets are valuable resources to many companies whose assets may, for instance, not be patentable but have a great commercial value and therefore need to be protected. This could be considered as an alternative to patenting if the processing costs are prohibitive.

Defensive publishing

Having information in the public domain prevents others from patenting it, therefore placing the partners in an IP infringement situation. For exploitable results that cannot either be patented or considered as trade secrets, we encourage the partners to publish their results.

Potential commercial agreements

As the project evolves, and with the possible exploitation of commercial results, collaborating partners will be encouraged to sign commercial agreements to define and agree on the terms and conditions of their foreseen commercial exploitation strategies. It will be important for the partners to determine any contractual agreements well in advance. Maintaining a spirit of collaboration between partners will be a key factor for negotiating scenarios that incorporate project IP results that serve the interests of all partners.

4.2 Tailored Recommendations

4.2.1 Path Forward on Individual Ownership

In order to patent something new, each partner will need to:

- Decide with other partners on the ownership of the innovation (if the invention results from a collaboration with other parties)
- Liaise with their own patent agents if they have some
- Update in the IP Repository regarding the column "patent application"

4.2.2 Path forward on Joint Ownership

Barriers and drivers to joint ownership

Several challenges might hinder IP protection under a joint ownership regime for the NBRACER project, which include:

- All partners might have confidentiality concerns when it comes to protecting results together with other partners.
- Partners might want to develop protections on their own, as they would not have to spend time discussing with other partners, and they already have an internal patent lawyer working for their company or research centre.

In order to bring partners together, IID-SII has and will continue advocating on several advantages regarding joint ownership:

- All partners can save money in patent applications since costs will be shared by all patent owners.
- By patenting results together, partners strengthen their relations and encourage collaboration between countries.
- Partners might be interested in patenting together to get more funding opportunities at higher TRL to develop the technology and to begin commercializing their IP. The TRL of the technology in the NBRACER project is between a 4 and 5 at the start of the project in 2023 and aims to reach TRL 6 or even 7 by the project end in 2027.

Planning joint ownership discussions

While no partners collaborating anticipate IP protection, partners creating KERs should have continuous discussions on ownership and eventual protection. When partners would like to initiate more in-depth discussions, IID-SII can bring partners together to talk about administrative applications, innovation ownerships and financial agreements.

IID-SII would recommend leading the following discussions if needed by partners:

- TECNALIA, Cantabria Uni, FIHAC, Deltares and CMCC on the toolbox for landscape characterization and modelling of BDV and ESS, the GIS-based decision tool, as well as the conceptual framework for designing NbS at multiple scales and landscapes;
- VITO, WR, CKIC, CMCC, Lisbon Uni, AAU, TECNALIA, Cantabria Uni, FIHAC and Deltares on the toolbox on economic development, finance and business support.

4.2.3 Path Forward with Partners

IID-SII will continue its work on the exploitation task throughout Phase 1 (as outlined in Section 1.3) and future Phases by:

- **Maximizing dissemination of all KERs:** in line with the IP protection strategy selected for each result from the project, research partners should avoid publishing IP that will be commercialised using a trade secret or patent (until after the patent has been awarded). However, all other results from the project should be targeted for publication and shared at relevant events such as conferences in line with the Dissemination and Communication plan.
- **Setting-up regular bilateral meetings with respective partners:** exploitation strategies for KER and potential additional foreground IP will be addressed, as well as any doubts or concerns the partner may have;
- **Updating the IP Repository:** if not already addressed in bilateral meetings, partners should inform IID-SII to update the dedicated IP Repository based on any changes or updates of results and/or strategies;
- **Aligning with WP7 in order to build the Replication Repository:** IID-SII (WP8) will liaise at around M36 of the project with WP7 partners in order to design and build the Replication Repository.
- **Leveraging NBRACER to continue collaborative research and develop further foreground IP results:** where and when appropriate, partners are encouraged to open new PhD/Post-Doc positions during and after the project for further research. Consortium members should build upon the network established during NBRACER to continue collaborative work: collaboration could be in the form of participation in a future EU or national project aimed at scaling up project results, or bilateral cooperation between public and private partners. This will be key to ensure that research work does not remain siloed and maximised its impact as applied research in NbS.

5 Conclusion

In conclusion, the exploitation task, led by the IP & Exploitation Manager and Deputy, is progressing methodically through the IP diagnosis phase 1, where project results with potential for exploitation are being identified and defined. The project's IP strategy began taking shape with a foundational exploitation workshop conducted in M7, employing the RSB methodology. This workshop served as a crucial introduction to IPR management, ensuring that all participants gained a clear understanding of background IP and the necessary protections for project outcomes. It also provided a platform for partners to discuss their specific roles and contributions toward achieving the KERs, already outlined in the Grant Agreement.

This initial workshop was particularly valuable in allowing partners to forecast any potential foreground IP that could emerge from their work, and in identifying and narrowing down potential beneficiaries for the project's exploitable results. Additionally, discussions around anticipated outcomes, goals, and risks associated with the project's deliverables enabled a clearer understanding of each partner's stakes in the project's progress. Together, these insights laid the foundation for an IP repository, designed to serve as a comprehensive record and a management tool for tracking the project's IP landscape as it continues to develop.

While this early-stage workshop successfully engaged around 30 attendees, a notable achievement given the scale of the project, IID-SII recognises that broader participation is

essential to achieving alignment across all involved entities. To address this, IID-SII plans to reach out to partners who were unable to attend, facilitating discussions similar to those covered in the initial workshop in early 2025. These follow-up sessions will ensure that every partner is informed about IPR considerations, has the opportunity to discuss their contributions, and can share their perspectives on both foreground and background IP.

The establishment of the Initial Exploitation Plan has initiated a roadmap providing clarity and direction on effectively managing NBRACER's IP, while presenting preliminary recommendations to exploit it appropriately. By encouraging joint ownership of IP, the project team aims to amplify the impact of its outcomes, ensuring that results benefit all stakeholders and achieve their maximum potential. Additionally, the plan outlines a pathway for IP management in the coming years, setting a framework for continued collaboration, innovation, and impact maximization.

Moving forward, IID-SII's structured approach will continue to facilitate open and productive exchanges with partners, keeping the project's IP strategy adaptive to emerging needs and collaborative goals. With the groundwork laid for systematic IP protection and exploitation, the project is well-positioned to deliver on its commitments and create lasting and sustainable value for NBRACER outcomes.

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Annex 1

Partner	Foreground IP (TRL 6/7)	Contribution to IP	Expected Valorisation Strategy (WS1 - April 2024)
Deltares	Integrated balanced portfolio of solutions & pathways for scaling up in the 3 landscapes	Support the development of portfolios and pathways (through WP5 & especially in WP2)	Showcase knowledge development & applications in NbS --> blogs; scientific publications
	Toolbox for the landscape characterisation & modelling of BDV & ESS	Contribute to the toolbox (through WP5)	
	Conceptual framework to assist on the design of NBS at multiple scales & landscapes	Contributing to technical and process framework development	Write a policy brief
	Open-source GIS-based decision support tool	Development of the tool utilising data and results from all WPs	Propose further research; perform a training (even to externals in Delft Software days)
	Toolbox for regions on economic development, finance & business support	Contribution to the toolbox	Development & application of tools to support climate adaptation; blogs
CKIC	Risk assessments/hazard profile	Support regions where needed	Scientific publications; create network of students with academia
	Impact assessments	Multi-scale Nbs/ESS impact assessments on KCS - at least supporting demo regions	Scientific publications; create network of students with academia
	NBRACER Transformative adaptation guidelines		
	Transformative governance pathways		Publication
WR	Integrated balanced portfolio of solutions & pathways for scaling up in the 3 landscapes	Design of database categorisation and complete it with urban solutions	Policy brief; public web dissemination (podcast?); publication
	Conceptual framework to assist on the design of NBS at multiple scales & landscapes	Contribute to the development and application of the framework	Public web dissemination --> Inspiring stories to share on social media
	Toolbox for regions on economic development, finance & business support	Design tools for this toolbox - WR leading WP6	Develop a training
	Transformative governance pathways		Publication
	Transformative governance pathways		Publication
TECNALIA			
IID-SII	RBS Methodology	Replicable valorisation of results	Workshops; launch an advisory service?
	Tools for engagement, community building, capacity building, communication	Replicable C&D strategy	Public web dissemination; use in future projects; workshops; training
FIHAC	Nbs portfolio		Publication; policy brief
	Toolbox for the landscape characterisation & modelling of BDV & ESS	Compilation of regional databases & models to characterise biodiversity	Publication
	Integrated balanced portfolio of solutions & pathways for scaling up in the 3 landscapes	From independent NBS towards integration-coordination of multiple NBS at the landscape	Propose further research
Cantabria Gob	Toolbox for regions on economic development, finance & business support	Interaction with regional stakeholders	
RedCambera			
VITO	Integrated balanced portfolio of solutions & pathways for scaling up in the 3 landscapes	VITO leads for rural; VITO contributes data	Launch an advisory service; create open access to data; publication (database? policy brief?)
	Toolbox for the landscape characterisation & modelling of BDV & ESS	TBD	Launch an advisory service; create an open license
	Conceptual framework to assist on the design of NBS at multiple scales & landscapes	Contribute to content/knowledge sharing	
	Open-source GIS-based decision support tool	TBD	
	Toolbox for regions on economic development, finance & business support	VITO leads this	Perform a training (info markets)
	Risk assessments/hazard profile	Improved soil/water balance model (see background IP)	Integrate in existing commercial product (for farmers/agrofood industry); integrate in existing open tools (consultants)
	Impact assessments	NBS impact tool ('potential maps')	Integrate in existing open tools; create open access data
	NBS database	Concrete scenarios + impact for WF & FF regions	Integrate in existing open tools; create open access data

Figure 5: Screenshot of IP Repository