REGREEN
NATURE-BASED SOLUTIONS

Fostering nature-based solutions for smart, green and healthy urban transitions in Europe and China

Deliverable **N°8.7**

EXPLOITATION AND REPLICATION PLAN

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WP N°8 Innovation and impact creation

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EXECUTIVE SUMMARY

The document focuses on the exploitation and replication strategy for the REGREEN project's key exploitable results (KERs) with the aim of maximizing their impact and sustainability beyond the project's duration. The target audience includes project stakeholders, researchers, policymakers, and industry professionals interested in advancing nature-based solutions (NBS) for smart, green, and healthy urban transitions.

The plan outlines the identified KERs, stakeholders and presents a market needs analysis, exploitation and replication pathways, intellectual property rights management, and a robust dissemination strategy.

Thirteen KERs have been identified, each undergoing a thorough stakeholders and market needs analysis. The analysis involved a comprehensive evaluation to identify and assess opportunities for exploitation and replication, enabling the development of a strategic approach that maximizes the potential of REGREEN's KERs. The primary objective was to gain a deep understanding of the market context in which these results would be implemented, with a focus on identifying the environmental, social, and economic aspects that stakeholders aim to address or enhance through nature-based solutions initiatives.

Furthermore, the KERs have a unique value proposition that sets them apart from existing solutions available in the market. By highlighting these advantages, the project team aims to demonstrate the significant added value that the KERs bring to stakeholders, encouraging their adoption and replication in diverse settings. The analysis also considered intellectual property rights and guided decisions on protection and exploitation in line with the project's adherence to FAIR principles (Findable, Accessible, Interoperable, and Reusable data).

The document emphasizes effective dissemination and communication of the project's KERs to relevant audiences. It identifies goals, target groups, and provides an overview of communication and dissemination activities and channels to ensure widespread adoption and utilization of project findings.

The exploitation and replication plan serves as a roadmap to guide the project's activities, ensuring the effective leverage of KERs and tapping into valuable markets. The document underscores the commitment to transfer knowledge, foster innovation, and contribute to the advancement of the field by maximizing the impact of EU-funded research. Adherence to the exploitation and replication plan will ensure the project's objectives are achieved, facilitating long-term sustainability and scalability of its key outcomes.

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LIST OF ACRONYMS

PROJECT TITLE

REGREEN - Fostering nature-based solutions for smart, green and healthy urban transitions in Europe and China

PROJECT PARTNERS

AAK	Aarhus Kommune
AU	Aarhus University
CEH	Centre for Ecology & Hydrology
FU	Fudan University
GVG	Grad Velika Gorica
ICLEI	ICLEI European Secretariat
INTU	Intugreen
IPR	L'Institut Paris Region
IUE	The Institute of Urban Environment, Chinese Academy of Sciences
JEPLAE	Jeplae Consulting
JR	Joanneum Research
MNHN	Muséum National d'Histoire Naturelle
RH	Richard Hardiman
SLU	Sveriges Lantbruksuniversitet
TU	Tsinghua University
UFZ	Hemholtz-Zentrum Für Umweltforschung
UNEXE	University of Exeter
ZEZ	Zelena Energetska Zadruga
ZJUT	Zhejiang University of Technology

COMMONLY USED TERMS

KER	Key Exploitable Results
IPR	Intellectual property rights
NBS	Nature Based Solutions
TLR	Technology Readiness Level
WP	Work Package
ULL	Urban Living Lab
SME	Small and Medium-sized Enterprise
NGO	Non-Governmental Organisation

1 INTRODUCTION

1.1 Purpose of the deliverable

This deliverable aims to provide a comprehensive plan for REGREEN project's key outcomes. The strategy will outline how the project's Key Exploitable Results (KERs) will be effectively exploited and scaled up for wider adoption, with a focus on maximizing the exploitation and sustainability of REGREEN's results beyond the end of the project.

The report builds upon the content of the first version of the Dissemination and Exploitation Plan (D8.1) and its update (D8.3) and is intended to support the REGREEN roadmap. The strategy is informed by the market analysis as well as the project's overall objectives and expected outcomes.

1.2 Scope of the document

The deliverable will cover the full range of activities and processes involved in the exploitation and replication of the project's KERs. This includes identifying potential partners and stakeholders; capturing the unique value proposition of the solutions and the replicable components; securing intellectual property rights and addressing lessons learned from the project, including major challenges and best practices in communication, process design, decision making, and partnership building to facilitate the scalability and replicability of the KERs in other contexts or regions.

The document highlights the need to identify and document the key factors that contribute to the success of the project, enabling others to exploit and replicate those aspects effectively. The strategy will also outline how the project's KERs are disseminated and communicated to relevant audiences.

1.3 Structure of the document

Section 2 provides an overview of the exploitation and replication strategy. It begins by summarizing the KERs identification process conducted in the previous phase. Furthermore, it includes a detailed stakeholder and market needs analysis, providing valuable insights into market trends and dynamics. Following this, the section explores the exploitation and replication pathways for each KER, outlining the specific strategies and approaches to be implemented.

Section 3 focuses on the management of data and intellectual property rights. This section encompasses guidelines and best practices for handling proprietary information and addressing any potential legal considerations.

In Section 4, the document delves into the dissemination strategy. It highlights the goals of the strategy and identifies the target groups to whom the information will be communicated. Additionally, an overview of the main communication and dissemination activities and channels is provided, demonstrating the various methods and platforms through which the information will be shared with the intended audience.

2 EXPLOITATION AND REPLICATION STRATEGY

The Exploitation and Replication Plan presents a progress update on the strategy and actions concerning the key exploitable results of the REGREEN project and guides activities that support their positioning.

"*A Key Exploitable Result (KER) is an identified main interesting result, which has been selected and prioritized due to its high potential to be "exploited" – meaning to make use and derive benefits-downstream the value chain of a product, process or solution, or act as an important input to policy, further research or education*"[3].

By good planning and proactively seeking out opportunities and dialogues with future beneficiaries of the project results, partners increase the chances of the REGREEN legacy being utilized in a best possible manner. Each partner, or the project consortium as a whole, can turn the activities in this project or its outputs into products or services that have commercial or non-commercial value. The exploitation process is coordinated and guided by JR. A balance will be sought between IPR protection of products and tools and replicability of REGREEN results.

Based on the initial Dissemination and Exploitation plan, the REGREEN project has conducted several activities for the exploitation and replication of the KERs. A collaborative approach was followed, working closely with partners and stakeholders to identify and develop the KERs. Partners were able to contribute their expertise and insights to the development process. The project followed a multi-stage approach that involved identifying the KERs, analysing stakeholder and market needs, and disseminating and marketing the KERs to the target groups.

The process is shown in the figure below:

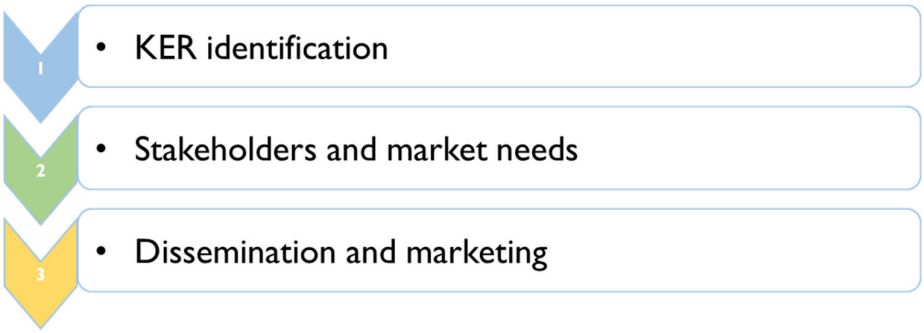

Figure 1. Process: Identification/Analysis/Dissemination

The approach was designed to ensure that the KERs had the highest potential for exploitation by focusing on innovativeness, demand, earning or recognition opportunities, impact on society, and their contribution to the advancement of Nature-Based Solutions (NBS).

2.1 KER Identification

In order to identify relevant exploitation opportunities, an overview of the project activities and results was conducted at the beginning of the project, along with an assessment of their alignment with European overall targets. Once the project results were identified, an analysis was conducted with the REGREEN project partners to assess the exploitation potential of each result, which then

[3] https://intellectual-property-helpdesk.ec.europa.eu/system/files/2022-02/HEU%20Results%20platform.pdf

translated into the KERs. Each KER was assigned to a specific partner, or in some cases to several partners, according to their scope of work within REGREEN.

Table 1. List of updated key exploitable results

Key Exploitable Result	Work Package	Owner	Partners Involved
NBS Transition Handbook	WP7	ICLEI	All
NBS valuation methods	WP4	UNEXE	AU
Cost-effectiveness of NBS	WP2	AU	
Urban Eco-explorer APP	WP3	UFZ	
City Explorer toolkit	WP3	UKCEH	
Depaving mapping tool	WP7	IPR	
Interactive walkable floormaps (IWF)	WP5	UFZ	AAK, AU, JEPLAE
Depaving guidelines in cities	WP7	IPR	
Online decision support tool	WP8	ZEZ	All
Field e-Books	WP5	AU	
Greenopolis	WP5	AU	INTU
Vigie-Nature École (VNE)	WP5	MNHN	
Training kit	WP7	IPR	

Two additional sessions focused on the exploitation of the KERs were held with the partners in February and April 2023. During these sessions, the partners were requested to review their REGREEN contributions and finalize the list of KERs. A template was created for the partners to outline a more detailed exploitation and replication plan. This plan includes market and end-user analysis, identification of resources and costs for the uptake of the solutions, potential barriers for exploitation and IPR agreements. Where applicable, the partners were asked to self-evaluate the maturity of each KER in terms of the current technology readiness level (TRL) and expected TRL to be achieved by the end of the project.

During the consultation process the partners provided valuable feedback and insights on the project activities and outcomes. This feedback was taken into account when designing the categories of KERs and has been instrumental in developing comprehensive exploitation and replication plans for each KER. As a result, different categories of KERs were created to reflect the diversity of the project outcomes, to ensure that the exploitation and replication strategies are aligned with their specific characteristics and market opportunities.

These categories are: (1) knowledge and research findings, (2) policy and decision making, and (3) learning and training resources.

1. **Knowledge and research findings**: scientific publications, knowledge material and methods that provide a solid foundation for further research, policy development, and practical implementation of nature-based solutions.
2. **Policy and decision making**: guidelines and tools that help policy makers, urban planners, and other stakeholders in identifying and quantifying potential NBS within cities. These solutions provide a clear framework for NBS development, as well as helping to build political will and support for NBS projects.
3. **Learning and training resources**: educational materials and training programs that can help engage and educate stakeholders, promoting awareness and understanding of the benefits of NBS. These solutions also provide practical advice, technical resources, and build capacity for the implementation of NBS.

Additionally, the REGREEN Transition Handbook (D7.4) has been identified as an "umbrella" for the abovementioned categories. It serves as a framework for organizing and synthesizing the diverse outcomes and results of the REGREEN project and facilitating their further development, exploitation, and uptake.

Figure 2. The outcome of the working session on KERs categorization (April 2023)

2.2 Stakeholder and market needs

The analysis on stakeholders and market needs was conducted to identify and evaluate opportunities for exploitation and replication and develop a strategy that maximizes the potential of REGREEN KERs. The aim was to understand the market context in which the results would be implemented, highlighting the environmental, social, and economic aspects that stakeholders are seeking to address or improve through NBS initiatives.

Stakeholders and market needs: market context in which the KER is exploited and replicated;
Description of the solution: a short description of how KER aims at satisfying the stakeholders and market needs;
Unique value proposition: description of the innovativeness and distinctive benefits and advantages the solution offers to stakeholders compared to current available solutions.

The results of the stakeholders and market needs analysis are presented below:

Table 2. Results of the stakeholders and market needs analysis

Key Exploitable Result	**Stakeholders and market needs** *what are the needs (social, environmental, economic) of the stakeholders and what opportunities can be generated through NBS?*	**Description of the solution**	**Unique value proposition** *why is this solution different from existing ones?*
The "umbrella" KER			
NBS Transition Handbook	Changes in climate and environment, and decision-making and management approaches make urban zones more susceptible to flooding, overheating, and result in loss of urban biodiversity, green areas and open streams. The objective of the REGREEN Transition Handbook is the implementation of well devised nature-based elements in the urban design and infrastructure that take advantage of the multiplicity of services that ecosystem functions can provide, and take into account their relevant scales and structure, resulting in urban developments that better meet citizen's expectations of a healthy, biodiverse, and resilient urban life.	Guidelines on managing transition process cycle, moving towards NSB. The NBS Transition Handbook (1) provides new evidence-backed knowledge and insights that are transferable and made operational for European and Chinese conditions, and (2) takes a holistic social-ecological approach, working with causal chains of change, conditions and impacts.	The NBS Transition Handbook provides support to the cities (policy makers, practitioners) to achieve transition by selecting different pathways based on the context (e.g. through education, awareness raising or modelling of the ecosystem services).

Key Exploitable Result	**Stakeholders and market needs** *what are the needs (social, environmental, economic) of the stakeholders and what opportunities can be generated through NBS?*	Description of the solution	**Unique value proposition** *why is this solution different from existing ones?*
Knowledge and research findings			
NBS valuation methods	NBS valuation is complex, and the expertise and resource required to carry out broad multi-outcome/value analyses are significant. The ongoing shift to urbanization globally and the mounting impacts of climate change in urban settings has intensified the need for accurate and valid valuing of NBS. The multi-method, cross-discipline nature of the work offers a comprehensive, contemporary empirically informed guidance on valuing discreet NBS, in the context of health and well-being. It is especially pertinent in the REGREEN ULLs where the work has been carried out, but is likely to have relevance in other cities too, with the appropriate provisos for applying the results or methods in non-ULL locations.	REGREEN have employed a suite of methodologies, including using existing methods in novel ways (e.g. causal loop diagrams) to explore and assign values to health and well-being related outcomes related to NBS. The solution is envisioned as both novel knowledge (in the form of results and findings) and potential for contribution to future knowledge generation (in the form of methodological guidance and reflection).	The valuation of NBS is an international research focus. The REGREEN NBS valuation methods are not intended to compete with those of other institutes or organizations but rather to act as a general contribution of scientific knowledge. The value of the solution lies in its potential societal impact and potentially additional non-market benefit in the scientific and policy spheres.
Cost Effectiveness of NBS	Despite increasing interest in NBS, there is still a lack of comprehensive understanding regarding the costs of different types of green and blue urban and peri-urban NBS and their variations. Cost information is a key component in economic assessment of the viability of NBS compared to alternative solutions and without a robust overview of costings of NBS, scale-up and mainstreaming of NBS is hampered. The findings and approach offered are of relevance to cities across Europe and beyond, as data originates from Europe, Asia and North America.	REGREEN has analysed and offers a generalised cost function, cost estimates for different types of blue and green NBS and demonstrate how cost measures can be applied to make economic assessments of NBS. The latter is done as a transparent stepwise cost-effectiveness approach with the least possible information requirements.	The cost-effectiveness of NBS work in REGREEN has an international research focus while providing practice level an operational approach with limited information requirements. The findings on costs of different types of NBS and the stepwise cost-effectiveness approach are relatively straightforward to follow for municipal planners and other stakeholders and do not require specialist insights. The solution fills a gap regarding evidence of costs of NBS and a pragmatic, transparent approach for municipalities and other relevant stakeholders in comparing NBS with non-NBS solutions.

Key Exploitable Result	**Stakeholders and market needs** *what are the needs (social, environmental, economic) of the stakeholders and what opportunities can be generated through NBS?*	Description of the solution	**Unique value proposition** *why is this solution different from existing ones?*
Policy and decision-making			
Urban Eco-explorer APP	Providing a platform for resource sharing within and outside the project team, especially for the visualization of geospatial NBS products, it can help members without relevant professional backgrounds to quickly understand the environmental pressures faced by ULLs and the benefits generated by NBS. It increases comprehensiveness of NBS in REGREEN by visualizing techniques.	The Urban Eco-explorer APP aggregates and visualizes spatial results from the REGREEN project, including land-cover observations and future projections for each ULLs, multiple ecosystem-service products, and more. The app also facilitates the sharing of geospatially relevant results from the different WPs and helps urban planners to better understand the pressures on ULLs and the benefits of NBS.	The use of this APP does not require any professional knowledge to support. Technically, it can support both computer and mobile terminals, as well as some simple interactions. As a new product, it is designed for REGREEN outcomes to demonstrate spatially explicit NBS information.
City Explorer toolkit	Cities confront various challenges such as heat, air pollution, noise, and flooding. To enhance urban residents' lives, cities are keen on adopting Nature-based Solutions. This involves establishing new green infrastructure or enhancing its management. Consequently, there is a need for innovative tools that can assist planners in knowing where best to create green spaces and making sure that the benefits are received by the people who need them most.	The City Explorer toolkit is an interactive web-based tool, which helps planners to understand where best to create urban green spaces such as parks and blue spaces such as ponds, to ensure that benefits such as cooling on a hot day, improved air quality, and noise reduction are received by those city residents where they are most needed. Currently, the tool offers up to four modules (air pollution removal, cooling, noise mitigation, surface water flood risk), with ongoing development to introduce more. These modules enable the calculation and mapping of ecosystem services benefits. The tool also facilitates opportunity mapping to guide effective planning.	The tool uses models and calculations based on spatial analysis (rather than simple look-up tables which are used by most other similar tools) to calculate the benefits of different green infrastructure and nature-based solutions to tackle challenges in cities such as heatwaves, air pollution and flood risk. The tool also assists in identifying inequalities and social justice issues within the planning process. By combining physical and social data (age and income levels of the population) with ecosystem services models, it provides a comprehensive resource that supports informed decision-making and promotes equitable urban development.

Key Exploitable Result	**Stakeholders and market needs** *what are the needs (social, environmental, economic) of the stakeholders and what opportunities can be generated through NBS?*	Description of the solution	**Unique value proposition** *why is this solution different from existing ones?*
Depaving mapping tool	Our cities are full of areas that have been concreted or asphalted over and where nature could return and flourish. Renaturing urban environments has become a key strategy for cities: biodiversity is declining significantly in urban areas, the effects of climate change (runoff, flooding, urban heat islands, etc.) are intensifying and the health and wellbeing of city-dwellers are deteriorating. Renaturing makes it possible to adapt cities to climate change and to make them more permeable to wildlife by developing nature-based solutions.	The depaving mapping tool is a free methodology developed to target urban areas where renaturing represents a key strategy to restore biodiversity, adapt to climate change and improve people's health. To date, it has been deployed throughout the Paris Region. All maps produced are interactive and freely available on the internet.	Renaturing is a way of rolling out nature-based solutions in areas that have been subject to ground sealing. These solutions have proved their effectiveness and can complement or replace the grey infrastructure traditionally used in regional development. The purpose of this guide is to propose a method that will help local authorities to target urban areas where renaturing represents a key strategy to restore biodiversity, adapt to climate change and improve people's health.
Interactive Walkable Floormaps (IWF)	There is a need to create more effective, sustainable, and inclusive urban planning and design in the face of complex environmental and social challenges. Policymakers and planners require support to coordinate interventions across different sectors, and citizens need to participate in the design of more sustainable and liveable cities.	The manual for IWF will provide the detailed sequence from map design and technical prerequisites to didactic applications with schoolchildren, and policy makers. IWF offer a unique opportunity for materializing the objectives and visions of public governance and can facilitate a collaborative dialogue and development of policies across different sectors.	Highly interdisciplinary product generation across natural and social scientists, teachers and governance professionals. Unlike traditional maps, IWF are created at different scales and sizes for different areas of interest, providing a detailed and customizable tool for policymakers, planners, educators, and citizens.
Depaving guidelines in cities	The growing pressure on land use and urbanization has resulted in the loss of soil functions and ecosystem services, negatively impacting biodiversity, climate change, and the health of citizens. The European Commission has proposed in the EU Environment Action Programme to 2020 (7th EAP) to achieve 'no net land take' by 2050. However necessary it may be, it may nevertheless result in even greater urban densification in cities that are already suffering from climate change and dwindling biodiversity.	The guide proposes a method for local authorities to target urban areas where renaturing can restore biodiversity, adapt to climate change, and improve people's health, and provides recommendations on how to identify a potential for depaving and technical resources to implement such projects effectively.	The guide's unique approach is to help local authorities balance the economic development of urban areas with the need for environmental sustainability and livability by promoting NBS. The guide is focused on the Greater Paris area, which is particularly affected by the consequences of urbanization and densification. It offers recommendations on how to implement renaturing projects in the best possible conditions based on feedback from respondents in the field.

Key Exploitable Result	**Stakeholders and market needs** *what are the needs (social, environmental, economic) of the stakeholders and what opportunities can be generated through NBS?*	Description of the solution	**Unique value proposition** *why is this solution different from existing ones?*
Online decision support tool	The successful implementation of NBS is a complex process that involves a range of stakeholders. Each group has different needs, capabilities, and constraints when it comes to implementing NBS. Therefore, customized guidance and resources are essential to ensure that each group can effectively implement NBS according to their specific needs and circumstances.	An online decision support tool designed to provide customized guidance and resources to stakeholders, including SMEs, communities, local authorities, and other stakeholders, to build, implement, and deliver effective NBS.	It is designed to integrate NBS across administrative sectors, mainstream them in planning and management, optimize co-benefits, and translate them into viable business models. By offering tailored guidance and resources, the tool can help stakeholders overcome barriers and challenges that may arise during the implementation process and ensure the successful delivery of NBS projects.
Learning and training resources			
Field E-Books	The field e-books are intended to support teachers to engage in nature-based learning and technological supported learning processes. NBS is not yet a layman term and this teaching material communicate the REGREEN agenda to a wider audience and aims to make it specific and concrete so even children understand what it is all about.	Field e-books for nature and climate explorers is a nature-based learning teaching material targeting (mainly) middle school pupils. The e-books encourage pupils to physically explore their nearby surroundings and demonstrate their learning processes by authoring e-books about their findings and learning processes. The pupils use phones, tablets, and nature apps in the process to learn how to use the technology for knowledge seeking and to support their nature curiosity.	Field e-books guide and empower pupils to work with the concept of Nature-Based Solutions, explore its meaning, and recognize its potential in their city. By focusing on the child and nature perspective, the e-book encourages children to envision and actively participate in designing their city in a way that harmonizes with nature.
Greenopolis	With increasing urbanization and its associated challenges, there is a growing need for solutions that can address these problems while also promoting biodiversity and creating livable, healthy environments for people. Educational resources and tools can help individuals, businesses, and policy makers understand and implement sustainable and nature-based approaches to urban development.	A web-based educational platform that promotes sustainable urban development and motivate youngster to explore their natural environment. It offers digital exercises and activities for teachers and pupils to explore different themes, each treating one climate challenge and introducing relevant examples of NBS.	Its focus is on educating individuals, particularly teachers and children about NBS for sustainable urban development and climate resilience. The platform offers digital exercises and activities that are structured into different themes, making the learning and exploring of nature-based solutions simple, inspiring, and motivating.

Key Exploitable Result	**Stakeholders and market needs** *what are the needs (social, environmental, economic) of the stakeholders and what opportunities can be generated through NBS?*	Description of the solution	**Unique value proposition** *why is this solution different from existing ones?*
Vigie-Nature École (VNE)	The recent evolution of the schools' curricula includes the use of citizen science. Teaching scientific approach is gaining importance, data analysis and sustainable development have to be included in courses. We provide materials that allow teachers to work on all these components. Furthermore, in a context of extinction of experience of nature, we provide an opportunity for the teachers to teach outdoor and (re)-connect pupils and students with nature.	Vigie-Nature École is a citizen science program that aims to monitor ordinary biodiversity. It is designed to teach students about the importance of biodiversity, its loss, and the impact of human activities on the environment. 15 schools have participated in the REGREEN project in the Île-de-France region. The support of these activities by the Museum and the Vigie-Nature École team encourages new governance and educational dynamics in relation to nature, and facilitates the implementation of new activities for teachers, students and eco-delegates.	Vigie-Nature École proposes protocols to study nature where most of the existing solutions only propose observations. These protocols allow the participants to use their results to compare and assess the efficiency on one of the NBS key components, biodiversity. As a citizen science program, it enables teachers to raise pupil awareness about biodiversity as they contribute to a genuine research program. This direct link to research is also rare in education programs.
Training kit	There is a demand for the development of new approaches and techniques to shift from traditional to nature-based solutions in cities. This includes the need for training and education services to equip local stakeholders with the knowledge, skills and collaboration opportunities required for implementing these solutions.	A training resource to provide a comprehensive approach to understanding, designing, and implementing NBS in urban settings. By combining scientific background, technical resources, training workshops, and practical ideas for action, the training kit equips participants with the knowledge and skills to successfully implement NBS projects in their cities.	Tailor-made approach that is designed specifically to address the unique needs of the ULLs where it is implemented. The REGREEN training kit is designed to ensure improvements in specific issues such as depaving, water management, green roofs, and green space design and management, which are specific to the ULL's context and challenges.

2.3 Exploitation and replication pathways

This chapter outlines the various strategies for leveraging and replicating the REGREEN outputs. It encompasses an analysis of the target audience, cost considerations, resource allocation, as well as the potential risks and challenges associated with the adoption and scaling-up of the KERs. Furthermore, it explores tangible applications of the research results, not limited to commercial utilization, it defines the TRL[4] (current and expected) of the KER and conducts an assessment of the IPR requirements associated with the various solutions.

The "umbrella" KER

2.3.1 The NBS Transition Handbook

- **Target audience:** Cities and communities, urban practitioners, policy makers, local authorities, city networks, researchers, educational institutions
- **Exploitation process:** The content provided through the REGREEN Transition Handbook encourages engagement in community action for NBS and interplay between citizen science, participatory education and community NBS planning. Exploitation activities target three main groups: (1) Public authorities, citizens, business actors and NGO participating in the ULLs: a. co-creation activities where evidence, tools and decision-support systems are tested and validated. This will concurrently result in increased awareness and activity among these groups. b. research with school children, citizen science and community NBS planning, resulting in awareness raising and evidence-based results. (2) The wider public: raise awareness of the benefits that NBS provide at local/city level through focus groups, photo elicitation with community groups, deliberative valuation workshops & seminars and engagement with school classes, project web-pages & platforms, explanatory videos, social media (all in English, Chinese & for some products other national languages too). (3) Municipal authorities, decision-& policy makers, communal utilities, city planners and entrepreneurs in other cities: engaging them through webinars and clustering events.
- **Replication process:** The NBS Transition Handbook can be used by the relevant city departments (e.g., urban planning, environment and climate change, green infrastructure, etc.) to support their work in developing or enhancing sustainable pathways towards nature based urban development. The NbS Transition handbook can also be used by the cities who are part of the EU Mission "Climate-Neutral and Smart Cities" [1] or the regions and communities who are part of the Mission "Adaptation to climate change" [2]. In order to maximize impact of using and updating the NbS Transition handbook, one approach would be to explore the possibility to add the handbook as a resource on the Net Zero Cities (NZC) platform [3] as well as the MIP4Adapt platform [4]. Moreover, the Handbook can be used as a guide from other research projects (e.g., UP2030, Pathways 2 Resilience, Regions 4 Climate) [5]–[7] to support the cities involved and further elaborate or expand the themes of the

[4] TRL is a measure of technological maturity and represents nine different levels of maturity according to the definition by the European Commission (https://horizoneuropencpportal.eu/sites/default/files/2022-12/trl-assessment-tool-guide-final.pdf). This evaluation aimed to determine the maturity of the results and their potential for exploitation and it is only applicable and described for KERs that comprise technical components.

handbook. Overall, the replication of the handbook can be implemented on different contexts and thematic topics.

- **Costs and resources:** N/A
- **Risks/challenges:** The handbook is still under development

Knowledge and Research Findings

2.3.2 NBS Valuation Methods

- **Target audience:** Policy makers, council/municipality planners, academic institutions, citizen and resident engagement and advocacy groups.
- **Exploitation process:** Beyond the end of the project the knowledge may be used to advocate for NBS and assess their suitability in planning standards and policy contexts. The findings of the work will be made publicly available via open-access publication for most of the work and as such will be freely available to stakeholders in the NBS space. The valuation methods will contain both qualitative and quantitative analysis and results. There will also be significant theoretical contribution in the case of the application of systems-thinking methods to NBS, which has the potential to shape future NBS planning and evaluation strategies in novel ways. The REGREEN transition handbook and factsheets will offer a format to make the solution available beyond the academic sector.
- **Replication process:** use of the suite of evaluation methods must take into account the fact that the work centred on the REGREEN ULLs, and any replication must consider local contextual factors, suitability of available data and the expertise resource available.
- **Costs and resources:** The key costs/resources required for the solution are the expertise to interpret and replicate the methods. Additional finance is not required for this solution.
- **Risks/challenges:** no risks or challenges anticipated

2.3.3 Cost-effectiveness of NBS

- **Target audience:** council/municipality planners, policy makers
- **Exploitation process:** The cost-effectiveness analysis of urban NBS provides i) much needed cost information of NBS that is crucial for economic assessments of the viability of NBS compared to alternatives; and ii) a stepwise ranked cost-effectiveness analysis based on ranking of local policy objectives combined with a systematic procedure to handle the multiple potential benefits provided by NBS. The process offers a feasible approach for council and municipal planners to make informed choices on competing solutions relative to conventional cost-benefit analysis. The approach is relatively straightforward and does not require an aggregation of multiple benefits into one common measurement or valuation unit. The work is available through a public deliverable D2.3 [8] and will further be made available in an open access journal publication.
- **Replication process:** The cost findings of NBS are derived from peer reviewed and grey literature from the US, Canada, EU, China, Malaysia, Singapore and South Korea and cover a wide range of urban blue and green NBS including swales, infiltration trenches, green spaces for flood reduction, lawns, parks, and urban forestry as well as green roofs, lakes, ponds,

streams, river reopening, riverbank restoration and wetland restoration. The spread of countries and types of urban NBS make the findings well adapted to different local settings, but these must consider local contextual factors and availability of local data.

- **Costs and resources:** The costs and resources required for the solution include expertise to understand the cost-findings, integrate local data and information and apply the stepwise ranked cost-effectiveness analysis in a local context. Additional finance is not required for this solution.
- **Risks/challenges:** no risks or challenges anticipated.

Policy and Decision-Making

2.3.4 Urban Eco-explorer App

- **Target audience:** Scientists, city managers, urban planners
- **Exploitation process:** Firstly, this App provides basic data and awareness to other WPs within the project, while helping project managers to aggregate NBS outputs. Secondly, it can help city managers/planners to achieve a deeper understanding of the environmental pressures facing the city and the benefits of NBS. Finally, it can also serve as a platform for NBS education and showcase NBS cases for students as it gives an easy comprehension of the environmental situation.
- **Replication process:** This APP is highly replicable, it is built on the Google Earth Engine (GEE) platform, completely open source and free, and has absolute advantages and convenience in sharing and visualizing geospatial data with no special regulatory requirements.
- **Costs and resources:** This APP is based on the GEE platform; the construction and maintenance of the APP requires Java programming skills. The App development itself does not require additional funding. No additional financing needed beyond human resources with expert knowledge.
- **Risks/challenges:** Not involved
- **TRL:** The overall framework of the app has been built and the completion level is 6. All geospatially related NBS products and results will be summarized by the end of the project. It gives comprehensive view of NBS in each ULLs. In the future, the tool could be expanded to consider local microclimates and promote the use of native species. This approach not only enhances the usual services provided by NBS, such as recreation, heat mitigation, and water management, but also improves the productivity and biodiversity of ecological systems. Monitoring changes in local microclimate can also aid in making more informed decisions when selecting suitable NBS. This approach not only enhances biodiversity but also reduces maintenance costs when NBS is well connected to other elements of the environment.
- **Costs and resources:** To create a digital solutions for NBS expertise is needed in leading the website development, digital marketing, NBS expertise, content creators, User Experience (UX) and Use Interface (UI) designers, programmers, Search Engine Optimisation (SEO) experts, networks to promote efforts for live campaigning.
  Some of the costs include: Content creation, design development, programming, maintenance and promotional budget.

- **Risks/challenges:** One risk is the potential for poor quality inputs during the tool's development phase, such as inaccurate or unreliable data or information. Another challenge is the risk of maintaining a business-as-usual approach without focusing on capacity building for decision makers and building institutional memory. Without investing in training and knowledge enhancement, decision makers may lack the necessary skills and understanding to effectively implement NBS, resulting in limited adoption and impact. Furthermore, the lack of research on the quality of NBS poses a risk as well as the absence of translational standardization. Translating NBS concepts and approaches into practical and standardized guidelines can be complex. Without clear standards and guidelines, there is a risk of inconsistent implementation and limited scalability of NBS projects.
- **TRL:** current 5/9, we aim to get it to 9/9 by the end of the project.

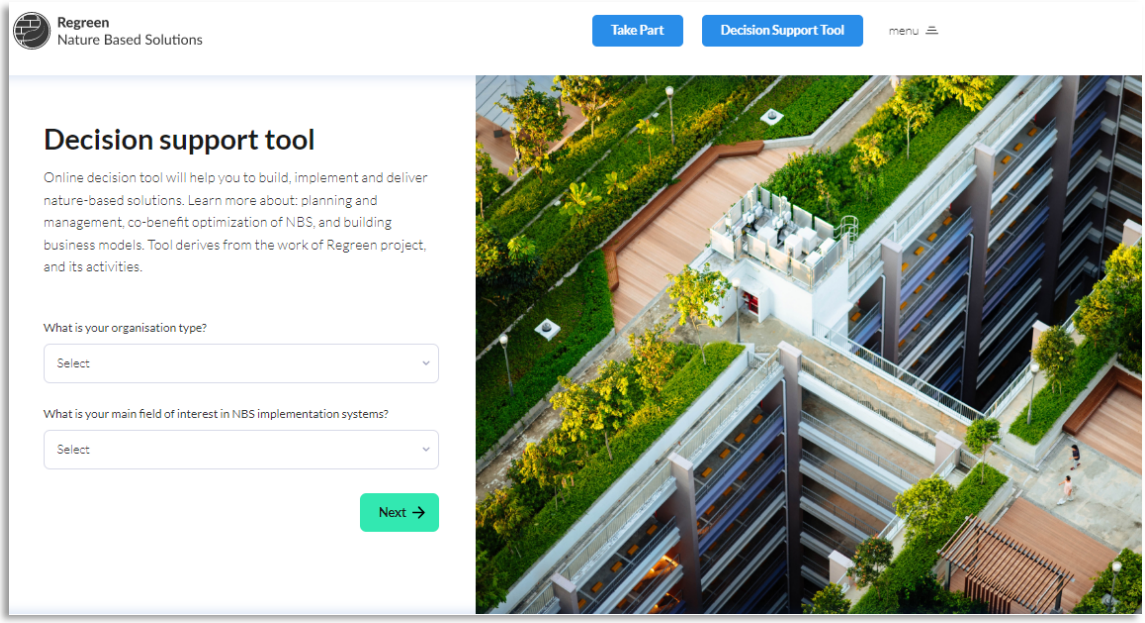

Figure 3. Decision support tool homepage (source https://nature-solutions.eu/decision-support-tool/)

2.3.5 Depaving mapping tool

- **Target audience:** Cities, decisions makers, urban planners, NGOs
- **Exploitation process:** The exploitation of the Depaving mapping tool is societal, political, and aimed at improving public knowledge and action. The Depaving mapping tool is a methodology for identifying sealed sites in urban areas, not randomly but in areas that present one or more key challenges to which renaturing is able to respond (e.g., adapting to climate change, improving the living environment or preserving biodiversity). The depaving maps provided by the tool could be exploited in many ways. Cities could use results to develop renaturing strategy and building it into planning documents. Depaving maps could be applied to regulatory zoning in the framework of local planning documents and guidelines by identifying "preferential renaturing zones" that would stand alongside guidelines relating to the green and blue grid. For instance, on the scale of the Paris Region and in the framework of the Île-de-France region (SDRIF) master plan review process, this work may make a valuable

contribution to conversations on how to prioritize areas for renaturing. The results could also be used by NGOs or citizens to define areas where they want to carry out renaturing project.

- **Replication process:** The depaving mapping tool was created to be replicable for different urban contexts and cities. It is possible to follow the GIS method described in the REGREEN's deliverable 3.2 [9].

  The criteria and data used in the methodology may be enriched or supplemented according to the local context and to available data. The online publication of interactive maps can be done with many GIS tools, such as ArcGIS or QGIS.
- **Costs and resources:** Costs include direct personnel costs. Resources include intellectual and technical resources
- **Risks/challenges:** The Depaving mapping tool allows to prioritize depaving and renaturing actions, but it does not make it possible to assess feasibility. The mapping results will have to be refined with field measurements and surveys and arbitrated according to technical feasibility.
- **TRL:** 9/9

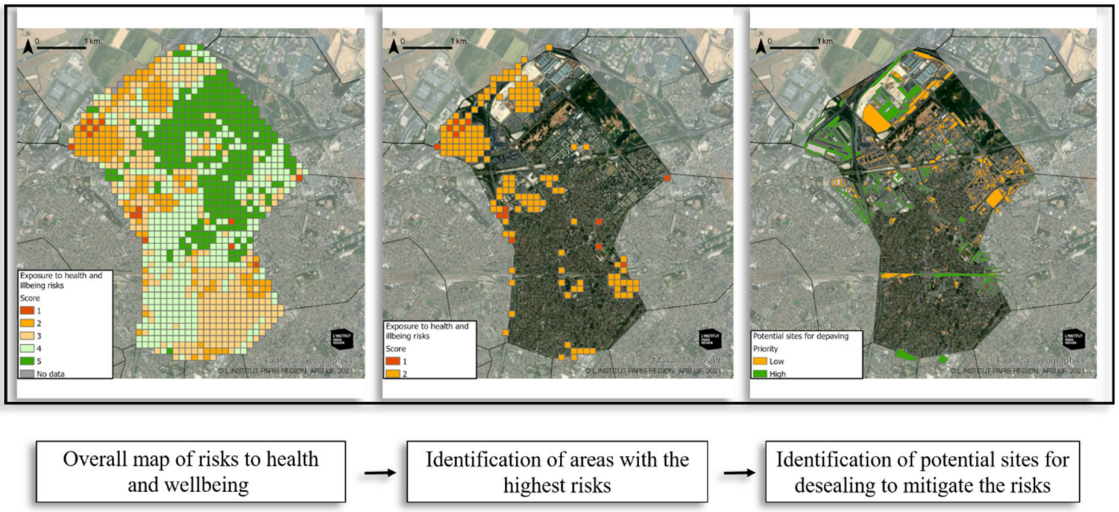

Figure 4. Identification of desealable sites in sectors highly exposed to climate change in Aulnay-sous-Bois (Paris Region, département of Seine-Saint-Denis)

2.3.6 Interactive Walkable Floormaps (IWF)

- **Target audience:** Citizens, policy makers as well as teachers and pupils in schools and further education
- **Exploitation process:** The exploitation strategy for walkable floormaps involves using them as a visual and tangible communication tool to support decision-making and deepen the common understanding of environmental stressors and allocation for NBS. Floormaps can be used by citizens, policymakers, teachers, and pupils in schools and further education settings. The strategy involves holding introductory meetings to explain the floormap and discuss land-cover details to include and the map legend to provide. Floormaps can also be used as a stand-alone tool for meetings on site, providing a tangible sensation beyond the project duration.

This helps to ensure that stakeholders continue to use the floormap beyond the initial project period and can continue to benefit from its use over time.

The potential for exploitation is seen at different levels:

(1) Exploitation for policy makers where IWF have the potential to be exploited as a tool for more effective and sustainable urban planning and design. The floormaps provide a visual representation of the city that can aid in governance and planning discussions. They also facilitate collaboration and dialogue across different policy sectors, which can help policy makers coordinate interventions for biodiversity, urban liveability, climate adaptation, social equity, health and wellbeing, and education. Floormaps can be used to engage citizens in the design of urban green, blue, and built-up spaces, thus enhancing the opportunities for participatory processes.

(2) Exploitation for schools: IWF have the potential to be exploited by schools as a tool for education and awareness raising among children. They provide a tangible representation of the environment that can help students understand the complex interrelationships between different elements of the urban environment.

- **Replication process:** The material of IWF is designed to ensure multiple usages due to its robustness and flexibility. Therefore, the product itself allows repeated use. The digital information of IWF can easily be scaled to the area of interest. The scale should not exceed 1:1,500-1:2,000, otherwise it either becomes too blurry or not detailed enough.

  The replication is limited by the availability of recent digital orthophotos (DOPs) or very high-resolution satellite images with a spatial resolution below 0.5 m. Some countries/regions either do not acquire DOPs on a regular basis at all or do not provide them for public/research issues. Moreover, the budget can be limiting as design, printing and shipping is cost-intensive. When producing IWF, technical skills are necessary to estimate dimensions, size and scales; this information are provided by the modular guideline. Apart from that, IWFs can be designed using open source GIS software like QGIS, transparent layers and QR codes have no replication limit as well.
- **Costs and resources:** The key resources needed for creating and printing a walkable floormap are spatial science knowledge, technical and financial resources. The costs associated with creating and printing a walkable floormap are primarily related to human resources (GIS expertise) work hours and printing costs. Additional costs may be incurred for shipping if no local printing company is available to facilitate production. It is important to note that incentives from the public sector development areas are crucial for the development and adoption of walkable floormaps, and communal or regionally owned datasets can be used to cover additional costs for aerial photographs or other remotely sensed data. Cooperation with planners and teachers should also be carried out without further costs.
- **Risks/challenges:** Walkable floormaps can be created by GIS experts and a high-quality printing company. However, their quality depends on the significance of the designed overlay (planned developments, green corridors, options for NBS implementations, etc.). So, planners, stakeholders and teachers must collaborate with the GIS expert to gain well-tailored floormaps.

- **TRL:** 9/9 - for walkable floormaps the market is ready. All it needs is a GIS expert and interdisciplinary exchange on what to present on the floormaps and at which scale. There is a very high transferability of this mapping tool.

Figure 5. A floormap focusing on the area around Aarhus harbour at the Aarhus VIA University College

2.3.7 Depaving guidelines in cities

- **Target audience:** Cities, policy makers, citizens and local movements
- **Exploitation process:** The exploitation strategy for the depaving guidelines involves building partnerships with local authorities, NGOs, and citizen groups to promote the use of the guide and spread awareness about the importance of renaturing urban environments. The aim is to engage customers through regular communication and establish trust in the solution's effectiveness, using a multichannel approach to reach a wide audience. The solution could help create and foster new businesses such as concrete recycling or ecological engineering solutions (phytodepuration[5], soil restoration, etc.) that can provide services related to renaturing urban environments.

  Replication process: To replicate the depaving guidelines, local authorities should start by assessing their urban areas to identify suitable locations for renaturing projects. Engaging stakeholders, including policymakers, community organizations, and experts, is crucial for their input and feedback. Capacity building and training programs should be provided to staff and stakeholders involved in depaving projects.
- **Costs and resources:** Depaving projects can be very expensive, especially when it comes to the removal of sealed coverage, such as concrete or asphalt. This cost can deter cities from pursuing renaturing projects, particularly those with limited budgets. To successfully implement a depaving project, the availability of intellectual, technical, and financial

[5] The purification of surface water by means of bacteria on the roots of plants.

resources is essential. Incentives from the public sector are also crucial for the success of such projects.

Overall, the costs of a depaving project depend on many factors, size of the area, techniques used, the kind of ecosystem to be restored, etc. According to France Stratégie [10], the average cost of desealing is between 60 and 270 euros per square meter. These are significant costs that can be offset by savings made thanks to rainwater management and the direct and indirect benefits that a new natural area provides.

- **Risks/challenges:** In urban settings, renaturing is still often perceived as an approach to landscaping, where the main aim is to create a green decor that makes the city more attractive. This kind of greening is a controlled ornamental approach to nature focusing mainly on plants and ignoring other species as well as ecological functionality. Conversely, renaturing via ecological engineering relies on knowledge of the living world and takes each level of biodiversity (genetic, specific and ecological) into account. The transition from greening to ecological engineering requires active collaboration between ecologists and landscapers.

  Ecological engineering and research into ecological restoration have produced a rich corpus of knowledge and expertise that can be used to begin desealing urban areas. As many projects have already demonstrated, renaturing has already proven its worth and feedback from such initiatives can inspire future endeavours. However, ecological restoration in urban settings is a relatively recent development. Renaturing is also an opportunity to rebuild and strengthen connections with urban stakeholders and local communities. Urban design must open itself up to local residents, who must be given their say in urban policymaking.

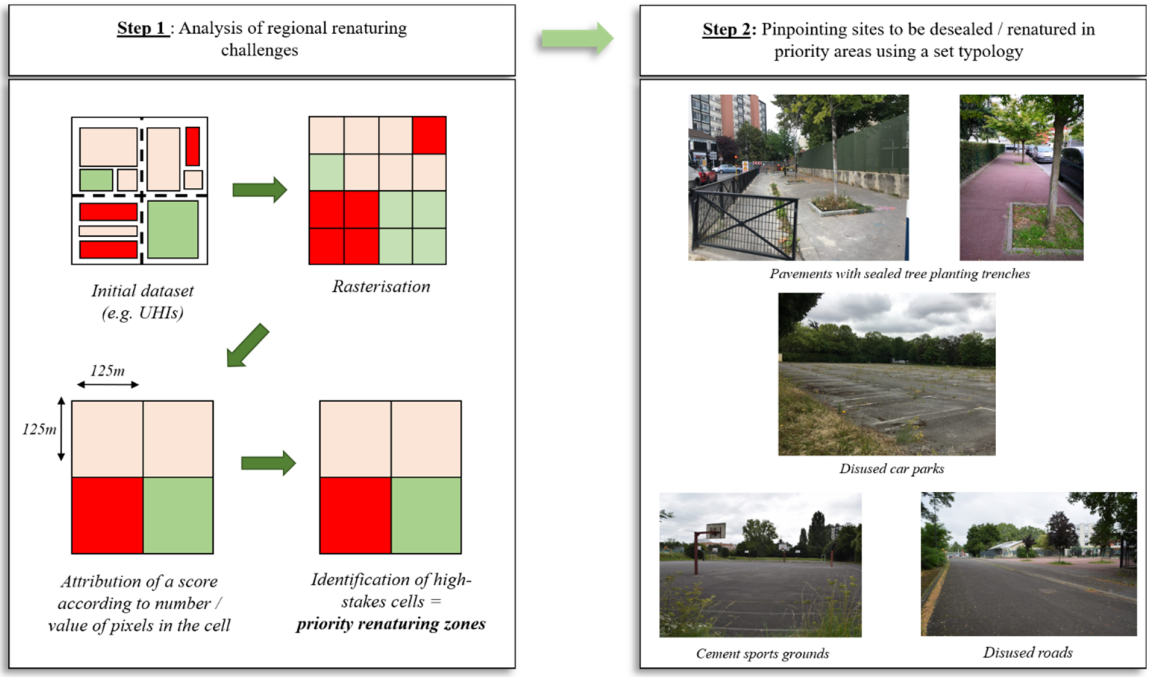

Figure 6. Graphic showing the method of spatial analysis

Learning and training resources

2.3.8 Field E-books

- **Target audience:** Students (mainly middle school), teachers, schools
- **Exploitation process:** The REGREEN project can collaborate with schools and teachers to promote the e-book's use. By leveraging the project's network and partnerships, partners can encourage schools to incorporate the e-book into their curriculum, reading programs, or as supplementary material for nature-based learning initiatives. The student-authored eBooks will be published at the REGREEN website to inspire city planners and future pupils to work with the topic. Another pathway is to leverage the e-book through online platforms and digital distribution channels to make it easily accessible to a wide audience. This can involve partnerships with children's book websites, or educational platforms that specialize in distributing digital content for schools and families. Another option is the promotion of the e-book through educational journals that can significantly increase the visibility and credibility of the solution. This exposure can drive a wider adoption of the e-book and its incorporation into educational practices.
- **Replication process:** The teaching material is freely available and can be used in multiple places. The partners have created a framework for successful replication and wider adoption. The e-book's format is compatible with different platforms and devices and considers accessibility features to enhance the user experience. To ensure that the e-book aligns with local contexts and cultural sensitivities, making the content more relatable and engaging, teachers are expected to adjust the material to their classes and to their learning levels and interests. Teachers should also consider translating the e-book into different languages if necessary to facilitate its adoption.

2.3.9 Greenopolis

- **Target audience:** Children, students, schools, young citizens
- **Exploitation process:** REGREEN partners are working with ULLs in Aarhus and in Velika Gorica to integrate Greenopolis into the schools' initiatives, leveraging the interactive online platform that offers educational materials, resources, and engagement opportunities. The practical application of Greenopolis is emphasized to encourage students to implement NBS in real-world urban contexts. Also, other schools in the partner countries will be contacted.
- **Replication process:** The replication strategy for Greenopolis revolves around its successful integration Aarhus and Velika Gorica ULLs. The aim is to promote the platform as an educational tool and support its adoption in other contexts beyond the project.
  To facilitate replication, the platform's content (open access), exercises, and activities can be tailored to address specific urban challenges and align with local sustainability goals. The modular structure of Greenopolis allows for flexibility and adaptation to different contexts and challenges.
- **Costs and resources:** The cost and resource requirements for Greenopolis encompass platform maintenance and content updates, to keep the educational materials relevant and engaging; additionally, allocating resources for marketing and outreach activities is essential to increase awareness and promote the platform among the target audience. Another important aspect is investing in training and capacity building programs. These initiatives aim to enhance user competency and support the successful implementation of Greenopolis.

- **Risks/challenges:** Addressing the resource constraints faced by educational institutions and ensuring proper training and support for teachers.
- **TRL:** 9/9

Figure 7. Greenopolis homepage (source: https://greenopolis.regreen-project.eu/)

2.3.10 Vigie-Nature École

- **Target audience:** Teachers, after-school centres, National parks
- **Exploitation process:** The exploitation strategy involves using the Vigie-Nature École's website as the primary entry point and leveraging its network, which includes the Ministry of Education. The program also relies on NGOs and school networks for communication, including official and social media channels. To develop the solution at the European scale, the program requires the participation of new partners such as research institutions to lead scientific developments and manage collected data, local conservation NGOs to help teachers in the field and with communication, and school networks to organize training sessions and promote the program. By collaborating with these partners, Vigie-Nature École aims to expand its reach and impact in promoting biodiversity monitoring and education.
- **Replication process:** The solution can be replicated in other countries and schools by adapting the content to the curricula of the countries / schools. The main objective would be to find relevant schools to participate, administration to relay and research labs to collect and analyse the data. Finding relevant stakeholders is crucial to replicate the project at a relevant scale. Vigie-Nature École offers 10 protocols for monitoring biodiversity that can be selected based on various criteria such as the time of year, duration, cost of materials, and the age of the students. This approach allows for a reduction in the amount of material tools needed, which is beneficial for schools that may have limited funding.

- **Costs and resources:** Vigie-Nature École requires coordination, production of educational resources, and training as its key resources. The development and maintenance of the program's website are also essential. As for the cost structure, human resources are needed to coordinate the program and develop new resources.
- **Risks/challenges:** The identification of the stakeholders is difficult and might therefore reduce the opportunities to replicate the project. Since France is very centralized in term of education, when developing this framework outside France, the dissemination strategy must be adapted to other education systems. Direct contact with the schools should be preferred in countries where education is less centralized.
- **TRL:** 9/9
- **IPR:** All documents are shared under the licence creative commons Attribution-ShareAlike 4.0 International

	Durée sur le terrain	Période de l'année	Coût du matériel	Âge des élèves
Sauvages de ma rue	De 30 min à 1 h	Toute l'année, mais privilégier les périodes de floraison	12 € par livre (prévoir au moins 4 livres par classe)	Du cycle 3 au lycée
Oiseaux des jardins	15 min	Toute l'année mais plus facile en hiver avec des mangeoires	Avec des mangeoires, comptez 15 € pour 5 kg de graines	Du cycle 1 au lycée
Opération Escargots	Moins de 30 min	Toute l'année, mais peu ou pas d'escargot en hiver	Gratuit si vous utilisez des planches de récupération	Du cycle 1 au lycée
BioLit	De 30 min à 1 h	Toute l'année	Prévoir des quadrats	Du cycle 2 au lycée
Vigie-Chiro	15 min	Septembre - octobre et mai-juin	Achat de 3 piles LR06 (AA), environ 5 €	Du cycle 4 au lycée
Spipoll	20 min	Toute l'année	Prévoir des appareils photos	Du cycle 3 au lycée
Placettes à vers de terre	De 1h à 1 h30	De janvier à fin avril	7 € environ pour les pots de moutarde	Du cycle 3 au lycée
Lichens Go !	De 30 min à 1 h	Toute l'année par temps sec	Quelques euros pour l'achat du grillage	Du cycle 4 au lycée
Alamer	De 30 min à 1 h	Toute l'année	Quelques euros pour l'achat de corde pour le transect	Du cycle 3 au lycée
BirdLab	15 min	Du 15 novembre à fin mars	Prévoir 15 € pour 5 kg de graines et des tablettes	Du cycle 2 au lycée

Figure 8. Vigie-Nature École - choose your protocol (source: https://www.vigienature-ecole.fr/choisir)

2.3.11 Training kit

- **Target audience:** Technicians from cities (urban planning and green space departments mostly)
- **Exploitation process:** Engaging in participatory approaches and networking with customers, particularly technicians from cities who work in planning and green space departments. Organizing training workshops, creating online forums or social media groups, and other forms of communication to share the importance of NBS and the benefits of the training kit. By doing so, the city could create a sense of urgency and excitement around NBS, which could help drive demand for the training kit.

- **Replication process:** Training enterprises can replicate this type of training locally for cities. Enhancing NBS in cities requires major changes in vision and approaches to traditional cities management. Training stakeholders to novel ecological practices is thus a crucial step in the process of mainstreaming NBS. The training kit describes why and how to organize training workshops on nature-based solutions for cities (agents, decision-makers and city stakeholders). It aims to provide ideas for NBS training and to improve their deployment. All the ideas and resources shared in the training kit are intended to be adapted according to the needs and expectations of the participants.
- **Costs and resources:** Required key resources include a minimum number of participants – at least 10 to ensure the training is effective - and intellectual and technical resources. In terms of costs, the elements to be considered are the costs of training preparation and the material for the training sessions.
- **Risks/challenges:** The objective of the training kit is to provide ideas for NBS training and improve their deployment. Feedback from the participants at the Aarhus training workshop highlight the importance in such trainings to share a common language about NBS, to convince about their benefits, and to constitute a team to improve their implementation.
- **TRL:** 9/9

3 MANAGEMENT OF DATA AND INTELLECTUAL PROPERTY RIGHTS

REGREEN is committed to adhering to the FAIR principles, which ensure that research data is findable, accessible, interoperable, and reusable (FAIR). As part of this commitment, REGREEN has chosen to participate in the Open Research Data Pilot (ORDP). The project acknowledges the importance of making research outputs, including articles, chapters, monographs, and their associated data, widely and publicly available.

The Updated Data Management Plan (D1.4) [11] indicates that publications will be made open access through the "green" (no-cost) route and copies will be deposited in an institutional repository of the relevant project partner. Articles published via "green" access will be deposited and made open access no later than six months after publication (12 months for publications in Social Sciences). Additionally, efforts will be made to deposit research publications/articles related to the project in openAIRE[6], either through direct links or direct deposits.

As the project aims to deliver data suitable for direct use or use after adaptation to local conditions, by planners and other scientists, they will be made openly available in different forms as part of the REGREEN platform tools, as scientific publications and/or in open data repositories.

Data submitted under the ORDP will be provided as open access under creative commons license without restrictions for re-use. Data published as scientific articles will comply with open access requirements. All the project data follow *a Creative Commons Attribution Non-Commercial license.* Datasets that will be generated in REGREEN will be made public before the finalization of the project in an open repository (zenodo.org). In case of embargoed data, the embargo time will not exceed a period of 5 years after the project is completed. REGREEN's produced data will be open and usable by third parties since REGREEN follows the Creative Commons Attribution Non-Commercial license. In some cases, data will not be published publicly if the task leaders opt out of publicly releasing data

[6] https://www.openaire.eu/about

with sufficient justification to the Project Steering Committee. Should any new rights emerge, REGREEN will strive to protect them under the Creative Commons license and actively manage to find consensus within the consortium, ensuring that the project's outputs are shared openly and collaboratively.

4 DISSEMINATION STRATEGY

The dissemination strategy for REGREEN is a crucial component of the overall project plan. Its primary objective is to ensure that the project's messages, findings, and recommendations are tailored to the specific needs, interests, and preferences of the target audience. It considers the most suitable communication channels, formats, and platforms to convey the information effectively.

Furthermore, the dissemination strategy aims to create a lasting impact by ensuring the results endure beyond the project's completion. It emphasizes the importance of long-term sustainability, which may involve strategies such as maintaining ongoing communication with the target audience, archiving project resources, establishing partnerships or networks to support the continued use of the results, and considering the potential for future collaborations or further research.

When planning specific activities as part of this plan, responsible partners (UNEXE, UFZ, UKCEH, AU, INTU, JR, ICLEI, SLU) will ensure approximate equal representation with respect to co-authorship of partners, diversity of topics, as well as the time and geographic distribution of the activities.

4.1 Goals

The objective of REGREEN communication, dissemination and exploitation is to achieve high visibility of the project, its work and results among different target groups, to trigger change in perception and utilization of NBS in cities. This includes:

- Raising awareness and understanding of NBS among the public at the EU, national and local levels, including China
- Engaging ULL participants and stakeholders involved in project activities, providing them with project information, guides and tools for NBS deployment
- Connecting and mobilising NBS businesses and innovation communities
- Effectively exchanging experiences between Europe and China in the field of urban NBS
- Sharing research results with the scientific and expert community
- Promoting and adapting project results for their purposeful use after the project ends

4.2 Target groups

Primary target groups and main communication and dissemination approaches have been listed in priority order below:

1) The **general public** is reached through regularly updated communication channels, such as the project website and social media platforms (LinkedIn and Twitter), and promotional material, such as educational videos. Moreover, presence of REGREEN articles in mainstream newspapers and magazines, as well as in publicly open events aims at creating familiarity with the NBS concept, solutions and benefits, as well as the project itself.

2) **ULL stakeholders and citizens** are invited to take part in resolving their city's challenges through application of NBS. ULL coordinators have played a crucial role in announcing REGREEN activities through local communication channels, attracting diverse participants. Local and national REGREEN communication and stakeholder interactions have been established, ensuring that the content produced by REGREEN is translated into the local language and tailored to the ULL-related audience. Furthermore, a focus on children and schools has been added, with dedicated educational programs complementing business accelerators at the local level.

3) **Businesses and innovators** have been actively invited to join capacity-building initiatives for SMEs and start-ups in ULLs. Workshops, accelerator programs, and a shared digital platform have facilitated their involvement and provided information about the opportunities offered by the NBS market.

4) **City representatives and policy makers** Project results have been effectively communicated to city representatives and policy makers through concise tools such as policy briefs, factsheets, webinars, and other materials. Local and EU REGREEN events have provided opportunities for city representatives to present their local efforts and network with colleagues across Europe and China, fostering knowledge exchange and collaboration.

5) **Scientists and experts** from various disciplines have been engaged through the dissemination of REGREEN results in scientific and professional journals, conferences, and meetings. The REGREEN team has actively collaborated with relevant projects, particularly other EC-funded NBS sister projects, to share knowledge, experiences, and pool efforts in driving sustainable transitions.

4.3 Overview of main communication and dissemination activities and channels

Below the list of the most effective communication channels and the targeted audience (Updated from D8.3)

Table 3. Main communication and dissemination activities and channels

ACTIVITY	RESPONSIBLE AND CONTRIBUTING PARTNERS	NO. OF ACTIONS	TIMING	TARGET GROUP	LINK
Newsletter	JR All partners contribute	4 of 6 newsletters published	M6, M14, M28, M34, M42, M54	All target groups	Neswletter 1 Newsletter 2 Newsletter 3 Newsletter 4
Video*	JR	2 professional videos	M12, M52	All target groups	Video 1

ACTIVITY	RESPONSIBLE AND CONTRIBUTING PARTNERS	NO. OF ACTIONS	TIMING	TARGET GROUP	LINK
Website*	JR All partners contribute	Webpage online	M3	All target groups	Home - REGREEN (regreen-project.eu)
Podcast series*	INTU	8 episodes recorded and published on the website	M24-M30	All target groups	REGREEN Podcasts - REGREEN (regreen-project.eu)
Fact sheets*	ICLEI	14 Factsheets both in English and in Chinese	M34	All target groups	Resources - REGREEN (regreen-project.eu)
Policy Briefs	JR and AU	6-8 policy briefs	M50	City representatives and policy-makers	
Digital platform**	ZEZ	Stand alone page linked to from the REGREEN webpage	M12	Businesses and innovators	Nature Solutions Platform - REGREEN (regreen-project.eu)
Educational platform / Greenopolis*	INTU	Stand alone page linked to the REGREEN webpage	M30	Schoolchildren	Introduction | Regreen Website (regreen-project.eu)
Twitter	JR	1,768 followers; 258 tweet (up to may 2023)	M3	Scientists and experts; City representatives and policy-makers	REGREEN (@REGREEN_nbs) / Twitter
LinkedIn	JR and INTU	1,710 followers; at least 1 post per week	M3	Businesses and innovators	REGREEN | LinkedIn
Webinars	ICLEI	At least 3 webinars	Y3; Y4	Scientists and experts; City representatives and policy-makers; ULL stakeholders and citizens	
Scientific dissemination	UNEXE and UFZ	Scientific articles and presentations at scientific conferences	Throughout the project	Scientists and experts	Resources - REGREEN (regreen-project.eu)

ACTIVITY	RESPONSIBLE AND CONTRIBUTING PARTNERS	NO. OF ACTIONS	TIMING	TARGET GROUP	LINK
Events	ICLEI	4 events – Stakeholder Dialogue, EU ULL Transition Workshop, Final event	Y3; Y4	Scientists and experts; City representatives and policy-makers; Businesses and innovators; ULL stakeholders and citizens	
Business activities	INTU and JR	Ideation events, Network creation and 3 Accelerator Programme events in the ULLs	Throughout the project	Businesses and innovators	
Networking	AU	30 times referenced in other project's events or articles	Throughout the project	Scientists and experts; City representatives and policy-makers	
General communication /outreach	JR	Unlimited	Throughout the project	All target groups	

*Online for additional 5 years beyond the project lifetime **to be included in future projects

5 CONCLUSION AND NEXT STEPS

This deliverable presents the underlying exploitation and replication strategy, which will be followed throughout the project and describes the activities taken so far. Three overarching objectives are set within the strategy: identification of KERs, stakeholders and market needs analysis, and dissemination strategy.

Thirteen KERs have been identified by the partners, each of which has undergone a thorough stakeholder and market analysis, considering the associated intellectual property rights. To ensure that the project delivers data that can be readily utilized by planners and other scientists, the KERs are made openly available in various formats. These formats include integration within the REGREEN platform tools, publication in scientific journals, and inclusion in open data repositories (zenodo.org). By adopting this approach, the project aims to provide data that can be accessed directly or adapted to suit local conditions, fostering widespread utilization and facilitating future research endeavours.

The ultimate objective of this strategy is to transfer knowledge and results, enabling widespread adoption and utilization of the project's findings. By maximizing the impact of EU-funded research, the project aims to contribute to the advancement of the field and foster innovation. As the project progresses, the exploitation and replication plan will continue to guide the activities, ensuring that the

identified KERs are effectively leveraged, valuable markets are tapped into, and the dissemination efforts persist.

REGREEN is committed to promoting and exploiting its results not only during the project's duration but also beyond. The project recognizes the significance of its scientific findings and intends to leverage them in follow-up projects by its partners and present them at future conferences, ensuring the continuation of the project's legacy.

REFERENCES

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