



PHUSICOS

According to nature

Deliverable D8.6

The Exploitation Plan

Work Package 8 – Dissemination and communication

Deliverable Work Package Leader:
NGI

Revision: 0 – Final
Dissemination level: Public

December 2022



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 776681.

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The present document has not yet received final approval from the European Commission and may be subject to changes.

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Project information

Project period: 1 May 2018 – 30 April 2022
Grant Agreement number: 776681
Web-site: www.phusicos.eu
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Summary

This document summarizes the beneficiaries' approach for structuring and implementing concrete actions supporting the exploitation of the project results. These results are produced in the five innovation action arenas: technical, service, governance, learning arena and product innovations.

The core of the Exploitation Plan is the Exploitation Actions Table, a living document for the identification of innovations and the structuring of specific actions to exploit the innovations. The intention of the Exploitation Actions Table is to assist the project partners to identify and plan appropriate actions to support the exploitation of the innovations.

A 'snapshot' of this table (in its current state) is included in the appendix. However, as a living document this table will be updated as the project progresses and the final version of the table at the closure of the project will be published via the project webpage at phusicos.eu.

This document is one of the four strategic documents specifically governing the management of outputs from the research: the Innovation management plan (D1.5), the Dissemination and communication plan (D8.5), and the Plan for Mainstreaming NBSs in Europe - Innovative Approaches to reduce risks (D8.7).

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1 Introduction

Exploitation means the use of results in further research and innovation activities other than those covered by the action concerned, including inter alia, commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities.

-Horizon Europe Programme Guide: V2.0 – 11.04.2022

The purpose of this exploitation plan is to provide guidance to the consortium partners to ensure that our results are best utilized to achieve the PHUSICOS goals and secure the project legacy, and to satisfy the expectations and formal requirements associated with our project funding.

Several of the formal PHUSICOS deliverables are directly relevant for the exploitation of our results, and content from these documents will be considered in the development of this plan:

- D8.1 – Describing the project website and expected contents
- D8.2, D8.4, D8.5 – Various revisions of the Communication and Dissemination plan, addressing administrative requirements and providing the supporting materials to enable consistent and clear communication and dissemination from the project via various channels and formats.
- D8.3 – Provide a standard presentation of the project and results
- D1.5 – Innovation management plan
- D1.8 – Impact evaluation report (pending)
- D8.7 – Plan for Mainstreaming NBSs in Europe - Innovative Approaches to reduce risks (pending)

In addition, PHUSICOS is directly collaborating with our sister project OPERANDUM on various topics, including exploitation.

1.1 PHUSICOS goals

PHUSICOS is a demonstration project where a main goal is to contribute to the up-scaling and mainstreaming of NBS for risk management for climate change in rural areas in Europe (Figure 1). To enable this, PHUSICOS is developing the evidence base and practical knowledge necessary to support decision makers and relevant stakeholders in the task of implementing NBS solutions for disaster reduction and relief in rural areas). In addition, the project aims to ensure that the project results and innovative outputs reach beyond the context of the project and are accessible and practically useable for those who need them.

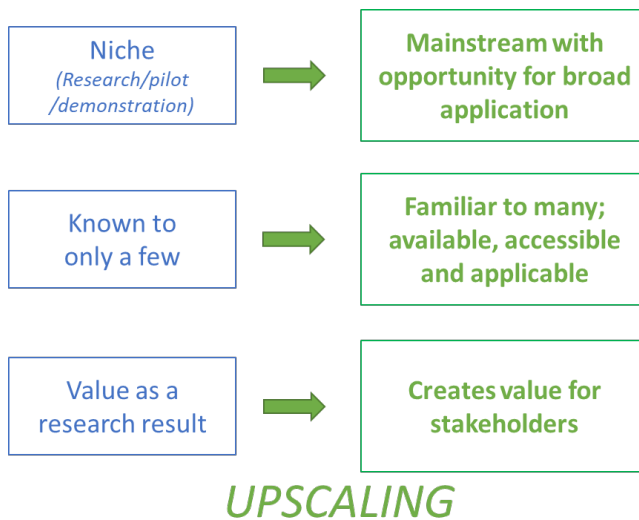


Figure 1. Upscaling is a central goal for the PHUSICOS project (ref D1.5)

1.2 Project results

The central goal of the PHUSICOS project is to support the upscaling and mainstreaming of NBS used for disaster risk reduction in rural/mountainous areas. The project has been structured around demonstrator sites and five innovation arenas. Each of these are led by a specific consortium partner and in collaboration with other partners:

- Service innovation (WP3) - Stakeholder participation through living labs (TUM)
- Technical innovation (WP4) - The development of an assessment framework (UNINA)
- Governance innovation (WP5) - Governance for co-designing, financing and implementing nature-based solutions (IIASA)
- Learning arena innovation (WP6) - Learning platforms to encourage knowledge exchange (IFK)
- Product innovation (WP7) – The development of an evidence base and data platform (BRGM)

Each of these innovation arenas has produced experience, knowledge and solutions which are innovations that can be utilized by the consortium. In addition, the practical, social and legal and economic aspects of implementing the demonstrator sites have created specific knowledge, experience and insights outside of the consortium - in the local communities and stakeholders where these demonstrator sites are located.

1.3 Open access as a priority – Commercial exploitation as an opportunity

The underlying tenet for Phusicos has been to 'enable' rather than 'commercialize', which has inspired the PHUSICOS consortium to embrace the concepts of open access rather than confidentiality for most project results. The partners agreed early in the project that preference would be placed on open science / open access / open dissemination, rather than efforts to secure intellectual property (IP) and pursue commercial exploitation of specific results. While some results may be eligible for commercial processes, the majority of our results will be disseminated and used in other ways.

Publication of articles, the submission of open project deliverables, and the sharing of results via workshops, social media and public events have been the primary routes for communication and dissemination. Consequently, the majority of the utilization opportunities for the PHUSICOS consortium will fall into the categories of supporting knowledge exchange through collaboration, publication, or enabling non-commercial public activity to meet societal needs and goals.

The PHUSICOS demonstrator sites present solutions providing significant social benefits. The PHUSICOS results can be exploited for policy purposes supporting up-scaling and mainstreaming of the NBSs. Similarly, innovative results supporting education and training can be exploited to develop local capacity for implementing NBSs, and our results related to evaluating and documenting the efficacy of NBS will also directly support upscaling.

While most PHUSICOS results will be utilized in non-commercial ways, this does not prevent consortium partners or local stakeholders around the demonstrator sites from pursuing commercial exploitation for some of their results. The principles for managing innovations including rights and commercial exploitation principles are described in D1.5 Innovation Management Plan.

This may be through direct exploitation of specific results, or alternately indirectly by enabling commercial activities made possible by PHUSICOS creating an interest for (and gaining trust in) NBSs for climate change risk management. PHUSICOS results can provide tools, knowledge and experience which local organizations, authorities and industry can use to develop their own commercial activities. For example, the afforestation demonstration site in the Pyrenees could enable a small local company to develop an industrial landscaping service providing the installation of tripods and indigenous trees for avalanche risk management purposes.

1.4 Peer learning: OPERANDUM

The three EU projects funded under the HydroMet funding (OPERANDUM, PHUSICOS and RECONNECT) have established collaboration to support common goals, needs and thematic topics within the three research projects. Exploitation of results is one of the themes identified for collaboration.

While PHUSICOS has a clearly defined focus on open data/open access exploitation, OPERANDUM has had a much stronger focus on technical development and the opportunities for commercial exploitation. OPERANDUM has developed a comprehensive framework for identifying and following up potential innovations, including a 'go to market' roadmap for commercial exploitation works.

The Exploitation Actions Table in this exploitation plan (see Section 2.6) is inspired by (and adapted from) the innovation tracking tool and framework developed by OPERANDUM, with modifications to meet the project needs of PHUSICOS. The quality and utility of this product is substantially better as a direct result of the collaboration with OPERANDUM.

The exploitation plan of PHUSICOS will be shared with RECONNECT in the hope that the collaboration will provide beneficial inspiration to RECONNECT's exploitation activities.

2 Elements of the exploitation plan

2.1 Utilization strategies

The primary strategic goal is to ensure the legacy of the project's results and to contribute to the objectives of mainstreaming and upscaling. This can be accomplished through various strategic actions, for example

- Direct collaboration in ongoing and future research
- Indirect collaboration by providing access to data, methods and results
- Knowledge transfer in academic fora (journals, conferences)
- Knowledge transfer through higher level education (academic) or practical training (industry/continuing education)
- Access to practical results, methods, services and experience to encourage broad adoption of techniques and solutions for implementing NBS.
- Community-building around the topics of NBS for disaster risk reduction in rural areas, creating capacity, local skill sets and experience
- Community-building in terms of trust and positive associations
- Information/marketing services to promote specific results
- Financial exploitation, e.g. achieving direct economic results by creating a product, service, or initiating new projects

2.2 The Utilization Arena

The PHUSICOS project is structured as an innovation arena consisting of five thematic focus areas for innovation (work packages 3-7), set in the context of demonstrator sites (work package 2). Similar to the innovation arena concept, dissemination and

exploitation can be described in the terms of a utilization arena, consisting of five thematic areas arising out of the strategic actions:

- Scientific dissemination via journals and academic fora (conferences, workshops)
- Education and training activities, ranging from formal academic courses to practical applied training
- Popular dissemination via trade journals and fora, or publicity via traditional media and social media
- Collaborative research with other organizations and projects that carry a natural synergy
- Commercial exploitation of innovations for a specific purpose.

The two arenas are co-dependent: results of the innovation arena feed into the utilization arena, and the experiences/feedback from the utilization arena enrich the innovation arena. (Figure 2).

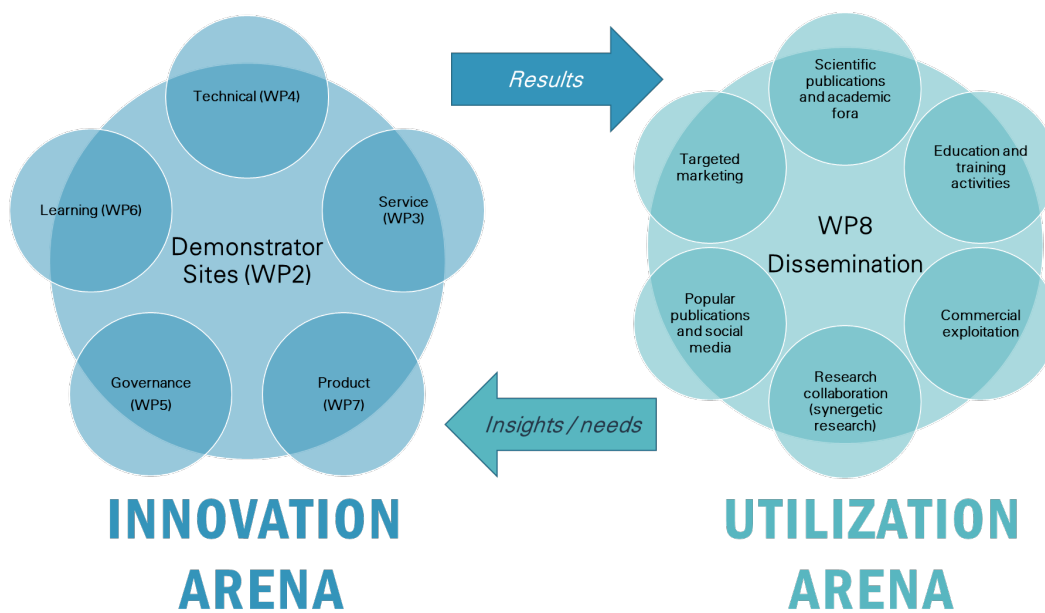


Figure 2. Clustering of PHUSICOS activities in an innovation arena and a utilization arena

2.3 Stakeholder groups

Stakeholders can be segmented (grouped) in various ways depending on the specific need for the topic or discussion. In the Innovation management Plan (D1.5), stakeholders were segmented in five groups (Table 1), where the key factor for segmentation is the stakeholder interests and needs related to upscaling activities.

Table 1 Stakeholder groups in the context of upscaling

Group	Characteristics	General interests
Companies	Private companies and consultants providing services, such as construction, supply of materials, service etc.	Providing services and solutions creating value for the customer and the company. This group needs efficiency, quality, risk reduction.
Lobbyists	Public interest groups consisting of groups of citizens or organizations, dedicated to pushing forward specific interests, needs or wants (interest groups/ advocacy groups/ coalition groups)	Promoting the interests of a segment of society they represent. This group needs information and evidence.
Authorities	Government bodies, public agencies or regulatory agencies serving citizens and companies.	Implementing policy and actions to manage, protect and improve society.
Experts	The scientific community	Research and development to improve knowledge and provide knowledge-based services to other stakeholders.
Citizens	Individual citizens or persons who have their own personal interests and needs, not belonging within other groups	

2.4 Stakeholder tiers

A different segmentation of stakeholders is useful for the discussion regarding utilization activities, where the key segmentation factor is how the stakeholders benefit from the utilization. In this context they are broadly grouped as first, second and third tier stakeholders (Table 2 and Figure 3). Note that Table 1 and Table 2 are not contradictory, it is the same general set of stakeholders but where these are grouped in two different ways according to the context the groups will be used in.

Table 2 Stakeholder groups in the utilization context

Tier	Stakeholders	General interests
First Tier	PHUSICOS consortium partners External persons or organizations directly engaging in PHUSICOS activities (for example, constructing the demonstrator sites; entities engaged in living labs / co-creation processes)	<i>First tier</i> stakeholders are the producers of results and the primary drivers of utilization activities, and are also direct beneficiaries of these. Commercial activities (if any) may be the direct exploitation of results and methods.
Second Tier	Active users of the PHUSICOS results Academic/research organizations engaged in collaborative research, or in thematically related research with direct interest in or use for PHUSICOS results Commercial or public entities with direct (and pending) utilization of PHUSICOS results.	<i>Second tier</i> stakeholders are the direct beneficiaries of the utilization activities, for example via knowledge shared through academic publication or commercial activities based on open-source information. This tier includes policy and governance activities related to NBS, collaborative or derivative research, and organizations implementing commercial services using knowledge and methods available in the market through dissemination or education.

Tier	Stakeholders	General interests
Third Tier	General public Organizations (public or private) that may eventually find need/use for PHUSICOS results.	<i>Third tier</i> stakeholders are indirect beneficiaries, for example via co-benefits of NBS implementations, general public developing positive perceptions and acceptance for NBS concepts, or organizations that incidentally or accidentally stumble across results or knowledge that they can use creating some positive value for their endeavors.

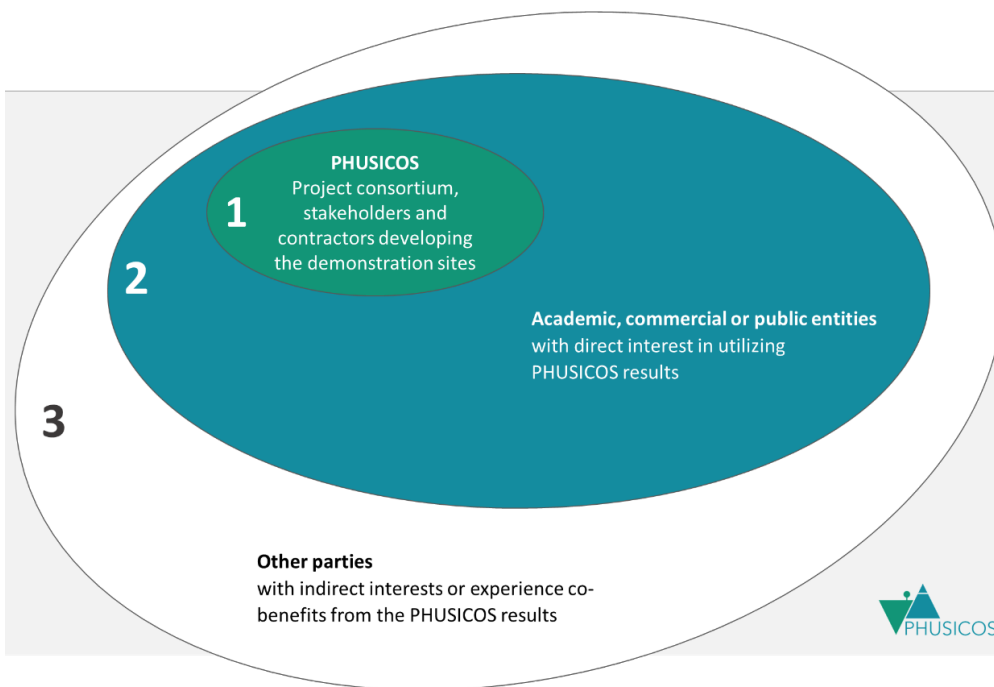


Figure 3. Stakeholder tiers

2.5 'Packaging' of results as innovations

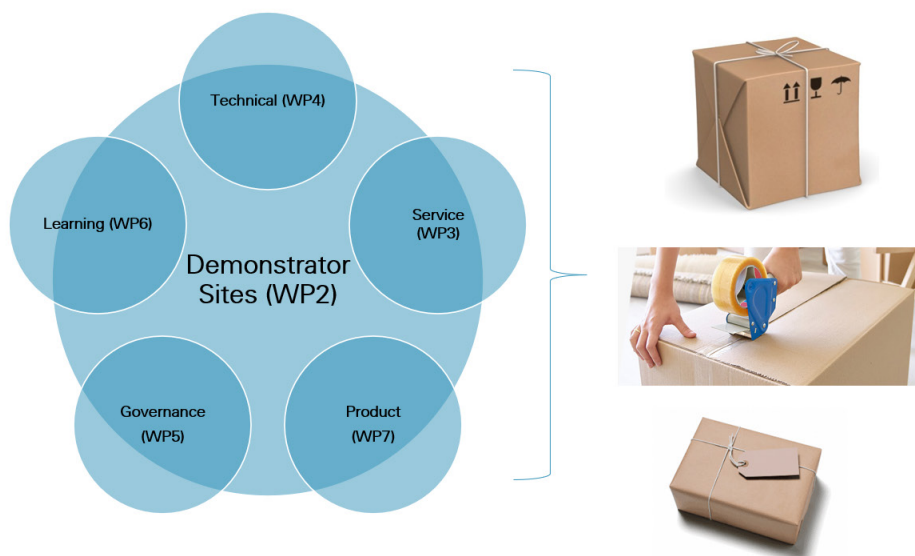
The PHUSICOS research is fundamentally structured as Innovation Actions (IA) clustered around Demonstration sites. For practical reasons, each IA is organized as a work package lead by a consortium partner and with contributory work by several other partners, and the demonstrator sites are collectively organized as a single work package (WP2) under the coordination of the Lead partner but with tight connections to the research organizations in the country where the demonstrator sites are located. The individual demonstration sites are also quite varied in terms of technical challenges, type, scale, local accept and local financing.

One of the effects of this organization is a rather diverse spread of the types of research results produced, ranging from for example from engineering data to policy briefs, or scientific articles to virtual reality-based training tools. Many of these results are quite clearly innovations, but may consist of various elements or contributions, possibly from

one or several work packages and partners. Other results may require additional work or be considered in combination with unrelated results to be regarded as innovations.

The idea of 'packaging' is an analogy and is essentially the idea of defining a mental 'box' around a result, a set of complementary results, or even dividing a result into several pieces, such that as a clearly defined unit they can be regarded as an innovation. For example, in the Governance innovation arena, a single policy brief may or may not reach the level of an innovation, but several policy briefs could collectively define new implementation models that are clearly an innovation. As another example, the innovation tables from the Innovation Management Plan (D1.5), and the exploitation action tables from this Exploitation plan (D8.5), collectively define an innovative way of structuring and tracking the innovation-exploitation process through the course of a traditional collaborative research project.

While the process of 'packaging' is not formalized at the work package level, the WP leaders are encouraged to use the example of this analogy for inspiration when reviewing the results of their work package and populating the exploitation action table with innovations from their activities.



‘PACKAGE’ RESULTS AS INNOVATIONS

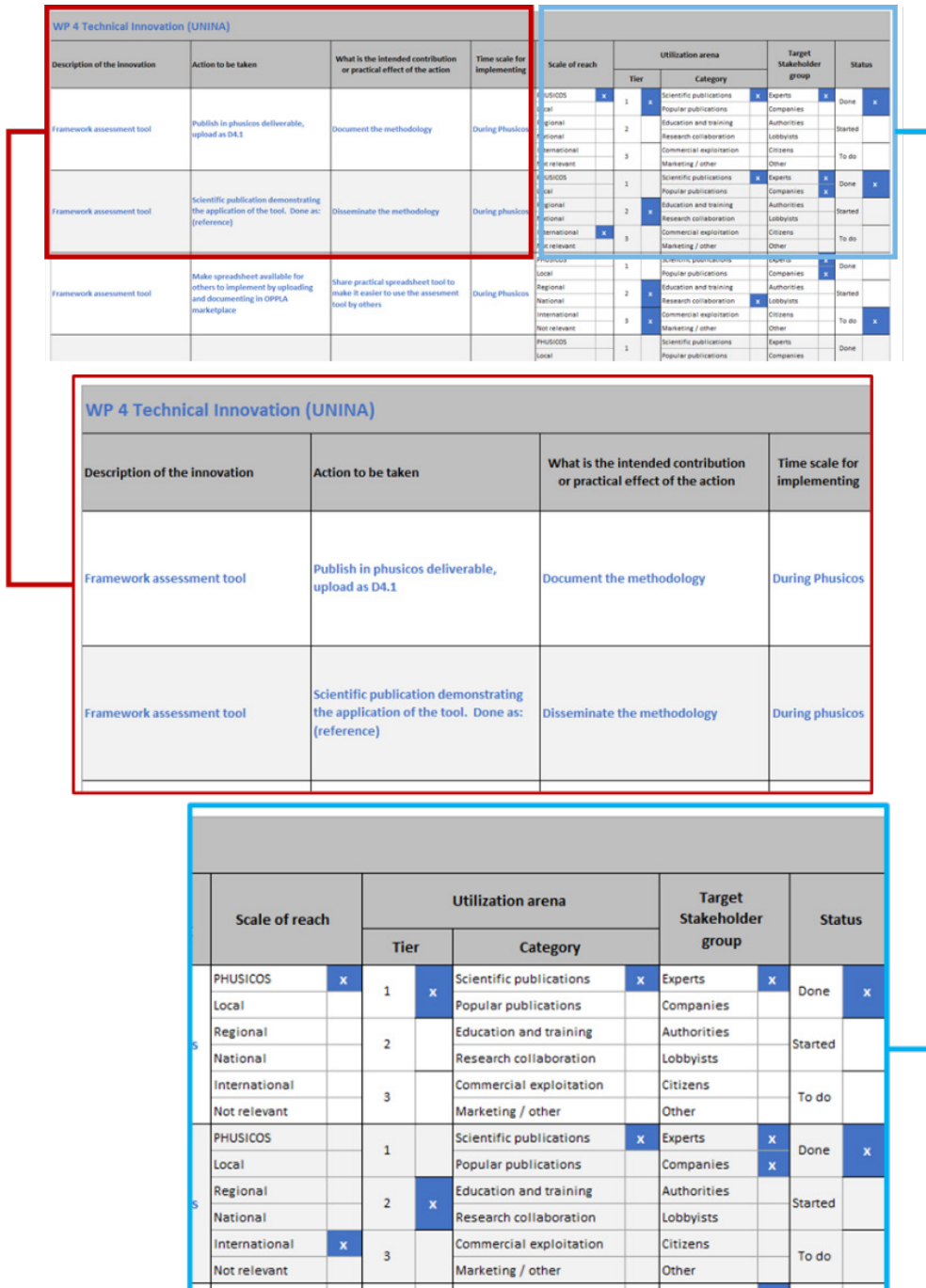
Figure 4. Analogy of 'packaging' to define innovations

2.6 Exploitation Actions Table

The Exploitation Actions Table is the core of the Exploitation Plan. The purpose of the table is to provide a structured approach for the work packages to identify innovative results, and to plan appropriate actions to enable utilization of the results. The

exploitation actions table is a living document requiring periodic revision to update the status and to add additional actions if any are identified.

The table is in spreadsheet format to support easy editing as well as sorting/analyzing the input. The table documents descriptions of the innovations and intended actions as well as measures of impact factors for the actions Figure 1. Each of the columns of the table are described in more detail below.



WP 4 Technical Innovation (UNINA)			
Description of the innovation	Action to be taken	What is the intended contribution or practical effect of the action	Time scale for implementing
Framework assessment tool	Scientific publication demonstrating the application of the tool. Done as: (reference)	Disseminate the methodology	During phusicos
Framework assessment tool	Make spreadsheet available for others to implement by uploading and documenting in GPP/A marketplace	Share practical spreadsheet tool to make it easier to use the assessment tool by others	During Phusicos

WP 4 Technical Innovation (UNINA)			
Description of the innovation	Action to be taken	What is the intended contribution or practical effect of the action	Time scale for implementing
Framework assessment tool	Publish in phusicos deliverable, upload as D4.1	Document the methodology	During Phusicos
Framework assessment tool	Scientific publication demonstrating the application of the tool. Done as: (reference)	Disseminate the methodology	During phusicos

Scale of reach	Utilization arena		Target Stakeholder group	Status
	Tier	Category		
PHUSICOS	1	Scientific publications	Experts	Done
Local		Popular publications	Companies	
Regional	2	Education and training	Authorities	Started
National		Research collaboration	Lobbyists	
International	3	Commercial exploitation	Citizens	To do
Not relevant		Marketing / other	Other	
PHUSICOS	1	Scientific publications	Experts	Done
Local		Popular publications	Companies	
Regional	2	Education and training	Authorities	Started
National		Research collaboration	Lobbyists	
International	3	Commercial exploitation	Citizens	To do
Not relevant		Marketing / other	Other	

Figure 5. Exploitation actions table (shown with several examples)

Description of the innovation

Results from a WP (or several WPs) are thematically 'packaged' as an innovation, e.g. a result or collection of results which are exploitable, e.g. can be utilized via one or several pathways in the utilization arena (Figure 2). The work of defining these innovations is the natural responsibility of the work package leader in cooperation with the contributors producing the results.

Action to be taken

Each innovation should have one or more actions planned to help exploit the innovation. Ideally the WP has been proactive in initiating actions underway (such as publication), and as the project approaches completion that the range of actions planned or taken can be supplemented with final actions to help 'fill' the exploitation gaps. For commercial exploitation, developing business plans and securing IPR could be examples of potential action. For academic exploitation, suitable actions might be targeting the publication of results in respected journals. Similarly other types of exploitations will have relevant and suitable actions to maximize impact.

What is the intended contribution or practical effect of the action

Each action needs a description of the intended impact, contribution or practical effect of the specific action. What does the WP hope to achieve by investing effort and resources in completing the action? How will this impact support the overall exploitation of the innovation? The intention of this question is to provoke a reasoning and justification for performing the action.

Time scale for implementing the action

Each action implemented has an associated complexity and natural timing, and the WP needs to consider this in the context of the project and the broader goals for exploitation. A specific milestone is the end date of the PHUSICOS project, and the time scale for implementing the action can be associated with this: Will the action be completed within the duration of the PHUSICOS project, or will the implementation of the action extend beyond the project? What is the expected duration? For example, a commercial exploitation activity focused on establishing IPR (patents) will take more than one year from initial filing. Implementation of a policy brief into operative legislation may require years of lobby activity before results are achieved. Publishing in a technical conference may require only some months.

Scale of reach

An innovation and the actions supporting its utilization will have an expected scale of reach, e.g. to what geographical extent will these have relevance. This is particularly important given the fundamental project goals of upscaling and mainstreaming NBSs. Upscaling can be both in terms of the size of individual implementations, but also in terms of 'lifting' solutions from local solutions to applicability for other regions or nations. Identifying the scale of reach raises awareness regarding the content and form of the action. Here we have defined the following scale groups and their applicability:

- PHUSICOS - the project demonstration sites and partners involved
- Local - municipalities associated with the demonstration sites
- Regional - a given region, like a county, province, geographical feature
- National - within a country
- International - pan European or global
- Not relevant - not representable as a geographical extent

Utilization arena - Tier

The concept of the Stakeholder Tier is described in Section 3.4. This classification is essentially the 'proximity' of a Stakeholder to the project. This raises awareness of how the result of the action will be received, as well as the needs of the recipient group for contextual information.

Utilisation arena - Category)

This is a general description of the type of product or information resulting from the action to support the innovation. These are:

- Scientific publications – traditional academic works published in recognized journals or in the proceedings of respected academic conferences. Includes published results of all disciplines (not solely traditional science).
- Popular publications – informational works published in trade magazines, newspapers, television or other respected media, but intended for a wider audience than traditional academic use.
- Education and training – materials or products developed for the specific purposes of education and professional or vocational training
- Research collaboration – products, data or knowledge which are developed to promote opportunities for research collaboration, for example shared databases, algorithms or other forms intended for use by other researchers.
- Commercial exploitation – activities or dissemination supporting the development of commercial activities, for example the establishment of intellectual property rights, the development of business model concepts, registration of a start-up, royalty agreements, establishing partnerships, etc.
- Marketing/other – any form of dissemination or utilization intended to create awareness or branding of the innovation, including posts via social media or popular video services.

These categories are not mutually exclusive, as actions may result in products or effects fulfilling several categories. As an example, a policy brief may be of a technical nature, supporting more of a scientific publication role; it may focus on informing and educating, filling more of an education and training role; or it may focus on public awareness and general information fulfilling a marketing role or a popular publication role. As another example, a journal article is a scientific publication, but it may also support research collaboration.

Target stakeholder group

This is a third dimension defining the intended targets for the actions to exploit the innovation: The stakeholder group. In addition to reach (geographic), and tier (relevance) the stakeholder group defines the nature or capability of the intended beneficiary of the exploitation action or innovation. These are defined as:

- Experts – Individuals or organizations with specialist knowledge capable of using the innovation at the highest academic levels or complexity. Typically these are universities, research institutes, or other organizations with similar competencies or roles.
- Companies – Organizations with technical capability to utilize or benefit from the exploitation action.
- Authorities – Persons or organizations in governance or public service
- Lobbyists – Persons or organizations promoting special interests related to the innovation.
- Citizens – Ordinary persons or groups of persons who may benefit
- Other – A beneficiary which cannot be adequately defined by any of the above groups.

Multiple stakeholder groups can be targeted by an exploitation action.

Status

The status is a simple indicator describing the progress on implementing an exploitation action: Done, Started, and To do.

3 Implementing the exploitation plan

3.1 Context

The purpose of this exploitation plan is to provide a method to describe, structure, and follow up strategic actions to enable exploitation of the innovative results from the PHUSICOS project. This plan is complementary to the Innovation Management Plan (D1.5), which established expectations regarding innovations to be developed by the project.

Innovations are the results of the research, and the actions implemented for exploitation of the results are intended to preserve the legacy of the project results, maximize impact of these, and enable creating added value. Added value can be in terms of commercial value, but also in terms of supporting further research, influencing governance processes, contributing to education and awareness and a myriad of other direct benefits as well as co-benefits.

3.2 Initial steps

The approach is bottom up: It is the work package leaders who have the responsibility to evaluate the results from their work package (and collaborations across PHUSICOS) to identify innovations, and to define what actions are needed to best utilize (exploit) the innovations.

To assist the WP leaders in the process, an administrative review was done of a number of project outputs to try to identify potential innovations. The exploitation actions table was pre-filled with the potential innovations and sent to the WP leaders for review and as a starting point for their own additions to the table. The outputs reviewed include:

- The innovation tables from D1.5
- The formal Phusicos deliverables (Dx.x)
- Several key articles and dissemination projects
- General knowledge about project activities and results

3.3 General guidelines and considerations for WP leaders

The WP leaders were requested to reconsider activities and results within a work package, and try to summarize innovations in the table as a well-defined method, data, product, tool etc. If necessary, try to 'package' the results together as tangible innovations. Some suggested guidelines:

- Focus on research output (e.g. results), and try to condense these into a short and concise description of them in terms of innovations.
 - How can these results be utilized to support the goals of upscaling and mainstreaming of NBS for rural DRR?
 - What are the scientific and technical goals we want to achieve?
 - Are there synergies to other PHUSICOS innovations?
- Who are the relevant stakeholders for an innovation? What tier do they represent?
 - What is the best way to reach the stakeholders?
 - Which categories of actions are most relevant? (Scientific publication, popular publication, education/training materials, research collaboration, commercial exploitation, or marketing/topic awareness materials)
 - What are the main benefits for the stakeholders
- What are the factors affect the exploitation of the results?
 - What are the main advantages
 - What are the main obstacles?
 - What is the temporal scale, e.g. the exploitation timeline?

- Collaboration within your own organization: Are there persons or groups who can contribute to exploitation, for example communications and market development groups?
- If considering commercial exploitation, what are the economic aspects:
 - Can this innovation generate income?
 - What are the costs to do this?
 - What resources are required?
 - Are there any licensing / IP issues to consider?

The resulting innovations and associated exploitation actions should be recorded on the appropriate WP tab in the Exploitation Action Table.

3.4 Cross-work package innovations

The word silo literally refers to a tall cylindrical building for grain storage, but now is a widely used metaphor for the separation of knowledge, information, or activities by organizational groups. These metaphorical silos can develop for a wide number of reasons depending on the type of organization or setting. PHUSICOS is organized in work packages supporting mutual collaboration, communication, and co-creation around a central core of demonstration sites (Figure 6. PHUSICOS organisation

WP silos can occur when methodologies, tools and metrics which are naturally used in one context (for example WP4 Technical Innovation), are not well defined or understood in another context (for example WP3 Service Innovation). Differences in communication forms or practices can create gaps, for example policy briefs of WP5 serve a very different purpose than the graphical user interface of WP7. Even though all partners are working towards the same overarching goal of upscaling and mainstreaming of NBS, these mismatches lead to missed opportunities.

The PHUSICOS partnership is quite strong, and communication within the consortium functions well, and is well managed by the lead partner. Although the interdependencies of the different WPs are clearly identified (Figure 6), silo thinking can still occur within the individual WPs when looking at innovations and exploitation opportunities. This is not a conscious decision but can occur as the natural result of researchers getting deeply into the scientific and engineering details of their own work, unfortunately resulting in them missing sight of how their work is a valuable (and critical) contribution to the work of other WPs or the bigger picture of the project.

When filling out the Exploitation Actions table, The WP leaders and contributing partners are encouraged to 'look laterally' outside of their work package and try to identify cross-cutting innovations that result from the interaction of results and researchers from individual WPs. As one example: innovative training techniques developed in WP6 may be adapted for educational materials for a Framework Assessment Tool (WP4) training program. These innovations and associated actions can be placed on the X-WP tab in the Exploitation Actions Table.

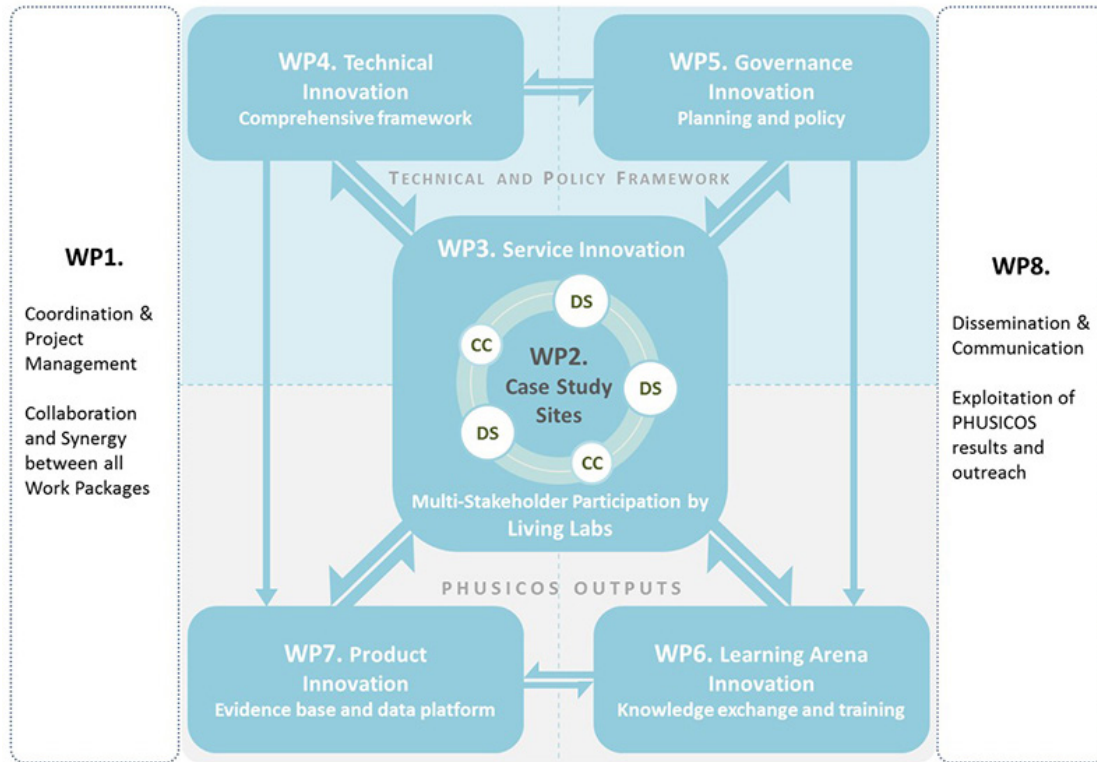


Figure 6. PHUSICOS organisation

3.5 Special considerations for commercial exploitation

While PHUSICOS is primarily focused on open access/open data, project participants who have ambitions for initiating commercial activities based on their innovations are free to pursue this utilization if they wish. There are several specific considerations regarding the intellectual property (IP).

- The owner of the IP must consider if any other project participants may have a rightful stake in the innovation. Requirements for notification of intent to commercialize and the expectations regarding ownership and sharing of IP are described in the Consortium Agreement.
- The owner of the IP must consider if there are any dependencies to other intellectual property in the project necessary for exploiting the IP. If dependencies are present, the Consortium Agreement describes the expectations for negotiating access rights.
- Other project participants must respect the IP owner's expectations regarding confidentiality and dissemination of the IP to be commercially exploited.

The owner of the IP is responsible for their own processes regarding Intellectual Property Rights Management. The IP owners should protect their intellectual property developed during the project from possible external threats, as well as developing mitigation strategies in case of internal disagreements if this occurs between partners. Note that the Consortium Agreement provides rules and expectations for IP ownership.

Commercial exploitation efforts should include a market analysis to assess the potential of the innovation result. Key aspects of the market should be considered: size of the market both in volume and in value, the customer segments, competition, the economic opportunity, and potential barriers and preventative regulation. The owner of the IP is encouraged to leverage the knowledge and experience of the other Partners in this assessment.

Finally, the commercial exploitation activities should include the development of an initial business model. Frameworks such as the Business Model Canvas and the Value Proposition Canvas are useful tools for developing business model concepts. These tools are built on clearly defined building blocks (or elements) of a business model, and as such is a structured conceptual approach that is easy to understand and apply, particularly for engineers and scientists.

4 Legacy

4.1 Exploitation Actions Table: a living document

The Exploitation Actions Table in its current form is included in the appendix. However, this table is to be regarded as a living document and will be revised as appropriate through the remaining PHUSICOS project period. The final version of the table will be presented (and distributed) at the final consortium meeting and archived with the project information. A redacted version (to remove sensitive information) may be published on the Phusicos website under the 'Publication / Results' section.

4.2 Post PHUSICOS opportunities

Project partners (economic beneficiaries of the public research funding program) must engage in dissemination and exploitation activities regarding their results. Dissemination is the disclosure of the results by appropriate means, including scientific publication, commercial exploitation, educational materials or by other pathways. Nominally this dissemination will occur during the project period.

However, nature-based solutions often require time to develop and mature, and the full efficacy of these measures may take years to become apparent. Many of the results anticipated from the PHUSICOS demonstrator sites will require time, and the extent of impact of these measures will not be fully measurable until well after the completion of the PHUSICOS project.

PHUSICOS project partners are strongly encouraged to keep focus on the demonstrator sites, and if practical to consider including the demonstrator sites (or data from them) in future research activities and proposals. While not a formal requirement of the PHUSICOS contract to do this, there is a tremendous opportunity for developing operational experience, gathering performance data, and assessing socioeconomic

effects and other co-benefits by following these installations for some years (or even decades) into the future.

The various PHUSICOS innovations and the products/knowledge disseminated via the exploitation actions are valuable building blocks for continuing research activities into NBS performance and evaluation in an engineering sense, but also in terms of developing and influencing governmental policies and social engagement. One of the intentions of the Exploitation Plan is to make these building blocks accessible for future research, and the PHUSICOS partners are encouraged to bring these onwards into new research activities, research proposals, educational environments or for commercial exploitation.

Policymakers may also draw on results and knowledge developed within PHUSICOS when developing policies, guidance documents or other similar materials. Influencing and promoting policy supporting NBS for DRR is a key aspect of upscaling, and PHUSICOS partners are encouraged to promote the results and innovations from PHUSICOS supporting this policy work if the opportunity arises.

Appendix A

PHUSICOS Publications

List current as of 18 December 2022

Title	Authors	Title of the Journal / Proc. / Book	Peer-reviewed	DOI	Type
Operationalizing polycentricity for landscape resilience	Liu, Wei	Landscape Architecture Frontiers	yes	10.153 02/J-LAF-1- 010002	Scientific Publication
A Battery of Soil and Plant Indicators of NBS Environmental Performance in the Context of Global Change.	Andrés, P., Doblas-Miranda, E., Mattana, S., Molowny Appendix A-Horas, R., Vayreda, J., Guardiola, M., Pino, J., Gordillo, J.	Sustainability	yes	https://doi.org/10.3390/su13041913	Scientific Publication
A Meta -Analysis of the Value of Ecosystem Services of Floodplains for the Danube River Basin	Perosa et al. (from PHUSICOS Zingraff - Hamed A.)	Science of The Total Environment	yes	https://doi.org/10.1016/j.scitotenv.2021.146062	Scientific Publication
A Methodological Approach to Assess Nature-Based Solutions' Effectiveness in Flood Hazard Reduction: The Case Study of Gudbrandsdalen Valley. Environ	Gerundo, C.; Speranza, G.; Pignalosa, A.; Pugliese, F.; De Paola, F.	Environmental Sciences Proceedings	?	https://doi.org/10.3390/environsciproc2022021029	Scientific Publication
Assessment of NBSs effectiveness for flood risk management: The Isar River case study	Pugliese, F.; Caroppi, G.; Zingraff-Hamed, A.; Lupp, G.; Gerundo, C	AQUA—Water Infrastructure, Ecosystems and Society	?	10.2166/aqua.2021.101	Scientific Publication
Bottlenecks for the implementation of the European Union Water Framework Directive principles and instruments – governance, planning processes and institutional obstacles	ZingraffHamed et al. (several coauthors outside of PHUSICOS)	Water alternatives	?	https://doi.org/10.3390/su13063012	Scientific Publication
Catalyzing Innovation: Governance Enablers of Nature-Based Solutions	Martin, J.G.C., Scolobig, A., LinneroothBayer, J., Liu, W., Balsiger, J.	Sustainability	yes	doi.org/10.3390/su13041971	Scientific Publication

Title	Authors	Title of the Journal / Proc. / Book	Peer-reviewed	DOI	Type
Designing A Resilient Waterscape Using A Living Lab and Catalyzing Polycentric Governance	ZingraffHamed, A., Martin, J., Lupp, G., LinneroothBayer, J., & Pauleit, S.	Landscape Architecture Frontiers	yes	https://doi.org/10.15302/J-LAF-1-020003	Scientific Publication
Editorial to Special Issue: Nature-Based Solutions—Concept, Evaluation, and Governance	Lupp, G.; ZingraffHamed, A.	Sustainability	yes		Scientific Publication
Effects of recreational users on restored floodplain vegetation in urban areas - The case of the Isar River Restoration in Munich	Zingraff-Hamed, A.; George, F.N.; Lupp, G.; Pauleit, S	Urban Forestry and Urban Greening	?	https://doi.org/10.1016/j.ufug.2021.127444	Scientific Publication
Governance models for nature-based solutions: Seventeen cases from Germany	ZingraffHamed et al. (also from PHUSICOS Gerd Lupp)	Ambio	?	https://doi.org/10.1007/s13280-020-01412-x	Scientific Publication
Human -River -encounter sites in cities: the case of the urban river restoration	Zingraff - Hamed et al. (several co - authors outside of PHUSICOS)	Sustainability	yes	https://doi.org/10.3390/su13052864	Scientific Publication
Implementing Nature-Based Solutions in Rural Landscapes: Barriers Experienced in the PHUSICOS Project	Solheim, A., Capobianco, V., Oen, A., Kalsnes, B., WulffKnutsen, T., Olsen, M., Del Seppia, N., Arauzo, I., Garcia Balagues, E., Strout, J.M.	Sustainability	yes	https://doi.org/10.3390/su13031461	Scientific Publication
Innovation in NBS co-design and implementation	Strout, J.M., Oen, A.M.P., Kalsnes, B.G., Solheim, A., Lupp, G., Pugliese, F., Bernardie, S.	Sustainability	yes	https://doi.org/10.3390/su13020986	Scientific Publication
Integrated Valuation of the Co - Benefits of Nature -Based Solutions for Flood Risk with TESSA: An Example of Floodplain Restoration Measures at the Local Scale	Perosa et al. (from PHUSICOS Zingraff - Hamed A.)	Sustainability	yes	https://doi.org/10.3390/su13031482	Scientific Publication
Living Labs – A Concept for Co-Designing Nature-Based Solutions	Lupp, G., ZingraffHamed, A., Huang, J.J., Oen, A., Pauleit, S	Sustainability	yes	https://dx.doi.org/10.3390/su13010188	Scientific Publication
Long-Term Simulations of Nature-Based Solution Effects on Runoff and Soil Losses in a Flat Agricultural Area within the Catchment of Lake Massaciuccoli (Central Italy).	Pignalosa, A., Silvestri, N., Pugliese, F., Corniello, A., Gerundo, C., Del Seppia, N., Lucchesi, M., Coscini, n., De Paola, F., Giugni, M.	Agricultural Water Management	?	j.agwat.2022.107870	Scientific Publication

Title	Authors	Title of the Journal / Proc. / Book	Peer-reviewed	DOI	Type
Modelling Approach for NBSs Suitability Assessment in an Agricultural Area under Changing Climate Conditions: Case Studies in the Massaciuccoli Catchment (Central Italy)	Pignalosa, A.; Silvestri, N.; Pugliese, F.; Gerundo, C.; Del Seppia, N.; Lucchesi, M.; De Paola, F.	Environmental Sciences Proceedings	?	https://doi.org/10.3390/environsciproc2022021044	Scientific Publication
Modelling the effects of NBS adoption in mitigating soil losses of a land reclamation area in the Massaciuccoli lake catchment (Central Italy)	Pignalosa, A., Silvestri, N., Pugliese, F., Gerundo, C., Corniello, A., Del Seppia, N., Lucchesi, M., Coscini, N., and De Paola, F.	EGU General Assembly 2022	?	https://doi.org/10.5194/egusphere-egu22-7965 , 2022	Scientific Publication
Nature-Based Solutions (NBSs) Application for Hydro-Environment Enhancement. A Case Study of the Isar River (DE)	Pugliese, F., Caroppi, G., ZingraffHamed, A., Lupp, G., Giugni, M	Environmental Sciences Proceedings	yes	doi:10.3390/environsciproc2020002030	Scientific Publication
Nature-based solutions for hydrometeorological risk reduction: a state-of-the-art review of the research area	Ruangpan et al. (from PHUSICOS Vittoria Capobianco, Amy Oen)	Nat. Hazards Earth Syst. Sci	yes	https://doi.org/10.5194/nhess-20-243-2020	Scientific Publication
Nature-Based Solutions—Concept, Evaluation, and Governance	Lupp, g., Zingraff-Hamed, A	Sustainability	?	https://doi.org/10.3390/su13063012	Scientific Publication
Non-structural flood management in European rural mountain areas – Are scientists supporting implementation?	Conitz, F.; Zingraff-Hamed, A.; Lupp, G.; Pauleit S.	Hydrology	?	https://doi.org/10.3390/hydrology8040167	Scientific Publication
Platform Dedicated to Nature - Based Solutions for Risk Reduction and Environmental Issues in Hilly and Mountainous Lands	Baills, A., Garcin, M., Bernardie, S.	Sustainability	yes	https://doi.org/10.3390/su13031094	Scientific Publication
Policy Business Forum – Synthesis of the meeting March 24th, 2020	Scolobig, A; Martin, J.; Bayer, J.-	n.a.	No	https://phusicos.eu/wp-content/uploads/2020/06/PBF1_Synthesis.pdf	Report
Stakeholder Mapping to Co-Create Nature-Based Solutions: Who is on Board?	ingraffHamed et al. (also from PHUSICOS Gerd Lupp, Amy Oen, Stephan Pauleit)	Sustainability	yes	doi:10.3390/su12208625	Scientific Publication

Title	Authors	Title of the Journal / Proc. / Book	Peer-reviewed	DOI	Type
Stakeholder perceptions of Nature-Based solutions and their collaborative co-design and implementation processes in rural mountain areas – A case study from PHUSICOS	Lupp, G.; Huang, J.J.; Zingraff-Hamed, A.; Oen, A.; Del Sepia, N.; Martinelli, A.; Lucchesi, M.; Wulff-Kuntsen, T.; Olson, M.; Frisli Fjøsne, T.; Balaguer, E.-M.; Arauzo, I.; Solheim, A.; Kalsnes, B.; Pauleit, S.	Frontiers in Environmental Science	?	10.3389/fenvs.2021.678446	Scientific Publication
The knowledge transfer potential of online data pools on nature-based solutions	Schröter et al. (from PHUSICOS ZingraffHamed A.)	Science of The Total Environment	yes	https://doi.org/10.1016/j.scitotenv.2020.143074	Scientific Publication
Urban Stream and Wetland Restoration in the Global South—A DPSIR Analysis	Wantzen et al. (from PHUSICOS Aude Zingraff Hamed)	Sustainability	yes	https://doi.org/10.3390/su11184975	Scientific Publication

Appendix B

PHUSICOS Deliverables Status

List current as of 18 December 2022

Deliverable (No. and title)	WP	Lead Beneficiary	Type	Dissemination level	Due Date (month)	Status	Delivery
D1.1. Minutes of PHUSICOS Kick-off Meeting	1	NGI	Report	Public	3	submitted	Accepted
D1.2. Data Management Plan, version 1	1	NGI	ORDP	Confidential	6	submitted	Accepted
D1.3. Project Management Plan, ver. 1	1	NGI	Report	Confidential	6	submitted	Accepted
D1.4. Progress Report 1	1	NGI	Report	Confidential	11	submitted	Accepted
D1.5. Innovation Management Plan	1	NGI	Report	Public	12	submitted	Accepted
D1.6. Data Management Plan, version 2	1	NGI	ORDP	Confidential	18	submitted	Accepted
D1.7. Project Management Plan, ver. 2	1	NGI	Report	Confidential	18	submitted	Accepted
D1.8. Impact Evaluation Report	1	NGI	Report	Confidential	24	submitted	Accepted
D1.9. Progress Report 2	1	NGI	Report	Confidential	29	submitted	Accepted
D1.10. Data Management Plan, version 3	1	NGI	ORDP	Confidential	36	submitted	Accepted
D1.11. Project Management Plan, ver. 3	1	NGI	Report	Confidential	36	submitted	Accepted
D2.1. Procedure for distribution of funds and tenders	2	NGI	Report		6	submitted	Accepted
D2.2. Overview of submitted and approved NBSs for implementation during months 1-14	2	NGI	Report	Public	15	submitted	Accepted
D2.3. Overview of submitted and approved NBSs for implementation during months 15-24	2	NGI	Report	Public	25	submitted	Accepted
D2.4. Nature-based solutions implemented in PHUSICOS	2	NGI	DEM	Public	48		
D3.1. Guiding framework to tailored Living Labs establishment at concept and demonstrator case study sites	3	TUM	Report	Public	3	submitted	Accepted
D3.2. Starter Toolbox for Stakeholder knowledge mapping to co-design NBS solutions at case study sites	3	TUM	Report	Public	6	submitted	Accepted

Deliverable (No. and title)	WP	Lead Beneficiary	Type	Dissemination level	Due Date (month)	Status	Delivery
D3.3 Monitoring & Evaluation scheme to assess stakeholder participation and user satisfaction with Living Labs experience, version 1	3	TUM	Report	Public	12	submitted	Accepted
D3.4 Monitoring & Evaluation scheme to assess stakeholder participation and user satisfaction with Living Labs experience, version 2	3	TUM	Report	Public	24	submitted	Accepted
D3.5 Report on lessons learned with Living Labs experience and lesson learned, draft	3	TUM	Report	Public	29	submitted	Accepted
D3.6 Monitoring & Evaluation scheme to assess stakeholder participation and user satisfaction with Living Labs experience, version 3	3		Report		36		
D3.7 Report on lessons learned with Living Labs experience and lesson learned	3		Report		48		
D4.1 Comprehensive Framework for NBS assessment	4	UNINA	Report	Public	12	submitted	Accepted
D4.2 Evaluation of ecosystems and ecosystem services for alternative landscape scenarios with plan designs, draft	4	UNINA	Report	Public	21	submitted	
D4.3 Integrated digital shared database/platform for monitoring and early warning	4	UNINA	Report	Public	24	submitted	Accepted
D4.4 Modelling changing pattern of hazard and risk and identifying the return period of the extreme events that the NBSs could safely withstand	4	UNINA	other	Public	30	submitted	Accepted
D4.5 Evaluation of ecosystems and ecosystem services for alternative landscape scenarios with plan designs	4	UNINA	Report	Public	42	submitted	Accepted
D4.6 Analysis report on the residual risk, comparing NBSs, grey solutions and other risk reduction measures	4		Report		48		
D5.1 NBS in-depth case study analysis of the characteristics of successful governance models; accompanied by a Policy Brief	5	IIASA	Report	Public	18	submitted	Accepted

Deliverable (No. and title)	WP	Lead Beneficiary	Type	Dissemination level	Due Date (month)	Status	Delivery
D5.2 Opportunities and barriers to NBS at the EU, national, regional and local scales, with suggested reforms and innovations	5		Report		34		
D5.3 Governance innovations for the design, financing and implementation of NBS, and their applications to the concept and demonstration projects; accompanied by a Policy Brief	5		Report		48		
D6.1 Training programme on costs and risks of NBSs – webinar with training material	6	Innlandet County	DEC	Public	36	submitted	Accepted
D6.2 Training video for local contractors	6		DEC		42		
D6.3 The PHUSICOS game – A Complex Social-Ecological Simulation on NBS, with facilitation instructions and materials	6	IASA	other	Public	48	submitted	Accepted
D7.1 Web-based tool – module 1 (Inventory of NBSs)	7	BRGM	other	Public	12	submitted	Accepted
D7.2 Web-based tool – module 2 (Existing web-based platforms)	7	BRGM	other	Public	24	submitted	Accepted
D7.3 Web-based tool – module 3 (Design)	7	BRGM	other	Public	40	Submitted	
D7.4 Web-based tool – module 4 (Longterm su	7		other		48		
D8.1 Website	8	NGI	DEC	Public	1	submitted	Accepted
D8.2 Dissemination and Communication Plan, version 1	8	NGI	Report	Public	2	submitted	Accepted
D8.3 Slideshow to promote sustainable NBSs	8		other		17	?	
D8.4 Dissemination and Communication Plan, version 2	8	NGI	Report	Public	18	submitted	Accepted
D8.5 Dissemination and Communication Plan, version 3	8		Report		36		
D8.6 Exploitation Plan	8		Report		36		
D8.7 Plan for Mainstreaming NBSs in Europe - Innovative approaches to reduce risks	8		Report		48		
D8.8 NBS Strategy Testament	8		Report		48		

Appendix C

Exploitation Actions Table WP1 to WP8 and X-WP

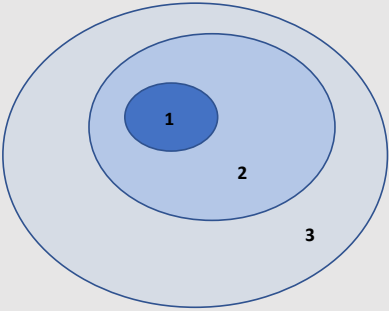
WP # Title of WP (lead)											
Description of the innovation	Leading partner	Action to be taken <i>(an innovation can have one or several actions)</i>	What is the intended contribution or practical effect of the action	Time scale for implementing	Scale of reach	Utilization arena		Target Stakeholder group	Status		
						Tier	Category				
Provide a short description of the innovation. Merge cells if several actions are planned. Each innovation may have 1 or several actions	NGI and UNINA <i>(for example)</i>	Action 1. For example, publish in a journal.	Document the research results in a peer reviewed journal	End of PHUSICOS	PHUSICOS	1	Scientific publications	<input checked="" type="checkbox"/>	Experts	<input checked="" type="checkbox"/>	Done
					Local		Popular publications		Companies		
					Regional	2	Education and training		Authorities		Started
					National		Research collaboration		Lobbyists		
					International	3	Commercial exploitation	<input checked="" type="checkbox"/>	Citizens		To do
					Not relevant		Marketing / other		Other		
	NGI	Action 2. For example, publicize via social media	Create general public aw	2	PHUSICOS	1	Scientific publications		Experts		Done
					Local		Popular publications		Companies		
					Regional	2	Education and training	<input checked="" type="checkbox"/>	Authorities		Started
					National		Research collaboration	<input checked="" type="checkbox"/>	Lobbyists	<input checked="" type="checkbox"/>	
					International	3	Commercial exploitation		Citizens	<input checked="" type="checkbox"/>	To do
					Not relevant		Marketing / other	<input checked="" type="checkbox"/>	Other		
For convenience: I have included blank sections so that additional actions can be easily added. You can also insert new sections as needed. Don't worry about format, just content. We will sort out formatting later.					PHUSICOS	1	Scientific publications		Experts		Done
					Local		Popular publications		Companies		
					Regional	2	Education and training		Authorities		Started
					National		Research collaboration		Lobbyists		
					International	3	Commercial exploitation		Citizens		To do
					Not relevant		Marketing / other		Other		
					PHUSICOS	1	Scientific publications		Experts		Done
					Local		Popular publications		Companies		
					Regional	2	Education and training		Authorities		Started
					National		Research collaboration		Lobbyists		
					International	3	Commercial exploitation		Citizens		To do
					Not relevant		Marketing / other		Other		
					PHUSICOS	1	Scientific publications		Experts		Done
					Local		Popular publications		Companies		
					Regional	2	Education and training		Authorities		Started
					National		Research collaboration		Lobbyists		
					International	3	Commercial exploitation		Citizens		To do
					Not relevant		Marketing / other		Other		
					PHUSICOS	1	Scientific publications		Experts		Done
					Local		Popular publications		Companies		
					Regional	2	Education and training		Authorities		Started
					National		Research collaboration		Lobbyists		
					International	3	Commercial exploitation		Citizens		To do
					Not relevant		Marketing / other		Other		

Put an x in the box and it will turn blue.
You can choose as many

Tier: This refers to the relation to PHUSICOS

Tier 1: PHUSICOS project partners and sub-contractors on demonstration sites.
Tier 2: Other organisations who are expected to have direct interested in the PHUSICOS activities, like other research organisations working with climate change adaptation

Tier 3: third parties who may have some kind of general interest in the results, like private persons, government organisations or officials not directly working with climate etc. (basically interested persons, but no specific application or use for the information at this time)



WP 1 Project admin (NGI)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena			Target Stakeholder group	Status
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category			
<p>Innovation Management plan: Tables presenting the overall vision for upscaling innovations, interested stakeholders, scale of reached, and a more specific presentation of goals and actions that may be taken within PHUSICOS</p>	<p>Publish in PHUSICOS deliverable, upload as D1.5</p>	<p>Outline the expectations regarding the innovations resulting from PHUSICOS</p>	<p>During PHUSICOS</p>	PHUSICOS	1	Scientific publications	Experts	Done		
				Local		Popular publications	Companies			
				Regional	2	Education and training	Authorities	Started		
				National		Research collaboration	Lobbyists			
				International	3	Commercial exploitation	Citizens	To do		
				Not relevant		Marketing / other	Other			
					PHUSICOS	1	Scientific publications	Experts	Done	
					Local		Popular publications	Companies		
					Regional	2	Education and training	Authorities	Started	
					National		Research collaboration	Lobbyists		
					International	3	Commercial exploitation	Citizens	To do	
					Not relevant		Marketing / other	Other		
				PHUSICOS	1	Scientific publications	Experts	Done		
				Local		Popular publications	Companies			
				Regional	2	Education and training	Authorities	Started		
				National		Research collaboration	Lobbyists			
				International	3	Commercial exploitation	Citizens	To do		
				Not relevant		Marketing / other	Other			

WP 2 Case study sites (NGI)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena		Target Stakeholder group	Status			
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category					
<p>specific technical issues or details related to implementing of demonstrator NBS: demonstrate viability and up-scalability of nature-inspired solutions for reducing the risk of extreme weather events in rural mountain landscapes.</p>	<p>Publish in PHUSICOS deliverable, upload as D2.4</p>	<p>Document the implementation of NBS in PHUSICOS</p>	<p>During PHUSICOS</p>	PHUSICOS	<input checked="" type="checkbox"/>	1	Scientific publications	<input checked="" type="checkbox"/>	Experts	<input checked="" type="checkbox"/>	Done	<input checked="" type="checkbox"/>
				Local			Popular publications		Companies			
				Regional		2	Education and training		Authorities		Started	
				National			Research collaboration		Lobbyists			
				International		3	Commercial exploitation		Citizens		To do	
				Not relevant			Marketing / other		Other			
	<p>Make description of the innovation available for others, by uploading in OPPLA marketplace</p>	<p>Dissemination</p>	<p>During PHUSICOS</p>	PHUSICOS		1	Scientific publications		Experts		Done	
				Local			Popular publications		Companies			
				Regional		2	Education and training		Authorities		Started	
				National			Research collaboration		Lobbyists			
				International	<input checked="" type="checkbox"/>	3	Commercial exploitation		Citizens		To do	
				Not relevant			Marketing / other		Other			
	<p>Disseminate success stories, via social media</p>	<p>Dissemination</p>	<p>During PHUSICOS</p>	PHUSICOS		1	Scientific publications		Experts		Done	
				Local			Popular publications		Companies			
				Regional		2	Education and training		Authorities		Started	
				National			Research collaboration		Lobbyists			
				International		3	Commercial exploitation		Citizens		To do	
				Not relevant			Marketing / other		Other			
	<p>Identify specific innovations developed at case sites</p>		<p>During PHUSICOS</p>	PHUSICOS		1	Scientific publications		Experts		Done	
				Local			Popular publications		Companies			
Regional					2	Education and training		Authorities		Started		
National						Research collaboration		Lobbyists				
International					3	Commercial exploitation		Citizens		To do		
Not relevant						Marketing / other		Other				
			PHUSICOS		1	Scientific publications		Experts		Done		
			Local			Popular publications		Companies				
			Regional		2	Education and training		Authorities		Started		
			National			Research collaboration		Lobbyists				
			International		3	Commercial exploitation		Citizens		To do		
			Not relevant			Marketing / other		Other				

WP 2 Case study sites (NGI)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena		Target Stakeholder group	Status	
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category			
Identification and removal of barriers for implementation of NBS		Scientific publication on barriers experienced in the PHUSICOS Project. Done as: (reference)	Dissemination	During PHUSICOS	PHUSICOS	1	Scientific publications	Experts	Done	
					Local		Popular publications	Companies		
					Regional	2	Education and training	Authorities	Started	
					National		Research collaboration	Lobbyists		
					International	3	Commercial exploitation	Citizens	To do	
	Not relevant	Marketing / other	Other							
						PHUSICOS	1	Scientific publications	Experts	Done
						Local		Popular publications	Companies	
						Regional	2	Education and training	Authorities	Started
						National		Research collaboration	Lobbyists	
International						3	Commercial exploitation	Citizens	To do	
Not relevant	Marketing / other	Other								
Developing new forms for cooperation and interaction between companies					PHUSICOS	1	Scientific publications	Experts	Done	
					Local		Popular publications	Companies		
					Regional	2	Education and training	Authorities	Started	
					National		Research collaboration	Lobbyists		
					International	3	Commercial exploitation	Citizens	To do	
	Not relevant	Marketing / other	Other							
						PHUSICOS	1	Scientific publications	Experts	Done
						Local		Popular publications	Companies	
						Regional	2	Education and training	Authorities	Started
						National		Research collaboration	Lobbyists	
International						3	Commercial exploitation	Citizens	To do	
Not relevant	Marketing / other	Other								

WP 3 Service innovation (TUM)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena			Target Stakeholder group	Status				
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category							
Establishment of Living Labs: Framework for Tailored Living Lab Establishment at Concept and Demonstrator Case Study Site	Publish in PHUSICOS deliverable, upload as D3.1	Document the methodology	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	X	Experts	X	Done	X	
				Local	X			Popular publications		Companies	X			
				Regional		2		Education and training		Authorities	X	Started		
				National				Research collaboration	X	Lobbyists				
				International	X	3		Commercial exploitation		Citizens		To do		
	Not relevant		Marketing / other		Other									
	Engaging a diverse range of stakeholders through a Living Labs approach				PHUSICOS	X	1		Scientific publications	X	Experts		Done	X
					Local	X			Popular publications		Companies			
					Regional	X	2		Education and training		Authorities		Started	
					National				Research collaboration	X	Lobbyists			
					International	X	3		Commercial exploitation		Citizens		To do	
	Not relevant		Marketing / other		Other									
					PHUSICOS		1		Scientific publications		Experts		Done	
					Local				Popular publications		Companies			
					Regional		2		Education and training		Authorities		Started	
National						Research collaboration				Lobbyists				
International						3		Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other		Other										
co-design for case study sites	Publish in PHUSICOS deliverable, upload as D3.2	Toolbox for Stakeholder knowledge mapping, to co-design NBS solutions at case study sites	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	X	Experts	X	Done	X	
				Local	X			Popular publications		Companies	X			
				Regional	X	2		Education and training		Authorities	X	Started		
				National	X			Research collaboration	X	Lobbyists	X			
				International	X	3		Commercial exploitation		Citizens	X	To do		
	Not relevant		Marketing / other		Other									
	Make toolbox and methodology available for others to implement by uploading in OPPLA marketplace:	Share toolbox to make it easier to use the methodology by others. Comment: Work in TF6, experience and materials contribute to handbook, decision tool and other materials elaborated	During PHUSICOS	PHUSICOS		1		Scientific publications		Experts	X	Done		
				Local				Popular publications		Companies				
				Regional		2	X	Education and training	X	Authorities	X	Started	X	
				National				Research collaboration	X	Lobbyists	X			
				International	X	3		Commercial exploitation		Citizens		To do		
	Not relevant		Marketing / other		Other									
					PHUSICOS		1		Scientific publications		Experts		Done	
					Local				Popular publications		Companies			
					Regional		2		Education and training		Authorities		Started	
National						Research collaboration				Lobbyists				
International						3		Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other		Other										

WP 3 Service innovation (TUM)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena			Target Stakeholder group	Status			
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category						
Scheme for monitoring and evaluating stakeholder participation and user satisfaction for the living lab experiences	Publish in PHUSICOS deliverable, upload as D3.3 and D3.4	Document the methodology	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	X	Experts	X	Done	X
				Local	X			Popular publications		Companies			
				Regional		2		Education and training		Authorities	X	Started	
				National				Research collaboration		Lobbyists	X		
				International	X	3		Commercial exploitation		Citizens		To do	
				Not relevant				Marketing / other		Other			
	Scientific publication on stakeholder perceptions of Nature-Based solutions and their collaborative co-design . Scientific publication on stakeholder perceptions of Nature-Based solutions and their collaborative co-design .	Dissemination. Done as: (reference) doi: 10.3389/fenvs.2021.678446, Comment: Work in TF6, experience and materials contribute to handbook, decision tool and other materials elaborated	During PHUSICOS	PHUSICOS		1		Scientific publications	X	Experts	X	Done	X
				Local				Popular publications		Companies			
				Regional		2	X	Education and training		Authorities	X	Started	
				National				Research collaboration		Lobbyists			
				International	X	3		Commercial exploitation		Citizens		To do	
				Not relevant				Marketing / other		Other			
	Make scheme available for others to implement by uploading and documenting in OPPLA marketplace	Dissemination. Comment: Work in TF6, experience and materials contribute to handbook, decision tool and other materials elaborated		PHUSICOS		1		Scientific publications	X	Experts	X	Done	
				Local				Popular publications	X	Companies	X		
				Regional		2	X	Education and training	X	Authorities	X	Started	X
National					Research collaboration			X	Lobbyists	X			
International				X	3		Commercial exploitation		Citizens		To do		
Not relevant							Marketing / other		Other				

WP 4 Technical Innovation (UNINA)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena			Target Stakeholder group	Status				
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category							
<p>Framework assessment tool: a methodological framework for NBSs assessment is outlined and some tools to support decision-making are established.</p>	UNINA	Publish in PHUSICOS deliverable, upload as D4.1	Document the methodology	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	X	Experts	X	Done	X
					Local				Popular publications		Companies			
					Regional		2	X	Education and training		Authorities		Started	
					National				Research collaboration		Lobbyists			
					International		3	X	Commercial exploitation		Citizens		To do	
					Not relevant				Marketing / other		Other			
	UNINA	Scientific publication demonstrating the application of the tool. Done as: (reference)	Disseminate the methodology. under review in Journal of Environmental Planning and Management Journal; AQUA—Water Infrastructure, Ecosystems and Society	During PHUSICOS	PHUSICOS		1	X	Scientific publications	X	Experts	X	Done	X
					Local					Popular publications		Companies		
					Regional		2	X	Education and training		Authorities		Started	
					National				Research collaboration		Lobbyists			
					International	X	3	X	Commercial exploitation		Citizens		To do	
					Not relevant				Marketing / other		Other			
	UNINA	Make spreadsheet available for others to implement by uploading and documenting in OPPLA marketplace	Share practical spreadsheet tool to make it easier to use the assessment tool by others	During PHUSICOS	PHUSICOS		1	X	Scientific publications		Experts	X	Done	
					Local					Popular publications		Companies		
					Regional		2	X	Education and training		Authorities		Started	
					National				Research collaboration	X	Lobbyists			
International						3	X	Commercial exploitation		Citizens		To do	X	
Not relevant								Marketing / other		Other				
				PHUSICOS		1	X	Scientific publications		Experts		Done		
				Local					Popular publications		Companies			
				Regional		2	X	Education and training		Authorities		Started		
				National				Research collaboration		Lobbyists				
				International		3	X	Commercial exploitation		Citizens		To do		
				Not relevant				Marketing / other		Other				
<p>Database/platform for monitoring and early warning: guidelines and recommendations for detailed planning, procurement, and deployment of monitoring systems of NBSs</p>	BRGM	Published in PHUSICOS deliverable, uploaded as D4.3	Integrated digital shared database/platform for monitoring and early warning	During PHUSICOS	PHUSICOS		1	X	Scientific publications		Experts	X	Done	X
					Local					Popular publications		Companies		
					Regional		2	X	Education and training		Authorities	X	Started	
	National	X	Research collaboration		Lobbyists									
	International		3	X	Commercial exploitation		Citizens		To do					
	Not relevant				Marketing / other		Other							
	BRGM	Summary of database, available for others by uploading on OPPLA marketplace	Dissemination	During PHUSICOS	PHUSICOS		1	X	Scientific publications		Experts	X	Done	
					Local					Popular publications		Companies		
					Regional		2	X	Education and training		Authorities		Started	
National		Research collaboration	X	Lobbyists										
International	X	3	X	Commercial exploitation		Citizens		To do	X					
Not relevant				Marketing / other		Other								
				PHUSICOS		1	X	Scientific publications		Experts		Done		
				Local					Popular publications		Companies			
				Regional		2	X	Education and training		Authorities		Started		
				National				Research collaboration		Lobbyists				
				International		3	X	Commercial exploitation		Citizens		To do		
				Not relevant				Marketing / other		Other				
					PHUSICOS	X	1	X	Scientific publications	X	Experts	X	Done	X

WP 4 Technical Innovation (UNINA)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena		Target Stakeholder group	Status		
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category				
<p>Methods for developing hazard and risk maps to illustrate flood patterns and landslides for different climate scenarios: aims to assess the effectiveness of nature- based solutions (NBS) in reducing risks at the three demonstrator cases of the project by implementing numerical modelling and analyses to produce the hazard maps for threats of interest, with and without NBS implementation, and for different climatic scenarios</p>	UNINA	Published in PHUSICOS deliverable, uploaded as D4.4	Document methodology	During PHUSICOS	Local	1	Popular publications	Companies	Done		
					Regional	2	Education and training	Authorities	X	Started	
					National		Research collaboration	Lobbyists			
					International	3	Commercial exploitation	Citizens		To do	
			Marketing / other	Other							
	UNINA	Make methodology for risk map production and progressive updating available for others to implement by uploading and documenting in OPPLA marketplace	Dissemination	During PHUSICOS	PHUSICOS	1	Scientific publications	Experts	X	Done	
					Local		Popular publications	Companies			
					Regional	2	X	Education and training	Authorities	X	Started
					National		Research collaboration	X	Lobbyists		
					International	3	X	Commercial exploitation	Citizens		To do
	Not relevant	Marketing / other	Other								
	UNINA	Scientific publication demonstrating the application of the tool.	DISSEMINATION: published in Agricultural Water Management and Environmental Sciences Proceedings journals	During PHUSICOS	PHUSICOS	1	Scientific publications	X	Experts	X	Done
Local					Popular publications		Companies	X			
Regional					2	X	Education and training	Authorities	X	Started	
National						Research collaboration	Lobbyists				
International					3	X	Commercial exploitation	Citizens		To do	
Not relevant	Marketing / other	Other									

WP 4 Technical Innovation (UNINA)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena			Target Stakeholder group	Status		
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category					
Methods for Evaluating ecosystems and ecosystem services for alternative landscape scenarios with plan designs	CREAF	Make methodology for ecosystem/services assessment available for others to implement by uploading and documenting in OPPLA marketplace	Dissemination		PHUSICOS	1		Scientific publications	Experts	<input checked="" type="checkbox"/>	Done	
					Local			Popular publications	Companies	<input type="checkbox"/>		
					Regional	2	<input checked="" type="checkbox"/>	Education and training	Authorities	<input checked="" type="checkbox"/>	Started	
					National			Research collaboration	Lobbyists	<input checked="" type="checkbox"/>		
					International	3		Commercial exploitation	Citizens	<input type="checkbox"/>	To do	<input checked="" type="checkbox"/>
	Not relevant	Marketing / other	Other	<input type="checkbox"/>								
	CREAF	Publish in PHUSICOS deliverable, upload as D4.2 and D4.5	Evaluation of ecosystems and ecosystem services for alternative landscape scenarios with plan designs, draft	During PHUSICOS	PHUSICOS	1	<input checked="" type="checkbox"/>	Scientific publications	Experts	<input checked="" type="checkbox"/>	Done	<input checked="" type="checkbox"/>
					Local			Popular publications	Companies	<input type="checkbox"/>		
					Regional	2		Education and training	Authorities	<input type="checkbox"/>	Started	
					National			Research collaboration	Lobbyists	<input type="checkbox"/>		
International					3		Commercial exploitation	Citizens	<input type="checkbox"/>	To do		
Not relevant	Marketing / other	Other	<input type="checkbox"/>									

WP 5 Governance innovation (IIASA)

Description of the innovation	Leading Partner	Action to be taken	What is the intended contribution or practical effect of the action	Time scale for implementing	Scale of reach		Utilization arena		Target Stakeholder group	Status					
					Tier	Category									
NBS in-depth case study analysis of the characteristics of successful governance models: overview of governance frameworks that have enabled the initiation, planning, design, and implementation of NBS across three successful NBS cases	IIASA & Uni Ge	Published in PHUSICOS deliverable, uploaded as D5.1	Document the governance models	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	X	Experts	X	Done	X	
					Local				Popular publications		Companies				
					Regional		2		Education and training		Authorities	X	Started		
					National				Research collaboration		Lobbyists				
					International	X	3		Commercial exploitation		Citizens		To do		
					Not relevant				Marketing / other		Other				
	IIASA & Uni Ge	Make summary of case study analysis, publish on relevant platforms e.g. OPPLA Marketplace	Dissemination	Dissemination	During PHUSICOS	PHUSICOS		1		Scientific publications		Experts	X	Done	
						Local				Popular publications		Companies			
						Regional		2	X	Education and training		Authorities	X	Started	X
						National				Research collaboration	X	Lobbyists			
						International	X	3		Commercial exploitation		Citizens		To do	
						Not relevant				Marketing / other		Other			
	IIASA	Published as peer-reviewed article in <i>Sustainability</i>	Dissemination, document the research results in a peer reviewed journal	Dissemination, document the research results in a peer reviewed journal	During PHUSICOS	PHUSICOS	X	1		Scientific publications	X	Experts	X	Done	X
						Local				Popular publications		Companies			
						Regional		2	X	Education and training		Authorities	X	Started	
						National				Research collaboration		Lobbyists			
						International	X	3		Commercial exploitation		Citizens		To do	
						Not relevant				Marketing / other		Other			
	IIASA & Uni Ge	Published as Policy Brief	Dissemination, Document the research results in a policy brief	Dissemination, Document the research results in a policy brief	During PHUSICOS	PHUSICOS	X	1		Scientific publications	X	Experts	X	Done	X
						Local				Popular publications		Companies			
Regional							2	X	Education and training		Authorities	X	Started		
National									Research collaboration		Lobbyists				
International						X	3		Commercial exploitation		Citizens		To do		
Not relevant									Marketing / other		Other				
IIASA & Uni Ge	Wolong case published in UNDRR GAR 2022	Dissemination, document the research results in global assessment	Dissemination, document the research results in global assessment	During PHUSICOS	PHUSICOS		1		Scientific publications	X	Experts	X	Done	X	
					Local				Popular publications		Companies				
					Regional		2	X	Education and training		Authorities		Started		
					National				Research collaboration	X	Lobbyists				
					International	X	3		Commercial exploitation		Citizens		To do		
					Not relevant				Marketing / other		Other				

WP 5 Governance innovation (IIASA)

Description of the innovation	Leading Partner	Action to be taken	What is the intended contribution or practical effect of the action	Time scale for implementing	Scale of reach		Utilization arena		Target Stakeholder group	Status				
					Tier	Category	Tier	Category		Done	X			
IIASA & Uni Ge	Published as peer-reviewed article in <i>Climate Risk Management</i>	Dissemination, document the research results in a peer reviewed journal	During PHUSICOS	PHUSICOS	X	1	Scientific publications	X	Experts	X	Done	X		
				Local			Popular publications		Companies					
				Regional		2	X	Education and training		Authorities	X	Started		
				National			Research collaboration		Lobbyists					
				International	X	3		Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other		Other										
Uni Ge	Published as book chapter in <i>Scienza, politica e società: l'approccio post-normale in teoria e nelle pratiche</i>	Dissemination, document the research results in a book	During PHUSICOS	PHUSICOS	X	1	Scientific publications	X	Experts	X	Done	X		
				Local			Popular publications		Companies					
				Regional		2	X	Education and training		Authorities	X	Started		
				National			Research collaboration	X	Lobbyists					
				International	X	3		Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other		Other										
IIASA	Published as peer-reviewed article in <i>Risk Analysis</i>	Dissemination, document the research results in a peer reviewed journal	During PHUSICOS	PHUSICOS	X	1	Scientific publications	X	Experts	X	Done	X		
				Local			Popular publications		Companies					
				Regional	X	2	X	Education and training		Authorities		Started		
				National	X		Research collaboration		Lobbyists					
				International		3		Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other		Other										
IIASA	Published as scientific report in <i>The World in 2050</i>	Dissemination, document the research results in a scientific report	During PHUSICOS	PHUSICOS	X	1	Scientific publications	X	Experts	X	Done	X		
				Local			Popular publications		Companies					
				Regional		2		Education and training		Authorities		Started		
				National	X		Research collaboration	X	Lobbyists					
				International	X	3	X	Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other		Other										
UNIGE	Upload to Adaptation at Altitude on-line portal	Dissemination, education	During PHUSICOS	PHUSICOS		1	Scientific publications		Experts	X	Done	X		
				Local			Popular publications	X	Companies					
				Regional		2	X	Education and training	X	Authorities		Started		
				National			Research collaboration	X	Lobbyists					
				International	X	3		Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other		Other										
Opportunities and barriers to NBS at the EU, national, regional, and local scales, with suggested reforms and innovations	IIASA & Uni Ge	Published in PHUSICOS deliverable, uploaded as D5.2	Document the research results	During PHUSICOS	PHUSICOS		1	X	Scientific publications	X	Experts	X	Done	
					Local	X		Popular publications		Companies				
					Regional	X	2		Education and training		Authorities	X	Started	X
					National	X		Research collaboration		Lobbyists	X			
					International		3		Commercial exploitation		Citizens	X	To do	
Not relevant		Marketing / other		Other										
IIASA & Uni Ge	Create separate info documents/flyers/policy briefs for major innovations or suggestion for reform.	Document the research results in a policy brief	During PHUSICOS	PHUSICOS		1		Scientific publications		Experts	X	Done		
				Local			Popular publications		Companies					
				Regional		2	X	Education and training		Authorities	X	Started	X	
				National	X		Research collaboration		Lobbyists					
				International	X	3		Commercial exploitation		Citizens		To do		
Not relevant		Marketing / other	X	Other										
					PHUSICOS	X	1	X	Scientific publications	X	Experts	X	Done	
					Local			Popular publications		Companies	X			

WP 5 Governance innovation (IIASA)

Description of the innovation	Leading Partner	Action to be taken	What is the intended contribution or practical effect of the action	Time scale for implementing	Scale of reach		Utilization arena		Target Stakeholder group		Status		
							Tier	Category					
Governance innovations for the design, financing, and implementation of NBS, and their	IIASA & Uni Ge	Published in PHUSICOS deliverable, uploaded as D5.3	Document the research results in a project report	During PHUSICOS	Regional		2	Education and training	Authorities	X	Started	X	
					National			Research collaboration	Lobbyists				
					International		3	Commercial exploitation	Citizens		To do		
					Not relevant			Marketing / other	Other				
	UNIGE	Submitted in a peer-reviewed journal, Regional Environmental Change	Dissemination, document the results in a peer-reviewed journal	During or immediately after PHUSICOS	PHUSICOS	X	1	Scientific publications	X	Experts	X	Done	X
					Local	X		Popular publications	Companies				
					Regional		2	X	Education and training	Authorities	X	Started	
					National			Research collaboration	Lobbyists				
					International		3		Commercial exploitation	Citizens		To do	
					Not relevant			Marketing / other	Other				
	UNIGE	Submitted as book chapter	Dissemination, document the results in a book	During PHUSICOS	PHUSICOS	X	1	Scientific publications	X	Experts	X	Done	X
					Local	X		Popular publications	Companies				
					Regional		2	X	Education and training	Authorities	X	Started	
					National			Research collaboration	Lobbyists				
					International		3		Commercial exploitation	Citizens		To do	
Not relevant						Marketing / other		Other					
UNIGE	Submitted as Master Thesis	Dissemination, education	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	Experts	X	Done	X	
				Local	X		Popular publications	X	Companies				
				Regional		2		Education and training	X	Authorities		Started	
				National			Research collaboration	Lobbyists					
				International		3		Commercial exploitation	Citizens		To do		
				Not relevant			Marketing / other	Other					
Propose new ideas for policy, governance and finance innovation and discuss them with key stakeholders at the Policy Business Forum	IIASA & Uni Ge	Policy Business Forum 1, focus on governance innovation	Share NBS knowledge, learn from representatives of the public and private sectors, raise awareness, conduct research	During PHUSICOS	PHUSICOS	X	1	Scientific publications	Experts	X	Done	X	
					Local			Popular publications	X	Companies			X
					Regional		2		Education and training	X	Authorities	X	Started
					National	X		Research collaboration	X	Lobbyists			
					International	X	3	X	Commercial exploitation	Citizens		To do	
	Not relevant		Marketing / other	Other									
	IIASA & Uni Ge	Policy Business Forum 2, focus on the role of public and private sector	Share NBS knowledge, learn from representatives from the public and private sector, raise awareness, conduct research	During PHUSICOS	PHUSICOS	X	1	Scientific publications	Experts	X	Done	X	
					Local			Popular publications	X	Companies			X
					Regional		2		Education and training	X	Authorities	X	Started
					National	X		Research collaboration	X	Lobbyists			
					International	X	3	X	Commercial exploitation	Citizens		To do	
	Not relevant		Marketing / other	Other									
	IIASA & Uni Ge	Policy Business Forum 3, focus on private sector upscaling and capacity building	Share NBS knowledge, learn from representatives from the public and private sector, raise awareness, collaborate with NetworkNature, conduct research	During PHUSICOS	PHUSICOS	X	1	Scientific publications	Experts	X	Done	X	
					Local			Popular publications	X	Companies			X
					Regional		2		Education and training	X	Authorities	X	Started
National					X	Research collaboration		X	Lobbyists				
International					X	3	X	Commercial exploitation	Citizens		To do		
Not relevant		Marketing / other	Other										
				Draft manuscript	PHUSICOS	X	1	Scientific publications	X	Experts	X	Done	
					Local			Popular publications		Companies	X		

WP 5 Governance innovation (IIASA)

Description of the innovation	Leading Partner	Action to be taken	What is the intended contribution or practical effect of the action	Time scale for implementing	Scale of reach		Utilization arena		Target Stakeholder group	Status			
							Tier	Category					
	UNIGE	Published as peer-reviewed article	Document the Policy Business Forum results in a peer-reviewed journal	during PHUSICOS, publication after	Regional	2	x	Education and training	Authorities	x	Started		
					National			x	Research collaboration			Lobbyists	
					International	3		Commercial exploitation	Citizens		To do		
					Not relevant			Marketing / other	Other				
D5.4: Learning from NBS implementation barriers	IIASA & Uni Ge	Published in PHUSICOS deliverable, uploaded as D5.4	Document the results		PHUSICOS	1	x	Scientific publications	x	Experts	x	Done	
					Local			x	Popular publications	Companies	x		
					Regional	2		Education and training	Authorities	x	Started		
					National			x	Research collaboration	Lobbyists			
					International	3		Commercial exploitation	Citizens		To do		
					Not relevant			Marketing / other	Other				
	IIASA & Uni Ge	Published as Policy Brief	Document the results in a policy brief	During PHUSICOS		PHUSICOS	1		Scientific publications		Experts	x	Done
						Local			x	Popular publications	Companies	x	
						Regional	2	x	Education and training	Authorities	x	Started	
						National			x	Research collaboration	Lobbyists		
						International	3		Commercial exploitation	Citizens		To do	
						Not relevant			Marketing / other	x			Other
IIASA	Published as peer-reviewed article	Document the results in a peer-reviewed journal	Draft manuscript during PHUSICOS, publication after		PHUSICOS	1		Scientific publications	x	Experts	x	Done	
					Local			x	Popular publications	Companies	x		
					Regional	2	x	Education and training	Authorities	x	Started		
					National			x	Research collaboration	Lobbyists			
					International	3		Commercial exploitation	Citizens		To do		
					Not relevant			Marketing / other	Other				
Opportunities and barriers to NBS at the EU, national, regional, and local scales, with suggested reforms and innovations	IIASA	Published as peer-reviewed article	Document the results in a peer-reviewed journal	After PHUSICOS	PHUSICOS	1		Scientific publications	x	Experts	x	Done	
					Local			x	Popular publications	Companies			
					Regional	2	x	Education and training	Authorities	x	Started		
					National			x	Research collaboration	Lobbyists			
					International	3		Commercial exploitation	Citizens		To do		
					Not relevant			Marketing / other	Other				

WP 6 Learning Arena Innovation (Innlandet County)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena		Target Stakeholder group	Status				
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category						
<p>Training program and associated materials regarding costs and risks of NBSs. Webinars, video etc. are envisioned.</p>	<p>Published in PHUSICOS deliverable, uploaded as D6.1/D6.2</p>	<p>To further develop the understanding of NBS among local authorities and decision-makers</p>	<p>During PHUSICOS</p>	PHUSICOS	1	X	Scientific publications	Experts	Done	X			
				Local			Popular publications	Companies					
				Regional	2	X	Education and training	X	Authorities	X	Started		
				National			Research collaboration		Lobbyists				
				International	3	X	Commercial exploitation	X	Citizens		To do		
				Not relevant			Marketing / other		Other				
	<p>Create concise summary of the training materials and videos and uploading it to OPPLA marketplace</p>	<p>Dissemination</p>	<p>During PHUSICOS</p>	PHUSICOS	1	X	Scientific publications	Experts	X	Done			
				Local			Popular publications	Companies	X				
				Regional	2	X	Education and training		Authorities	X	Started		
				National			Research collaboration	X	Lobbyists				
				International	3	X	Commercial exploitation		Citizens		To do	X	
				Not relevant			Marketing / other		Other				
				PHUSICOS	1		Scientific publications	Experts		Done			
				Local			Popular publications	Companies					
				Regional	2		Education and training		Authorities		Started		
				National			Research collaboration		Lobbyists				
				International	3		Commercial exploitation		Citizens		To do		
				Not relevant			Marketing / other		Other				
		<p>Published in PHUSICOS deliverable, uploaded as D6.3</p>	<p>Document methodology</p>	<p>During PHUSICOS</p>	PHUSICOS	1	X	Scientific publications	Experts		Done		
					Local			Popular publications	Companies	X			
					Regional	2	X	Education and training	X	Authorities	X	Started	
					National			Research collaboration		Lobbyists			
					International	3	X	Commercial exploitation		Citizens	X	To do	X
					Not relevant			Marketing / other		Other			
				PHUSICOS	1		Scientific publications	Experts		Done			
				Local			Popular publications	Companies					
				Regional	2		Education and training		Authorities		Started		
				National			Research collaboration		Lobbyists				
				International	3		Commercial exploitation		Citizens		To do		
				Not relevant			Marketing / other		Other				

WP 7 Product Innovation (BRGM)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena			Target Stakeholder group	Status		
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category					
A PHUSICOS web-based tool for demonstrating and maintaining data for NBSs and populating this with data	Published in PHUSICOS deliverable, uploaded as D7.1	Establishing the structure and identifying metadata for the evidence base and data platform	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	X	Experts	Done	X
				Local				Popular publications		Companies		
				Regional		2		Education and training		Authorities	Started	
				National				Research collaboration		Lobbyists		
				International		3		Commercial exploitation		Citizens	To do	
				Not relevant				Marketing / other		Other		X
	Published in PHUSICOS deliverable, uploaded as D7.3	Present the design concepts	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications	X	Experts	Done	
				Local				Popular publications		Companies		
				Regional		2		Education and training		Authorities	Started	X
				National				Research collaboration		Lobbyists		
				International		3		Commercial exploitation		Citizens	To do	
				Not relevant				Marketing / other		Other		X
	Published in PHUSICOS deliverable, uploaded as D7.4	Develop a strategy for managing the PHUSICOS database beyond the end of the project or porting the database to another data management system.	During PHUSICOS	PHUSICOS	X	1	X	Scientific publications		Experts	Done	
				Local				Popular publications		Companies		
				Regional		2		Education and training		Authorities	Started	
				National				Research collaboration		Lobbyists		
				International		3		Commercial exploitation		Citizens	To do	X
				Not relevant				Marketing / other	X	Other		
	Dissemination through social media				PHUSICOS	X	1		Scientific publications		Experts	Done
					Local				Popular publications		Companies	
					Regional		2		Education and training		Authorities	Started
					National				Research collaboration		Lobbyists	
					International		3		Commercial exploitation		Citizens	To do
					Not relevant				Marketing / other		Other	
Some sort of marketing (publications, workshops...etc.)			During PHUSICOS	PHUSICOS		1		Scientific publications		Experts	Done	
				Local				Popular publications		Companies		
				Regional		2		Education and training		Authorities	Started	
				National				Research collaboration		Lobbyists		
				International		3		Commercial exploitation		Citizens	To do	
				Not relevant				Marketing / other		Other		

WP 7 Product Innovation (BRGM)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena		Target Stakeholder group	Status	
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category			
The collection of data itself as created by the PHUSICOS project.				During PHUSICOS	PHUSICOS	1	Scientific publications	Experts	Done	
					Local		Popular publications	Companies		
					Regional	2	Education and training	Authorities	Started	
					National		Research collaboration	Lobbyists		
					International	3	Commercial exploitation	Citizens	To do	
	Not relevant	Marketing / other	Other							
						PHUSICOS	1	Scientific publications	Experts	Done
						Local		Popular publications	Companies	
						Regional	2	Education and training	Authorities	Started
						National		Research collaboration	Lobbyists	
International						3	Commercial exploitation	Citizens	To do	
Not relevant	Marketing / other	Other								

WP 8 Dissemination and communication (NGI)

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena		Target Stakeholder group	Status		
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category				
<p>Webpage: contributes to the external communication of PHUSICOS, to include information about the project and will also link to existing projects and portals on nature based solutions</p>	<p>Published in PHUSICOS deliverable, uploaded as D8.1</p>	<p>Document the webpage</p>	<p>During PHUSICOS</p>	PHUSICOS	1	X	Scientific publications	Experts	X	Done	X
				Local			X	Popular publications	X		
				Regional	2	X	Education and training	X	Authorities	X	Started
				National			Research collaboration	Lobbyists			
				International			Commercial exploitation	Citizens	X		
	Not relevant	3		Marketing / other	X	Other		To do			
					PHUSICOS	1		Scientific publications	Experts		Done
					Local			Popular publications	Companies		
					Regional	2		Education and training	Authorities		Started
				National	Research collaboration			Lobbyists			
				International	3		Commercial exploitation	Citizens		To do	
				Not relevant			Marketing / other	Other			
				PHUSICOS	1		Scientific publications	Experts		Done	
				Local			Popular publications	Companies			
				Regional	2		Education and training	Authorities		Started	
				National			Research collaboration	Lobbyists			
				International	3		Commercial exploitation	Citizens		To do	
				Not relevant			Marketing / other	Other			

Cross-workpackage innovations

Description of the innovation	Partner responsible for the action	Actions to be taken to support exploitation of the innovation				Utilization arena		Target Stakeholder group	Status	
		Short description	What is the intended contribution or practical effect?	Time scale for implementing	Scale of reach	Tier	Category			
					PHUSICOS	1	Scientific publications	Experts	Done	
					Local		Popular publications	Companies		
					Regional	2	Education and training	Authorities	Started	
					National		Research collaboration	Lobbyists		
					International	3	Commercial exploitation	Citizens	To do	
	Not relevant	Marketing / other	Other							
						PHUSICOS	1	Scientific publications	Experts	Done
						Local		Popular publications	Companies	
						Regional	2	Education and training	Authorities	Started
						National		Research collaboration	Lobbyists	
International						3	Commercial exploitation	Citizens	To do	
Not relevant	Marketing / other	Other								
					PHUSICOS	1	Scientific publications	Experts	Done	
					Local		Popular publications	Companies		
					Regional	2	Education and training	Authorities	Started	
					National		Research collaboration	Lobbyists		
					International	3	Commercial exploitation	Citizens	To do	
	Not relevant	Marketing / other	Other							
						PHUSICOS	1	Scientific publications	Experts	Done
						Local		Popular publications	Companies	
						Regional	2	Education and training	Authorities	Started
						National		Research collaboration	Lobbyists	
International						3	Commercial exploitation	Citizens	To do	
Not relevant	Marketing / other	Other								



H2020 Project PHUSICOS
Grant Agreement No. 776681