“NAture Insurance value: Assessment and Demonstration”

NAIAD

SC5-09-2016 Operationalising insurance value of ecosystems
Grant Agreement nº 730497

Deliverable 1.3

Conceptual and Demo Roadmap

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The European Commission

EXECUTIVE SUMMARY

This deliverable includes an outline of the Conceptual and Demo roadmap developed for NAIAD. This deliverable was included after the final version of proposal that was submitted to incorporate important and relevant suggestions from the evaluation. This document will provide the basis that will continue to be worked on throughout the project´s duration to provide a clear roadmap that facilitates conceptual coherence, practical implementation and integration of the different elements that make up NAIAD.

CONTENT

1. A conceptual and demo roadmap 5
2. The NAIAD Conceptual Roadmap 6
3. Steps taken based on the NAIAD evaluation report 6
3.1.1. NAIAD Task forces 6
3.1.2. NAIAD Glossary and NAIAD Library 7
3.1.3. NAIAD Working paper Series 9
4. NAIAD Methodological framework 10
5. A common Vision 12
6. NAIAD as a system dynamic 16
7. Exercise 1: NAIAD system dynamic exercise (Valladolid, January 2017 Led by Dr Monica Altamirano and Camilo Benitez) 16
8. Exercise 2: mapping and alignment of tools and methods (Madrid meeting, April 2017 Led by Dr Monica Altamirano) 19
9. Integration task force 20
10. NAIAD Gantt chart and YEd 20
10.1.1. WP Roadmaps 22
11. The NAIAD Demo Roadmap 22
ANNEX 1: NAIAD Glossary 23
ANNEX 2: VISION AND MISSION OF NAIAD (results partners exercise at KOM) 36
ANNEX 3: DEMO POSTERS 38
ANNEX 4: BRAGUE ROADMAP AS EXAMPLE 39

EDITION INFORMATION

Table 1: Versions

VERSION	EDITION DATE	MODIFICATION	WRITTEN BY	CONTROLLED BY
0.1	12-05-2017	FIRST DRAFT EDITION	LOPZ-GUNN E.	
0.2	06-06-2017	SECOND DRAFT OF THE STRUCTURE	ZORRILLA-MIRAS P.	
0.3	06-06-2017	FINAL	ZORRILLA-MIRÁS P, VAY L..	
FINAL	**1-12-2017**	CO REVISION		VAY L. (PM)

1. A CONCEPTUAL AND DEMO ROADMAP

The aim of this document is to develop a conceptual roadmap for the assessment and demonstration of the insurance value of ecosystems, which will be tested in 9 demos across Europe. This roadmap in turn is based on the development of a clearly defined, comprehensive and logical framework for the operationalization of the insurance value of ecosystems.

The conceptual framework is based on the recognition of the multiple roles of ecosystems, which will be integrated and incorporated for the analysis of its insurance value. This framework necessarily relies on the integration of physical, social, institutional and economic aspects to understand the insurance value of ecosystems. It also needs to give due attention to factors that are enablers or, on the contrary, barriers for the uptake of innovative institutional and financial mechanisms to include the insurance value of ecosystems into current practices. In insurance language terms, it focuses on the potential for ex-ante intervention to reduce the damage costs by putting value into ecosystem functions that can reduce risk. This practice encompass a complex interplay between regulatory frameworks, economic incentives, financial resources, viable business models and providers of green infrastructure services to encourage the use and uptake of nature based solutions as part of risk reduction portfolio of measures.

In NAIAD the development of the conceptual framework and its testing and implementation in 9 demos (and potentially sister demos) is heuristically conceived as a methodological Roadmap that takes us from the Insurance Value of Ecosystems (IVE) to the development of so called Natural Assurance Schemes (NAS). In other words, a path that goes from basic research to implementation of results; a transition from research and lessons learnt from demo implementation into evidence based policy making. Success will be partly measured by the ability to develop workable NAS that build on the IVE assessed and tried in the demo sites.

Thus, the project is inherently ambitious and therefore one of the first decisions is how to put adequate boundaries to make the project objectives realistic and viable. NAIAD has chosen to focus on water risks and security, with an emphasis on the integration between blue/green/grey infrastructures. In other words, on increasing the portfolio of available solutions that would complement the current options available with examples based on nature based solutions that are either complementary, or substitute to conventional solutions.

2. THE NAIAD CONCEPTUAL ROADMAP

A number of activities have taken place over the first 6 months to strengthen the NAIAD Conceptual roadmap. These activities were decided based on a number of factors, namely:

a) the comments sent by the evaluation panel of the NAIAD proposal,
b) the outputs from the Kick Off meeting (Valladolid, Jan 2017) and,
c) Conceptual and Demo Roadmap meeting (Madrid, April 2017).

This section summarises the steps taken and future activities planned to continue to strengthen the conceptual analytical framework and its implementation through demos into a NAIAD methodological Roadmap.

3. STEPS TAKEN BASED ON THE NAIAD EVALUATION REPORT

The evaluation report identified a series of areas that needed further development and consideration in the NAIAD project, in particular, greater attention to a number of key concepts that underpin NAIAD, namely: a) the concept of resilience and its operationalisation, b) the robust scientific underpinning and theoretical conceptual foundation of the insurance value of ecosystems, and c) the entrepreneurial state as a concept and its operationalisation.

The overall approach has been to develop three strategies, a) to set up a series of Task forces, b) to elaborate a NAIAD Glossary and NAIAD Library and c) to create what we have called the NAIAD Working Paper series.

3.1.1. NAIAD Task forces

A series of NAIAD Tasks Forces have been set up internally that are focused on specific NAIAD issues that cross the disciplinary boundaries (which correspond to the WP structure). Thus, we have created 8 Task Forces (see table 1). In particular, two have been created to immediately address the evaluator comments: One on resilience, and one of the insurance value of ecosystems. The task force on the entrepreneurial state will be developed later, once the project has advanced a bit more, once the first Institutional Analysis is undertaken in D 3.2. Institutional analysis report: baseline analysis and policy recommendations.

Table 1: NAIAD Task forces created to facilitate integration across Tasks and in depth analysis of specific strategic issues for NAIAD.

Task force	Members	Foreseen Output
Insurance Value of Ecosystems	Jean Marc Tacnet, Guillaume Pitot, Roxanne Marchal, Elena Lopez Gunn, Monica Altamirano, Pedro Zorrilla, Josh Weinberg, Javier Calatrava	Insurance Value Survey NAID Working Papers series 1) Collective paper 2) Applied to France and forests
Resilience	África fe la Hera, Marisol Manzano, Raffaele Giordano, Alessandro Pagano, Pedro Zorrilla, Elena Lopez Gunn and Maria Mañez	Paper on resilience and the insurance value of ecosystems with a particular focus on the ecosystems represented in NAIAD (forests and groundwater)
Hazards and Risks	Miguel Llorente, David Mouncoulon, Mark Mulligan, Peter van der Keur	Guidelines based on INSPIRE on the meaning of risks and hazards for the insurance value of ecosystems
Ethics and data	Laura Vay and one member (IP) per partner	D1.2. Ethics, internal consent forms for use in the different countries, map of applicable laws in the different countries
Integration	Mónica Altamirano, Jean Marc Tacnet,	Exercises undertaken and transversal work to help integrated the different tasks and deliverables (overarching frame)
IVE Platform, ISP, data and Web tool	Nora van Cauwenbergh, Assela Pathirana, Elena Lopez Gunn, Maria Mañez, Zdravko kozinc	Plan for the integration of the ISP, the web, etc into a final visualization tool
Collaborative modelling and Stakeholder engagement	Pedro Zorrilla, Raffaele Giordano, Elena Lopez Gunn, Laura Basco, Monica Altamirano	Collaborative models undertaken in all demo sites
Institutional Analysis		Elena Lopez Gunn, Nora van Cauwenbergh, Monica Altamirano, Marta Rica,

3.1.2. NAIAD Glossary and NAIAD Library

Another activity that has been started and will be continued throughout the Project is to create a series of internal resources that eventually will part of the NAIAD legacy. NAIAD developed a glossary for the proposal submitted. Since then this **NAIAD Glossary** *(See ANNEX 1 for NAIAD Glossary)* has been updated to take into account the following:

a) The glossary is now aligned and makes reference to the terms that have already been defined and are already in use from previous projects. Namely NAIAD will be using terms that have come from projects such as EKLIPSE, Operas, etc.

b) In addition, NAIAD has added terminology that is particularly relevant to our project that comes from the DRR community and from the insurance industry.

Thus in many ways it aims to create a "common language" between these different areas to facilitate the cross fertilisation between CCA (Climate change adaptation), DRR (Disaster risk reduction and Ecosystem services where NAIAD sits. In some ways, NAIAD complements another DRR SC9 project called PLACARD by adding ecosystem services to the DRR/CCA dialogue already under analysis in PLACARD (http://www.placard-network.eu/), which under NAIAD becomes a trialogue.

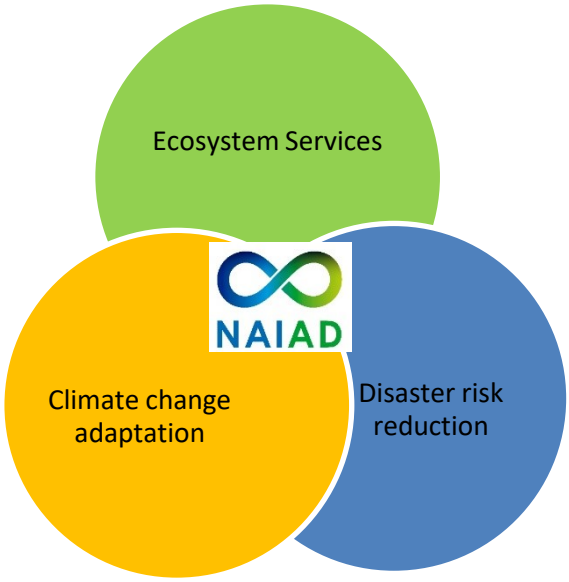


Figure 1: NAIAD Trialogue between Ecosystem services, DRR and CCA (source: own).

In addition to the NAIAD Glossary (appendix 1), NAIAD is also developing a **NAIAD Library** that eventually could serve as basis for the MOOC that will be developed towards the project. The consortium has aligned practices though an internal voting survey to identify Mendeley as the referencing programme to be used internally, and organised according to a number of elements (tags, abstracts, etc.).

In particular and in relation to DRR one of the conclusions from the Madrid meeting is that NAIAD would adopt the terminology from INSPIRE in relation to hazards and risks.

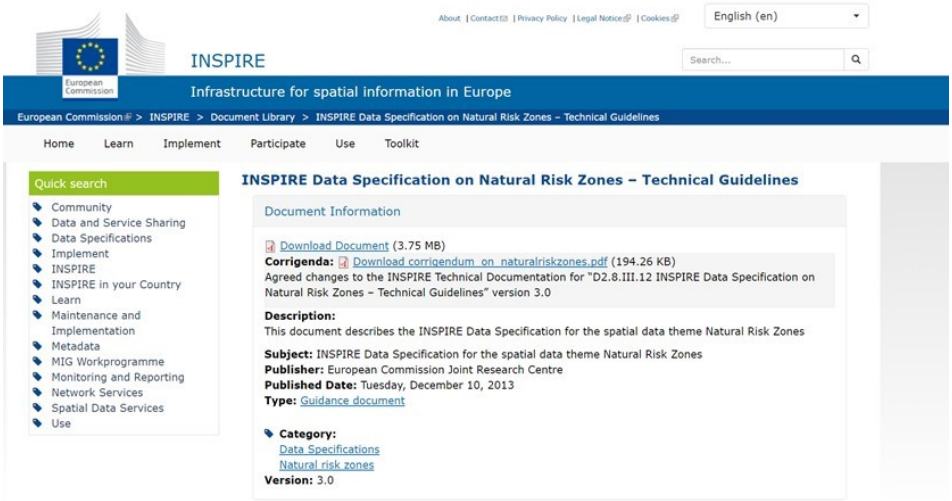


Figure 2: Inspire Technical Guidelines document to be used in NAIAD.

3.1.3. NAIAD Working paper Series

Another activity has been to start a series of so called NAIAD Working Papers. The first NAIAD working paper will be a collective paper where each section is led by the partner expert in the topic, supported by other partners sharing this area of expertise. This serves three purposes: 1) to use and put to value the internal knowledge within the NAIAD consortium, 2) generate a series of products relatively quickly that can facilitate discussion outside the consortium and finally 3) to strengthen internal collaboration between partners in the same area of expertise.

The figure below summarises the first **NAIAD working paper** (led by CHD/ICA) that is already under preparation, that has the added value of supporting the Insurance Value Survey currently under preparation (led by IRSTEA). In the figure below, we summarise the current outline of this first Working Paper with the aim that a first draft will be ready by the end of June and a Final version by the end of July ready to for the first policy dialogue at the end of August (Stockholm Water Week).

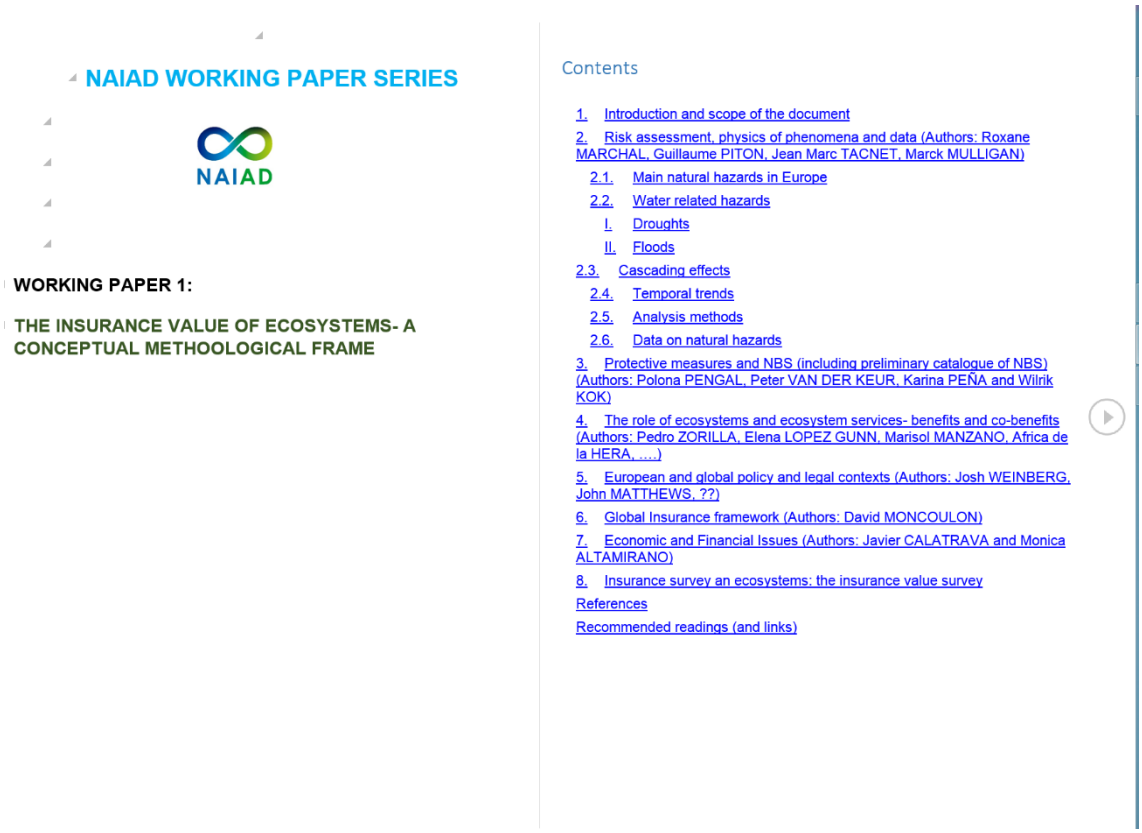


Figure 3: Mock-up of the first NAIAD Working Paper series: No 1: Insurance value of ecosystems.

4. NAIAD METHODOLOGICAL FRAMEWORK

One of the important outputs of NAIAD project will be the development of an assessment framework that can be used for future assessment of nature based solutions for climate adaptation. Nevertheless, we have already a departing point idea about how it can develop, that was stated in the NAIAD proposal and has been updated after the first NAIAD meetings.

The main goal of NAIAD´s methodological approach is to operationalize the insurance value of ecosystems in public and private spheres. It is based on combining two main planning process methodologies, the first based on natural resources management - the Integrated Water Resources Management Planning Cycle and the second based on business case development and financial arrangements, the National Public Investment System (for different infrastructure fields), which

is the normal investment frame for countries. The reason for adopting these two approaches in NAIAD is to ensure a faster uptake of NBS, as part of risk management strategies. This is because NBS would feed directly into the planning context and procedures already followed within these two key arenas of decision making - natural resource planning and investment planning, the core of NAIAD for the insurance value of ecosystems. By combining these generally disconnected decision making processes for resource management planning and (infrastructure) investment plans, NAIAD ensures a holistic approach that takes into account NBS or green infrastructure for DRR solutions, along with traditional grey infrastructure and hybrid variants.

NAIAD methodology has two clear phases:

i) Assessment (phase 1),
ii) Operationalization (phase 2),

Phase 1 - the **assessment component**- includes an analysis of the physical, social, institutional and economic systems. These assessments will in turn provide the scientific basis and evidence for building the strategic phase of the Business Case, the approach followed by most countries in National Public Investment Systems.

The operational steps would be: Mapping physical hazard (flood, inundation, drought, soil erosion and landslide) potential and risk, Mapping insurance-relevant natural capital, Modelling insurance-relevant ecosystem services, Crowdsourcing event data and early warning, Climate, land and ecosystem scenarios, Application and intervention.

Phase 2 - the **operationalization of NAS schemes -** NAIAD focuses on river catchments and in line with the Integrated Water Resource Management (IWRM) cycle, we look at strategic choices. Business models and financial arrangements will be further developed and customized departing from generic business models, as well as financing and economics instruments considered having as high potential of applicability/suitability. We will not work only with insurance companies, but also with insurance beneficiaries, who could benefit from reduced quotes by insurance companies if they adopt adaptation measures.

The assessment needs to be done at multiple scales, from a regional scale, through the catchment scale, and finishing at local scale. This is the way insurance companies work, because regional scenarios need to be taken into account to frame the potential risks, local scale needs to be analysed to evaluate risks and its economic valuation, and catchment scales needs to be taken usually to provide appropriate adaptation measures.

5. A COMMON VISION

The **NAIAD Vision** starts from the content already included in the Grant Agreement and which is summarised in Box 1.

Box 1

NAIAD aims to operationalise the insurance value of ecosystems to reduce the human and economic cost of risks associated with water (floods and drought) by developing and testing - with key insurers and municipalities – the concepts, tools, applications and instruments (business models) necessary for its mainstreaming. NAIAD will do this in detail for 9 demonstration sites (DEMOs) throughout Europe and develop tools and methods applicable and transferable across all of Europe.

NAIAD will contribute to providing a robust framework for assessing insurance value for ecosystem services by (i) enabling full operationalization through improved understanding of ecosystem functionality and its insurance value at a broad range of scales in both urban and rural context; (ii) making explicit the links between ecosystem values and social risk perception; and (iii) the application of developed methods and tools in water management by relevant stakeholders, especially businesses, public authorities and utilities.

Indeed one of the identified Milestones is the NAIAD Vision, where it states in the GA:

> **Milestones** *A number of actions are planned in the Kick off meeting so as to create an overall common vision from the start of the project. The means of verification will be the delivery of the meeting minutes to all partners and NAIAD Project Officer (M6) (emphasis added)*

During the Kick off meeting, an exercise was undertaken during the WP Leaders day (January 2017) to start to develop a common project vision (see Box 2. For the description of the methodology followed and Table 2 for the results obtained).

Box 2: World Café with WP leaders on NAIAD Vision (Valladolid, Jan 2017)

Rotation of the same group that spends 15 minutes in each of the key questions for NAIAD Vision

- **Who?** By guiding the team to describe the audience for NAS and NAIAD, you help clarify the target groups and ensure that the language used is intended for that audience.

- **What?** By describing what NAS is, you spell out some of the look and feel questions that accompany every project effort.
- **When?** This question begins the process of project scheduling by illuminating time expectations regarding the project. It also helps us dig into our expectations by defining the circumstances in which NAIAD (and NAS) would be used.
- **Where?** This question helps the team articulate the scope of the project. For instance, will the NAS be used by everyone, or only some specific groups? In some specific areas
- **Why?** This is the most critical question to answer. Why would end users and stakeholders make the painful effort to change their existing habits and migrate to NAS? This question is also expanded to explain why you are developing NAS as opposed to other approaches that some stakeholders may champion.

Table 2. Result of the NAIAD Vision exercise.

Question	Responses from the groups

WHY	Information gap that needs to be filled = to **demonstrate that NAS can be better than grey infrastructure**
	- To *find clear evidence of the long term benefits* (both physical and financial)
	- To **bring new solutions** to the dark tunnel of traditional grey solutions that are not working.
	  - Example from Philadelphia, where NBS benefits were 3/4 times bigger than with traditional solutions.
	  - Existing solutions (grey inf.) do not work: we are seeing currently they are expensive, inflexible, damaging and UGLY! In danger with climate change.
	- To **build the case for investors** - Fill the gap between science and policy
	- It is a win-win solution
	"NAS are mainly more sustainable: resilience, co-benefits, less invasive, less reversibility costs, lower initial costs, improve biodiversity (a safer world), mitigate risks, low maintenance costs on the long term, cost/benefit analysis is positive, adaptability to changes (climate change), useful for social (intangible) benefits, taking into account all the consequences (holistic analysis). (these items could be used as indicators to measure a successful NBS)"
	- For private sector: **NAS could reduce costs**
	- For people: it could **increases co-benefits**
	- For governments: **NAS create a framework where governments can outsource the risks to the private sector and still implement policies**.

	We are **not developing new solutions (NBS), we are looking at existing solutions and valuing them.** We should bring stakeholders to comment on them.
WHAT	***NATURAL ASSURANCE SCHEMES…*** "Investing in nature to increase resilience and to reduce risk in a PPP (public, private, people partnership) coordinated action" "brings innovative thinking regarding current NBS and grey infrastructure solutions, more equity in distribution of costs and benefits and thinking on insurance in a broader perspective, not so commercial" "further discussion needed on the difference between insurance and assurance" **NAS must be FEEST (financially, economically, environmental and socially timely)** NAS: Worry free in a beautiful way Some groups **focused on restoring and preserving ecosystem functionality and services, others on financing and role of insurance companies, public authorities** Key issues: its a nature based solutions, assurance related to functionality of the system, scheme relates to coordination of all this (private companies may "buy the risk", public authorities may subsidize nature investments")
WHO	*FOR THE OPERATIONALISATION OF NATURAL ASSURANCE SCHEMES, WE SHOULD NOT FOCUS ON A SPECIFIC AUDIENCE* **Three audiences** identified: 1. INSURANCE industry (companies/reassurance/financers)+ UTILITIES + (engineering companies) 2. WATER AGENCIES (catchment level) + LOCAL AUTHORITIES also RISK MANAGERS 3. PEOPLE: Safety perception is the key factor for local communities. This audience is not so important as the other two: they could be followers of insurance/utilities or trust in local governments GOAL: identify agents of change for each of three sectors Target all 3 audiences although with well-defined approaches for each. In addition the policy level is considered as relevant KEY CHALLENGE: demonstrate RELIABILITY + COST-EFFECTIVENESS of NBS. Add NBS to the portfolio of agents dealing with Risk Reduction currently using GI and promoting new incentives
WHERE	KEY WORDS Multiple scale and scale consistency e.g. Catchment level… no need to restrict ourselves to administrative boundaries … eventually upscale Insurance is a global actor- be aware and also that investors and finance community awake to new risks- affect global capital flows Municipalities are key! + windows of opportunity End users also determine "where" Good baselines and data of current conditions Identify areas where NBS is a possibility- NAS "fertile ground" = overlay scale and exposure to hazards, damage costs, possible NBS, acceptance or appetite for NBS *Internal: Grid of demos and expertise*; *Expert Support groups*; *Analysis of needs*

In addition to the WP Leaders World Café exercise, feedback was collected at the KOM from all the partners on the "Vision and Mission of NAIAD" exercise which results are included in ANNEX 2.

One of the important elements that came out of the KOM was to identify the insurance sectors as a key strategic actor. Thus, NAIAD has to make a special effort to engage with the insurance industry, with systematic and coherent interactions. Thus, specific attention will be paid to the insurance sector in a concerted manner and with a coherent message. The idea of a planned and coordinated approach that builds up over time as the project evolves and there are preliminary results is fundamental. Table 3 summarises the interactions with the insurance sector that have already taken place and those that are planned in a gradual way to interact with the insurance sector

Table 3. Activities related to Insurance Companies (source: Progress Report M1-6)

Meeting	Type of Meeting	Targeted Public	NAIAD Participants	Date	Place
NAIAD-KOM	NAIAD Meeting	NAIAD consortium	All Consortium	30-Jan-17	Valladolid, Spain
IVE Survey Skype	NAIAD Meeting	EU Insurance Companies	IRSTEA, ICA, CHD, GEOECOMAR, BDG, SIWI, ERCE, ISKRIVA, DELTARES, IGME, HZG	14-Mar-17	Skype
IVE Survey planning	NAIAD Meeting	IVE Survey discussion and work plan	HZG, REVIVO, CNR-IRSA, IGME, ICA, AMBIOTEK, GEOECOMAR, GEUS, CCR, IRSTEA, DELTARES	24-Mar-17	Madrid, Spain
Preparation of IICC approach Strategy	NAIAD Meeting	CCR Executive Board and French Insurance Companies	CCR, ICA, CHD	06-Apr-17	Skype
IVE Survey planning	NAIAD Meeting	IVE Survey discussion and work plan		24-Apr-17	Madrid, Spain

Guy Carpenter	Congress	European Insurance sector	CCR, ICA, CHD	10-Apr-17	Berlin, Germany
Presentation of NAIAD to CCR Executive Board and French Insurance Companies	NAIAD Event	CCR Executive Board and EU Insurance Companies (mainly French)	CCR, ICA, CHD	08-Jun-17	Paris, France
IVE Survey to French Insurance Companies	NAIAD Survey	IVE Survey to French Insurance Companies	IRSTEA	15-Jun-17	France
World Water Week-SIWI	NAIAD Event	EU Policy Makers, Insurance Companies.	CHD, ICA, CCR, SIWI	27-Aug-17	Stockholm, Sweden
I Stakeholders Workshop	NAIAD Event	EU Insurance sector	DEMOs	Nov-17	Europe
NAIAD GA	NAIAD GA	EU Insurance Sector	All Consortium	11-Jan-18	London, UK
Insurance Sector Workshop	NAIAD Event	EU Insurance Sector	CCR, ICA, CHD, etc.	18-May-18	Montpelier, France
II Stakeholders Workshop	NAIAD Event	EU Insurance sector	DEMOs	Jun-18	Europe
III Stakeholders Workshop	NAIAD Event	EU Insurance sector	DEMOs	May-19	Europe

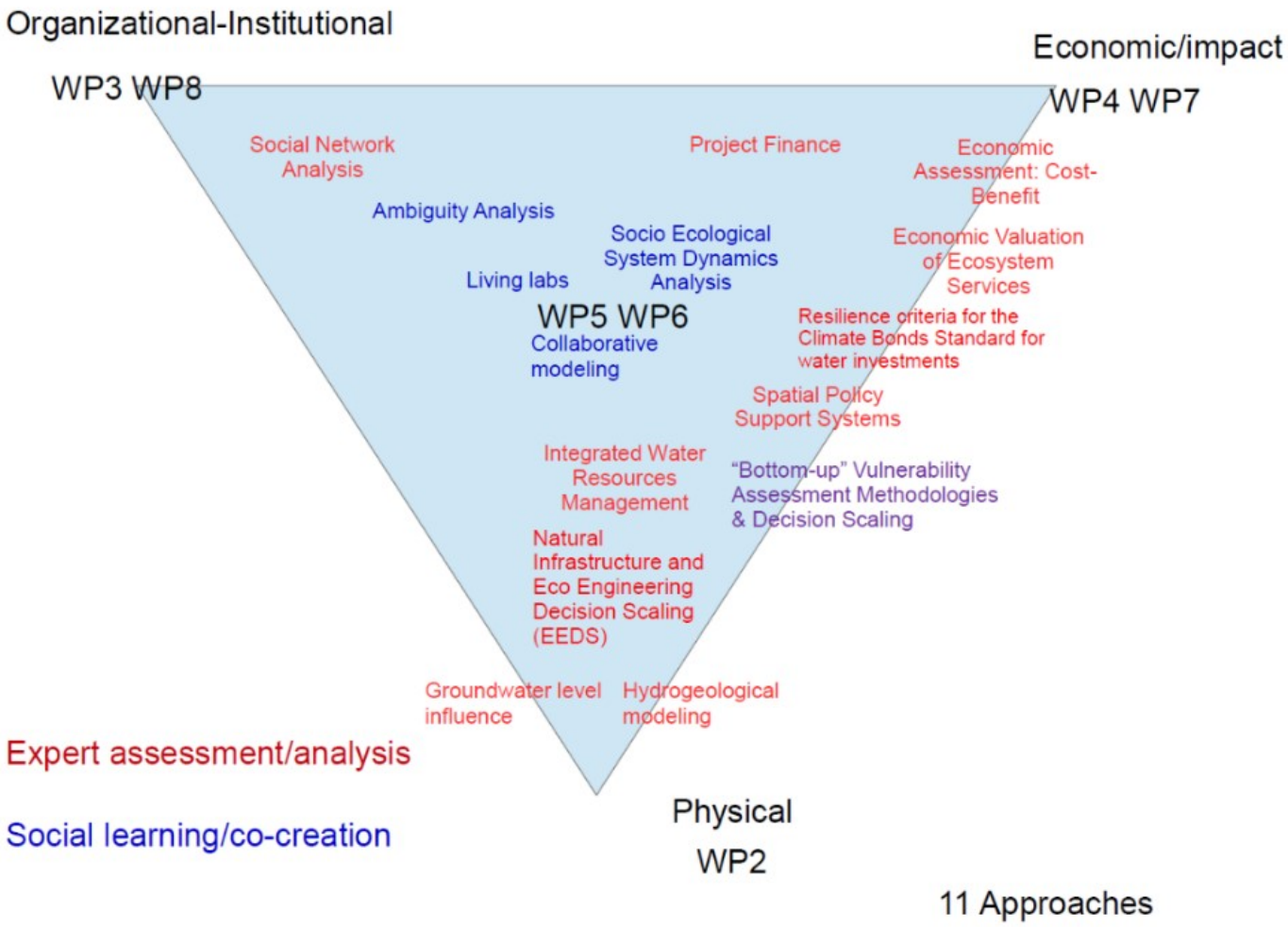
6. NAIAD AS A SYSTEM DYNAMIC

One of the main final elements from NAIAD will be the methodological analytical frame. This relies critically in the successful integration of knowledge and approaches. In order to ensure this integration and eventual transdisciplinary, two exercises have already been carried out (one at the KOM meeting with WP leaders and one at the Madrid Conceptual and demo roadmap workshop).

7. EXERCISE 1: NAIAD SYSTEM DYNAMIC EXERCISE (VALLADOLID, JANUARY 2017 LED BY DR MONICA ALTAMIRANO AND CAMILO BENITEZ)

The results of the exercise are presented below (Figure 4) were a first intake of disciplines, tools, methods and approaches was mapped.

Figure 4: NAIAD Discipline Intake (Jan 2017) (author: Monica Altamirano and Camilo Benitez).



How would NAIAD be a successful project for you?

Relevance

Actually implementing DEMO/ real impact (7/8)

Integrating methodologies/ knowledge (5/8)

Issue to be addressed by NAIAD initiative

Articulating puzzle pieces, learning collective action (2/8)

Link green infra – economic instruments (4/8)
(IVE - NAS)

Water scarcity/protection (1/8)

Problem to be tackled by Natural Based Solution

Water protection (3/8)
Water scarcity (3/8)
Water quality (1/8)
Awareness ecosystem value (1/8)

8. EXERCISE 2: MAPPING AND ALIGNMENT OF TOOLS AND METHODS (MADRID MEETING, APRIL 2017 LED BY DR MONICA ALTAMIRANO)

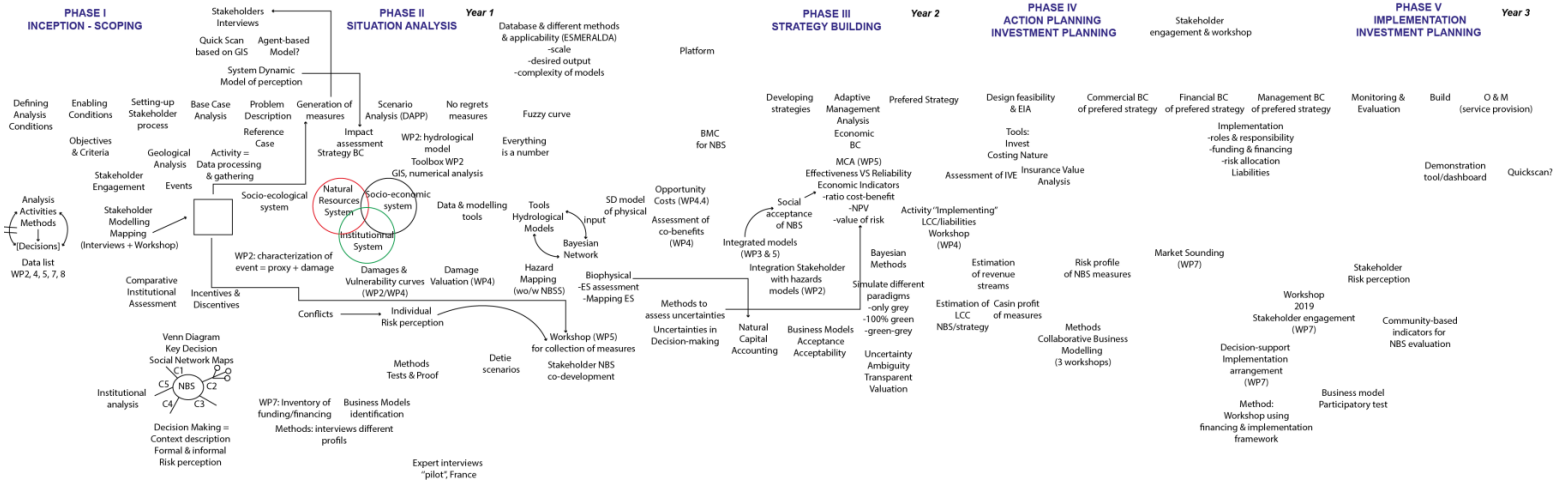


Figure 5: Roadmap exercise run by M Altamirano (DELTARES) and converted by Roxanne Marchal (IRSTEA).

9. INTEGRATION TASK FORCE

An Integration Task force will continue to work on the area of conceiving NAIAD itself as a system dynamic model, to ensure integration of knowledge from the outset. Here there are two activities: a) to continue the mapping of the tools and methods to be used in NAIAD, and b) link this approach to project management to ensure the technical and the management aspects run smoothly.

10. NAIAD GANTT CHART AND YED

To Ensure the support of the technical work with the project management a detailed NAIAD Gantt Chart has been prepared, as well as a graphic representation of the linkages between tasks in NAIAD to try to capitalise on the synergies, e.g. with the potential of joint deliverables and/or progression between deliverables that are in different work packages to ensure alignment and continuity of the work undertaken across WPS and partners work (Figures 6 and 7).

[Gantt]

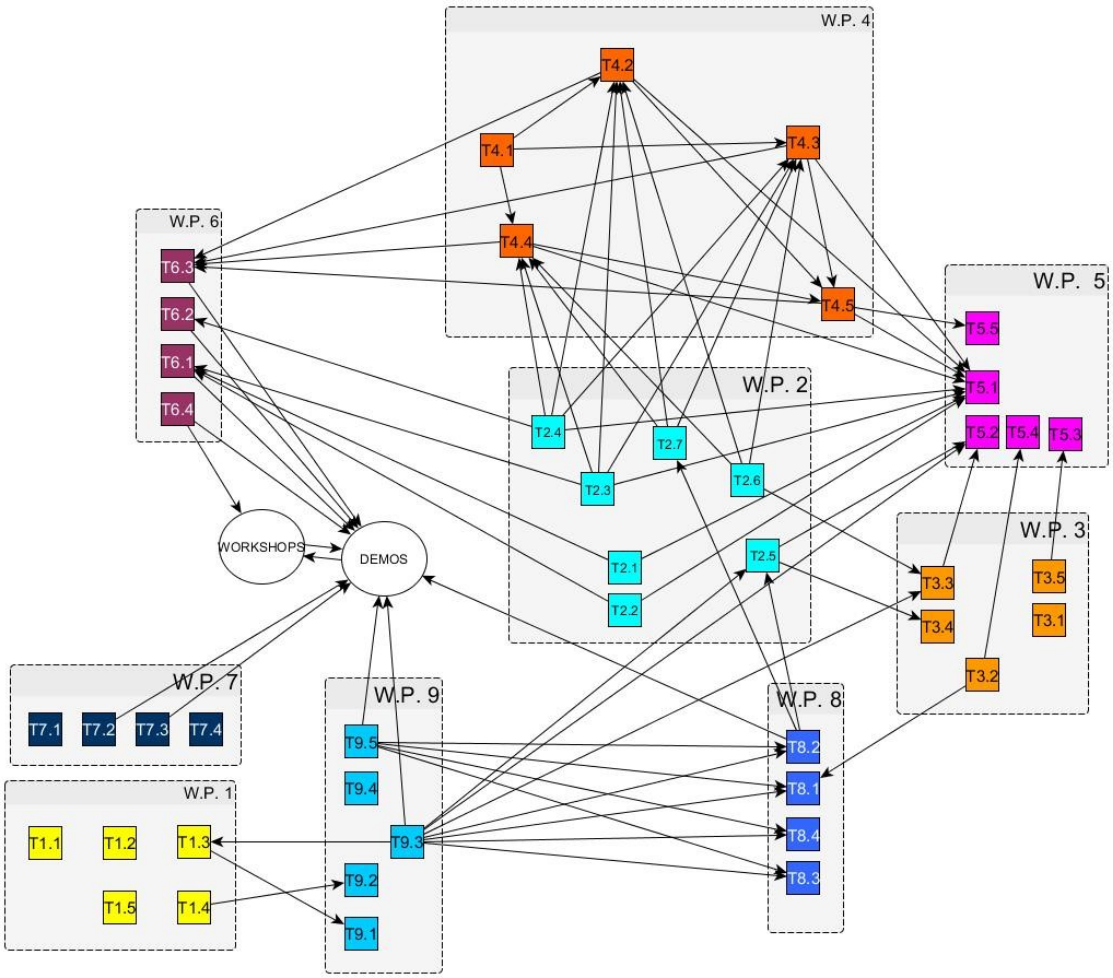


Figure 6: Diagram showing the linkages between tasks in NAIAD to try to capitalise on the synergies.

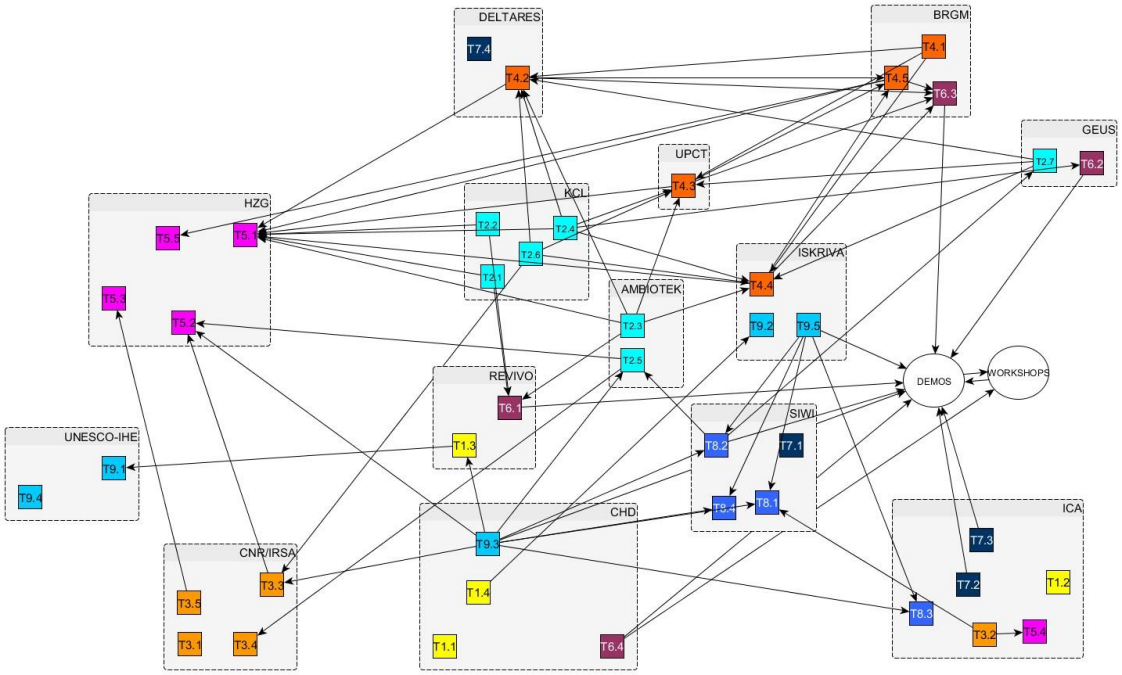


Figure 7: Diagram showing the linkages between partners in NAIAD to try to capitalise on the synergies.

10.1.1. WP Roadmaps

In addition each WP has gone through a double process, first at the KOM each WP had to prepare a detailed document on how tasks etc. would be implemented to be discussed at the KOM to identify as early as possible potential problems, synergies and confirm work programmes. Second, the next meeting was brought forward precisely because a number of issues were identified, particularly the alignment between the WPs and the implementation in the DEMOS. A revised document per WP has now been prepared and uploaded into the NAIAD ISP.

11. THE NAIAD DEMO ROADMAP

One of the strengths but also challenges of the NAIAD Project approach is its clear focus on the use of real life DEMOS. These provide *'living solutions labs',* that are conceptualised as embedded case studies, which gather a range of locally tailored and larger scale nature based solutions. The Demo posters have now been updated (see ANNEX 3). An additional activity by all DEMOS has been to start to produce individual roadmaps linking demos to all tasks activities (see ANNEX 4 for Brague example).

ANNEX 1: NAIAD GLOSSARY

Document in progress to trigger discussion and enhance a common understanding between NAIAD consortium. For that purpose, the addition of new concepts, new definitions and alternative definitions are welcome. Where different definitions and ideas arise between NAIAD consortium, a process will be put in place to try to reach a shared definition.

Adaptation: An adjustment in ecological, social or economic systems in response to observed or expected changes in climatic stimuli and their effects and impacts in order to alleviate adverse impacts of change or take advantage of new opportunities. (Adger et al. (2005), in Eklipse Report).

Adaptation Pathways: An approach that presents sequences of possible actions after various Adaptation Tipping Points are reached in the form of adaptation trees (e.g. like a decision tree or a roadmap).

Adaptive planning: A structured, iterative process of robust decision making in the face of uncertainty, with an aim to reducing uncertainty over time through system monitoring and learning from what is experienced as the future unfolds.

Adaptation Tipping Point: The conditions under which an action no longer meets its clearly specified objectives. The timing of the tipping point is scenario dependent.

Bayesian Networks: is a probabilistic graphical model (a type of statistical model) that represents a set of random variables and their conditional dependencies via a directed acyclic graph (DAG). Bayesian networks (BNs), also known as belief net- works (or Bayes nets for short), belong to the family of probabilistic graphical models (GMs). These graphical structures are used to represent knowledge about an uncertain domain. In particular, each node in the graph represents a random variable, while the edges between the nodes represent probabilistic dependencies among the corresponding random variables. These conditional dependencies in the graph are often estimated by using known statistical and computational methods. Hence, BNs combine principles from graph theory, probability theory, computer science, and statistic. Ben-Gal I., Bayesian Networks, in Ruggeri F., Faltin F. & Kenett R., Encyclopedia of Statistics in Quality & Reliability, Wiley & Sons (2007).

Better Business Case approach includes 5 elements of analysis a) the Strategic Case demonstrates that the proposal is strategically aligned and is supported by a compelling case for change, b) The Economic Case ensures that a wide range of investment options have been evaluated and that the preferred option optimises value for money, c) The Commercial Case ensures that any proposed procurement is commercially attractive and viable, d) The Financial Case demonstrates that the preferred solution is affordable and can be funded, e) The Management Case provides assurance that processes and capabilities are in place to ensure that the preferred solution can be successfully delivered (UK Five Case Model, 2001).

Budget reallocation: A budget allocation is the amount of funding designated to each expenditure line. It designates the maximum amount of funding an organization is willing to spend on a given item or program, and it is a limit that is not to be exceeded by the employee authorized to charge expenses to a particular budget line.

http://smallbusiness.chron.com/budgetary-allocation-31340.html

Budget Reserves: funds that have been organized in the state budget in order to finance foreseen measures without interruption and to ensure financing of newly originating expenditures that cannot be postponed.

http://encyclopedia2.thefreedictionary.com/Budget+Reserves

Business Models: A business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore, we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences. (Clarifying Business Models: Origins, Present, and Future of the Concept by A. Ostenwalder, Y. Pigneur, and C.L. Tucci).

Capital a stock of materials or information that exits at a point in time. Each form of capital stock generates, either autonomously or in conjunction with services from other capitals stocks, a flow of services that may be used to transform material, or the spatial configuration of materials, to enhance the welfare of humans.

Catchment scale water management:

Climate mitigation potential: The potential of reducing GHG emissions (in particular carbon emissions) through the implementation of NBS at different spatial scales, thus contributing to the global challenge of reducing climate change. (Adapted from IPCC (2014), in Eklipse Report).

Climate Resilient Investment A climate-resilient investment is an investment that results from a process where governments, planners and developers integrate climate change in project planning and design, thereby attracting climate finance from relevant sources such as the Green Climate Fund or green bonds. The proper integration of climate change in the planning and design of infrastructure investments may considerably reduce the risk posed by future climate change to the national assets.

Co-benefits: The various benefits that can be provided by a NBS simultaneously over a certain period. (Jiang et al. (2016), in Eklipse Report).

Cost-benefit analysis: The process of quantifying the costs and benefits of a NBS (over a certain period), and those of its alternatives (within the same period), in order to have a single scale of comparison for unbiased evaluation. (Adapted from Atkinson and Mourato (2015), in Eklipse Report).

Coastal floods (storm surge, tsunami)

http://www.livescience.com/23913-flood-facts.html

Coastal flooding occurs along the edges of oceans, and is driven predominantly by storm surges and wave damage. This kind of flooding is usually connected to hurricanes, tsunamis or tropical storms. When low pressures occur in a storm over the ocean, they suck the water toward the center. As long as the eye is over deep water, problems are minimized, but as the storm moves toward land it carries a dome of water that can exceed 25 feet (7.6 meters) in diameter. When the dome reaches the shoreline, it can cause significant damage. At the same time, waves breaking along the shoreline assault beaches and structures, with destructive potential. In a hurricane, 9 out of 10 deaths are caused not by wind but by fast-moving storm surge.

Damage: loss or harm resulting from injury to person, property, or reputation (Merriam-webster). Damage occurs during and immediately after the disaster and is measured in physical units (i.e. square meters of housing, kilometres of roads, etc.). UNISDR_2015_Working background text on Disaster Risk Reduction Terminology_23 October_2015

Degradation of an Ecosystem Service

Reduction in the contribution that an ecosystem service, or bundles of services, makes to human well-being as a result of loss of a stock of natural capital or its condition (capacity) to generate service output.(OpenNESS_Glossary_final).

Demonstration Living Labs (DEMOs): Living labs: are innovation infrastructures within which research organizations collaborate with users and early adopters in creating participative strategies to define, design, develop, and validate new products and services. For this kind of innovation cluster to succeed, it must implement effective practices[1][1]. Research-Technology Management Vol. 56 , Iss. 3,2013

Disaster risk reduction (DRR): The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events. (UNISDR_2009_TerminologyEnglish)

Dynamic Adaptive Policy Pathways: An improved iterative policy analysis process for adaptive planning. The DAPP approach combines Adaptive Policymaking with Adaptation Pathways, and the

[1] EC (2009), Design as a driver of user-centred innovation, Commission Staff Working Document SEC(2009)501 final, European Commission, Brussels, 7 April.

Dell'Era, C., Landoni, P., (2014). Living lab: A methodology between user-centred design and participatory design, Creativity and Innovation Management 23 (2): 137-154

developed plans include a strategic vision of the future, commit to short-term actions, and establish a framework to guide future actions.

Ecological resilience, also called ecological robustness, the ability of an ecosystem to maintain its normal patterns of nutrient cycling and biomass production after being subjected to damage caused by an ecological disturbance. The term resilience is a term that is sometimes used interchangeably with robustness to describe the ability of a system to continue functioning amid and recover from a disturbance.

Economic benefit: The economic advantages of designing and implementing a NBS over a certain period, quantifiable in terms of monetised costs and benefits, including generated cash flows. (Eklipse Report).

Economic cost: The cost of designing and implementing NBS over a certain period. It may include acquisition, management, transaction, damage and opportunity costs. (Naidoo et al. (2006), in Eklipse Report).

Economic instruments are fiscal and other economic incentives and disincentives to incorporate environmental costs and benefits into the budgets of households and enterprises. The objective is to encourage environmentally sound and efficient production and consumption through full-cost pricing. Economic instruments include effluent taxes or charges on pollutants and waste, deposit—refund systems and tradable pollution permits[1]**.**

Ecosystem functions. Biological or system properties of processes of ecosystems.

Ecosystem disservices: Negative contributions of ecosystems to human well-being, including undesired and harmful impacts on the environment, that relate to the generation of ecosystem services. (Potschin et al. (2016) Von Döhren and Haase (2015), in Eklipse Report).

Ecosystem services a) are the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fiber; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling[2]. "Natural hazard regulation" has been acknowledge as one of the services by the Millenium ecosystem assessment. (MEA 2005). B) **Ecosystem services** are the flow of materials, energy, and information from natural capital stocks, which combined with manufactured and human capital services to produce human welfare. C) The contributions of ecosystem structure and function, in combination with other inputs, to human well-being. (Burkhard et al. (2012), in Eklipse Report).

[2] Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC.

ECO: Actuary: a web based spatial policy support system - developed with the insurance industry - for mapping and understanding the biophysical basis for insurance value of natural capital to different stakeholders and events as well as the impacts of land use and climate change upon it.

EEDS: Eco-Engineering Decision Scaling is a methodology for simultaneously assessing climate and other risks for built infrastructure and ecosystems through the use of stakeholder-defined performance metrics. EEDS is considering a "bottom up" risk assessment since it applies problem definitions intrinsic to the system undergoing evaluation, rather than using external data such as climate models (GCMs) in a "top down" application to identify vulnerabilities and risks (Weaver et al. 2012, WIREs Climate Change). Also in contrast to most top-down assessments, EEDS tends to reduce problems identified with high uncertainty by supplementing GCM data with other modelled, projected, and observed data, as well as generally using the full range of GCM models and scenarios with equal weighting. First described in Poff et al. (2016, Nature Climate Change), EEDS expands on the original conception of decision scaling, which was first applied in a climate adaptation project for North America's Lake Superior (Brown et al. 2012, Water Resources Research). EEDS does not reply on economic valuation of ecological attributes but expert- or observer-defined environmental success / failure boundaries to negotiate performance trade-offs with built infrastructure. As such, EEDS can also serve as mechanism for exploring and evaluating green, grey, and hybrid infrastructure options in terms of function.

Environmental sciences (social aspects):

http://www.newagepublishers.com/samplechapter/001281.pdf

The science of Environment studies is a multi-disciplinary science because it comprises various branches of studies like chemistry, physics, medical science, life science, agriculture, public health, sanitary engineering etc. It is the science of physical phenomena in the environment. It studies of the sources, reactions, transport, effect and fate of physical a biological species in the air, water and soil and the effect of from human activity upon these.

The Physical Man The 'Physical Man' is one of the organisms populations or biological community. He is in need of basic elements of the physical environment like habitat (space), air, water and food. Besides, like other biological populations, he releases wastes into the ecosystem.

The Social Man The 'Social Man' performs the following functions:

a) Establishing social institutions,

b) Forming social organisations,

c) Formulating laws, principles and policies,

d) Taking steps to safeguard his existence, interest and social welfare.

The Economic Man

The economic man derives and utilises resources from the physical and biotic environment with his skills and technologies. The economic function makes the man an environment/ geomorphic process as he transports matter and energy from one component of the ecosystem to the other.

There may be any following two situations:

a) His exploitative functions may be in harmony with the natural environment. Such, functions do not necessarily involve change in the working of the ecosystem.

b) These functions may exceed the critical limit. Consequently, the equilibrium of the environment/ecosystem is disturbed and a great number of environment and ecological problems crop up. These are detrimental to man him besides to whole population of human species in a given ecosystem.

Exposure: People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses (UNISDR 2009). EXAMPLE: A hospital is in the affected area (Inspire guidelines).

Financing arrangements:

In the context of project financing, the documents, which provide the project financing and sponsor support for the project as defined in the project contracts. Campbell R. Harvey.A statement outlining the terms of credit between a lender and a borrower. While this may apply to any loan agreement, the term is most commonly used in project finance.

(Farlex Financial Dictionary).

Financing contingency: is a condition that allows the buyer to walk away from a transaction if it is unable to secure financing. Much like the purchase of a home, the financing contingency is in place to protect the buyer from any legal ramifications that may arise if it is unable to close. However, unlike real estate contracts, the financing contingency in a company purchase and sale agreement is not as rigidly defined and has no set date when the contingency is waived.

The financing contingency is usually included in the letter of intent (LOI) which will stipulate the date when financing is expected to be finalized (typically not more than a few days prior to close). Sometimes, the financing contingency may refer to specific terms that need to be in place rather than whether the financing can or cannot be obtained. These terms may include securing a specific rate or amortization schedule to provide for the buyer's return modeled in the target's valuation.

Flash floods (pluvial floods) http://www.livescience.com/23913-flood-facts.html

Flash floods: Water from floods can take time to build up, allowing the population in an area time to be warned in advance. But sometimes flooding occurs quickly. Flash floods gather steam within six hours of the events that spawned them. They are characterized by a rapid rise of fast-moving water. Fast-moving water is extremely dangerous — water moving at 10 miles an hour can exert the same

pressures as wind gusts of 270 mph (434 kph), according to a 2005 article in USA Today. Water moving at 9 feet per second (2.7 meters per second), a common speed for flash floods, can move rocks weighing almost a hundred pounds. Flash floods carry debris that elevate their potential to damage structures and injure people.

Funding alternatives: Alternative Funding

— Revenue or funds received or generated from sources and methods other than the traditional property tax fund. (National Guide to Sustainable Municipal Infrastructure)

Hazard A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR 2009). EXAMPLE: Earthquake hazard. (Inspire guidelines).

Green adaptation' is an application of eco-engineering and aims at adaptation to the pressures of climate change, population growth and economic development, making use of ecosystem services. Ecosystems are able to adapt to changing circumstances and therefore, might be more robust in the light of climate change. The approach has a strong connection to protection and support of local communities and their livelihoods" (Hulsman et. al 2011, 5).

Green Infrastructure The restoration of riparian areas and green space in flood prone urban spaces increases their capacity for water retention and flood prevention. As well as producing a more pleasant environment, green infrastructure also delivers long-term storage of emitted carbon, and is therefore a useful tool for climate change mitigation. Green infrastructure aims to boost the restoration of flood prone areas and provide an alternative, or at least a valuable addition to orthodox, 'grey' methods of flood prevention such as the raising of dykes. Green infrastructure assists climate mitigation and results in a greener environment, which is more attractive for living, recreation and tourism, boosting local economy. However, the social and environmental advantages of green infrastructure are often limited by a misbalanced cost distribution, land use regulations and unawareness about the potential benefits. EU Green Infrastructure: A strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services.

Green space: Urban green space is land within urban areas that is partly or totally covered by vegetation. This includes parks and street trees, as well as urban agricultural and forest land, wastelands, cemeteries and private gardens (including roof gardens). (Breuste et al. (2013); Davies et al. (2015), in Eklipse Report).

Groundwater/waterlogging floods: The waterlogging may be defined as rendering the soil unproductive and infertile due to excessive moisture and creation of anaerobic conditions.(http://www.yourarticlelibrary.com/water/waterlogging/waterlogging-definition-causes-effects-with-statistics/61000/)

Habitat and species restoration and rehabilitation:

Hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR 2009).

EXAMPLE: Earthquake hazard. (INSPIRE: Data specification on Natural Risk Zones)

Insurance value of ecosystems: the value of the sustained capacity of ecosystems to maintain their functioning and production of benefits despite any disturbance; the value of the sustained capacity of ecosystems to reduce risks to human society caused by e.g. climate change related excess precipitation, temperature or by natural disasters (EC 2015).

Market-based Instruments: Instruments of environmental policies in which a change in technology, behaviour or products is encouraged through financial incentives (either subsidies, taxes, price differentiation or market creation).Source: Environmental Programme for the Danube River Basin Glossary

Measure: intervention within the water resources system

N**atural Assurance Schemes**: Denotes a range of financial mechanisms to internalise the insurance value of green infrastructure in the green/grey mix of mitigation against water risks. Natural assurance schemes are defined - with stakeholders - based on locally relevant but EU-wide physical, socio-cultural and economic valuation. They provide the mechanism to finance the mitigation of risks through targeted investment of a proportion of insurance revenues.

Nature based solutions: solutions that are inspired or supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions. "Nature-based solutions are actions which are inspired by, supported by or copied from nature. They have tremendous potential to be energy and resource-efficient and resilient to change, but

to be successful they must be adapted to local conditions. Many nature-based solutions result in multiple co-benefits for health, the economy, society and the environment, and thus they can represent more efficient and cost-effective solutions than more traditional approaches. NBS do not have clear boundaries and may intersect with other policy areas, such as eco-innovation and the bio-economy." (EC 2015).

NBS Effectiveness: The degree to which objectives are achieved and the extent to which targeted problems are solved. In contrast to efficiency, effectiveness is determined without reference to costs. E.g., Does the NBS lead to enhanced climate resilience in the urban area? Does the NBS lead to environmental benefits? Does the NBS lead to social benefits? Does the NBS lead to economic benefits? (Adapted from Oxford Dictionary (2016), in Eklipse Report).

Natural Water Retention Measures: aim at restoring and maintaining water related ecosystems by natural means. They are Green Infrastructures intended to maintain and restore landscape, soils and aquifers in order to improve their natural properties and services. They provide for water flow, water storage and quality regulation, reducing the vulnerability to floods and droughts and favouring climate change adaptation.

Natural capital: is the stock provide by all natural components (soil, geology, water, biodiversity etc.). The economic definition of natural capital is natural assets in their role of providing natural resource inputs and environmental services for economic production[3].

Stakeholders and industry engagement:

"... the process used by an organisation to engage relevant stakeholders for a purpose to achieve accepted outcomes." The AccountAbility 1000 Stakeholder Engagement Standard defines stakeholders as "... those groups who affect and/or could be affected by an organisation's activities, products or services and associated performance. This does not include all those who may have knowledge of or views about the organisation. Organisations will have many stakeholders, each with distinct types and levels of involvement, and often with diverse and sometimes conflicting interests and concerns." (2014 Deloitte & Touche. All rights reserved. Member of Deloitte Touche Tohmatsu Limited)

Strategy: logical combination of measures.

Phenomenon (Natural):

Policy mainstreaming: [Gender mainstreaming Source: General Assembly 52th session. Report of ECOSOC 1997.

"Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality". (El Salvador)].

Project delivery & finance arrangements:

A project delivery method is a system used by an agency or owner for organizing and financing design, construction, operations, and maintenance services for a structure or facility by entering into legal agreements with one or more entities or parties. (Wikipedia)

Finance arrangements: An agreement between a person or company and creditors whereby the person or company pays a fraction of what he/she/it owes to the creditors and, in exchange, the

[3] Source OECD : https://stats.oecd.org/glossary/detail.asp?ID=1730

creditors forgive the remainder of the debt. This helps the creditors recover some of the debt and helps the person or company avoid bankruptcy. Farlex Financial Dictionary

Resilience: a) The ability of a system to cope with change. More specifically, climate resilience can be defined as the capacity for a socio-ecological system to: (1) absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and (2) adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the system, leaving it better prepared for future climate change impacts[4]. (UNISDR)

b) is the capacity of social, economic, and environmental systems to cope with a hazardous event, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation. It has different interpretation according disciplines[5].

Robust: Plans or actions that perform acceptably in a large majority of scenarios.

Risk: is the combination of the consequences of an event (hazard) and the associated likelihood/probability of its occurrence (ISO 31010). EXAMPLE: 10000 People will lose their potable water supply due to earthquakes of magnitude 6 or above with a percentage likelihood[6].

Risk financing:

The determination of how an organization will pay for loss events in the most effective and least costly way possible. Risk financing involves the identification of risks, determining how to finance the risk, and monitoring the effectiveness of the financing technique that is chosen.

http://www.investopedia.com/terms/r/risk-financing.asp#ixzz4hzfwUfLp

Risk management:

The systematic approach and practice of managing uncertainty to minimize potential harm and loss.

Comment: Risk management comprises risk assessment and analysis, and the implementation of strategies and specific actions to control, reduce and transfer risks. It is widely practiced by organizations to minimise risk in investment decisions and to address operational risks such as those of business disruption, production failure, environmental damage, social impacts and damage from

[4] UNISDR definition of resilience

Capacity and Resilience with respect to the incorporation of the infrastructure and physical means and think about creating a link between the definitions of Capacity, Capacity development, Coping capacity and Resilience.

[5] (IPCC, 2014). Climate Change 2014: Impacts, Adaptatio, and Vulnerability

[66] technicals guidelines of INSPIRE on data specification for Natural Risk zones

fire and natural hazards. Risk management is a core issue for sectors such as water supply, energy and agriculture whose production is directly affected by extremes of weather and climate.

Risk modelling:

Risk modelling is about modelling and quantification of risk. For the financial industry, the cases of credit-risk quantifying potential losses due, e.g., to bankruptcy of debtors, or market-risks quantifying potential losses due to negative fluctuations of a portfolio's market value are of particular relevance. Operational risk, quantifying potential losses incurred due to failing processes is a relevant issue for any form of organization.

https://nms.kcl.ac.uk/reimer.kuehn/riskmodeling.html

Risk pool: A separate account established to hold income and expenses and is used when insurance groups come together to combine their premiums and paying out losses, typically used during disasters like floods, hurricanes, and other disasters. Read more: http://www.businessdictionary.com/definition/risk-pool.html

Risk transfer: Risk management strategy in which an insurable risk is shifted to another party (the insurer) by means of an insurance policy.

Read more: http://www.businessdictionary.com/definition/risk-transfer.html

Robustness: A robust strategy can be defined as one that performs well over a very wide range of alternative futures. A familiar example of a robust strategy is portfolio theory as applied in financial investment, which suggests that risk calls for portfolio diversification[7][8].

[8] http://climate-adapt.eea.europa.eu/uncertainty-guidance/topic2

River floods (fluvial floods) http://www.ehow.com/about_6310709_river-flood_.html

A river flood is one of the most common forms of natural disaster. It occurs when a river fills with water beyond its capacity. The surplus water overflows the banks and runs into adjoining low-lying lands. River floods are responsible for the loss of human life and the damage of property.

Sovereign Risk: is the risk that a foreign central bank will alter its foreign exchange regulations, significantly reducing or completely nullifying the value of its foreign exchange contracts. It also includes the risk that a foreign nation will fail to either meet debt repayments or not honour sovereign debt payments. Sovereign Risk

http://www.investopedia.com/terms/s/sovereignrisk.asp#ixzz4hzl1EjDd

Sovereign credit rating is the credit rating of a country or sovereign entity. Sovereign credit ratings give investors insight into the level of risk associated with investing in a particular country and also include political risks. At the request of the country, a credit rating agency will evaluate the country's economic and political environment to determine a representative credit rating. Obtaining a good sovereign credit rating is usually essential for developing countries in order to access funding in international bond markets.

http://www.investopedia.com/terms/s/sovereign-credit-rating.asp#ixzz4hziNqEZ5

Spatial and regional planning: Spatial planning systems refer to the methods and approaches used by the public and private sector to influence the distribution of people and activities in spaces of various scales. Spatial planning can be defined as the coordination of practices and policies affecting spatial organization. Spatial planning is synonymous with the practices of urban planning in the United States but at larger scales and the term is often used in reference to planning efforts in European countries. Discrete professional disciplines which involve spatial planning include land use, urban, regional, transport and environmental planning.[1] Other related areas are also important, including economic and community planning. Spatial planning takes place on local, regional, national and inter-national levels and often results in the creation of a spatial plan. (Wikipedia)

Stakeholder: Stakeholders are individuals and organizations that have an interest in or are affected by your evaluation and/or its results. Stakeholders provide a reality check on the appropriateness and feasibility of your evaluation questions, offer insight on and suggest methods to access the target populations, provide ongoing feedback and recommendations, and help make evaluation results actionable.

https://www.cdc.gov/std/Program/pupestd/Identifying%20and%20Determining%20Stakeholders.pdf

Synergy in the delivery of ecosystem services: Synergy arises when increased provision of one ecosystem service causes improvement in the provision of another ecosystem service. (Potschin et al. (2016) Beumer et al. (2014), in Eklipse Report).

Trade-offs: Situations in which one ecosystem service increases and another one decreases. This may be due to simultaneous response to the same driver or due to true interactions among services. (Potschin et al. (2016); Bardosa et al., 2016), in Eklipse Report).

Transferability:

Vulnerability: The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (UNISDR 2009).

Water-climate interactions:

ANNEX 2: VISION AND MISSION OF NAIAD (RESULTS PARTNERS EXERCISE AT KOM)

VISION	MISSION
-A Europe whose functions as a nature based economy -NBS is a scientifically sound way to build NAS on -The bridge the gap between scientific and citizens, in order to xxx a network of method while com implement the NBS in order to approach sustainable development. -NAIAD is a 3 years project composed by 24 partners, which means difficult to coordinate there will be need to ground concepts and clarify them before going into implementations in demos. Demos are a critical part. Communication amongst all of us will be essential. -Develop a market for "resilience" credits where green NBS are a preferred solution -A challenging but extremely interesting defections especially to manage to transmit the importance of ecosystem insurance to the insurance sector, xxx and citizen. -To develop an integrated assessment tool for evaluating NBS/NAS in participation and transparent ways. -Preparing the groundwork for a flexible collaboration between different interested parties on a subject of mutual interest. -Preservation of ecosystems wealth and green infrastructure as a way to reduce watt related risks, climate change impacts...socially accepted and assumed. -Fasten NAS -NAIAD will be successful if it is able to collect data + create methodologies that will support a compelling business care for NBS/IVE, and still the ides tolerably communicate them to external stakeholders. -A sustainable frame for ear system protection	Create a new actor of NBS development support by Risk Reduction benefits. To build a sound scientific understanding of NBS and demonstrate that NBS a viable approach for NAS under a broad range of conditions(THE DEMOs) To apply a participatory approach in order to develop sometimes for risk reclusion by using NBS on green infrastructure. To operationalize the insurance value of ecosystem is a project that goes beyond science and is able to implement solutions reaching people, public and private sectors. To make NBS a valid and nature RAMS option for Intra planning and Inv. planning. Reliability; Maintainability; Safety To deliver a clear message avoid the value and ecosystems and to define a sustainable technical mechanism to maintain it and value for the future. To create the necessary "links" so the measures that need implementation can have import. To test that it is feasible to Assure Nature, providing ways to assess insurance value and promoting financing, and disseminate this results so that they can be up-taken. Convince Policy Makers, and insurance Sector of "cost-effectiveness and reliability" of NAS. To advance understanding and implementation of NBS to promote mainstream adoption by stakeholder. Operationalize valuable scientific knowledge link technical NAS and facility implementation in diverse economic environments in EU by increased awareness and participative. Scenarios for greening the considering insurance value as clear recommendations for sectors good methods easy to apply by stakeholders.

-Recognition of insurance value of ES in practice it still happen already in documents. -To evidence the value of NBS, both in terms of hard economic insurance value but also in terms of soft values, wail is more difficult to define. -Contribute both scientifically & policy slide and territory effects to the mistake of NBS, NAS. -To foster a multi-sector, trans disciplinary understanding of the insurance value of NBS -A widespread mainstream acceptance and implementation of NAS so that our natural capital would be preserved and respected by everyone. -To prove pros and cons of NBS -To change the current development approach that is natural resource exploitations to nature resource sustainable management	SUCCESS? If we will be able lower the damage costs of flooding and prevent flooding with green solutions. Promote NBS Demonstration that NAS/NBS are flexible/attractive STRATEGIES / Long term vision for resilience/risk manager. Provide the MATERIAL & CONCRETE advents for UP TAKE by territories/communities/GOV To support end-users to understand the added value of NAS in oppositions to traditional green infrastructures To provide evidence-based information in the insurance value of NBS and to bring that information to a large, diverse geographically distributed group of stakeholders. To prove and promote the NBS is a better nature management alternative to grey infrastructure along with providing options for financing their implementations. Gather evidences of the role of ecosystem in natural risk reduction. To increase awareness about importance of sustainable nature resource management for society well-being, and also contribute important know-how in how to do it.

ANNEX 3: DEMO POSTERS

Link: https://drive.google.com/open?id=0B_XN7Iwp_QpuV2h4aU1lbGpaeUU

ANNEX 4: BRAGUE ROADMAP AS EXAMPLE

LINK: https://drive.google.com/open?id=0B_XN7Iwp_QpuZktQQUM4NXdsWkU