



“NAture Insurance value: Assessment and Demonstration”

NAIAD

SC5-09-2016 Operationalising insurance value of ecosystems
Grant Agreement n° 730497

Deliverable 9.5

NAIAD MOOC: Course on the insurance value of ecosystems

Due date of deliverable: 31/10/2019
Actual date of submission: 11/11/2019

Start date of project: 01-12-2016

Duration: 42 months

Name of partner responsible for deliverable: UNESCO-IHE

Authors: Van Cauwenbergh N., Patinara A. (Van Cauwenbergh *et al.* (2019): NAIAD MOOC: Course on the insurance value of ecosystems).

Dissemination Level		
PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730497.

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Edition information

VERSION	EDITION DATE	MODIFICATION	WRITTEN BY	CONTROLLED BY
INDEX DRAFT	SEPTEMBER 2017	LEARNING OBJECTIVES	VAN CAUWENBERGH, N., PATHIRANA, A.	CONSORTIUM
INDEX V1	MAY 2018	INDEX MODIFIED	VAN CAUWENBERGH, N., PATHIRANA, A., THOMAS, S.	CONSORTIUM
INDEX V2	JANUARY 2019	INDEX MODIFIED	VAN CAUWENBERGH, N., PATHIRANA, A.	CONSORTIUM
VERSION 1	JULY 2019	CONTRIBUTIONS	VAN CAUWENBERGH, N., DOUROJEANNI, P., BUSKER, T., PATHIRANA, A.	LOPEZ GUNN, E., BURKE, S., XX
VERSION 2	SEPTEMBER 2019	CONTRIBUTIONS	VAN CAUWENBERGH, N., PATHIRANA A.	LOPEZ GUNN, E.
FINAL	11 NOVEMBER 2019	SUBMISSION TO THE EC		CO



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EXECUTIVE SUMMARY

Deliverable 9.5 presents the online education material that was developed and tested as part of the capacity building and research uptake activities in the project. The (massive) open online course or (M)OOC focuses on how to integrate insurance value of ecosystems in environmental planning and infrastructure investment. To train and inform candidates on the operationalization of natural assurance schemes, the (M)OOC presented in this document covers aspects like assessment methodologies, engaging stakeholders and risk perceptions, natural capital valuation and preferred enhancement action to business model selection.

The document is structured in 5 parts: after the introduction, we present the aim and learning objectives of the MOOC and includes a discussion on the target audience and learning modalities. Chapter 3 of this document presents the conceptual and operational framework within which the NAIAD (M)OOC was developed, substantiating the choices that were made. Chapter 4 then gives an overview of the content in the different MOOC chapters, illustrating the objective and type of learning material that is provide on the online platform. In chapter 5 of this documents, we discuss the summer course that took place in August 2019 and that served as a first run of the (M)OOC, allowing to test the modalities of the course and define a strategy for future development. Chapter 6 finally documents the future development and exploitation of the NAIAD (M)OOC.

The course structure and material was developed in a co-design process with the entire NAIAD consortium and combines the theoretical insights and methodologies development with practical experience in the DEMO sites. The format of material is combination of background documents (policy and others), academic references, as well as videos and PowerPoints provided by the NAIAD consortium and broader network of advisors and collaborators. The course is set up to focus on implementing NBS by combining assessment methods and participatory processes that allow the multiple parties involved in NBS implementation to connect to the design and operation of the NBS that is considered most suitable for a given case. Specific attention is given to the development of a business model, responding to one of the main barriers identified in NBS implementation. In the course this is done in the form of workshop in which participants have to design and defend a viable business model for a given case and discuss amongst each other which business model is more likely to succeed. Feedback processes are currently in offline mode, and will be developed further online in the form of quizzes and peer review.

The course is set up in 4 chapters: (1) introduction to NBS and the debates on natural capital and insurance value of the environment, (2) Steps and tools in the design and implementation of NBS, (3) examples of the assessment and implementation trajectory in different (NAIAD and



other EU projects) Demos and (4) Operationalizing insurance value of the environment through the creation of business models around NBS in a given case.

The course has been tested and perceived positively to very positively by participants, who were particularly pleased with the exposure to and discussion of a NBS in the field with different stakeholders. This confirms the arguments for the chosen build-up of the course from an offline/online experience into gradually more stand-alone online version to assure quality of learning. Future development and exploitation of the course will serve different communities and needs; institutionalized a part of the curriculum in universities of the NAIAD consortium, open online course for broader audiences and backbone of more tailored courses in which coaching can be provided for specific cases for a practitioners audience.



1 Introduction

The aim of this document is to present the online education material that was developed and tested as part of the capacity building and research uptake activities in the project. The (massive) open online course or (M)OOC focuses on how to integrate insurance value of ecosystems in environmental planning and infrastructure investment. To train and inform candidates on the operationalization of natural assurance schemes, the (M)OOC presented in this document covers aspects like assessment methodologies, engaging stakeholders and risk perceptions, natural capital valuation and preferred enhancement action to business model selection.

The document is structured in 5 parts: after the introduction, we present the aim and learning objectives of the MOOC and includes a discussion on the target audience and learning modalities. Chapter 3 of this document presents the conceptual and operational framework within which the NAIAD (M)OOC was developed, substantiating the choices that were made. Chapter 4 then gives an overview of the content in the different MOOC chapters, illustrating the objective and type of learning material that is provide on the online platform. In chapter 5 of this document, we discuss the summer course that took place in August 2019 and that served as a first run of the (M)OOC, allowing to test the modalities of the course and define a strategy for future development. Chapter 6 finally documents the future development and exploitation of the NAIAD (M)OOC.



2 MOOC framework and concepts

2.1 What is a MOOC and why does NAIAD have one?

This deliverable is part of WP9 that deals with the communication and dissemination strategy of the project. To support the usage of NAIAD research results, an uptake strategy comprising 4 elements is deployed (see Figure 2-1); stakeholder engagement, capacity building, communication and monitoring and evaluation. With the capacity building, various methods and tools designed to assure that both consortium members and (next) users have sufficient capacity to access, evaluate, synthesize and use the research evidence.

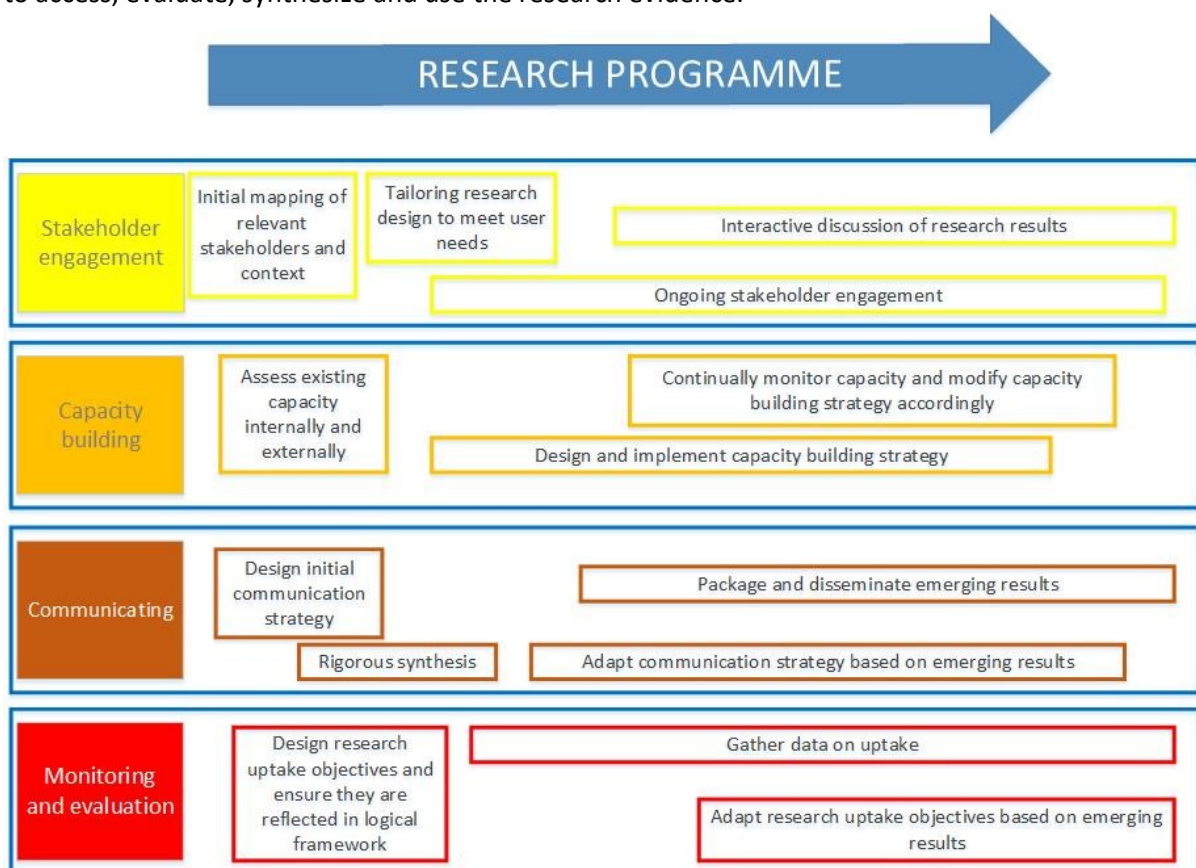


Figure 2-1: Research uptake and role of capacity building and communication therein

One such capacity building activity is the development and implementation of online educational material. Online education has evolved over the years and is increasingly used to respond to the need for more flexible and distance learning. In 2006, a new form of online



education appeared, called MOOC or massive open online course. A MOOC is an online course aimed at unlimited participation and open access through internet. In addition to traditional course material, such as lectures (be it video-taped), reading material and problem sets, MOOCs often provide interactive parts to the course with user forums to support community interaction among students and the teaching professionals. MOOCs also often have quizzes that allow for immediate feedback. In addition, peer review sessions can be organized in dedicated chat rooms to allow for groupwork and incremental learning in the distance. Given the popularity of MOOCs and the potential of reaching a wide public for research uptake through it, NAIAD proposed to design its own MOOC on how to integrate the insurance value of ecosystem in environmental planning and infrastructure investment.

2.2 Target audience and needs assessment

To inform the conceptual choices of the NAIAD (M)OOC, a needs assessment was performed in the first year of the project. This needs assessment builds on early analysis of next users and key messages of the NAIAD project as well as the tools and networks that would be used for it. Table 2-1 summarizes the next users for which the (M)OOC is used as a communication tool to assure uptake of the NAIAD experiences.

This first assessment was checked with the consortium in the first year of the project. This was done by linking to particular decision making processes (that might be DEMO specific) and considering how these processes could be informed by a range of research evidence and innovative approaches.

Table 2-1 : Target audience for the (M)OOC and other communication media

STAKEHOLDER /NEXT USER	KEY MESSAGE related to role and NAIAD uptake objective	MEDIA AND MEANS (tools and networks)
General public	The general public is both affected by and (politically) affecting the implementation of NBS insurance value. The message to this group is that “The use of green infrastructure can provide different benefits to society, including a potential reduction of insurance costs.” The objective is to increase the public awareness on the importance of ecosystem approach and the potential of Nature-Based Solutions (NBS).	Press agencies and established media at national/regional/local scale (briefs, news, inform on DEMO activities), open communication through website and social media with bulletins, and newsletters
Research community	The research community is important for further development and mainstreaming of NBS development and planning approach. The message is “NAIAD develops ground-breaking innovation in implementation of NBS insurance value, building on state-of-the art”. The objective is to share the methodological and technical advances and innovation by NAIAD with the research community.	Scientific publications (under gold or green rules for open access), participation in key conferences (e.g EIP Water, World Water Week) OPPLA, social networks, cross diffusion with other research initiatives.



Local communities, NGOs etc	Representatives of these groups will participate in social research activities in some cases around demos and in other cases around potential business models and compensation schemes. The objective is to enhance engagement of these stakeholders and to keep them updated on NAIAD progress.	MSPs and (online) discussion forums at DEMO and cross-demo scale. Website, reports, MOOC, dedicated translated and thematic communication materials, SLG, social media, crowdsourced monitoring
Infrastructure industry	The infrastructure industry is a crucial next user for implementation of the NBS insurance value. Our message to them is that “There is a business opportunity in NBS and NAIAD has tools to help implement the business”. The objective is to engage infrastructure industry to include NBS in their infrastructure portfolios and inform consortium and DEMOs on implementation opportunities and challenges.	MOOC, implementation toolkit, partners municipalities, industry partners as part of MSPs and as members of the advisory groups
Municipalities and administrative regions	Municipalities and administrative regions are crucial as local decision makers for implementation. Our objective and approach to this group will be analogue to the one used for insurance industry.	MOOC, cities network (ICLEI), partner cities, implementation guidelines, advisory groups
Public management bodies	We target responsibilities in land and water management, environment protection, disaster risk reduction, climate change adaptation, urban planning etc. to engage with the project. Our objective and approach to this group will be analogue to the one used for insurance industry.	SLG, website, Demos: full results and standardised summary reports, MOOC, RiverRes, Communities of practice, OPPLA

In addition of the needs assessment, a market analysis was done to understand which NBS related courses are available for the broader audiences. This analysis allowed us to further finetune the message we wanted to support with the online capacity building. The list below provides a number of links to related MOOCs that served as examples to our project:

- - Lessons from Scandinavia and Sustainable Cities - MOOC by IIIEE [\[1\]](#)
- - Sustainable Urban Environments - MOOC EdX by Trinity college [\[2\]](#)
- - Ecodesign for Cities and Suburbs - MOOC EdX by University of British Colombia [\[3\]](#)
- - Ecosystems Services - MOOC Coursera by University of Geneva [\[4\]](#)
- - Greening the Economy - MOOC Coursera by Lund University [\[5\]](#)
- - Building with Nature - MOOC EdX by TU Delft [\[6\]](#)
- - Innovative approaches to NBS - Webinar by ICLEI [\[7\]](#)
- - Naturvation NBS - MOOC by Naturvation, Durham University (under development) [\[8\]](#)



2.3 *Learning objectives*

To clarify the goal and target of the course, learning objectives (LOs) are identified. Learning objectives are the targets of the learning and can also be seen as performance objectives. They are statements that clarify what students/participants in a course will be able to accomplish after a certain period of teaching and learning. Learning objectives, whether for offline or online classes, have the same characteristics and are often written in the same way. LOs allow to determine in which direction course participants develop. The definition of learning objectives are a crucial step in the development of any course - offline or online - and need to be clarified in the planning stage of the course.

During the first year of the project, it was decided that the course should train and inform candidates on the operationalization of natural assurance schemes, and on how to integrate the insurance value of ecosystem in environmental planning and infrastructure investment. The course should therefore cover aspects like assessment methodologies, engaging stakeholders and risk perceptions, natural capital valuation and preferred enhancement action to business model selection. This decision on focus and topics was then translated by the capacity building team into learning objectives. The LOs of the NAIAD online course are stated as following:

Upon completing the (M)OOC you will be able to:

1. Explain resilience potential and trade-offs of NBS in the context of rapid onset disasters (e.g. floods) and slow onset events (e.g. Droughts).
2. Assess the risk reduction achieved by different NBS implementations at a broad range of scales in both urban and rural context.
3. Illustrate how the risk reduction potential of NBS can be included in insurance schemes.
4. Argue that multiple environmental social and economic benefits of NBS contribute for them to be cost-effective.
5. Select suitable NBS for a given context with the help of NAIAD toolkit.
6. Argue the importance of stakeholder engagement for successful NBS implementation and explain the role of different stakeholders at different stages of NBS lifecycle.
7. Discuss the integration of the insurance value of ecosystem in environment planning and infrastructure investment and make the business case for NBS.



3 Operational framework and guidelines for development

The (M)OOC is hosted on an online education platform based on the widely-used Moodle software (<https://moodle.org/>). NAIAD (M)OOC is implemented on the Open CourseWare platform and can be accessed through this link; (<https://ocw.un-ihe.org/>).

3.1 Course modalities – MOOC or OOC

At the start of the project and in parallel to the market analysis, experiences from (massive) online learning were analysed to identify which course modalities were most suitable for the uptake of NAIAD experiences. This analysis is based on prior MOOC experience in the consortium, literature review and discussion with MOOC experts outside of the consortium.

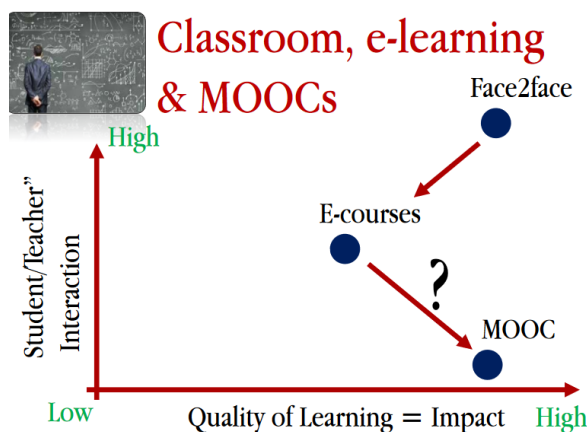


Figure 3-1 Quality of learning vs Student-teacher interaction

Whereas MOOCs have the potential to reach an audience of hundreds or thousands of students, analysis of the way in which MOOCs are actually used (e.g. (Pathirana, 2017) and (Pilli & Admiraal, 2017) show a number of pitfalls. Apart from the low retention of students (2%) till the end of the course, questions remain about the quality of learning that can be attained (see Figure 3-1). This is mainly related to the amount of feedback that can be given to students with different backgrounds and learning pace. In their recent review (Pilli & Admiraal, 2017) also state that « *Timely feedback that is formulated to be “to the point” is positively related to students’ meaningful learning and future research could investigate how to incorporate this kind of feedback into MOOCs.* ».

Based on these analysis and discussions, it was decided to opt for an open online course that would not be necessarily massive. In addition, it was decided to design the online course in such a way that it can be used in an offline environment to allow for higher levels of feedback to improve the learning by participants.



3.2 *Choice of hosting platform*

The software frameworks used to deliver education are called Learning Management Systems (LMS). Many universities today have learning management systems (LMS) that works as the primary content management system (CMS) for education. Popular implementations include Moodle, Blackboard and Canvas. Internationally Moodle, an open source software system is the market leader.

IHE-Delft has two such Moodle-based education platforms, one for internal (restricted to the students) use and another called Open Courseware platform (OCW) which is free and open to the world. NAIAD (M)OOC is implemented on this latter platform (<https://ocw.un-ihe.org/>). This provides participants with a number of videos, ppts, reading materials as well as rich interactive experiences through quizzes or peer review sessions, discussions, chat-rooms, etc.

Using the popular Moodle platform to host the NAIAD MOOC creates a number of advantages in terms of further development and sharing. Courses hosted on Moodle can be easily moved, copied and adapted easily. When/if the need arises it is convenient to share a Moodle course with thousands of places of learning that use Moodle. Moodle also provides facilities to export courses to other popular LMS.

IHE OCW platform is being widely used both by in-house students as well as outsiders. Courses are regularly added to the systems. This highly active environment ensures that NAIAD MOOC will continue to be available beyond the life of the project.

3.3 *Videos, materials and assessment*

A first assessment estimated that the total MOOC would be around 10-11h hours of video material posted online and divided in a number of chapters. Internal guidelines were shared with the consortium on which kind of videos could be made and what would be a standard script to be used as a basis (see Figure3-2). We distinguish theoretical/conceptual videos and application videos. These could follow the following structure:

- 20 min of introduction (lecture + film) on concept for each learning objective (total 2h30)
- 60 min per demo site (total 8h): a demo video will consist of a short introduction and then illustrate one or more LOs for a specific site and finish with a reflection of different stakeholders on the demo – typically this material will be cut into several sections of shorter videos

At the end of each chapter a link is introduced to an online quiz that allows to assess whether the participant has taken the content up. In later stages of the (M)OOC development the



distribution of time was adjusted to the selection of topics agreed in the consortium contributions.

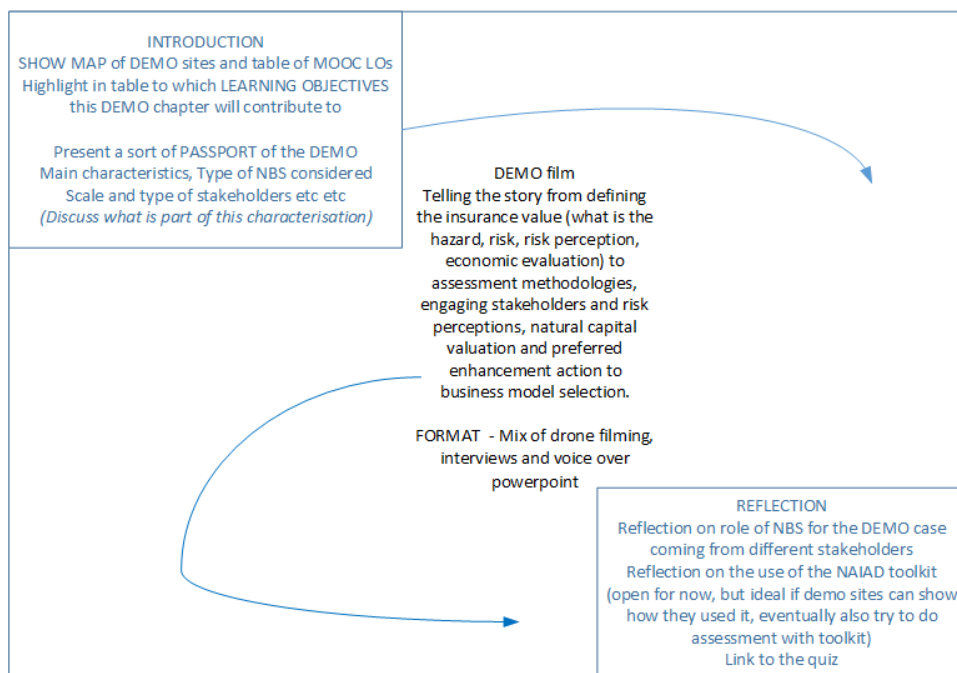


Figure 3-2 Internal guidelines for scripting the DEMO videos

In the current version of the (M)OOC, contributions in video format are roughly divided in 2 types: 1) Videos on specific concepts, approaches and methods for chapter 1 and 2 and 2) Videos on the case studies –demos sides for chapter 3 (see Annex 2 for detailed description).

3.4 How we built the (M)OOC

As discussed in D9.2, learning objectives and overall set-up of (M)OOC as well as storyboard for individual videos, were agreed with the consortium in the first year of the project. During the GA in Montpellier, we presented a first structure of the MOOC in 4 chapters and organized a co-design session with the consortium partners to identify which videos and other learning materials, the partners would provide. Figure 3-3 shows an example of the contributions (video, reading material, assessment questions) that were suggested by consortium partners during the co-creation session. For a detailed description of materials and videos proposed by the consortium, we refer to Annex 1.



D9.5 NAIAD MOOC: Course on the insurance value of ecosystems NAIAD GA n° 730497



Week	Topic	LOs	Videos and Readings	Assessments	Total Time	MOOC chapters
1	A	0,1	•Basic project overview •NBS overview •Natural capital (~2-2.5 hours)	•Quiz over NAIAD 2020 project (~10 min) •Preliminary Q and A (~10 min) •Preliminary min-report on position, background, disaster context, and current NBS practices in region of study (~1 hour)	~3-5 hours	0 Contextualise NBS within an ecosystem
2	B	3,4,5,6	•Tool overview (read on 3) (~1.5-2 hours)	•Quiz over implementation steps (of NAIAD WP structure) (~10 min) •Group chart of WP summaries: highlight shared and unique responsibilities/results of each WP (~1 hour) •Apply one of the in-depth tools to region/casestudy of study (~1 hour)	~4-6 hours	1 Explain resilience potential and onset disasters (e.g. floods) at a broad range of scales
3	C	2,3	• Demo videos (roadmap and perspectives) / Policy and stakeholder context of site (~2-3 hours)	•Survey questions for both DEMO partners and end-users; answer/discuss two other questions (~1.5 hour)	~4-6 hours	2 Assess the risk reduction action at a broad range of scales
4						3 Illustrate how the risk reduction insurance
						4 Argue that multiple environmental NBS contribute to

Figure 3-3: Overview of consortium contributions and connection to (M)OOC chapters and LOs

We then started with the creation of the NAIAD (M)OOC on UNESCO-IHE's Open Courseware platform (OCW), with some first information on what to expect in each chapter (see F3-4).

Figure 3-4: NAIAD (M)OOC chapters as presented in the OCW platform

In the second half of 2018, a number of videos were developed in collaboration with consortium and other partners, such as:



- Thames – freestations, EcoActurary, NFM Andrew Ross
- Rotterdam – demo set up, technical video on filtration system, stakeholder reactions
- Other – Zurich Insurance on Resilience

These videos were made available in the OCW as an example for consortium partners. In addition, a review process was installed allowing consortium members to design contributions using pedagogical criteria and to get feedback from the MOOC team (see box below)

Box - Internal consortium guidelines : review process for development of MOOC material

- Discussion of LOs with the consortium and assessment of 1) which DEMOs are most suitable to illustrate what (creation of the LO versus DEMO matrix), 2) which WPs and consortium partners will be the counterpart of the MOOC team for development of the 7 short introduction videos (creation of the LO versus WP videos)
- The MOOC team will plan a skype discussion with WP and DEMO lead identified in the matrix to define a draft storyboard of the video + draft questions for the online quiz that will be linked to each MOOC chapter
- The MOOC team will translate draft storyboards into script and send out for inputs of DEMOS/WPs
- Filming of content is planned (we have to discuss to what extent the filming and editing can be done by the DEMOs itself)
- Final editing of the video and quiz and posting online

In preparation of the Ljubljana GA in January 2019, we prepared a survey with the consortium to check the ideal format of the course; tailor-made training, MOOC or online course. After this consultation we agreed that it would be a good idea to consider developing an OOC first.

To facilitate the (M)OOC development further, 2 additional actions were taken:

- In March 2019, an intern (Buwe Halbertsma) was hired at UNESCO-IHE to help with the editing of NAIAD videos and help consortium partners to navigate on the OCW platform
- In April 2019 co-funding was acquired to organize a summer course around the NAIAD (M)OOC. The course on “Green risk reduction with NBS” took place from July 29 to August 2 for an audience of 30 participants. The summer course facilitated a test of the online learning environment and the video (and other) materials provided by partners in the consortium



4 Greening risk reduction through NBS : chapters and content

This section presents the (M)OOC in its current form, after the test run during summer 2019. A full version of the (M)OOC can be visited online at the following link: <https://ocw.un-ihe.org/course/view.php?id=62>

The (M)OOC is composed of four chapters that gradually build up knowledge toward the operational nature-based-solutions (see Figure 4-1). In the last chapter participants are invited to a groupwork in which they have to create a business model around NBS for a hypothetical case study. To build up the knowledge to this point of critical analysis and applied techniques, participants are guided through an introduction on nature based solutions and natural capital (chapter 1), guidelines for implementation in steps and tools and methods used to support planning and implementation of NBS (chapter 2) and practical examples of how these methods and tools have been used in different demonstration sites (chapter 3).

The screenshot displays the NAIAD MOOC interface. On the left is a sidebar menu for 'OCW IHE DELFT' with options: NAIAD2020, Participants, Competencies, Grades, Summary of Course, Chapter 1: NAIAD and NBS, Chapter 2: Steps to Implementing NBS, Chapter 3: DEMOs, Chapter 4: Insurance Value of Environment, Dashboard, Site home, Calendar, and Private files. The main content area shows four chapters, each with a title, a 'Restricted' status, an availability date, a progress bar, and a button for the chapter's main activity:

- Chapter 1: NAIAD and NBS**
Available from 5 February 2020, 11:00 PM
Progress: 0 / 5
Button: NBS intro
- Chapter 2: Steps to Implementing NBS**
Available from 5 February 2020, 11:00 PM
Progress: 0 / 7
Button: Steps and tools
- Chapter 3: DEMOs**
Available from 19 February 2020, 11:00 PM
Progress: 0 / 5
Button: DEMOS
- Chapter 4: Insurance Value of Environment**
Available from 4 March 2020, 11:00 PM
Progress: 0 / 5
Button: IVE B case

Figure 4-1: Overview of chapters in the NAIAD (M)OOC

A detailed description of the objectives and content in each of the 4 chapters is given in the following sections.



4.1 Chapter 1 – Nature-based solutions and risk reduction

The first chapter of the online course aims to introduce participants to the concept of nature-based solutions and its insurance value. The chapter builds up a discussion on what NBS are and how they relate to natural capital on the one hand and a discussion of NBS in relation to risk reduction on the other hand. For the first discussion we link to the on-going debate on valuing nature, including important discussion on non-conventional values that were highlighted during the debates in the Montpellier GA and linking to cutting-edge research in this aspect. The science-policy debate is then mimicked in the online course environment, where students are invited to criticize (positively or negatively) the different positions and arguments of scholars and actors on the science-policy interface. The introduction to the chapter on the online platform can be found in box below.

Box 1 – introduction to chapter 1 as presented on the online platform

« Welcome to the first week of the NAIAD NBS online course! This week will start the course with an introduction to nature based solutions, natural capital and the insurance value provided by NBS in the context of flood and drought prevention. Two debates will be introduced through this chapter: 1. what classifies a project as a "nature-based solution"? and 2. what is natural capital and how can we use it? The answers and stances to these questions are completely dependent on where the stakeholder comes from, and what they have experienced. Therefore, we encourage providing professional and career context this week so that the spectrum of class experience can be understood.

By the end of this chapter, you will be able to:

Contextualize NBS within accepted frameworks and processes, such as sustainable development, climate adaptation, sustainable development goals (SDGs), etc.

Explain resilience potential and trade-offs of NBS in the context of rapid-onset disasters (e.g. floods) and slow-onset disasters (e.g. droughts) »

It is important to note that in the selection of content for this introductory chapter, we considered the availability of other NBS related online education material (revealed in the market analysis, see section 3-1). We assured that the introduction narrowed down to the specific NAIAD contribution on insurance value (distinguishing the initial NBS context from the one provided in other online education material) while providing a broader applicable educational experience to participants through the debates. The outline of chapter 1 is presented in Figure 4-2 and an extract of the discussion on insurance value of nature and NBS can be found in Figure 4-3.



Summary of Course [Chapter 1: NBS and risk reduction](#) Chapter 2: Steps to Implementing NBS Chapter 3: DEMOs
Chapter 4: Insurance Value of Environment NBS Asset Management



- [Introduction](#) ☐
- [Nature Based Solutions and Natural Capital](#) ☐
 - [NBS and Natural Capital](#) ☐
 - [Risk reduction and nature-based solutions](#) ☐
 - [Background of Students](#) ☐
- [Lessons Learned](#) ☐

Available from **5 February 2020, 11:00 PM**

[◀ Summary of Course](#)

[Chapter 2: Steps to Implementing NBS ▶](#)

Figure 4-2 Outline chapter 1 on NBS and Natural Capital



Greening Risk Reduction with Nature Based Solutions

[Dashboard](#) / [Courses](#) / [NAIAD NBS](#) / [Chapter 1: NBS and risk reduction](#) / [Nature Based Solutions and Natural Capital](#)

Nature Based Solutions and Natural Capital



This section will discuss how NBS have risen in the current EU policies for flood and drought prevention, how this relates to the concept of insurance value and what are current developments and debates around NBS.

"Nature-based solutions are actions which are inspired by, supported by or copied from nature. Some involve using and enhancing existing natural solutions to challenges, while others are exploring more novel solutions, for example mimicking how non-human organisms and communities cope with environmental extremes." – Nature-Based Solutions EC Definition –

Insurance value of NBS in flood and drought prevention

The concept of insurance value for water related risk management aims to raise awareness on the risk reduction potential that ecosystems provide against a number of hazards. It is the opposite concept of the cost of risk. As an illustration, we can state that waterproofing and developing cities in risk prone areas have been risky and this can be estimated (now ex-ante) with the concept of cost of risks. At the opposite, or having another perspective, safeguarding or restoring ecosystems with a role in water regulation e.g. NBS have an insurance value.

Graveline et al. (2017) adopts an economic perspective of the insurance value of NBS, which is introduced here. The first interpretation of the insurance value is based on ecological economic literature and relates to the resilience capacity of ecosystems as an insurance device. It is consistent with Pascual et al. (2010) and the assumption that a biodiverse ecosystem is more capable of buffering shocks, and in economic terms, that the biodiverse ecosystem might reduce the volatility of income (or ecosystem services production) compared to the next best alternative. This idea is represented in Figure 1 below (we add the distinction between shocks e.g. hazard and stresses e.g. global changes). For a full discussion on insurance value, we refer to Graveline et al. (2017) section 4.



Figure 1: Illustration of the insurance value in different interpretations (source: Graveline et al. 2017)

Figure 4-3 Extract from chapter 1 introducing insurance value of NBS



4.2 Chapter 2 – Steps to implementing NBS

Chapter 2 of the online course explains the “how” of operationalizing the insurance value of nature based solutions. It does so by listing a number of methods and tools that are used to support assessment, planning and implementation of NBS in different contexts, considering multiple objectives, stakeholders and perceptions. The chapter is divided in 2 parts; in the first part an overview is given of the methods and steps in operationalizing IVE. In the second part we provide more detail on the tools that can be used to support the methods and steps. The introduction to chapter 2 on the online platform can be found in box below.

BOX : Introduction to chapter 2 as presented on the online platform

Welcome to the second and third week of the NAIAD NBS online course! By this point, you have been introduced to the concept of NBS and insurance value and the objectives set forth by the EU for flood and drought prevention. Two debates were introduced in the last chapter: 1. what classifies a project as a "nature-based solution"? and 2. what is natural capital and how can we use it? You also introduced yourself to your classmates and were able to read up on the different projects and NBS implementation barriers/successes experienced by your class.

The next two weeks will walk through the steps in implementing NBS, by structuring the process through the different components of integrated assessment and use thereof in participatory adaptive planning. Each step will provide an overview of their main objectives and barriers. In some steps, we will also provide additional material on tools and strategies developed within the NAIAD project. Three of the "Tools" chapters must be completed; the three completed are up to you to choose. As you go through the material, try piecing together the tasks and responsibilities across the groups to understand how each role plays into the larger project.

Learning objectives

By the end of this chapter, you will be able to:

Argue that multiple environmental, social, and economic benefits of NBS contribute for them to be cost-effective

Select suitable NBS for a given context with the help of the NAIAD toolkit

Argue the importance of stakeholder engagement for successful NBS implementation and **explain** the role of different stakeholders at different stages of NBS life-cycle

The content of this chapter is directly coming from the different work packages, reflecting different bio-physical (WP2), social perception (WP3) and economic (WP4) assessment methods that are developed in the NAIAD consortium and tested in its DEMOS. The material from D5.4 is mainly presented here (see figure 4-3).



Summary of Course Chapter 1: NBS and risk reduction Chapter 2: Steps to Implementing NBS Chapter 3: DEMOs
Chapter 4: Insurance Value of Environment NBS Asset Management



Available from **5 February 2019, 11:00 PM**

- [Introduction](#) ☐
- [Overview of methods and steps](#) ☐
- [Tools](#) ☐
 - Steps, methods and tools for NBS implementation ☐
Hidden from students
 - Comparative Chart on WP responsibilities ☐
Hidden from students
 - Applied Tool/Strategy to Background ☐
Hidden from students
- [Lessons Learned](#) ☐

Available from **19 February 2020, 11:00 PM**

[◀ Chapter 1: NBS and risk reduction](#)

[Chapter 3: DEMOs ▶](#)

Figure 4-4 Outline of chapter 2 – Steps to implementing NBS



Overview of methods and steps

1. Framework for planning and implementation

This section focuses on the framework for NBS design and implementation, explaining the steps and components of integrated assessment and how it is used. The framework proposed is that of participatory adaptive planning. It is largely compatible with the EU guidelines on climate adaptation (EC, 2013) and its related [climate adaptation support tool](#). Yet, whereas the EC guidelines focus on the integrated assessment and selection of strategies, the PAP framework introduces elements particularly important for the implementation of NBS. It does so by combining elements from (1) the Framework of Analysis for strategic water resources planning by [Loucks and Van Beek \(2017\)](#), (2) the adaptive dynamic policy pathways developed by [Haasnoot et al. \(2013\)](#), (3) the framework of participatory integrated planning by [Van Cauwenbergh \(2008\)](#).

Figure below represents a simplified version of the framework, showing the different steps followed.

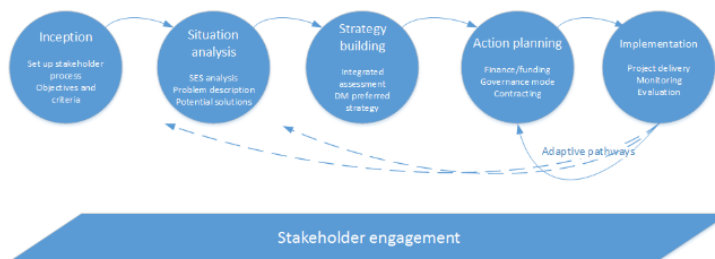


Figure 1: Participatory adaptive planning for nature-based solutions (source: Van Cauwenbergh et al., 2019)

Table of cont...

- 1. Framework for planning and implementation
- 2. Ecosystem Physical Assessment
- 3. Social Institutional Assessment
- 4. Economic Assessment
- 5. Business models and instruments for implementation

Figure 4-5 Extract from chapter 2 – methods: Framework for planning and implementation

The first part of this chapter is on the methods and approaches used in the project, with an introductory section on the participatory adaptive planning (see Figure 4-5) that provides a roadmap for combining methods and tools in the full planning and implementation cycle. The second part of chapter 2 focuses on NAIAD tools. The currently listed tools are: Metamodel, Eco-Actuary (see Figure 4-6), Free stations, Business canvas and stakeholder analysis. This section will represent all methods and models described in D5.4



The screenshot displays the NAIAD MOOC interface. On the left is a sidebar with a 'Course Overview' section and a list of sections including 'Summary of Course', 'Chapter 1: NBS and ris...', 'Chapter 2: Steps to Im...', 'Introduction', 'Overview of methods ...', 'Tools', 'Steps, methods and to...', and 'Comparative Chart on ...'. The main content area is titled 'Greening Risk Reduction with Nature Based Solutions' and shows the 'Tools' section of Chapter 2. The sub-section '3. Ecoactuary' is highlighted, with a description stating it is a testbed for green and grey infrastructure investments. Below the text is a screenshot of the Ecoactuary tool interface, which includes a map and several data tables. On the right, a 'Table of cont...' sidebar lists the course sections: 1. Introduction, 2. Metamodel, 3. Ecoactuary, 4. Free Stations, 5. Business canvas, and 6. Stakeholder analysis.

Figure 4-6 Extract from chapter 2 – tools: Eco-Actuary

4.3 Chapter 3 – DEMOs

In chapter 3 of the (M)OOC we focus on application of the NAIAD methods and tools in the DEMO sites. Through focusing on particular use of method/tool in a demo and reflection of different stakeholders, students are acquainted not only with the practice of NBS implementation across scales but also with the different contexts in which NBS are applied and to which strategies have to be adapted. The content in this chapter builds on the demo reports in D6.2 and will be updated with latest demo information in subsequent editions. The chapter includes material of the existing NAIAD demos, as well as material coming from other NBS projects/demos such as the INTERREG project on Building with Nature. In the future, the list of DEMOS can be extended to include further examples from other countries/projects.

BOX – Introduction to chapter 3 as presented on the online platform

Welcome to the fourth and fifth week of the NAIAD 2020 online course! By this point, you have been introduced to the NAIAD 2020 project and the objectives set forth by the EU for flood and drought prevention. Two debates were introduced in the last chapter: 1. what classifies a project as a "nature-based solution"? and 2. what is natural capital and how can we use it? You also introduced yourself to your classmates and were able to read up on the different projects and NBS implementation barriers/successes experienced by your class. You have also walked through the work package structure of NAIAD 2020 and were introduced to the responsibilities, barriers, and tools/strategies of each work package group. Examples of how these work packages and tools can be applied were discussed by your classmates, as each of you applied one to your area of interest.



The next two weeks will walk through each of the DEMO sites of NAIAD 2020. Each of these sites incorporate various work packages and tools/strategies in a controlled and monitored site. Partners and research centers part of NAIAD 2020 lead the projects, community outreach, and public financing research that results from each of these DEMOs. Each DEMO will cover a general overview, current and future work/challenges of each DEMO group, and a perspective from the end-users of the projects implemented. You will also be introduced to the policy and insurance context of the area. As you walk through the material, be sure to assess how these DEMOs are using the natural capital from NBS within their area.

Learning objectives

By the end of this chapter, you will be able to:

Assess the risk reduction achieved by different NBS implementations at a broad range of scales in both urban and rural contexts

Illustrate how the risk reduction potential of NBS can be included in insurance schemes

The overall structure of this chapter is simple (see Figure 4-7), with main focus on deliverable D6.2 as reading material on the demos and a combination of links and videos explaining the specific DEMO characteristics (example in figure 4-8), the methods and tools applied and perspective of end-users.

Summary of Course Chapter 1: NBS and risk reduction Chapter 2: Steps to Implementing NBS **Chapter 3: DEMOS** Chapter 4: Insurance Value of Environment NBS Asset Management

Available from **19 February 2019, 11:00 PM**

- ☐ Introduction
- ☐ DEMOs
 - ☐ Reading material on NAIAD demos
 - ☐ DEMOs: scale, context, NBS
 - ☐ Survey Questionnaires for DEMO Group and End-Users
- ☐ Lessons Learned

Available from **4 March 2020, 11:00 PM**

◀ Chapter 2: Steps to Implementing NBS Chapter 4: Insurance Value of Environment ▶

Figure 4-7 Outline of chapter 3 – DEMOS



It is important to note that there is some overlap between the material in the DEMO chapter and the one that zooms in on specific methods and tools in chapter 2. A conscious choice was made to allow for some overlap as participants will make a choice of some methods/tools and some DEMOS when going through the (M)OOC and absence of methodological elements in the chosen DEMO might complicate the understanding of the NBS trajectory.

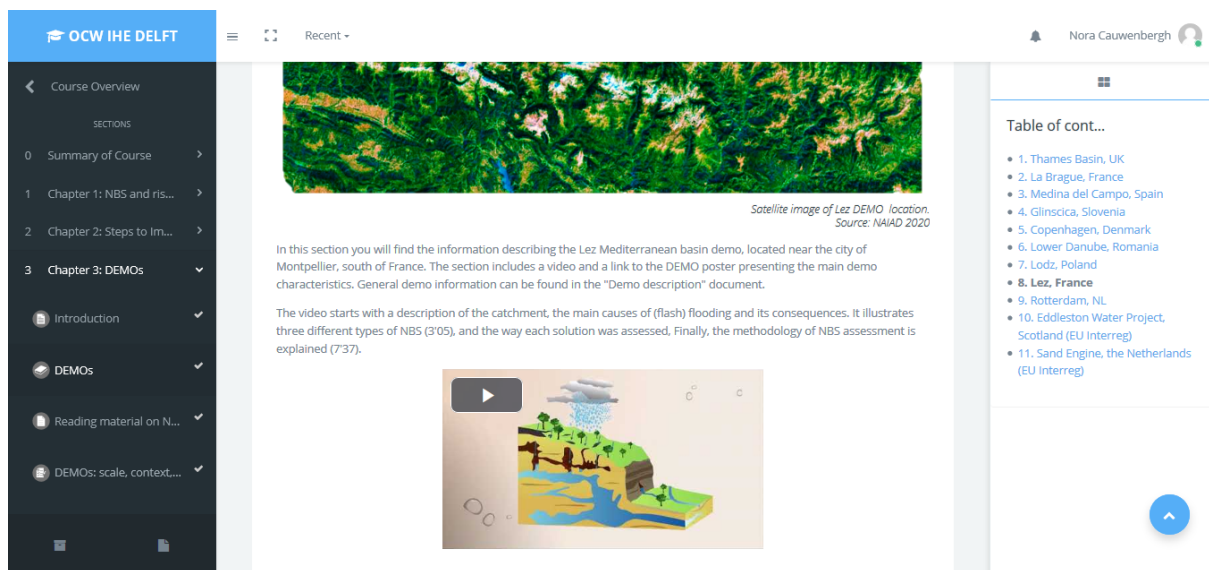


Figure 4-8 Extract from chapter 3 – Lez Demo

4.4 Chapter 4 – Insurance value of environment

Finally, the last chapter of the (M)OOC is focused on applying the knowledge acquired in the previous chapters and deals with the creation of business models for NBS (see

Figure 4-9). In this chapter student collaborate in groups around a hypothetical case study for which they have to define the hydrological risks, potential NBS and their co-benefits and argue for an NBS strategy through a documented business canvas. The chapter introduces the theory of the business canvas coming from D7.3 (see figure 4-10) and presents examples of business canvases in different context. In the groupwork, students gradually fill in the elements of the canvas: the service provided, different levels of beneficiaries, monitoring and indicators as well



as potential value transfers and transactions. Box below presents the introduction to the chapter as shown to participants in the online course platform.

Box – Introduction of chapter 4 as presented in the online platform

By this point, you have been introduced to NBS, insurance value, the different steps and methods to implement natural insurance schemes for flood and drought prevention. Two debates were introduced in the first chapter: 1. what classifies a project as a "nature-based solution"? and 2. what is natural capital and how can we use it? You also introduced yourself to your classmates and were able to read up on the different projects and NBS implementation barriers/successes experienced by your class. You have also walked through the steps and methods for assessment and implementation of NBS and were introduced to the responsibilities, barriers, and tools/strategies of different disciplinary approaches. Examples of how these methods and tools can be applied were discussed by your classmates, as each of you applied one to your area of interest. You have also learned about the scale, context, insurance and policy schemes, and NBS of each DEMO site within the NAIAD 2020 project. The end-users of each site have given you their perspective and you have already brainstormed questions and surveys for all actors involved.

This week will culminate the work you have done and topics you have researched through an interactive debate between the class. The moderator will provide a hypothetical case study. The insurance scheme, physical hazards, and community perception will be given to you to review. The class will then have a moderated debate on the insurance value of the environment. The debate will be epitomized through a class-constructed business model for the hypothetical case study. The steps of each work package should be evident in the work and the class ability to not only complete the tasks, but specialize and efficiently work together will be graded. Keep in mind that each person has a tailored strength and interest, and for the project to be successful, all actors should be involved.

The outline of this chapter is oriented towards business models and the material on the hypothetical case study as show in figure 4-9. It is important to note that the case study can be changed as far as sufficient background material is available. This allows groups to work on their 'own' case studies as to increase the relevance of the course. As discussed in section 6 of this document, the chosen format also allows for different levels of coaching on the creation of business models. Through the online course, further coaching can be organized in case participants have a concrete project for which they want to receive expert input.



Summary of Course	Chapter 1: NBS and risk reduction	Chapter 2: Steps to Implementing NBS	Chapter 3: DEMOs
Chapter 4: Insurance Value of Environment	NBS Asset Management		

Available from 4 March 2019, 11:00 PM	
Introduction	☐
Business canvas and value capturing	☐
ToR groupwork summer course	☐
Group division	☐
Material: Hypothetical Case Study	☐
Hidden from students	
Pre-reading Assessment	☐
Hidden from students	
Post-reading assessment	☐
Hidden from students	
Business Model for Hypothetical Case Study	☐
Hidden from students	
Insurance Value of Environment	☐
Hidden from students	
NAIAD NBS MOOC	☐
Hidden from students	
Lessons Learned	☐
Available from 11 March 2020, 11:00 PM	
SUBMISSION GROUPWORK (Canvas and related material)	☐
Here you can upload all your final products of the group work (upload by 1 group member is enough)	

◀ Chapter 3: DEMOs	NBS Asset Management ▶
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Figure 4-9 Outline of chapter 4 – Insurance value of environment



The screenshot displays the OCW IHE DELFT MOOC interface. On the left is a sidebar with a 'Course Overview' section and a list of sections including 'Summary of Course', 'Chapter 1: NBS and ris...', 'Chapter 2: Steps to im...', 'Chapter 3: DEMOs', and 'Chapter 4: Insurance V...'. The main content area is titled 'A linear flow NAS canvas process and steps for application'. It contains a diagram with eight clusters connected by arrows in a clockwise cycle: Cluster A (Flow of adaptation services), Cluster B (Regulatory context), Cluster C (Mapping the supply), Cluster D (Mapping the demand), Cluster E (Mapping the supply-demand interactions), Cluster F (Mapping the costs of the service), Cluster G (Mapping the ability/willingness to pay), and Cluster H (Mapping the ability/willingness to pay). The text explains that the business canvas is a quick visual way to compile information on how value is captured in a business or organization in a one-eye-shot format. It also mentions that the application can become difficult or confusing given the lack of logic and order in the display of the different elements. The text further states that the flow diagram in figure 2 shows the linearization and clustering of NAS canvas components and the sequential process proposed to facilitate the understanding, identification and description of those components when applied to particular NBS strategies. For a full explanation of the sequential process, it refers to Mayor et al. 2017. The text defines a business model as a description of the rationale of how an organization creates, delivers, and captures value, in economic, social, cultural or other contexts (adapted from Osterwalder, Pigneur, & Clark, 2010). It defines the way by which an organization offers value to customers, entices customers to pay for value, and converts those payments to benefits. In the context of NAIAD, due to the often hybrid nature of services (public and private) we will consider how a different organization - be it public, private e.g. an enterprise, an NGO, or a community of citizens - can deliver value to end users. Thus, it also considers the social value (see chapter 2 - economic assessment for discussion on benefits - private and public and co-benefits). A business model reflects management's hypothesis about what end users want, how they want it, and how an organization can structure and plan to best meet those needs, i.e. in the case of a private enterprise get paid for doing so and make a profit. For example, we will look at social business models at the community level to reduce national funding gaps for the maintenance of structural and non-structural adaptation measures. New viable business models in which costs structure and revenue streams are considered in such a way to make the value propositions interesting to different categories of stakeholders and investors. The NAS canvas, its components and sequential flow is further explained and illustrated for the case of Medina in the video below. At the bottom right, there is a video player thumbnail titled 'WP7 Mooc: Capturing the assurance value of NBS' with the subtitle 'Operationalization: application to the MAR in Medina del Campo demo'.

Figure 4-10 Extract from chapter 4 – Building the business model

5 Summer course and user reflections

During the summer of 2019, the (M)OOC was offered as a summercourse at IHE Delft (see Figure 5-1). The summercourse used the OCW platform of the NAIAD MOOC and tested the online modalities through a combined online/offline learning approach. This allowed the (M)OOC developers to fine-tune the modules, materials and interactive content on the platform. This section presents the course syllabus and participants and narrates the interaction of participants with the course material before sharing the reflections of participants themselves.

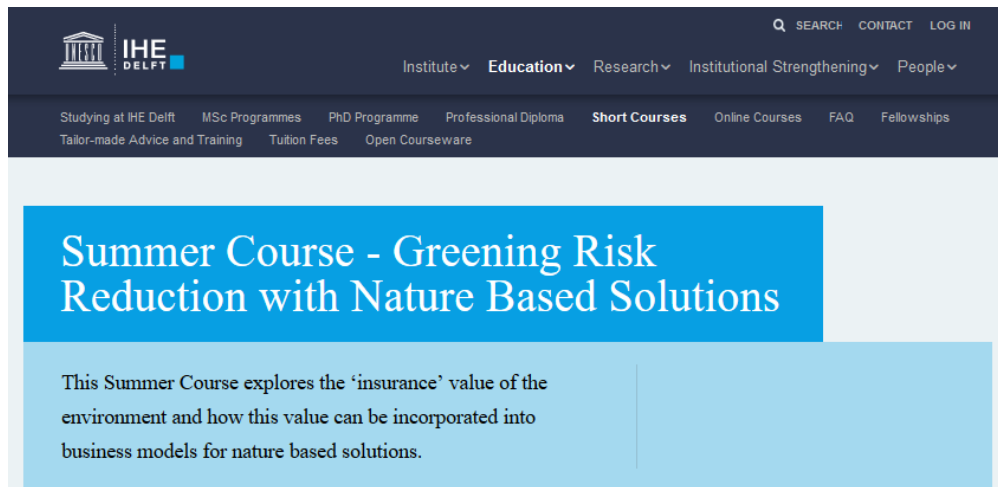


Figure 5-1 Announcement summer course

The summer course was organized in collaboration with 2 other NBS projects at EU level: the Interreg project (Building with Nature) and the H2020 project RECONNECT.

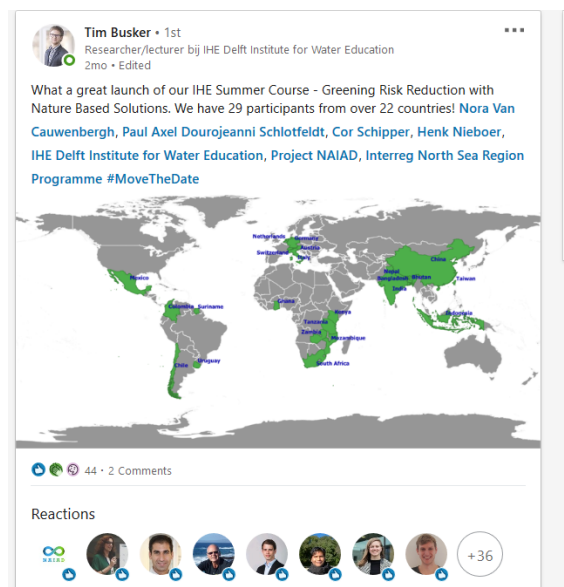


Figure 5-2 Launching announcement summer course



5.1 *Syllabus of the summer course*

This section presents the course syllabus of the summer course on “Greening risk reduction through nature-based solution” that took place in July-August 2019 at IHE Delft.

The course was given as a 1 ECTS course with a total workload of 28hours in total. It ran from July 29 to August 2, 2019 as a summer course and will reopen as a 6 weeks online course from April 1 to May 12 2020. The working method of the course is offline/online and details are presented below.

5.1.1 Introduction and learning objectives

NAIAD NBS explores the insurance value of the environment and how this value can be incorporated into business models for nature based solutions. This summer course (later 6-week online course) covers the overall objectives of on-going Horizon2020 projects NAIAD and RECONNECT, as well as of the Interreg Building with Nature project. It explains main concepts of the different approaches around NBS implementation, as well as tools applied and results analyzed from each of the DEMO sites in the projects.

Participants will debate and create a business model for a case study as part of their online course, as well as interact with course participants by sharing ideas and providing feedback. The supporting activities for these outcomes will enable them to build the necessary skills to continue the discussion of environmental insurance after the course ends.

The course will be completely online, allowing for flexible time management and consistently open access to classmates and resources as first hand users and learners of Moodle.

The learning objectives are the ones presented in section 2.1.

5.1.2 Programme

The programme is organized into 4 main topics.

1. Introduction to Nature Based Solutions and Natural Capital (1 week, 01/04 – 07/04)
2. Steps to Implementing NBS (2 weeks, 08/04 – 21/04)
3. DEMOs (2 weeks, 22/04 – 05/05)
4. Insurance value of the environment (1 week, 06/05 – 12/05)

These topics are presented in the schedule in table 5-1.



Table 5-1 Programme and lecturers of the NBS summer course

Period	Description	Lecturer
<i>Monday: Introduction to NBS, risk reduction and co-benefits</i>		
1 L (start: 10:30 am)	Welcome and introduction to the course	Nora Van Cauwenbergh
2 L	Introduction to the concept of Nature-Based Solutions	Tim Busker
3 E	Introduction to online platform (IHE NBS OCW) and check material (videos/reading)	Participants
4 E	Discussion + introduction group work (division in groups and coaches)	Coaches
<i>Tuesday: Introduction to methods and tools for NBS design and assessment</i>		
1 L (start: 9.45am)	From assessment to implementation: framework for participatory adaptive planning and management + use of tools/methods in NBS assessment	NvC / Paul Dourojeanni
2 E	<i>Groupwork:</i> Selection of a case (check case studies online) and division of roles for business canvas and workshops	Participants + coaches
3 E	Workshop on tools/methods: - Eco-Actuary (<i>Arnout van Sousbergen, KCL</i>) - Risk perceptions and SDM (<i>Raffaele Giordano, IRSA</i>) - Hydrological risk and meta models (<i>Vanni Hermawan, Deltares</i>) - Co-benefits and socio-economic valuation (<i>Ingrid Forey, BRGM</i>) - Stakeholder analysis (<i>Tim Busker, IHE</i>)	Coaches + NAIAD support online
4 E	Workshop (continued)	
<i>Wednesday: The practice of NBS and implementation</i>		
1 L	Ecoshape	Henk Nieboer
2 E	RECONNECT experiences <i>incl. Room for the River</i>	Zoran Vojinovic
3 L	Asset management and Life cycle challenges of NBS	Assela Pathirana
4 E	Case study on asset management and life cycle challenges NBS	Assela Pathirana
<i>Thursday: Demo practice –field visit Rotterdam</i>		
1 F	Visit Rotterdam demonstration area	Kieran Dartée
2 F	Roundtable stakeholders	Coaches
3 L	Cross-cutting implications of SDG indicators in natural and nature-based flood defences	Cor Schipper



<i>Friday: Business canvas development</i>		
1 E	Groupwork on selected case study	Coaches
2 E	Groupwork on selected case study	Coaches
3 E	Business canvas poster pitches; Map/sketch of risk before and after NBS + business model proposed	All - (NAIAD feedback)
4 E	Final discussion and closing (16h30)	

5.1.3 Assessment method

The Summer Course is graded pass or fail. A mandatory assessment method is “active participation”. The course coordinator monitors and assesses “active participation”, and decides if a student passes or fails the module. Guiding principles:

- A student should attend and actively participate in all sessions.
- If a student misses max. one day, the course coordinator may consider to impose an individual assignment to the equivalent of 8 study load hrs. A consideration can be ‘force majeure’ vs ‘lack of commitment’.
- If a student misses more than one day, the course coordinator typically decides to fail the student. If it is a case of force majeure, and the learning objectives can still be achieved, the course coordinator may alternatively decide to impose an individual assignment. The assignment should have a study load comparable to the absent time.
- A failed student should be offered the possibility to ‘re-sit’ the module. This is done by the course coordinator in the form of an assignment with a study load of 28 hrs (1 ECTS).

The course coordinator may want to use more assessment methods in the course. This is allowed as long as these are graded pass/fail. These assessment methods shall be filled in the module plan (once the course has been selected).

5.2 Participants

The course had a maximum of 25 participants and all places were taken. Registration was managed in AFAS and OCW environment (see figure 5-3).



Select	First name / Surname	Email address	Roles	Groups	Last access to course	Status
☐	[Redacted]	[Redacted]	Student	No groups	59 days 2 hours	Active
☐	[Redacted]	[Redacted]	Student	No groups	62 days 7 hours	Active
☐	[Redacted]	[Redacted]	Student	No groups	69 days 3 hours	Active
☐	[Redacted]	[Redacted]	Student	No groups	61 days 7 hours	Active

Figure 5-3 Registration log of participants summer course

The course has participants of over 22 countries (see Figure 5-4).

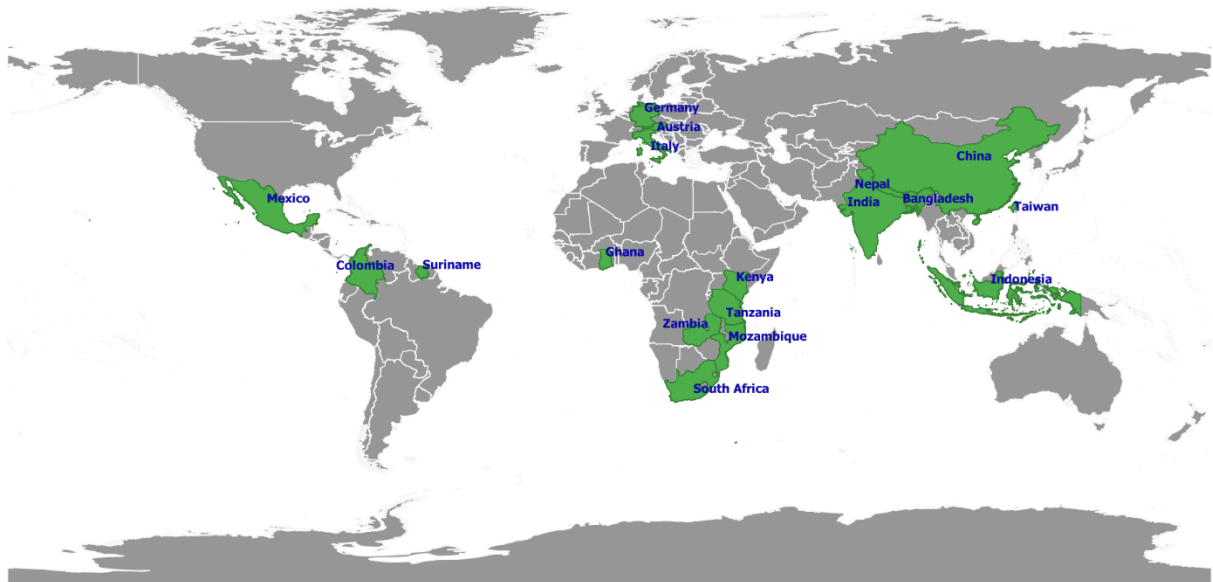


Figure 5-4 Summer course participants' map of countries of origin



5.3 Review and reflections

5.3.1 Course attendance and learning experience

The interest on NBS is growing in the private and public spheres, and has been welcomed as a key solution towards climate adaptation and social issues. This interest was manifested in the important assistance in the summer-course. Although the NBS concept is relatively new, this has allowed students to engage in an interdisciplinary way, tackling with key issues and debates this concept brings in new and innovative ways.

NBS implementation is being hampered by many ways. Through the first run of the online course as summer-course, students improved their understandings in how to develop a key aspect for NBS: the settlement of a Business case for its implementation through the development of a Business Canvas. Among the main the different learning objectives, students understood that the process of implementation is not a linear process, but rather, is a process that revisits earlier stages in order to set the boundaries of the solution. In this sense, the setting of the business case helps to define and set the different components essential for NBS implementation, but as such, is not completely defined until later stages of the process.

A project collaborator that helped in the organization of the course as part of an advanced class, put it as following:

“The experience I had while conducting the workshop was enriching in many ways. First, the opportunity to assist in the development of the course gave me key insights of the work it implies. I had the chance to work along [IHE and other experienced lecturers] which kindly shared with me their knowledge and experience. Second, the experience of guiding students to the accomplishment of the course objectives was very fruitful. Engaging with them through the development of the workshop allowed me to understand the different views and approaches into tackling the issues that NBS represents.” (Dourojeanni, P.)

The course was evaluated by the participants themselves as well. With an overall score of 4.2 out of 5, the course was well perceived, with high scores (above 4) for all lecturers involved. The fieldtrip and discussions in workshop style were among most appreciated by participants. They also saw the connection to their different disciplines, making this course a truly interdisciplinary one. When asked what they like least or found missing, some participants mentioned that they would like to go deeper into the functioning of nature-based solutions themselves as well as on the (calculation of) the actual risk reduction obtained. Full detail of the evaluation can be found in Annex 4.



5.3.2 Interactive learning and involvement of NAIAD and other experts

Different levels of interaction with NBS experts were organized in the NAIAD course.

- Lecture on the practice and implementaiton of NBS by Henk Nieboer (ECOSHAPE)
- Field visit and discussion on practice and implementation of NBS by John Jacobs (Municipality Rotterdam)
- Lecture on RECONNECT project and evidence-base for NBS by Zoran Vojinovic (RECONNECT)
- Exercise on the link between NBS and SDGs by Cor Schipper (Rijkswaterstaat)
- Examples from NBS in the Interreg Buidling with Nature project (Tim Busker)
- Skype session on the NAIAD methods with different partners (by Raffaele Giordano - IRSA, Ingrid Forey-BGRM, Arnout van Soesbergen-KCL, Vanhi Theravaani-DELTARES and Tim Busker)
- Coaching session (over skype) on business canvas with Beatriz Mayor - ICATALIST

The presence of experts from different institutions (both within and outside of NAIAD project) proved stimulating for students as various aspects of NBS assessment, planning and implementaiton were discussed and several of the NAIAD findings were put into context.

5.3.3 Assesment of the online education platform.

The summer-course was conducted with the support of the online course in the OCW platform elaborated for the NAIAD project. For its use, the platform was filled with information according to the learning objectives of the course. This content had the objective of delivering the students all the background information for the fulfilment of diverse activities during lectures, particularly for the workshop conducted at the end of the course.

The content being set up contained many sources of information key to understand key issues of NBS: NBS concept, ongoing debates, and its relation with risk reduction; the steps toward NBS implementation; experiences of implementation of NBS DEMOS; the insurance value of environment along the Business Canvas for setting the Business case; and finally NBS Asset management. This content covers a wide range of aspect of NBS, from its conceptual basis towards its implementation.

Based on discussion during the first run of the online course as a summercourse on the one hand, and an assessment of the education platform by the course coordinators, the following remarks can be made:

- ✓ Although the content is not complete, all students agreed that the information present corresponded to the content done in the lectures. This helped to guide discussions during lectures.



- ✓ The study cases presented in the platform gave key insights on how NBS are being implemented. These cases were also key to set the background for discussion, by presenting students with real and concrete solutions on the ground, while presenting key issues that are not usually available in literature.
- ✓ All students had no issues in interacting with the platform. The interface is well presented and easy to navigate. Certain problems with access to the NAIAD web page were presented.
- ✓ Set clear learning objectives: Learning objectives were set for each chapter and for overall objectives of the course.



6 Future development and exploitation

At the moment the NAIAD MOOC is presented as a part of IHE open courseware platform. Being a 100% open and free offering, this allows the content to be used in many different modalities both inside and out of IHE Delft.

6.1 *Use within IHE-Delft*

IHE Delft offers a number of courses that deal with or related to NBS. Examples are three week modules of Water Sensitive Cities, Wetlands for Livelihoods and Conservation and Climate Change Impacts and adaptation in Coastal Areas and Deltas. NAIAD MOOC content can be used to demonstrate the monetary (insurance) value of NBS in these courses.

Some of the MOOC content has already been used in Water Sensitive Cities Module (e.g. Case study Slovenia).

6.1.1 Student Research

Some of the content of NAIAD MOOC (e.g. Freestation of KCL - <http://www.freestation.org/>) has inspired new research at IHE. Several PhD students have developed ideas for environmental monitoring based on the concept of Freestation.

A new MSC research has started in 2019 on the topic of NBS as a result of NAIAD MOOC. It is expected that more students from around the world will be encouraged to work in the NBS, its insurance value and making the business case as a result of the content of the NAIAD MOOC.

6.1.2 SUWM specialization within Water Science and Engineering Programme

In the 2018/2019 academic year, IHE-Delft started a new MSc specialization on Sustainable Urban Water Management (SUWM). The original focus of this programme is to help China develop capacity to implement its Sponge-Cities programme (each of 30 cities in China will receive 50 to 75 million Euros to develop urban NBS). However, this specialization will evolve as a offering open for the whole world.

NAIAD MOOC can provide content for this specialization in the areas of Monetizing NBS and its insurance value.

6.1.3 Further development and Customization

NBS is a topic that is actively being used in the curricula at IHE. There are also several projects that are directly or indirectly focused on NBS. As a result, a number of new innovations as well as collections of information can be added to the NAIAD MOOC in the future.



One of the future plans is to create customized versions of NAIAD MOOC material that suits for different audiences (e.g. Policymakers, General Public, NBS experts, NBS applicants, etc.).

6.2 *Other uses*

The course can be used by collaborating institutions in future editions. Discussions are currently on-going with IUCN and King's College London.

6.3 *Future development of the OCW environment*

After its first run on the OCW platform, following points of improvement are listed for future development:

- ✓ Increase the interactives with the course:
 - Assessments in the platform are needed to evaluate the understanding of students.
 - Blogs or discussion forums of students can be an interesting add-on on the platform. This information may be interesting to add future content.
 - Also the experience of having live-stream classes should be considered.
- ✓ Plan of content: Not specifically for the summer-course, but for a future online platform:
 - It would be important to improve the video content to point to specific learning objectives.
 - It is also important to suggest additional reference materials in other sections or external links.
- ✓ The course is the result of collaboration with and input by many renowned educators and professionals in the NBS and water-related risk field. Highlighting their involvement will add to the visibility and value of the platform.
- ✓ Each student has their own pace, so it is important to find the balance between maintaining the interest, while giving time to complete the tasks.
- ✓ A mix of various contents (texts, videos, infographics, audio, presentation slides, quizzes etc) is key for the above.
- ✓ Regular assessments are a nice way to find out the progress of students.
- ✓ The interface of the platform is good, but many problems were encountered on the tools for designing the content of the platform. The current environment is rigid and needs to be discussed with developers to improve layout and design of the pages.



6.4 Exploitation of the course

Different levels of exploitation of the course are identified, assuring that the NAIAD experience remain available to the wider public after the lifetime of the project. These levels of exploitation include but are not limited to:

- Integration in IHE Delft curriculum as offline/online summer course (done)
- Link to educational activities at IUCN and KCL (on-going)
- Further development into a stand-alone online course (foreseen February 2020)
- Development in the course as part of a Tailor-made-Training with additional coaching on specific NBS projects participants want to develop (on demand)
- Use of course material and videos in existing courses in the different water engineering and management courses at NAIAD universities (on-going)



7 Bibliography

Pathirana, A. (2017). *The challenge of a MOOC*. UNESCO-IHE.

Pilli, O., & Admiraal, W. (2017). Students' Learning Outcomes in Massive Open Online Courses (MOOCs): Some Suggestions for Course Design. *Yükseköğretim Dergisi - Journal of Higher Education*, 7(1), 46–71. doi:10.2399/yod.17.001.



Annex 1. MOOC contributions and partners

This Annex presents the list of topics and contributions that was agreed by partners over several meetings and concluded during the April 2018 Montpellier AG

Steps to Implementing NBS			Responsible	Contact person
Videos	Co-benefits perception and effectiveness assessment	IRSA	Assela	Raffaele & Alessandro
	Importance of Risk Perception in risk management: different experiences and different people talking about same issue			
	Overview of Eco:actuary	WP2	Assela	Sophia & Caitlin
	How to use instruction video			
	Lower Danube on site	Danube	Nora	Florentina & Albert
	Kirakuarer Quarter: A NBS square city transformation	CPH	Nora	
Readings	Concept of knowledge integration as a basis for science based decision making in face of climate change	HZG	Nora	
	Cloudburst management Plan	CPH	Assela	Peter van der Keur
	Water in the City and Greenery in the City (Senokirir Foundation Website?)	?		
	Methods for ambiguity analysis in risk perception	IRSA	Buwe	
	how to cope with ambiguity in participatory modeling for risk management			
	SDM development for risk scenarios			
Assessments	D2.4 on Eco:actuary and Cat models	WP2	Assela	Sophia & Caitlin
	one page summary infosheet on Eco:actuary			
	model tools used in other demos			
	Assignment to evaluate capabilities to define which impacts of specific measures should be considered in the evaluation of NBS as risk reduction strategy: risk assessment, indicators, co-benefits, stakeholder engagement, LCC/economic assessment	Field Factors	Assela	Karina Pena
	Which of these situations would be a suitable application of Eco:actuary? Testing the efficacy of: a) a small scale urban retention pond, b) planting trees along a 10km stretch of the river, c) re-meandering a 20km stretch of river, d) building a large-scale coastal seawall?	WP2		
	Cost-benefit in participatory approaches for risk management; limits and potentialities	IRSA		



	DEMOS		Responsible	Partnername
Videos	Problem definition	Medina (CHD)	Nora	Elena and Bea
	Process of finding solutions			
	Solution definition			
	Present catchment/background	Glinscica	Assela	Polona Pengal
	Present challenge/historical practice and damage data in numbers			
	Global trends: how to do things different			
	Objectives and solutions: include NAIAD frameworks and process			
	Conclusions: NAS for Glinscica, how far have we come			
	NBS Implementation in Romania	Danube (GeoECOMAR, BDGroup)	Nora	Florentina and Albert
	Interviews with Andrew Ross about Green Bonds	Thames	Assela	
	Interview with Sophia Burke and Mark Mulligan about freestations and sensors			
	Decision-making process: economic vs multicriteria vs co-benefits	Brague (CCR, IRSTEA, UNICE)	Nora	Guillaume, Roxane and Jean-Marc
	physical contexts and issues: ridz(?) management			
	Global economic development scenario			
	Intro: Pb flood, N6, Characteristics of the basin	Lez (BRGM, CCR)	Nora	Philippe & Cecile
	Projected NBS: examples on site source due left			
	Recommendation along with institutional barriers			
	The ecohydrological NBS in densely populated areas; scale, implementation, cobenefits	Lodz	Assela	Kinga
	Stakeholder engagement and implementation of NBS	Rotterdam	Assela	Karina Pena



Readings	NBS case studies from Environment Agency	Thames		
	D6.1 and D6.2 characteristics and modelling in Thames			
	OECD reference on CBA			
	Selection of papers on interpreted data	?	Buwe	
	Selection of papers for damage assessment			
	Previous international projects on Gliscica			
Assessments	Publications in English	Gliscica		
	NWRM guide			
	River Wiki			
	What NBS would be most suitable for the Upper Thames catchment in terms of reducing flood risk?	Thames		
	Kahoot (?) Monkey survey w/ 10 MC questions on video content and reading:	Copenhagen (CPH)		
	what would be your favourite NBS design & assess with blue green factor	?		
	Who are the stakeholders			
	What are the characteristics of NBS?			
	What are the institutional, physical, and cultural breaks?	?	Assela/Nora	
	Is NBS acting alone (importance of combination)			
	Exercise: implement NBS in a specific context with constraints			
	decision making process: concepts, most important data, game situation to test methodology			
	physical contexts and issues	?		
	global economic scenarios			
	What strategy/scenario would you propose for Gliscica catchment and why?	Gliscica		



D9.5 NAIAD MOOC: Course on the insurance value of ecosystems
NAIAD GA n° 730497



IVE & Business Model			Contact person
Videos	Different European insurance systems	WP7	Bea, Elena, Diego Getting Back (contact about editing)
	Results of IVE survey		
	Insurance and Reinsurance interviews		Bea, Elena, Diego Getting Back (contact about editing)
	Typology of funding and financing w/ examples: EU Sustainable Finance		
	EIB review on SCE and end unpeccanennent (?)		
	Business model: WP7 pioneer case	Rotterdam	
Readings	Deliverables reports	?	
	Tutorials/slides		
	Bibliography list		
	Open access material	WP7	
Assessments	Multiple choice questions	?	
	definitions		



Annex 2. Transcript WP09 Open Course Material

Dear NAIAD partner,

This transcript gives indications on the requirements of the WP09 materials. Through emails you have been informed on what exactly is to be submitted by your party. Notes from your own end from the Montpellier meeting from NAIAD should address these subjects too. The material requested from you is required for a summer course at IHE-Delft addressing NBS and the NAIAD project.

Please keep the following notes in mind:

- Example videos and guidance materials can be found in the OCW, *NAIAD 2020 Online Project*. <https://ocw.un-ihe.org/mod/folder/view.php?id=5412>
- Try to complete the video as much as possible. However, if you do not have the expertise/capacity to do so, send us the footage with the storyboard and we can help you with editing.
- The type of material that is requested from you regarding a certain topic (video, readings or assessments) is indicated by email.
- The duration of the videos is set at a maximum of **10 minutes**.
- The deadline for the delivery of the requested materials is **15th of May**.

Creating a Video for the NAIAD 2020 MOOC

This document will outline important details in content creation, material editing, and publishing for the NAIAD 2020 MOOC.

Information:

- **Material requested from you:**
 - Videos on:
 - Klirakwarter Quarter: A NBS square city transformation
The specific input we would ask is a presentation of the CPH demo NBS process. You may choose which part of the process you want to highlight (e.g. technical assessment, risk perceptions, stakeholder process).



- The duration of the videos is set at a maximum of **10 minutes**.
- The deadline for the delivery of the requested materials is **30th of May**.
- The audience targeted by the MOOC are professionals with some background on NBS, but not necessarily about the specific tools (e.g. Eco Actuary) or insurance value of NBS (that's why they are interested in our OOC.) – A bit like typical IHE Delft student. Postgraduate, with 3-5 years of work experience after the first degree, interest in the water field, etc.

Types of videos:

There are three main types of videos that can be submitted.

- **Slideshow with voice overlay:** The creator must first script a slideshow presentation with completed animation, and then should record his/her voice whilst clicking through the slideshow. This can be completed by screen casting and audio recording.
- **Presenting with slideshow:** The creator can either present material and later add supplementary slides to the background, or present slideshow in lecture format. Either method requires good audio/visual recording.
- **Interview:** The creator interviews the subject so to create a larger narrative through a series of interviews or through a singular interview. The script here is created by the subject. This requires good audio/visual recording.
- There are more options to structure you video, see the following link for ideas: <https://ciel.viu.ca/learning-technologies-innovation/developing-using-media-content/creating-audio-video/types-educational-video>

Tools:

- **Screencastify:** records the screen; used to record slideshow presentations
- **Mic:** allows for proper audio recording; can be plugged into laptop or camcorder
- **Camcorder/phone:** portable video recording device; should have battery pack for outside material
- **Camtasia/OpenShot Editor:** video editor; can add transitions, music, etc.; publishes video in mp4 format



- **AC3 Filter:** required if raw material comes in .mts format
- **Movavi Video Converter:** converts .mts into various formats (such as .wav and .mp4)
- **YouTube:** allows for unlisted storage of videos from where they can be embedded into online course
- **Moodle:** platform for online course

Process of Creation:

The specific video linked to this guide is that of the Rotterdam DEMO.

1. Learning Objectives

The first step is to establish which learning objectives the video should fulfill. For the DEMO in general, the learning objectives were: 1) assess the risk reduction achieved by different NBS implementations at a broad range of scales in both urban and rural context and 2) illustrate how the risk reduction potential of NBS can be included in insurance schemes. However, for the Rotterdam DEMO in particular, the learning objectives are to: 1) understand the DEMO's physical characteristics and risks, 2) identify key DEMO leaders and stakeholders, 3) explain what exactly was implemented and enforced by the NAIAD DEMO group, 4) understand the value of the project to NAIAD, and 5) understand the next steps or barriers during the implementation process. These learning objectives more or less are the same for all DEMO sites. This order encourages the most flow for the narrative created. Each of these learning objectives should take up a maximum 2-3 minutes in length.

2. Interview Subjects

The second step is to line up speakers for the video. A good starting point is the DEMO leader. They should be able to suggest potential external subjects that would be beneficial for material. Example external subjects include municipality representatives, community organizations, technical specialists, etc. It is good to contact these speakers ahead of time to ensure their availability and scope/knowledge of involvement within the project or material topic. If your video is slideshow based, it is important to establish who is recording the voice over the slideshow so that they can practice scripting, speed, etc.



3. Scripting

Scripting is probably the most important step to video creation. This is where the narrative comes to life. There are different ways to script depending on the type of video you are trying to create.

For slideshow with voice overlays OR presenting with a slideshow, the best way to script is to do an iterative text/slideshow cycle. First, create an initial draft of the text, outlining main topics and key points that the student should know. Then create an initial supporting slideshow presentation. Go back and forth to make sure that the visual presentation SUPPLEMENTS the audio, and is not the main attraction.

For interview style videos, the scripting is less methodological. First, the creator should speak with the subjects to understand which questions are going to be asked, and what the answers generally would include. The subject can write down notes and the creator should highlight main points that need to be included. The script for this kind of video is created more by the order of the interviews. There should be a flow between ideas so that the student understands the DEMO in an intuitive order (see the learning objectives section). Since the script is more impromptu, it is important to adhere to the time restrictions. This is why it is important to highlight the main points with the subject before recording them so that both the creator and the subject knows what MUST be covered versus what MAY be covered.

4. Recording/Filming

The most important part of recording for any type of video is audio. PLEASE USE A MIC. Mics help pick up the voice of the subject over any surrounding noise. Use a tripod or some other stabilizing tool to ensure good video quality. Also, make sure your camcorder (or whatever else you decide to use to record) has battery or a power source nearby. It is important to try to do the recording/filming in a continuous stream so that the editing process is more fluid; if there are a lot of breaks and pausing in between, the video looks choppy even with editing.



5. Editing

Editing can be easy if the previous steps are followed. Editing tools are used to add transition slides (states the topics that create the narrative a.k.a. the learning objectives), name tags (stating the subject's name, profession, and interest in the NAIAD 2020 project), and transition music. Editing is also where the "uhms" and "uhs", and any other blank space is taken out. Any external comments/questions should also be edited out; these questions can be used as transition slides or assessment questions for later on. The only thing in the video should be the subject/slideshow and their own audio.

For any more questions or concerns, feel free to contact the Work Package 9-MOOC team.

Table 3: Sendai Targets and Proposed Indicators (source: UNISDR, 2017)



Annex 3. Example of storyboard: Beam parkland flood storage area

Introduction and orientation:

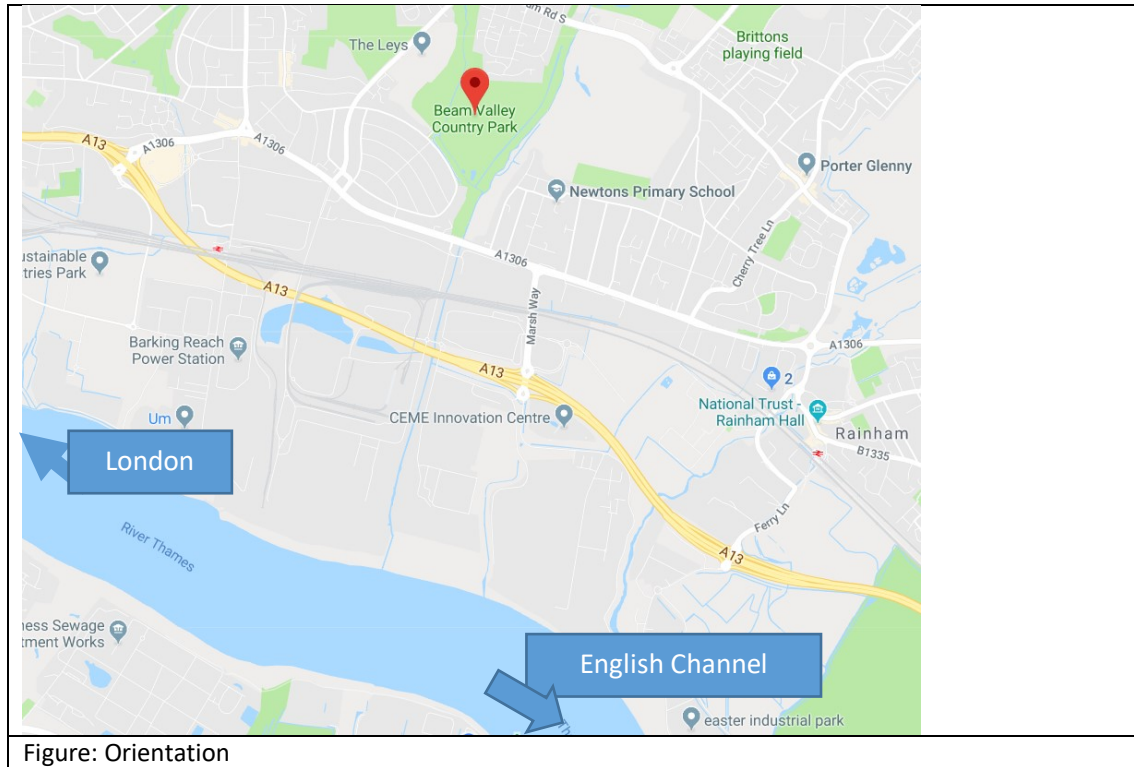


Figure: Orientation

- Land use: very urban
- Upstream – urban
- Downstream –urban / tidal impact

History:

Downstream:

- Industrial area downstream
- Ford factory
- Barking power plant (1/3 of London's power supply)
- 40k people lived
- Currently factory is very small



Beam parkland area:

- Former smallpox isolation area
- Dilapidated land area with lot of antisocial behaviour
- Poorest neighbourhoods

The future:

- Plans to develop a new urban area (new town) downstream
- Roughly the size of city of Windsor.

The Rehabilitation:

- Environmental agency took over
- Used as a flood retention area
- European regional development fund support
- Rewilding
- Biodiversity enhancement/protection

Flood retention function:

- Beam river causes flash floods – urban upstream
- Discharge can flow to Thames only during low tide (-3h,+3h window around ebb tide).
- Outside this time a lock is in operation to prevent backflow from Thames. (effectively isolated)
- If the flood occurs outside this time, water can back up to the beam parkland
- Use as a flood detention
- Excess water channelled to a side channel and pumped to Thames
- Grey/green combined solution
- 433k cu.m + 25k added later upon rehabilitation

Valuation:

- 2015 study “Natural capital assessment”
- 591k GBP/year Flood risk reduction benefit
- 770k GBP/year community benefits



Annex 4. Evaluation of summer course by participants

SC01-SC09 Summer Courses 2018/2020

Q1 Which Summer Course did you follow?

Answered: 19 Skipped: 0



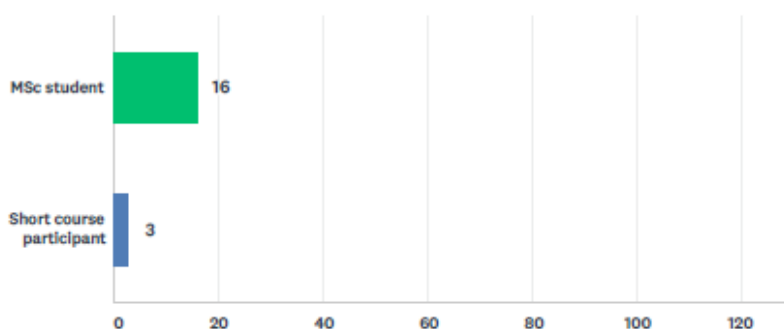
ANSWER CHOICES	RESPONSES	
SC01: Advanced Multi-stakeholder Analysis	0.00%	0
SC02: Asset Management of Water Systems	0.00%	0
SC03: Becoming a Water Leader	0.00%	0
SC04: Diverting the Flow: Questions of Gender in Water	0.00%	0
SC05: Greening Risk Reduction with Nature Based Solutions	100.00%	19
SC06: Hitch-hikers Guide to the Sustainable Development Goals	0.00%	0
SC07: Serious Gaming for the Water Sector	0.00%	0
SC08: Sustainable Development in the Water-Energy-Food Nexus	0.00%	0
SC09: Visual Methods for Water Communication	0.00%	0
TOTAL		19



SC01-SC09 Summer Courses 2018/2020

Q2 Please indicate if you are an MSc student or a short course participant

Answered: 19 Skipped: 0



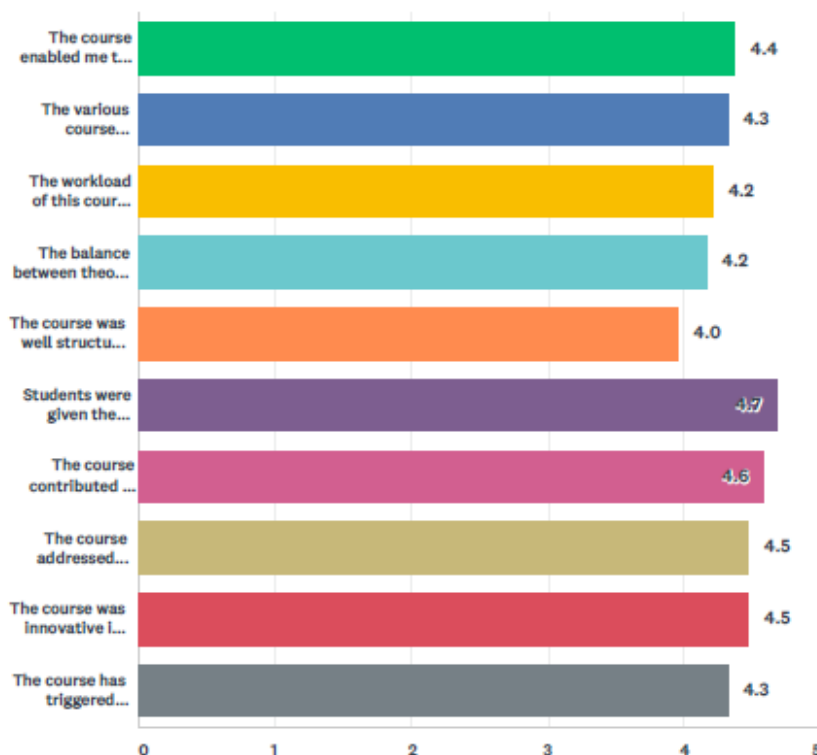
ANSWER CHOICES	RESPONSES	
MSc student	84.21%	16
Short course participant	15.79%	3
TOTAL		19



SC01-SC09 Summer Courses 2018/2020

Q3 Course content

Answered: 19 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
The course enabled me to achieve the learning objectives as stated in the course description	0.00% 0	0.00% 0	5.26% 1	52.63% 10	42.11% 8	19	4.37
The various course components were relevant to me	0.00% 0	0.00% 0	10.53% 2	47.37% 9	42.11% 8	19	4.32
The workload of this course was reasonable	0.00% 0	5.26% 1	10.53% 2	42.11% 8	42.11% 8	19	4.21
The balance between theory and practice (exercises/assignments) was right	5.26% 1	5.26% 1	5.26% 1	36.84% 7	47.37% 9	19	4.16
The course was well structured and coordinated	5.26% 1	5.26% 1	15.79% 3	36.84% 7	36.84% 7	19	3.95
Students were given the chance to participate in class	0.00% 0	0.00% 0	0.00% 0	31.58% 6	68.42% 13	19	4.68
The course contributed to broadening my professional knowledge and/or skills	0.00% 0	0.00% 0	0.00% 0	42.11% 8	57.89% 11	19	4.58
The course addressed issues outside the direct scope of my specialisation	0.00% 0	0.00% 0	5.26% 1	42.11% 8	52.63% 10	19	4.47



SC01-SC09 Summer Courses 2018/2020

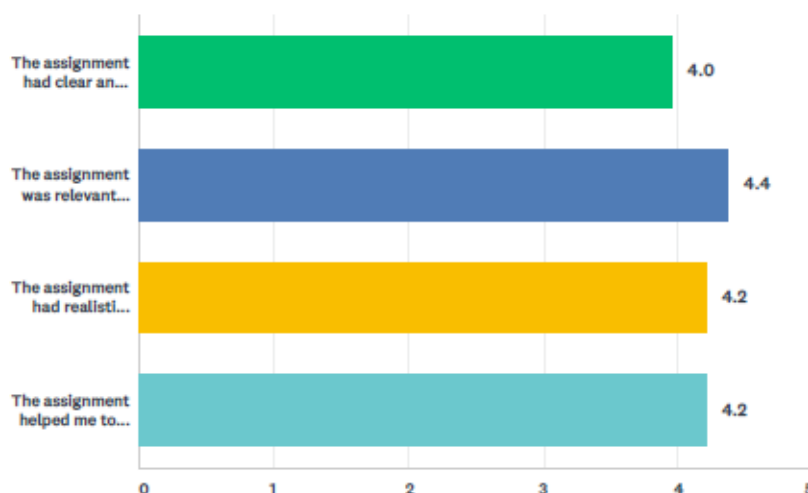
The course was innovative in terms of content, approach, and/or perspective offered	0.00% 0	0.00% 0	10.53% 2	31.58% 6	57.89% 11	19	4.47
The course has triggered critical thinking about the societal impact/relevance of my profession	0.00% 0	0.00% 0	21.05% 4	26.32% 5	52.63% 10	19	4.32



SC01-SC09 Summer Courses 2018/2020

Q4 Assessment procedures - Assignment(s), Presentation, etc

Answered: 19 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	N/A	TOTAL	WEIGHTED AVERAGE
The assignment had clear and specific instructions	0.00% 0	15.79% 3	10.53% 2	36.84% 7	36.84% 7	0.00% 0	19	3.95
The assignment was relevant and well integrated with the course content	0.00% 0	0.00% 0	21.05% 4	21.05% 4	57.89% 11	0.00% 0	19	4.37
The assignment had realistic deadlines	0.00% 0	0.00% 0	21.05% 4	36.84% 7	42.11% 8	0.00% 0	19	4.21
The assignment helped me to achieve the learning objectives	0.00% 0	0.00% 0	26.32% 5	26.32% 5	47.37% 9	0.00% 0	19	4.21

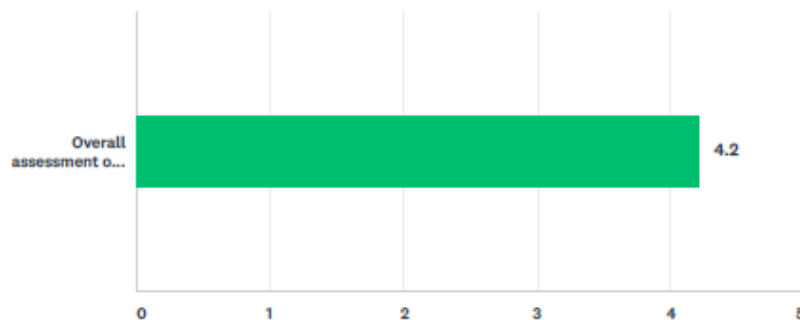
#	ANY ADDITIONAL COMMENTS ?	DATE
1	I think the course contents & materials are well defined.	8/26/2019 3:59 PM
2	more time for room for the river field trip if this NBS was mentioned that often as a NBS	8/24/2019 6:18 PM
3	I think it will be better to leave a little bit more time for the assignment at the end of the week. The additional guest lecturers could be done more at the beginning as an introduction and the lecture with the other class might be interesting but maybe it should be more concise and take only one period.	8/22/2019 12:10 PM
4	more time for us to discuss about the assignment	8/21/2019 6:07 PM



SC01-SC09 Summer Courses 2018/2020

Q5 Overall assessment

Answered: 19 Skipped: 0



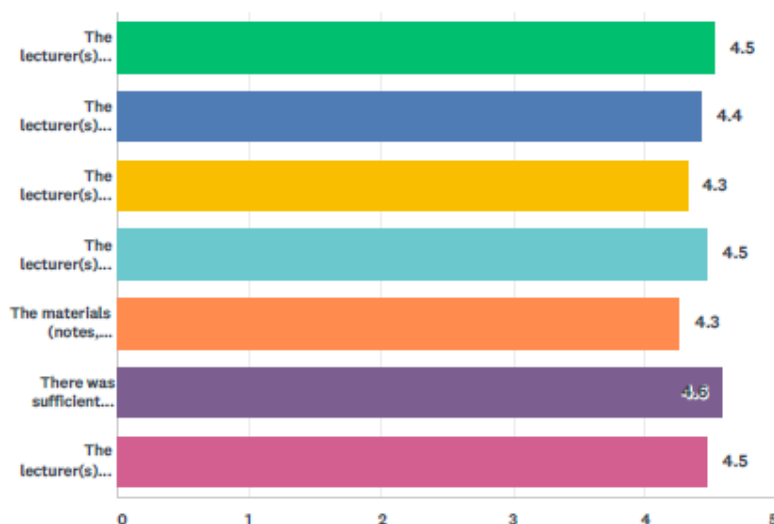
	POOR	UNSATISFACTORY	SATISFACTORY	GOOD	VERY GOOD	TOTAL	WEIGHTED AVERAGE
Overall assessment of the quality of your Summer Course	0.00% 0	5.26% 1	15.79% 3	31.58% 6	47.37% 9	19	4.21



SC01-SC09 Summer Courses 2018/2020

Q6 General evaluation of the course lecturers

Answered: 19 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
The lecturer(s) appeared to have thorough knowledge	0.00% 0	0.00% 0	5.26% 1	36.84% 7	57.89% 11	19	4.53
The lecturer(s) used appropriate didactical skills	0.00% 0	0.00% 0	0.00% 0	57.89% 11	42.11% 8	19	4.42
The lecturer(s) presented material at the right speed	0.00% 0	0.00% 0	10.53% 2	47.37% 9	42.11% 8	19	4.32
The lecturer(s) related course topics to each other	0.00% 0	0.00% 0	0.00% 0	52.63% 10	47.37% 9	19	4.47
The materials (notes, hand-outs, etc.) were clear and well-structured	0.00% 0	0.00% 0	10.53% 2	52.63% 10	36.84% 7	19	4.26
There was sufficient possibility for questions or discussion during the class	0.00% 0	0.00% 0	0.00% 0	42.11% 8	57.89% 11	19	4.58
The lecturer(s) was/were easy to contact outside of class	0.00% 0	0.00% 0	5.26% 1	42.11% 8	52.63% 10	19	4.47

#	ANY ADDITIONAL COMMENTS ?	DATE
1	The course materials and contents are sufficient	8/26/2019 4:18 PM



SC01-SC09 Summer Courses 2018/2020

Q7 What did you like most about this module?What were your most favorite experiences with this module?

Answered: 14 Skipped: 5

#	RESPONSES	DATE
1	The structure	9/6/2019 9:08 PM
2	Course contents. The participation of students	8/26/2019 4:27 PM
3	All	8/26/2019 12:20 PM
4	field trip	8/24/2019 6:21 PM
5	The field experiences, interacting with specialists in adoption of greening solutions, The challenge it offered me in sharpening and developing my critical thinking	8/22/2019 7:05 PM
6	Field trip to Rotterdam for the case study.	8/22/2019 6:05 PM
7	The Rotterdam field trip was very interesting and also the actual assignment and the presentations were.	8/22/2019 12:13 PM
8	Présentations and fieldtrips	8/22/2019 10:42 AM
9	Field visit to Rotterdam	8/22/2019 9:20 AM
10	discussing with group members	8/21/2019 6:09 PM
11	working on case studies	8/20/2019 8:38 PM
12	I like to learn about nature-based solutions for urban drainage My most favourite experience was the field trip in Rotterdam	8/20/2019 8:32 PM
13	Workshop for different NBS assessment tools	8/20/2019 7:51 PM
14	It was a continuation of the Wetlands for Livelihoods and conservation, I linked the link of the two modules.	8/20/2019 5:40 PM



SC01-SC09 Summer Courses 2018/2020

Q8 What did you like least about this module?What were your least favorite experiences with this module?

Answered: 12 Skipped: 7

#	RESPONSES	DATE
1	Time frame.	8/26/2019 4:27 PM
2	non	8/26/2019 12:20 PM
3	na	8/24/2019 6:21 PM
4	Being subjected to whole day lectures; could be more practical; or short and informative	8/22/2019 7:05 PM
5	The timing for different facilitators. It would have been good to have some brief introduction before some facilitators joined The combining of two summer courses into one was not very helpful in terms of what was discussed	8/22/2019 6:05 PM
6	The short time given to work on the assignment	8/22/2019 12:13 PM
7	None	8/22/2019 10:42 AM
8	Hard to find any	8/22/2019 9:20 AM
9	no clear structure for doing group work	8/20/2019 8:38 PM
10	I do not like how the sustainable development goals were introduced into the topic of nature-based solutions The lecture about sustainable development goals	8/20/2019 8:32 PM
11	Not focusing deeper in the nature based solutions, but focusing more in the process and assessment.	8/20/2019 7:51 PM
12	It had a lot more covered within a short period of time.	8/20/2019 5:40 PM



SC01-SC09 Summer Courses 2018/2020

Q9 Was there anything you found missing in the module which you believe should have been included?

Answered: 11 Skipped: 8

#	RESPONSES	DATE
1	The part where risk and reduction should be discussed more which was missing, hardly there	9/6/2019 9:08 PM
2	No.	8/26/2019 4:27 PM
3	more visit to the NBS should be included	8/26/2019 12:20 PM
4	field trip to one of the room for the river projects	8/24/2019 6:21 PM
5	I Believe not	8/22/2019 7:05 PM
6	Not Much	8/22/2019 6:05 PM
7	Some more insight into the actual risk decrease by using a green solution instead of a grey one	8/22/2019 12:13 PM
8	No	8/22/2019 10:42 AM
9	Site visits were not very relevant	8/20/2019 8:38 PM
10	it was missing to discuss more the business canvas in order to know how to apply in the cases	8/20/2019 8:32 PM
11	Not focusing deeper in the nature based solutions	8/20/2019 7:51 PM



SC01-SC09 Summer Courses 2018/2020

Q10 Do you have any other comments or suggestions to improve the module? How could your student experience with this module be improved?

Answered: 7 Skipped: 12

#	RESPONSES	DATE
1	Put on risk reduction as the central focus because that's where the core idea of the course is	9/6/2019 9:08 PM
2	Time limit of course could be increased.	8/26/2019 4:27 PM
3	more field visits	8/26/2019 12:20 PM
4	more fieldtrip than lecturer. I find it horrible to be in a classroom in the midst of summer. better to have more practical stuff	8/24/2019 6:21 PM
5	Suggesting students to present their own cases from their own countries/ of their own interest and apply the knowledge being taught and seek consultations	8/22/2019 7:05 PM
6	See a little more of the assessment in a technical way	8/20/2019 7:51 PM
7	It should be converted to a module rather than a summer coarse.	8/20/2019 5:40 PM



SC01-SC09 Summer Courses 2018/2020

Q11 Is there a specific topic on which you would have liked to follow a Summer Course?

Answered: 6 Skipped: 13

#	RESPONSES	DATE
1	No need	8/26/2019 4:27 PM
2	NBS for irrigation	8/26/2019 12:20 PM
3	more practical stuff as part of summercourse and more outdoor	8/24/2019 6:21 PM
4	None as of now	8/22/2019 7:05 PM
5	Decentralized sanitation systems	8/20/2019 8:32 PM
6	International Port Seminar	8/20/2019 5:40 PM