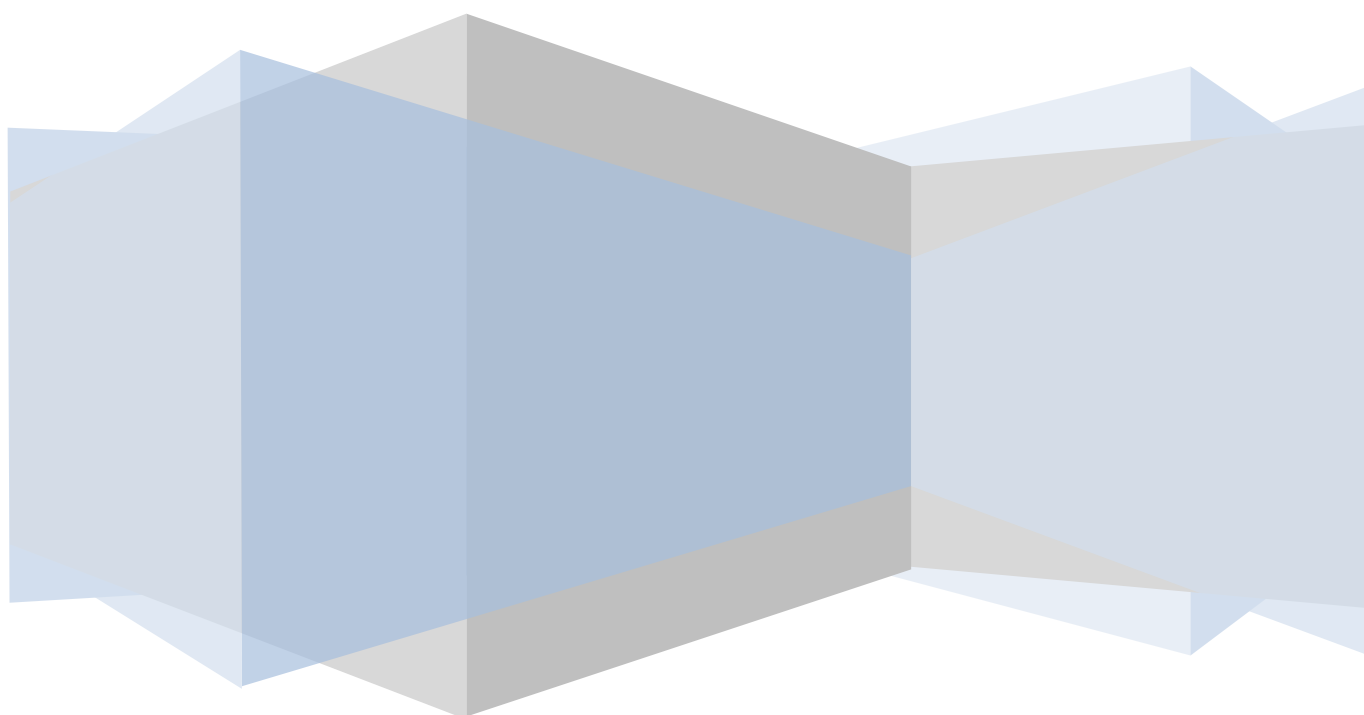


# Mid-Term Progress Report

## Water Joint Programming Initiative 2018 Joint Call

*Closing the water cycle gap - Sustainable  
management of water resources*



# **2018 Joint Call**

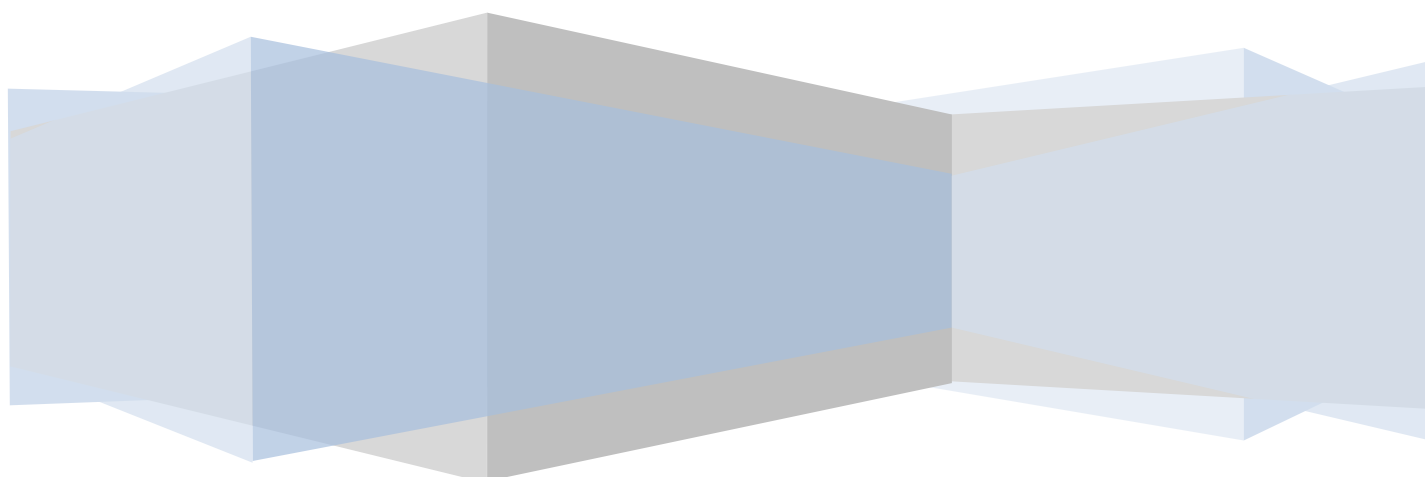
## **Mid-Term Progress Report**

### **Closing the water cycle gap - Sustainable management of water resources**

#### **NATURE-BASED SOLUTIONS FOR WATER MANAGEMENT IN THE PERIURBAN: LINKING ECOLOGICAL, SOCIAL, AND ECONOMIC DIMENSIONS (NATWIP)**

This document must be filled in by the project coordinator with the help of its project partners and must be sent to the WaterWorks2017 Follow-up Secretariat by **Nandita Singh** (for Consortium NATWIP).

The WaterWorks2017 Follow-Up Secretariat will ensure distribution to the concerned national funding agencies. The project coordinator is responsible for sending a copy of the report to its partners.





## **NATURE-BASED SOLUTIONS FOR WATER MANAGEMENT IN THE PERIURBAN: LINKING ECOLOGICAL, SOCIAL, AND ECONOMIC DIMENSIONS (NATWIP)**

Author of this report (Coordinator): Nandita Singh

Date of submission: 2020-10-30

E-mail: [nandita.singh@sh.se](mailto:nandita.singh@sh.se)

Project Website: [www.natwip.solutions](http://www.natwip.solutions)

Project code: WaterWorks2017-NATWIP

Duration of project:

Start date: 2019-04-01

End date: 2022-06-30

Period covered by this report: **2019-04-01 to 2020-09-30**

## I. Publishable Summary

Maximum 1 page

*The project context and objectives:* NATWIP intends to contribute to closing the water cycle gap by focusing on water management challenges in landscape areas that have been neglected because they lie in the transition zones between the urban and the rural, commonly referred to as 'peri-urban' areas, where the potential offered by nature-based solutions (NBS) is explored. The overall purpose is to exchange learning experiences among the partnership and promote the debate between science and society in order to increase awareness among practitioners and users on the application of NBS to manage different hydrological challenges such as water scarcity, pollution, and risks related to extreme events like flood and drought in peri-urban areas.

4 specific objectives have been defined in NATWIP: 1) Review of international experiences to identify barriers, lessons learned & challenges in the implementation of different NBS to deal with water management in the periurban; 2) Designing a methodological framework as a tool to analyze the potentials, content & benefits of NBS in peri-urban, considered from sustainability perspective; 3) Applying the methodological framework at multiple case study sites with an aim to compare situations & draw generalizations; & 4) Creating a common narrative for implementing NBS for water in the periurban, through best practices guidelines & policy recommendations.

*The main results achieved so far:* During the first 18 months, the first two objectives have been achieved to a great extent. International experiences on NBS for water in the periurban have been reviewed through a systematic literature review (SLR) of 1288 peer-reviewed articles. Additionally, a series of interviews were conducted with key experts involved in NBS in the different partner countries. An executive summary of the report is available on project website and two scientific papers containing more detailed analysis of the findings are in progress. Additional activities connected to review of international experiences are in progress in S. Africa and India. A near-final version of a methodological framework that can be used as a tool for assessing implementation of NBS in peri-urban contexts for addressing water challenges has been produced. This framework is partly derived from the findings of the SLR, complemented by an additional SLR and review of experiences. A scientific paper describing the framework is under preparation. Action for achieving the third specific objective is in progress. Background work for the third objective is complete and presently, the assessment framework produced earlier is being finalized for application to the specific case studies in the different partner countries.

*The expected final results and their potential impact and use:* The review of international experiences intends to build knowledge on the current status of NBS for water management in the periurban and the barriers, lessons learned and challenges facing their implementation seen through the sustainability lens. The methodological framework and its application to the case study sites intends to develop a ready-to-use tool for assessing the sustainability of any planned, ongoing or completed NBS for water management in the peri-urban. The case study reports and comparisons will help build knowledge about NBS practices for water in the periurban seen from sustainability perspective. Finally, the assessment tool developed above together with the common narrative would enable implementation of sustainable NBS for water in periurban areas, in turn promoting circular economy as well as a blue-green economy where more efficient water management through naturally-oriented water cycle will be combined with green infrastructure to promote socio-economic development in the peri-urban spaces. Project website: [www.natwip.solutions](http://www.natwip.solutions)

## 2. Work Performed and the Results achieved during the reporting period

*Maximum 10 pages.*

Please attach any deliverables produced and information on milestones achieved during the reporting period of this report.

### **a. Scientific and technological progress**

*Please describe the work performed and the results obtained during the period concerned, and the conformity of the work progress within the initial schedule.*

Though officially the project was launched on April 1, 2019 (with timely funding decision in Sweden), the project initiation faced a number of challenges. Among these, delays and uncertainties in partner funding lingered as an issue for quite some time. In fact, the Polish partner ultimately failed to receive funding, as a result of which they had to drop-out. The Norwegian, Spanish and South African partners had to wait for clearing of their funds. Besides delay, S. African funds came to be downsized, which meant a downward revision of their project budget. All these issues had important consequences for the project. Delay and uncertainty in funding resulted in postponement of the project initiation and adjustment of workpackage (WP) timelines. The project kick-off meeting could not be organized before 4-5 June 2019, which already meant a loss of 2 months. Further, even participation in this meeting required self-funding from the funded partner from S. Africa. The delay in start of the project came to be solved through prudent rescheduling of the time plan, and the revised work plan/time plan devised during the kick-off meeting is being closely followed.

The Polish partner was a key participant in the project and the cancellation of their funding led to an absence of a leader for WP 2. This problem, however, came to be partially resolved by engaging another institution from Brazil as an associate partner – namely, the International Institute for Sustainability (IIS-Rio), Rio de Janeiro, Brazil. For WP2 leadership, IIS-Rio was then sub-contracted by the Norwegian partner and also officially replaces the original Brazilian partner CSRio, who were self-funded. The sub-contract was for WP 2 (which is now concluded) but the Brazilian partner continues to participate in-kind in all the WPs through the rest of the project tenure. Downsizing of the S. African budget has meant a shorter and smaller funded participation, but they will continue to contribute in-kind to effectively complete their responsibilities in the project.

Despite the delays in project initiation, a substantially good progress has been achieved in the project during the first 18 months. Work in the first two workpackages (WP) are next to complete, with the result that the first two project objectives are almost achieved. In fact, the progress in the first two WPs has been faster than originally foreseen.

#### **Progress in WP1:**

WP1 was connected to the first project objective, which aimed at: “Review of international experiences to identify barriers, lessons learned & challenges in the implementation of different NBS to deal with water management in the periurban”. This WP aimed to develop a qualitative assessment from a multidisciplinary and multi-sectoral perspective by establishing the overall narrative(s) of the implementation of NBS in peri-urban areas.

This WP was revised to be completed during Sep 2019-Apr 2020 and comprised two main activities. Activity 1 comprised review of international experiences on NBS for water in the

periurban through a systematic literature review (SLR) of 1288 peer-reviewed articles. The SLR was initiated and conducted by the Spanish partner and completed within the expected time frame. The SLR helped to collect, examine and integrate various scientific contributions systematically. This review also ensured a logical process through a descriptive search procedure, establishing criteria for inclusion and exclusion, and exposing the analytical dimensions associated to the NATWIP framework proposal. The results of the SLR were shared and discussed with other partners through a series of online WP meetings, and suggestions from other partners have been considered.

The report based on activity 1 presents the theoretical background in the evolution of the NBS definition and the international experiences as practical applications available for water management. Furthermore, the results helped identify and highlight barriers, lessons learned and challenges when implementing different NBS for peri-urban water management.

Under activity 2, in-depth interviews with key experts involved in NBS in the different project countries were conducted, as input from all the consortium partners. An 'interview guide' was prepared by the Spanish partner for this purpose. Thereafter each partner identified relevant experts in their own countries and conducted the interviews. Due to Covid-19 situation, completion of the in-depth interviews was somewhat delayed. Transcripts of all the interviews are available on a shared (internal) project folder. The development of narratives derived from the expert interviews is foreseen as a complementary research paper.

The main deliverable and milestone connected to WPI was a review report at the end. Towards this deliverable, two scientific papers containing more detailed analysis of the findings are under preparation, and an executive summary of the review is already published on the project website (also attached to this report). It has been unanimously decided at the mid-term meeting that after publication of both the articles, these will be publicly shared on the project website.

As a complement to the Spanish team's initiative and efforts, the South African team is undertaking a second literature review (initiated during the Covid-19 lockdown). They identified that while the SLR focusses on challenges, lessons, barriers, the impact that NBS has (if any) on improvements to society is not a current focus of the WPI-led international review. So, they are exploring the question: What are the benefits of investments into nature for society? A global south perspective. They have performed the bibliometric searches, obtained the pdf copies of most papers, and already started the coding process.

In India, one master's student is performing a historical review of the status, changing practices and policy concerning NBS for water in the urban and peri-urban areas, NBS for water management being an old tradition in India. This is based on a desk review as well as interviews with key stakeholders. The study is anticipated to help identify barriers, lessons learned and challenges in the implementation of NBS in the peri-urban in present times.

### **Progress in WP2:**

The project objective connected to WP2 was to: “Design a methodological framework as a tool to analyze the potentials, content & benefits of NBS in peri-urban, considered from sustainability perspective”. Under the revised time plan, this WVP was to be implemented during the period Feb-Jun 2020, and has been completed, with designing of a near-final version of the methodological framework that can be used as a tool for assessing implementation of NBS in peri-urban contexts for addressing water challenges. This framework is partly derived from the findings of an SLR performed by the Brazilian team, complemented by the outcomes of WPI SLR. The work has been completed by the associate partner IIS-Rio, in close cooperation with the Norwegian partner. Since the framework, by nature, is supposed to be multi-disciplinary, the interim results of the WVP were shared by the IIS-Rio team and feedback from the other project partners has been sought through a series of online WVP meetings.

The milestone connected to WP2 was the formulation of the methodological framework for sustainability assessment of NBS for water which has been reached. Regarding the deliverable corresponding to this milestone, IIS-Rio intends to publish a peer-reviewed paper based on the framework before allowing it to be placed on the public domain through the project website. Hence, details of the framework are not yet available there. The ‘Methodology Guidebook’ which will outline the assessment framework is planned to be finalized at a later stage after the case studies comparison in WP3 is completed.

### **Progress in WP3:**

The project objective connected to WP3 is to: “Apply the methodological framework to conduct case study analysis at multiple sites in the partner countries with an aim to compare situations and draw generalizations”. Action for achieving this third objective is currently in progress. The assessment framework produced under WVP2 is being finalized for application to the specific case studies in the different partner countries, namely, Norway, Sweden, Spain, S. Africa, India and Brazil. This is, again, a multidisciplinary exercise, with the initiative being taken by the Norwegian partner, actively supported by others, particularly the Swedish, Spanish and S. African teams. The updated framework will be discussed at a WVP meeting on Nov 5, followed by finalization of the methodology and time plan for conducting the case studies and their comparison at a later meeting.

Though according to the revised time plan, this WVP was supposed to start in Jun 2020, work was already initiated in April 2019 and will continue till Jul 2021. The work started slowly in order to become familiar with the case study sites and is now in full swing. However, the WVP’s plan for completion faces great risk of uncertainty under Covid-19 pandemic. Detailed implementation of many of the individual case studies requires field studies, especially in Sweden, South Africa, Spain and India. This will involve multiple visits to the sites, participant observation of NBS-related activities and interviews with different stakeholders/ actors (including citizens/users). Given the observed upsurge of Covid-19 incidence, it is highly uncertain as to how long the field-based case studies might take. Currently, the partners are gathering more detailed information about the case studies through literature and interviews with key stakeholders. In Sweden, India and S. Africa, students are working on some of the case studies, primarily relying on secondary literature and online interviews due to Covid-19 restrictions. The expected deliverables from this WVP comprise independent case study briefs, to be published on the project website. In addition, scientific publications based on the comparative



case study will be produced. Brief accounts of the case studies, based on the existing knowledge of the partners, have been already published on the project website.

#### **Progress in WP4:**

WP4 is connected to the fourth project objective, which aims at: “Creating a common narrative for implementing NBS for water in peri-urban areas, through best practices guidelines and policy recommendations”. This is the most important WP of the project and will synthesize the outcomes of all the previous WPs. It is planned to start from Jun 2021 and completed by the end of the project period.

The expected deliverables from the WP are a policy brief outlining the major findings of the project in the form of policy recommendations NBS for water in the periurban; popular science publications in the form of ‘photo-stories’ & booklets, to be made available on project website; and a handbook for practitioners (to contain the methodological framework and case studies), in the form of a Report on Project website, and eventually as a book. Also, dissemination workshops will be organized in every European partner country (other partner countries dependent on fund availability).

Though preparatory work for this WP has been initiated by the S. African partner, supported by the consortium coordinator, the start of this WP is contingent upon completion of the third WP, which faces uncertainty as described before. It is anticipated that the narrative in WP4 will draw from three things: Interview results (from WP1), Case study analysis (from WP3), and if possible, specific, focused stakeholder workshops in each country (in WP4). The Workshops in each partner country are planned for late November/early December 2021, where the major theme will concern solutions for implementing NBS for water in the peri-urban. To plan in greater detail, a preparatory online workshop for the partners has been planned for May 2021. And as a prelude to the kind of activities expected in the WP, a shorter workshop was organized during the Mid-Term project meeting on 25 Sep 2020.

This WP further independently faces risk of delay due to Covid-19 pandemic because the country-based stakeholder workshops might get delayed.

#### **Progress in WP5:**

This WP concerns project initiation, coordination, monitoring, communication, knowledge dissemination, and reporting, and is the responsibility of the consortium coordinator. As of now, these project responsibilities are well handled by the consortium coordinator, very well-supported by the WP leaders and other partners. And, despite all difficulties, the project is proceeding in accordance with the revised time plan.

For knowledge dissemination to external stakeholders and public at large, a website ([www.natwip.solutions](http://www.natwip.solutions)) has been launched during the Mid-Term project meeting on Sep 24, 2020. The website will remain in existence on a long-term basis for a period of 10 years from now, helping wide dissemination of the knowledge generated in the project. This deliverable was substantially delayed due to difficulties in finding a suitable agency at affordable cost. Also, the project exists on social media (Facebook, Twitter) and on the research network platform ResearchGate.



### **Promotion of multi-disciplinary work:**

The entire project is based upon multi-disciplinary approach, in terms of the focus of research, requisite knowledge inputs, team expertise, and outputs.

The development of the project was an integrated multi-partner effort where inputs based on different disciplinary specializations of the partners were effectively combined, and its implementation so far has clearly carried forward this multi-disciplinarity. The overall implementation process in every WP is as follows: Each WP is initiated by one partner bringing in their own specialization. This initial effort is then subject to multi-disciplinary scrutiny through multi-partner review and discussion, so that the end-product is ultimately based on multi-disciplinary inputs. The multi-disciplinary insights primarily include technical, planning, ecological and social science perspectives. This is further enhanced through consultations with external stakeholders which is built-in at different phases of the research.

### **b. Collaboration, coordination and mobility**

- *Is the collaboration between partners effective? Is the contribution of each partner clearly identifiable? Does the project still meet the transnational nature?*

The collaboration between the project partners is very effective and cuts across through the different stages of execution of each WP. As described above, the activities under each WP are designed by the WP leader, using their own disciplinary knowledge and specialization. This initial effort is then subject to multi-partner review and discussion, leading to a collaborative effort from all. In this process, the contributions from each partner is initially clearly identifiable, but since the outputs represent an integrated whole, the specifics of contribution eventually get merged.

The project continues to meet the transnational nature. A segment of activities under WP1 was country-based, the outcomes of which are being integrated into a research article which will present transnational perspectives. The case studies to be conducted in WP3 are essentially transnational in character and this will emerge even more clearly during data analysis in the WP when case studies will be compiled and compared.

- *Please, indicate clearly those who performed the work (incl. also in-kind partners).*

In terms of work performance, all project partners – funded, associated and self-funded/in-kind - have been rather equally involved, and are anticipated to continue remain so, thanks to the basic project structure and implementation plan. The funded participants are: Södertörn University, Stockholm, Sweden; Universitat Politècnica de Catalunya (Technical University of Catalonia, UPC), Barcelona, Spain; Stiftelsen Norges Geotekniske Institutt (Norwegian Geotechnical Institute, NGI), Oslo, Norway; and Stellenbosch University, Stellenbosch, S. Africa.

The associate participants (including subcontracted and self-funded/in-kind partners) are Royal Institute of Technology (KTH), Stockholm, Sweden; IIS-Rio, Rio de Janeiro, Brazil; and Anugrah Narayan College (A.N. College), Patna, India.

- *Are the coordination and organisation of the project efficient?*

Until now, the coordination and organization of project activities has been extremely efficient. Coordination and monitoring is maintained through clear and regular communication among

the consortium coordinator and partners through emails, and sharing of essential information and relevant data through the project's 'Box' folder where all shared data files are uploaded. The responsibility for content of each WP is handled by the respective WP leaders & other partners, while the WP leaders and Consortium are jointly responsible for effective implementation of the project as a whole. Towards this end, project-level meetings began with the kick-off on 4-5 June 2019, organized in Stockholm and attended by all partners. This was followed by the Mid-Term meeting on Oct 24-25, 2020. Originally planned to be held in Norway, the meeting was finally organized online due to Covid-19 pandemic. Regular WP meetings are organized by the concerned WP leaders. Sometimes, smaller sub-WP meetings are also organized depending on the need. The major meetings organized in the project have been listed in the table under heading 5.

However, the efficiency of project organization and implementation faces great threat from the impact of Covid-19 pandemic. The impact is being increasingly felt as the project moves from more of desk-based studies to field-based research, as described in some earlier sections. It has already interrupted workflows and face-to-face meetings, which were somehow managed through online substitutes. However, significant risks are foreseen in the form of substantial delay in efficiently completing the case studies under WP3 and stakeholder workshops in WP4, contingent upon the local country-level scenarios.

- *Please, describe the mobility of the researchers within the Consortium.*

Mobility of the researchers is planned towards the end of WP3, in Jul 2021, when a study visit for all partners will be organized in Sweden to the two case study sites. This is foreseen to facilitate mutual learning and sharing of knowledge.

- *Please indicate coordination with other projects funded in the 2018 Joint Call or national and international projects funded by other instruments*

### **c. Impact and knowledge output**

- *Are the main impacts achieved?*

Main WPI impacts have been achieved as the SLR is finalized and the integration of qualitative information from in-depth interviews is a process in progress. As interviews were delayed due to COVID-19, this part is planned to be completed by the end of 2020. The results obtained are exploitable and at the moment two publications are in progress, as pointed out in the publication sections. This collaboration is relevant to the impact of the overall NATWIP project, as a more sustainable water management depends on the integration of multiple actors, who are directly or indirectly involved in promoting new attitudes, behaviors and practices, including the NBS up-take.

- *Are there any unexpected impacts?*

No

- *Where do the results of the project impact? (e.g. industry, end users, policy, etc.)*

The results of the project are primarily targeted to impact policymakers, planners, public sector and civil society practitioners as well as end-users in the community at large. Also, the industry – particularly consultancy firms, will be benefited through the framework and narratives. Another important user group of particularly the results of the international review would be researchers and students in the field.

- *Have the partners identified exploitable results?*

As the project progresses, the exploitable results are emerging clearly from the different WPs.

- *Has intellectual property protection been considered?*

Yes, there has been discussion about intellectual property rights (IPR) and their protection. In general, though all outputs would be deemed as belonging to the project, the IPR for specific outputs is seen to lie with its primary creators (that may be one or more core group of partners), even though other partners may have contributed to its improvement through their feedbacks. The holders of IPR to a specific output would be known from the authors of the work. So far, patents, designs and trademarks are not foreseen to be produced within the project, but scientific deliverables and popular science presentations would definitely involve the question of copyright, the protection of which is a concern in the consortium about which discussions have been held. According to legal frameworks in most of the partner countries, it is either not possible or not required to apply for copyright protection or registration, but rather the right is seen to arise automatically when a work comes into being. However, fearing the risk of unauthorized use of the research outputs, the partners decided to withhold direct publication of reports/framework/documents on the project website before peer-reviewed scientific publication of the outputs.

### 3. Table of Deliverables

Please indicate whether the planned deliverables are completed, delayed or readjusted. Explain any changes/difficulties encountered and solutions adopted. Please add/delete rows, as necessary in the table below.

Deliverable name	Lead partner (country)	Date of delivery (dd/mm/yyyy)	Changes, difficulties encountered and new solutions adopted
<b>WPI</b>			
Review report on international experiences on NBS for water- A comprehensive scientific report	UPC (Spain)	31/12/2019	Delayed due to delays in financial approval of Spanish budget. Organizing expert interviews under this WP was disturbed by Covid-19, and eventually many of the interviews acme to be organized online. Consequently, on the whole, WPI had to be flexible in terms of internal consortium deadlines, extending the time to prepare its deliverables, finally the report was completed in June 2020, an executive summary of which is now available on NATWIP website <a href="http://www.natwip.solutions">www.natwip.solutions</a>

Deliverable name	Lead partner (country)	Date of delivery (dd/mm/yyyy)	Changes, difficulties encountered and new solutions adopted
			Another change in the planned deliverable concerns publication of the full report on project website. The Spanish team which has authored this report expressed the desire to first publish the report as a full scientific paper, before making it available on the website. This intention was consented by all partners at the mid-term meeting, and hence the report will be published on the website later.
<b>WP2</b>			
Sustainability Assessment of NBS for Water in the Peri-Urban -A 'Methodology Guidebook'	Associate partner (IIS-Rio)	30/06/2020	This deliverable was supposed to present an outline of the assessment framework, to be published on project website. However, as with the previous deliverable, the authors of this deliverable (IIS-Rio) expressed the desire to first publish the framework as a full scientific paper. This intention was presented and discussed at the mid-term meeting and received consent from all partners. Hence the assessment framework will appear on the website later.
			Another deviation concerns the 'methodology guidebook'. It was discussed and decided at the mid-term meeting that a final version of the assessment framework that can be applied for assessing sustainability of NBS projects at large will need to also incorporate feedback from the case study applications that will be carried out in WP3. Hence, the guidebook preparation will follow completion of WP3.
<b>WP3</b>			

Deliverable name	Lead partner (country)	Date of delivery (dd/mm/yyyy)	Changes, difficulties encountered and new solutions adopted
<b>WP4</b>			
<b>WP5</b>			
NATWIP project website	SH (Sweden)	30/06/2019	Delayed due to, firstly, delayed kick-off of the project; secondly, delays in searching an appropriate agency for undertaking the task; and finally, procuring all relevant information to be used in setting up the website. The website has been launched at the project's mid-term meeting on 24/09/2020 – <a href="http://www.natwip.solutions">www.natwip.solutions</a> (Note: This deliverable was mistakenly presented as part of WPI in the project application)

#### 4. Budget review

Please include a budget breakdown here, i.e. how the funding has been used so far.

Among the funded partners, against a total requested grant of 905 704 €, total utilization until Aug 2020 has been 324 136 €.

In Sweden, against a total request of 372 574 €, until August 2020, a total of 143 749 € has been used, for personnel cost for permanent position, equipment, travel+subsistence, and overheads.

In Spain, the total fund requested was 82 500 €, and until Aug 2020, the expenses have totaled to 21 081 €, being utilized for meeting costs of personnel cost for non-permanent position, equipment, travel+subsistence, consumables, subcontracting and overheads.

In S. Africa, the requested funds were 50000 €, while expenses incurred until Aug 2020 total 12 559 €. The expenditures pertain to heads personnel cost for non-permanent position, travel+subsistence, and consumables.

In Norway, the requested funds were 400 000 €, out of which the expenditures incurred until Aug 2020 is 146 747 €, utilized for meeting costs for permanent staff, travel+subsistence, sub-contracting associate partner IIS-Rio, Brazil and overheads.

Among associate partners IIS-Rio, Brazil and A.N. College, India, self-funding in cash and kind was decided as 16 000 €, out of which total utilization until Aug 2020 is 5 834 €.

## 5. Consortium Meetings

Please list below the Consortium meetings which took place during the reporting period, by filling in the table below. Add/delete rows as necessary in the table below.

N°	Date	Location	Attending partners	Purpose/ main issues/main decisions?
1	5-6 Jun 2019	Stockholm	SH, NGI, UPC, SU, ANC, KTH, IIS-Rio	Kick-off Meeting, formulation of detailed project plan
2	9 Jan 2020	Online	UPC, SH, NGI, SU, ANC, KTH, IIS-Rio	Presentation of main advances in WPI + planning for upcoming workpackages
3	7 Feb 2020	Online	IIS-Rio, SH, UPC, NGI, SU	Kick-off meeting for WP2
3	31 Mar 2020	Online	UPC, SH, NGI, SU, ANC, KTH, IIS-Rio	Presentation of main results of WPI + next steps
4	15 Apr 2020	Online	UPC, SH, NGI, SU, KTH, IIS-Rio	Review of progress in WP2
4	19 May 2020	Online	UPC, SH, NGI, KTH, IIS-Rio	Review of WPI outputs + progress in WP2 + planning for WP3
5	12 Aug 2020	Online	SH, NGI, SU	Coordination between WP 3 & WP4
6	21 Sep 2020	Online	SH, SU	Detailed planning for WP4
7	25-26 Sep 2020	Online	SH, NGI, UPC, SU, ANC, KTH, IIS-Rio	Mid-term Meeting, review of progress in all workpackages and further (re)planning

## 6. Stakeholder/Industry Engagement

Maximum 1 page

Please indicate how stakeholders/industry were involved in the project during the reporting period:

- Has the project succeeded to engage with stakeholders/industry? If Yes, how? If No – why?

At pan-project level, NATWIP has succeeded to engage with several major stakeholders, including the public sector (government/municipal/local authorities), academia, civil society and NGOs, and the private sector. This engagement, at present, has been through interviews with them as 'key experts' in NBS under WPI. The purpose was to gain knowledge about their experiences and understanding about NBS and its application to manage the distinct water

challenges within their respective jurisdictions. These interviews were conducted by the partners in every country.

Further engagement with stakeholders is connected to WPs 3 and 4, where two-way communication with the stakeholders closely connected to the case studies is centrally important in terms of procuring data as well as sharing results. In Norway, the case study site is set in Skien municipality and throughout the reporting period they have been involved in the project. NGI has had meetings with them to keep them updated about the project as well as to see how the knowledge gained by the researchers can be best used by the practitioners. Similarly, the South African team interviewed key stakeholders, including landowners linked to one of their case studies. In Sweden, close communication with the public sector and other actors connected to the case studies is being maintained. In India, close ties with the governmental as well as civil society actors connected to the case studies have been established. In Brazil, the Associate Partner IIS-Rio has held interviews and meetings with professionals involved in the NBS theme of the academy and the public and private sectors.

- *If applicable, please, describe the provision of data by stakeholders/involvement of industry and dialogue between the project and stakeholders/industry.*

WPI aimed to gather different stakeholders' opinions and perspectives on NBS for water management through in-depth interviews in each partner country. Currently, work on integrating this data in the WPI report is ongoing, while their different narratives will be drafted in a scientific paper (WPI–paper 2). In addition to gathering information from key stakeholders for the project, these in-depth interviews in WPI were used as an opportunity to introduce them to the NATWIP project and engage them in the process of exposing them to the relevance of NBS for water management in the peri-urban. In the case of Norwegian stakeholders, the municipality is discussing which NBS should be used, and the Norwegian partner NGI is able to play a small advisory role here.

- *Has the cooperation between the Consortium and industry/stakeholder partners influenced the project outcome(s) to date? If Yes, How? If No, why?*

NATWIP considers the different stakeholders as experts in the field of NBS, who have brought practical region-based experiences on NBS to NATWIP, which otherwise remained incomplete from the SLR conducted under WPI. Thus, it can be said that the interviews with stakeholders have helped the project reach its specific objective no. 1 more completely.

The Norwegian partner NGI has engaged successfully with representatives from different departments within the Skien municipality as well as the county authority and it is hoped that as they can influence the outcome of the NBS project in the municipality, positively.

The members of Brazilian team consider that the involvement of the different actors in WP2 significantly contributed to achieving the objective of WP2, helping to define the main aspects of the assessment framework and to prepare the list of indicators.

Similarly, at the Swedish, S. African and Indian case study sites, engaging with the local stakeholders is an enriching experience with respect to the knowledge inflow to the project, as well as creation of a pathway for influencing the NBS action on the ground in future.

- *Outline the progress made towards achieving the project expected impacts.*

This stage of engagement with stakeholders was a tool towards producing the project outputs. The progress made towards achieving the project's expected impacts through stakeholder engagement is visible in WPs 1 and 2 and will further show up in WPs 3 and 4. In Norway,



NGI and those working at the municipality have been involved in the dissemination to the wider audience (presentations and paper).

- *Were there unexpected impacts to date?*

Not to date.

## 7. List of Publications produced by the Project - Open Access

- List all presentations, posters, and publications in scientific, peer-reviewed journals derived from this project, separating those in preparation, those in review and those accepted or in press.
- Provide websites and/or electronic copies of the key ones.
- Indicate all the co-authors for each publication.
- Order publications per date (chronologically) and for each year by alphabetical order.

Metadata on all project publications are required to be submitted as part of the final reporting. This will be done via the **Open Data & Open Access platform**, available at: <http://opendata.waterjpi.eu/> (also accessible from the bar menu of the Water JPI website).

International	Peer-reviewed journals	<p><b>1. WP1 – paper 1 (Deliverable D1.2b)</b></p> <ul style="list-style-type: none"> <li>•Date: (in preparation)</li> <li>•Title: International Experiences, Barriers and Lessons learned implementing Nature based Solutions for water management in the peri-urban</li> <li>•Co-authors: Andrea Ramirez, Elisabet Roca.</li> </ul> <p><b>2. WP1 – paper 2 (Deliverable D1.2c)</b></p> <ul style="list-style-type: none"> <li>•Date: (in preparation)</li> <li>•Title: NBS Opening narratives to close the Water Gap</li> <li>•Co-authors: NATWIP PARTNERS.</li> </ul> <p><b>3. WP2:</b></p> <ul style="list-style-type: none"> <li>•Date: (in preparation)</li> <li>•Title: Are nature-based solutions projects aligned with sustainability dimensions? guide and evaluation from an innovative framework</li> <li>•Co-authors: Agnieszka E. Latawiec, Aline F. Rodrigues, Ana Paula Lima, Fernanda Gomes, Fernanda Tubenclak, Ingrid Pena, Veronica Maioli, Viviane Dib and NATWIP partners</li> </ul> <p><b>4. WP3 – paper 1</b></p> <ul style="list-style-type: none"> <li>•Date: (in preparation)</li> </ul>
---------------	------------------------	---

		<ul style="list-style-type: none"> <li>•Title: From landfills to landscapes – nature-based solutions for water management taking into account legacy contamination</li> <li>•Co-authors: Sarah Hale, Unni Husby, Amy Oen, Elisabeth Sjødahl</li> <li>•Journal: Integrated Environmental Assessment and Management special edition “Incorporating Nature-based Solutions to the Built Environment”</li> </ul> <p><b>5. WP3 – paper 2</b></p> <ul style="list-style-type: none"> <li>•Date: (in preparation)</li> <li>•Title: Nature-based Solutions for Decentralized Wastewater Management in Sweden: Exploring Linkages between Technology, Policy and Institutional Dimensions</li> <li>•Co-authors: Nandita Singh, Amelia Morey Strömberg, Pontus Roseen</li> <li>•Journal: Water Resources Management (Open Access)</li> </ul>
	Books or chapters in books	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
	Communications (presentations, posters)	<ol style="list-style-type: none"> <li>1. <i>Nature-based solutions for water resource management in the urban fringe</i>, Amy Oen and Sarah Hale, Norwegian Geotechnical Institute, Oslo, Norway (<a href="mailto:amy.oen@ngi.no">amy.oen@ngi.no</a>), EGU General Assembly 2020, 4-8 May (online). Link: <a href="https://meetingorganizer.copernicus.org/EGU2020/EGU2020-10553.html">https://meetingorganizer.copernicus.org/EGU2020/EGU2020-10553.html</a>.</li> <li>2.</li> <li>3.</li> </ol>
National (separate lists for each nationality SWEDEN)	Peer-reviewed journals	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
	Books or chapters in books	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
	Communications (presentations, posters)	<ol style="list-style-type: none"> <li>1. <i>Nature-Based Solutions for Water: Local Wisdom or Modern Science?</i> Nandita Singh, Sep 19, 2019, at the Environmental Science Seminar Series, Södertörn University, Sweden</li> <li>2.</li> <li>3.</li> </ol>
National (separate lists for each nationality SPAIN)	Peer-reviewed journals	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
	Books or chapters in books	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
	Communications (presentations, posters)	<ol style="list-style-type: none"> <li>1. WPI – Congress oral presentation (Spanish)</li> </ol> <ul style="list-style-type: none"> <li>• Date: 29/09/2020</li> </ul>

		<ul style="list-style-type: none"> <li>• Title: <i>Lessons learned from incorporating Nature-Based Solutions in metropolitan environments. The case of the Axe Besòs.</i> (Presentation in Spanish)</li> <li>• Event: ISUF-H Conference. Forma Urbis and Metropolitan Territories. Metropolis in recomposition. Project's prospectives in the 21st Century</li> <li>• Co-authors: Andrea Ramírez, Roger Porcar, Míriam Villares, Elisabet Roca.</li> <li>• Website: <a href="https://congres.manners.es/ISUF-H/mostrarSesiones.php">https://congres.manners.es/ISUF-H/mostrarSesiones.php</a></li> </ul>
Dissemination initiatives	Popular articles	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
	Popular conferences	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>
	Others	<ol style="list-style-type: none"> <li>1. Project website: <a href="http://www.natwip.solutions">www.natwip.solutions</a></li> <li>2. NATWIP project disclosure on the website of IIS-Rio: <a href="https://www.iis-rio.org/en/projects/natwip-nature-based-solutions-for-water-management-in-the-periurban-linking-ecological-social-and-economic-dimensions-2/">https://www.iis-rio.org/en/projects/natwip-nature-based-solutions-for-water-management-in-the-periurban-linking-ecological-social-and-economic-dimensions-2/</a></li> <li>2. NATWIP project disclosure on the website of the Centre for Conservation and Sustainability Science: <a href="http://csrio.usuarios.rdc.puc-rio.br/en/projetos/solucoes-baseadas-na-natureza-para-gestao-da-agua-em-areas-periurbanas/">http://csrio.usuarios.rdc.puc-rio.br/en/projetos/solucoes-baseadas-na-natureza-para-gestao-da-agua-em-areas-periurbanas/</a></li> <li>3. NATWIP project disclosure on the website of NGI, Norway: <a href="https://www.ngi.no/eng/Projects/NATWIP-nature-based-solutions-for-water-problems-in-the-peri-urban">https://www.ngi.no/eng/Projects/NATWIP-nature-based-solutions-for-water-problems-in-the-peri-urban</a></li> <li>4. NATWIP project disclosure on ResearchGate: <a href="https://www.researchgate.net/project/NATWIP-NATURE-BASED-SOLUTIONS-FOR-WATER-MANAGEMENT-IN-THE-PERIURBAN-LINKING-ECOLOGICAL-SOCIAL-AND-ECONOMIC-DIMENSIONS">https://www.researchgate.net/project/NATWIP-NATURE-BASED-SOLUTIONS-FOR-WATER-MANAGEMENT-IN-THE-PERIURBAN-LINKING-ECOLOGICAL-SOCIAL-AND-ECONOMIC-DIMENSIONS</a></li> <li>5. Social media disclosures, e.g. Facebook page: <a href="https://www.facebook.com/NBSforwater">www.facebook.com/NBSforwater</a></li> </ol>

## 8. Knowledge output transfer

For each of the Knowledge Output arising from the project so far, please complete the following table.

<b>Short Title</b> <i>Please provide a short and concise title to describe the Knowledge Output</i>	<i>Review of International Experiences of NBS for Water in the Peri-Urban – WPI Report</i>
<b>Knowledge Output Description</b> <i>Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated.</i> <i>Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert.</i> <i>If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to and what is innovative about the Knowledge Output? (Max 500 characters).</i>	<p>The aim was to summarise the available knowledge on Nature-based Solutions (NbS) for water management in peri-urban contexts. The purpose of the literature review is to identify barriers, lessons learned and challenges in implementing different NbS to deal with water management in the peri-urban, to expose the theoretical basis in the evolution of the NBS definition and the practical applications available for water management. We conducted this research through a Systematic Literature Review (SLR) of peer-reviewed articles, which will be complemented with a qualitative approach based on in-depth interviews to key informants as input from the Consortium partners</p>
<b>Knowledge Type</b>	* report
<b>Link to Knowledge Output</b> <i>If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper.</i> <i>If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this.</i> <i>If the Knowledge Output is not planned to be publicly available, please state "Not available for public".</i>	<p>The executive summary of the report is published on the project website:  <a href="http://www.natwip.solutions">www.natwip.solutions</a></p>
<b>Sectors &amp; Subsectors</b> <i>Choose as many options as required from the list. Pick those sectors that you think would benefit from the application of this Knowledge Output.</i>	<ul style="list-style-type: none"> <li>• Basin Management</li> <li>• Flood Risk Management</li> <li>• Water Scarcity and Droughts</li> <li>• Drinking Water</li> <li>• Adaptation to Global Change</li> <li>• Others <ul style="list-style-type: none"> <li>○ Governance</li> <li>○ Socio-Economics</li> <li>○ Stakeholder Involvement</li> </ul> </li> </ul>
<b>End User</b> <i>Choose as many options as required</i>	<ul style="list-style-type: none"> <li>○ Environmental Managers &amp; Monitoring</li> <li>○ Policy Makers / Decision Makers</li> </ul>

Per identified End User, please identify possible applications of the Knowledge Output.	o Scientific Community
IPR Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not. Please insert "n/a" if no IPR has been applied.	n/a
Policy-Relevance If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why	
Status Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider: <ul style="list-style-type: none"> <li>• Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</li> <li>• Is there a corroborating body of evidence, or are contradictory results, available?</li> <li>• Does your knowledge progress beyond the current state-of-the-art / evidence base?</li> <li>• Is more research or demonstration needed to validate the results?</li> </ul>	This systematically review carried out provides a wide picture of the use of NBS at pan-scale. However, it would require to review grey literature to get a deeper insight into Global South countries.

Short Title Please provide a short and concise title to describe the Knowledge Output	International Experiences, Barriers and Lessons learned implementing Nature based Solutions for water management in the peri-urban
Knowledge Output Description Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated. Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert. If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to and what is	This paper asks What lessons learned and barriers are identified in implementing NBS for water management in the peri-urban? Under this purpose we have developed a Systematic Literature Review (SLR) of peer - reviewed articles on international experiences, analysing case studies that expose insights on aspects related to (i) NBS Problem-Solution: Water Challenges, Ecosystem Services (ES), Types and Scales and (ii) NBS Governance and management.

innovative about the Knowledge Output? (Max 500 characters).	
Knowledge Type	* scientific publication
<p>Link to Knowledge Output</p> <p><i>If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper.</i></p> <p><i>If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this.</i></p> <p><i>If the Knowledge Output is not planned to be publicly available, please state "Not available for public".</i></p>	The paper is under review in Sustainability Journal.
<p>Sectors &amp; Subsectors</p> <p><i>Choose as many options as required from the list. Pick those sectors that you think would benefit from the application of this Knowledge Output.</i></p>	<ul style="list-style-type: none"> <li>• Basin Management</li> <li>• Flood Risk Management</li> <li>• Adaptation to Global Change</li> <li>• Others <ul style="list-style-type: none"> <li>○ Governance</li> <li>○ Socio-Economics</li> <li>○ Stakeholder Involvement</li> </ul> </li> </ul>
<p>End User</p> <p><i>Choose as many options as required</i></p> <p><i>Per identified End User, please identify possible applications of the Knowledge Output.</i></p>	○ Scientific Community
<p>IPR</p> <p><i>Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not.</i></p> <p><i>Please insert "n/a" if no IPR has been applied.</i></p>	n/a
<p>Policy-Relevance</p> <p><i>If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why</i></p>	
<p>Status</p> <p><i>Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</i></li> <li>• <i>Is there a corroborating body of evidence, or are contradictory results, available?</i></li> </ul>	This output has conclusive knowledge in the European context. It would require a more extensive literature review to provide more valuable results in the international context, specially in the Global South.



<ul style="list-style-type: none"> <li>• Does your knowledge progress beyond the current state-of-the-art / evidence base?</li> <li>• Is more research or demonstration needed to validate the results?</li> </ul>	
<b>Short Title</b> Please provide a short and concise title to describe the Knowledge Output	A comprehensive framework for assessing the sustainability of Nature-Based Solutions for water in the peri-urban, especially regarding ecological, economic and social dimensions
<b>Knowledge Output Description</b> Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated. Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert. If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to and what is innovative about the Knowledge Output? (Max 500 characters).	This is the major Knowledge Output from WP2, to be reinforced through the outcomes of WP3. This framework will serve as a tool to analyze the potentials, content and benefits of NBS for water in the peri-urban context, considered from ecological, socio-economic, technological, policy, planning, governance, institutional perspectives, and including different types of stakeholders (authorities, administrators, associations, scientists and the public).
<b>Knowledge Type</b>	* exploitable scientific result
<b>Link to Knowledge Output</b> If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper. If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this. If the Knowledge Output is not planned to be publicly available, please state "Not available for public".	Will be eventually published on the project website <a href="http://www.natwip.solutions">www.natwip.solutions</a> and shared on other research and social media project platforms.
<b>Sectors &amp; Subsectors</b> Choose as many options as required from the list. Pick those sectors that you think would benefit from the application of this Knowledge Output.	<ul style="list-style-type: none"> <li>• Basin Management</li> <li>• Flood Risk Management</li> <li>• Water Scarcity and Droughts</li> <li>• Drinking Water</li> <li>• Bathing Water</li> <li>• Emissions and Water Reuse</li> </ul>



	<ul style="list-style-type: none"> <li>• Adaptation to Global Change</li> <li>• Others <ul style="list-style-type: none"> <li>○ Other General</li> <li>○ Agriculture</li> <li>○ Governance</li> <li>○ Consumer Health &amp; Welfare</li> <li>○ Finance</li> <li>○ Socio-Economics</li> <li>○ Stakeholder Involvement</li> </ul> </li> </ul>
<b>End User</b> Choose as many options as required Per identified End User, please identify possible applications of the Knowledge Output.	<ul style="list-style-type: none"> <li>○ Education &amp; Training</li> <li>○ Environmental Managers &amp; Monitoring</li> <li>○ Industry</li> <li>○ Policy Makers / Decision Makers</li> <li>○ Scientific Community</li> <li>○ Civil Society</li> </ul>
<b>IPR</b> Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not. Please insert "n/a" if no IPR has been applied.	n/a
<b>Policy-Relevance</b> If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why	Yes, this output will be relevant and support achievement of WFD objectives. NBS is an invaluable addition to the tools inventory that can be adopted in the European region for addressing the various water challenges. The availability of the framework will play a dual role: enhance awareness about NBS for water in the urban fringes and also, provide a ready-to-use tool for designing and implementing sustainable NBS initiatives in these areas to reach the WFD objectives.
<b>Status</b> Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider: <ul style="list-style-type: none"> <li>• Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</li> <li>• Is there a corroborating body of evidence, or are contradictory results, available?</li> <li>• Does your knowledge progress beyond the current state-of-the-art / evidence base?</li> <li>• Is more research or demonstration needed to validate the results?</li> </ul>	In the process of finalization

<b>Short Title</b> <i>Please provide a short and concise title to describe the Knowledge Output</i>	Incorporating Large-Scale Nature-based Solutions in Urban Development for Sustainable and Resilient Stockholm
<b>Knowledge Output Description</b> <i>Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated.</i> <i>Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert.</i> <i>If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to and what is innovative about the Knowledge Output? (Max 500 characters).</i>	Årstafältet, originally a grassland area, is a southern suburb in Stockholm where an urban development project integrating NBS is designed. The NBS exists as blue-green structures at a large urban scale to adapt to climate change and the expected rise of precipitation and higher risk of flooding. NBS is integrated in a planned city park in which the blue and green urban elements would serve as a sociotope. The main objectives have been to restore a drying stream (Bäckravinen) by bringing in stormwater, increase biodiversity, reduce the water load on the treatment plant and the risk of overflows, clean the water, and maintain the cultural value of the area. This case study promises interesting and innovative empirical insights that while increasing socio-environmental pressures push towards integrating NBS in urban planning projects, there exist great challenge from the existing governance structure, lack of appropriate collaboration and sectorial silos.
<b>Knowledge Type</b>	* exploitable scientific result
<b>Link to Knowledge Output</b> <i>If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper.</i> <i>If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this.</i> <i>If the Knowledge Output is not planned to be publicly available, please state "Not available for public".</i>	Will be eventually available as a case study brief on the project website <a href="http://www.natwip.solutions">www.natwip.solutions</a>
<b>Sectors &amp; Subsectors</b> <i>Choose as many options as required from the list. Pick those sectors that you think would benefit from the application of this Knowledge Output.</i>	<ul style="list-style-type: none"> <li>• Basin Management</li> <li>• Flood Risk Management</li> <li>• Emissions and Water Reuse</li> <li>• Adaptation to Global Change</li> <li>• Others <ul style="list-style-type: none"> <li>○ Agriculture</li> <li>○ Governance</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Socio-Economic</li> <li>○ Stakeholder Involvement</li> </ul>
<b>End User</b> <i>Choose as many options as required</i> <i>Per identified End User, please identify possible applications of the Knowledge Output.</i>	<ul style="list-style-type: none"> <li>○ Environmental Managers &amp; Monitoring</li> <li>○ Policy Makers / Decision Makers</li> <li>○ Scientific Community</li> <li>○ Civil Society</li> </ul>
<b>IPR</b> <i>Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not.</i> <i>Please insert "n/a" if no IPR has been applied.</i>	N/A
<b>Policy-Relevance</b> <i>If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why</i>	<p>The knowledge output is relevant to the WFD that provides a working framework for improving water quality and the stormwater water strategy in Sweden that was updated in 2015 to provide guidance for managing water quality considering the new core ideas of the stormwater strategy as a community issue. There is a knowledge gap on how to resolve planning and governance challenges and thus the link to relevant policies. The knowledge output will facilitate dialogue and contributes to enhancing communication and coordination among water-related sectors and societal actors that can support the WFD and stormwater strategy.</p>
<b>Status</b> <i>Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider:</i> <ul style="list-style-type: none"> <li>• <i>Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</i></li> <li>• <i>Is there a corroborating body of evidence, or are contradictory results, available?</i></li> <li>• <i>Does your knowledge progress beyond the current state-of-the-art / evidence base?</i></li> <li>• <i>Is more research or demonstration needed to validate the results?</i></li> </ul>	<p>The knowledge output is still being generated and will be finalised by the end of the project. More research will be carried out to reflect on the state-of-art of international evidence base of NBS.</p>

<p><b>Short Title</b> Please provide a short and concise title to describe the Knowledge Output</p>	<p>Nature-based Solutions for Decentralized Wastewater Management in Sweden: Exploring Linkages between Technology, Policy and Institutional Dimensions</p>
<p><b>Knowledge Output Description</b> Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated. Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert. If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to and what is innovative about the Knowledge Output? (Max 500 characters).</p>	<p>This is a novel non-deliverable Knowledge Output which has emerged out of the first set of interviews with Swedish stakeholders during WPI and connected to one of the Swedish case studies in WP3. The interviews and background exploration of the case study revealed big gaps in Swedish policy, legal framework and institutional set-up, regarding use of NBS for water especially in those peri-urban areas which lie outside the municipal networks of water supply and wastewater management. This paper will identify those gaps, describe their consequences for widening the water cycle gaps at the local and Baltic sea scales, and propose solutions.</p>
<p><b>Knowledge Type</b></p>	<p>* scientific publication</p>
<p><b>Link to Knowledge Output</b> If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper. If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this. If the Knowledge Output is not planned to be publicly available, please state "Not available for public".</p>	<p>The link will be eventually available as an open access article in journal <i>Water Resources Management</i> and also made available on the project website <a href="http://www.natwip.solutions">www.natwip.solutions</a></p>
<p><b>Sectors &amp; Subsectors</b> Choose as many options as required from the list. Pick those sectors that you think would benefit from the application of this Knowledge Output.</p>	<ul style="list-style-type: none"> <li>• Basin Management</li> <li>• Water Scarcity and Droughts</li> <li>• Drinking Water</li> <li>• Emissions and Water Reuse</li> <li>• Adaptation to Global Change</li> <li>• Others <ul style="list-style-type: none"> <li>○ Other General</li> <li>○ Agriculture</li> <li>○ Consumer Health &amp; Welfare</li> <li>○ Governance</li> <li>○ Socio-Economics</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Stakeholder Involvement</li> </ul>
<b>End User</b> <i>Choose as many options as required</i> <i>Per identified End User, please identify possible applications of the Knowledge Output.</i>	<ul style="list-style-type: none"> <li>○ Education &amp; Training</li> <li>○ Environmental Managers &amp; Monitoring</li> <li>○ Industry</li> <li>○ Policy Makers / Decision Makers</li> <li>○ Scientific Community</li> <li>○ Civil Society</li> </ul>
<b>IPR</b> <i>Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not.</i> <i>Please insert "n/a" if no IPR has been applied.</i>	N/A
<b>Policy-Relevance</b> <i>If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why</i>	<p>This Knowledge Output is relevant to the WFD and the Baltic Sea Action Plan (BSAP), with a focus on coastal and marine waters. Absence or ineffective treatment of wastewater in the coastal areas in the Baltic Sea region, a large part of which emanates from the unserved summer cottage areas, has tended to be ignored in scientific research as well as practical actions. Moreover, the relevance of promoting NBS in these areas for wastewater treatment is even less evident. This knowledge output is thus foreseen to bring new light on the issue and contribute to building transnational knowledge and awareness for appropriate action.</p>
<b>Status</b> <i>Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider:</i> <ul style="list-style-type: none"> <li>• <i>Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</i></li> <li>• <i>Is there a corroborating body of evidence, or are contradictory results, available?</i></li> <li>• <i>Does your knowledge progress beyond the current state-of-the-art / evidence base?</i></li> <li>• <i>Is more research or demonstration needed to validate the results?</i></li> </ul>	<p>Is being finalized. Yes, the knowledge is conclusive enough, being cross-checked with a larger set of stakeholders. As stated above, the paper will help knowledge progress beyond the current state-of-the-art.</p>

<b>Short Title</b> <i>Please provide a short and concise title to describe the Knowledge Output</i>	The way NBS can impact water quality in an area with legacy pollutants from a landfill
<b>Knowledge Output Description</b> <i>Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated. Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert.  If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to and what is innovative about the Knowledge Output? (Max 500 characters).</i>	The case study site in Norway is located in Skien municipality and NBS are being considered in order to assist in re opening of a river which flows through a pipe. The river runs over two old landfills and there is a problem with leaching of contaminants. Via a close collaboration with representatives from different departments within the municipality as well as the county authority, enough information has been obtained to prepare a publication about possible NBS that can be used to help this problem. This problem is actually very under explored in the literature and there are very few similar cases world wide so it is an innovative area of exploration. Based on an initial literature search in this area, very few articles and reports have been found related to NBS and water quality.
<b>Knowledge Type</b>	* exploitable scientific result
<b>Link to Knowledge Output</b> <i>If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper.  If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this.  If the Knowledge Output is not planned to be publicly available, please state "Not available for public".</i>	The report that forms the background to the publication is available in Norwegian at this link: <a href="https://www.miljodirektoratet.no/globalassets/publikasjoner/ml405/ml405.pdf">https://www.miljodirektoratet.no/globalassets/publikasjoner/ml405/ml405.pdf</a>
<b>Sectors &amp; Subsectors</b> <i>Choose as many options as required from the list. Pick those sectors that you think would benefit from the application of this Knowledge Output.</i>	<ul style="list-style-type: none"> <li>• Flood Risk Management</li> <li>• Emissions and Water Reuse</li> <li>• Others <ul style="list-style-type: none"> <li>○ Governance</li> <li>○ Stakeholder Involvement</li> </ul> </li> </ul>
<b>End User</b> <i>Choose as many options as required  Per identified End User, please identify possible applications of the Knowledge Output.</i>	<ul style="list-style-type: none"> <li>○ Policy Makers / Decision Makers</li> <li>○ Scientific Community</li> </ul>
<b>IPR</b>	N/A



<p>Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not. Please insert "n/a" if no IPR has been applied.</p>	
<p><b>Policy-Relevance</b> If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why</p>	<p>WFD provides key policy guidance for water quality and the Floods Directive for water quantity. While NBS for flood mitigation is advancing the policy-relevance in this area, there appears to be a gap between the potential for NBS to improve water quality and thus the link to policy-relevance to the WFD. This publication therefore will contribute to the body of literature that can support water quality policy.</p>
<p><b>Status</b> Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider:</p> <ul style="list-style-type: none"> <li>• Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</li> <li>• Is there a corroborating body of evidence, or are contradictory results, available?</li> <li>• Does your knowledge progress beyond the current state-of-the-art / evidence base?</li> <li>• Is more research or demonstration needed to validate the results?</li> </ul>	<p>The peer reviewed publication based on the information from the report will be finalised and submitted by November 2020. The report that is available in Norwegian has been used by the municipality and also by the Norwegian Environment Agency to decide which NBS may be suitable for the site. There are few similar studies in the area and the publication will address a clear knowledge gap. More research will be carried out for all the case study sites in the project and another paper will be written to reflect findings worldwide for NBS for the peri-urban.</p>

<p><b>Short Title</b> Please provide a short and concise title to describe the Knowledge Output</p>	<p>A historical and social analysis of the Dwars River riparian zone to guide long-term ecological rehabilitation of the river</p>
<p><b>Knowledge Output Description</b> Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated. Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert. If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g.</p>	<p>This honours thesis (non-deliverable) uses a mixed methods approach to study rehabilitation in one of the South African case studies. Rehabilitation of alien tree invaded riparian systems is needed due to high risks (water use, fire risk). This study mapped invasion history and surveyed landowner opinions. Findings were that management efforts should focus on removing least dense invasions of alien trees in the mid-upper catchment. Stakeholder collaboration will be vital in rehabilitation success.</p>



What are the key characteristics of the Knowledge Output? What research is it adding to and what is innovative about the Knowledge Output? (Max 500 characters).	
Knowledge Type	* other: thesis
Link to Knowledge Output If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper. If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this. If the Knowledge Output is not planned to be publicly available, please state "Not available for public".	N/A
Sectors & Subsectors Choose as many options as required from the list. Pick those sectors that you think would benefit from the application of this Knowledge Output.	<ul style="list-style-type: none"> <li>• Water Scarcity and Droughts</li> <li>• Drinking Water</li> <li>• Adaptation to Global Change</li> <li>• Others <ul style="list-style-type: none"> <li>○ Agriculture</li> <li>○ Governance</li> <li>○ Consumer Health &amp; Welfare</li> <li>○ Socio-Economics</li> <li>○ Stakeholder Involvement</li> </ul> </li> </ul>
End User Choose as many options as required Per identified End User, please identify possible applications of the Knowledge Output.	<ul style="list-style-type: none"> <li>o Education &amp; Training: training of rehabilitation implementors (stakeholders)</li> <li>o Industry: landowners for decision making for strategic investment in rehabilitation</li> <li>o Policy Makers / Decision Makers: information for strategic investment in rehabilitation</li> <li>o Scientific Community: extending the knowledge base</li> </ul>
IPR Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not. Please insert "n/a" if no IPR has been applied.	N/A
Policy-Relevance If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why	N/A
Status	Is being finalized.

<p>Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider:</p> <ul style="list-style-type: none"> <li>• Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</li> <li>• Is there a corroborating body of evidence, or are contradictory results, available?</li> <li>• Does your knowledge progress beyond the current state-of-the-art / evidence base?</li> <li>• Is more research or demonstration needed to validate the results?</li> </ul>	
--	--

<p><b>Short Title</b> Please provide a short and concise title to describe the Knowledge Output</p>	<p>Nature-Based Solutions for Water Management in India: The Urban and Peri-Urban Scenario</p>
<p><b>Knowledge Output Description</b> Please only include generated Knowledge Outputs, not those that are expected. Note: Knowledge Outputs can be non-deliverables, milestones or 'grey knowledge'. Also, multiple Knowledge Outputs could exist within one deliverable, and should be separated. Try to give a comprehensive description, making the Knowledge Output fully understandable to a non-expert. If relevant please provide detail of where the Knowledge Output differs from its equivalent, e.g. What are the key characteristics of the Knowledge Output? What research is it adding to and what is innovative about the Knowledge Output? (Max 500 characters).</p>	<p>This is a Master's thesis (non-deliverable) which combines literature survey with stakeholder interviews to examine the different forms of NBS traditionally adopted in urban and peri-urban India to ensure sustainable water supply in history and the changes encountered in the recent times. It will also explore the relevance and potential offered by NBS for water for promoting policies and practices for sustainable water management in urban and peri-urban India.</p>
<p><b>Knowledge Type</b></p>	<p>* other: Master thesis</p>
<p><b>Link to Knowledge Output</b> If you can provide a link to the Knowledge Output then please do so, e.g. digital object identifier (DOI), web address, download, research paper. If the Knowledge Output is not publicly available currently but will be in the future, please provide details. Also, if it is available but only upon request, please state this. If the Knowledge Output is not planned to be publicly available, please state "Not available for public".</p>	<p>Link is planned to be eventually provided through the project website (<a href="http://www.natwip.solutions">www.natwip.solutions</a>)</p>

<p><b>Sectors &amp; Subsectors</b>  Choose as many options as required from the list.  Pick those sectors that you think would benefit from the application of this Knowledge Output.</p>	<ul style="list-style-type: none"> <li>• Basin Management</li> <li>• Flood Risk Management</li> <li>• Water Scarcity and Droughts</li> <li>• Drinking Water</li> <li>• Adaptation to Global Change</li> <li>• Others <ul style="list-style-type: none"> <li>○ Agriculture</li> <li>○ Governance</li> <li>○ Socio-Economics</li> <li>○ Stakeholder Involvement</li> </ul> </li> </ul>
<p><b>End User</b>  Choose as many options as required  Per identified End User, please identify possible applications of the Knowledge Output.</p>	<ul style="list-style-type: none"> <li>○ Education &amp; Training: for promoting NBS as an approach for water sustainability in higher education</li> <li>○ Environmental Managers &amp; Monitoring: to sensitize them about the relevance of integrating NBS in their plans and actions</li> <li>○ Policy Makers / Decision Makers: to inform and sensitize them about the need to design necessary policies and projects based on NBS for addressing water crisis in the country</li> <li>○ Scientific Community: to enhance their knowledge base on the subject</li> <li>○ Civil Society: to support grass-root-based action for promoting practice of NBS for water sustainability</li> </ul>
<p><b>IPR</b>  Please indicate whether IPR has been applied to this Knowledge Output (applied for a patent, copyright etc), or not.  Please insert "n/a" if no IPR has been applied.</p>	<p>N/A</p>
<p><b>Policy-Relevance</b>  If the Knowledge Output is relevant to the WFD or any other related Directives, please list and explain why</p>	<p>N/A</p>
<p><b>Status</b>  Please identify whether the Knowledge Output is finalised, is still being generated or whose status/future is unknown. Consider:</p> <ul style="list-style-type: none"> <li>• Is your knowledge conclusive enough that it provides sufficient evidence to make an impact on, or be applied by, an End User?</li> </ul>	<p>Currently the study is in progress and is planned to be finalized during November 2020.</p>

- *Is there a corroborating body of evidence, or are contradictory results, available?*
- *Does your knowledge progress beyond the current state-of-the-art / evidence base?*
- *Is more research or demonstration needed to validate the results?*

## 9. Open Data

In relation to Open Data, the funded projects will be requested to submit metadata on all the resources directly generated by the project, as well as additional information on how these data will be exploited, if and how data will be made accessible for verification and re-use, and how it will be curated and preserved. Metadata on all project resources are required to be submitted as part of the final reporting. This will be done via the **Open Data & Open Access platform**, available at: <http://opendata.waterjpi.eu/> (also accessible from the bar menu of the Water JPI website).

## 10. Problems Encountered during Project Implementation

- Please indicate if any problems were encountered during the Project Implementation. The most important problem was delay in starting the project due to delayed funding decisions for partners and resultant delay/uncertainty in receiving funds to start work, including travel for the kick-off meeting. Thereafter, the second major problem was the Polish funding agency's decision to cancel the grant to University of Agriculture in Krakow (UAK), Krakow – which was a key partner shouldering a critical responsibility in the project. And the third problem currently facing the project concerns the inability to visit field case study sites and meet stakeholders due to the Covid-19 pandemic. This is leading to delay as well as uncertainty in effectively conducting the planned tasks.
- Did any of the partners find difficulties related to the grant agreement, the availability of funds at national level or other similar issues not specifically related to the technical part of the project?  
As stated above, difficulties in procuring grants was the major challenge faced. Though officially the project was launched on April 1, 2019 (with timely funding decision in Sweden), the project initiation could be organized only in early June 2019, when funding possibilities/situation became clearer for Norway and Spain.  
For S. Africa, there was a delay in initiating the funding process and ultimate award of the grant, and lack of clear communication about funding allocations, which led to the need to downsize the project budget at a later stage. A consequence of the funding difficulties was that the S. African partner self-financed her trip to Stockholm to attend the project kick-off meeting. The other consequence for the S. African partner has been a shorter and smaller funded participation, though in-kind participation will continue throughout the project tenure.

Another serious grant-related difficulty concerned the Polish partner - University of Agriculture in Krakow (UAK), Krakow – where miscommunication in the beginning between the funding agency and the partner finally led to the decision of cancellation of the grant. The major consequence of this decision was the absence of a leader for VP 2.

#### 11. Suggestions for improvement regarding project implementation?

Since most of our problems have been related to funding, in terms of lessons to be learned for future occasions, we think that there is need to have better coordination and organization among the funding agencies so that projects can be implemented in a more effective and timely manner. Also, the communication between funding agencies and the partners needs to be more punctual and clearer.