THE NATURE FOR CATCHMENTS LAUNCHRAMP

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Global Infrastructure Basel Foundation (GIB) is a Swiss non-profit foundation promoting sustainable and resilient infrastructure globally. GIB engages with a wide range of stakeholders to build links between infrastructure projects and sources of finance.

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Project Partners

Special acknowledgement goes to the organisations who supported the development and implementation of the Nature for Catchments Launchramp Methodology:

CONTENT

List of Terms and Abbreviations

Terms

Area	A particular extent of a surface, which is affected by the climate change hazards (e.g., Thessaly Region in Greece).
Site	The specific location where the Nature-based Solution potentially will be implemented.
Study	The present pre-feasibility study in the given area (e.g., Pedieos River in Cyprus).

Abbreviations

IUCN	The International Union for Conservation of Nature
NbS	Nature-based Solutions
NCL	The Nature for Catchments Launchramp
PPP	Public-Private Partnership
RCP	Representative Concentration Pathways
VfM	Value for Money

INTRODUCTION

Summary

The objective of the Nature for Catchments Launchramp is to:

- assess the feasibility of Nature-based Solutions (NbS) and their ability to support climate adaptation and reduce the impact of floods and droughts on people, infrastructure, and the economy;
- deliver specific NbS interventions that align with stakeholders' interests, are embedded in the local institutional and policy framework, and are suitable for further development (i.e., feasibility and implementation stages);
- guide the process of an NbS project; whether as a stand-alone NbS or as a complement to an investment pipeline of infrastructure projects;
- improve access to both private and public financing and funding to develop impactful and bankable NbS or hybrid infrastructure projects;
- identify and quantify co-benefits of NbS measures.

Nature provides innovative solutions to some of the world's biggest problems, including river flooding, droughts, poor water quality and other water security challenges. Floods can cause substantial economic losses and affect the well-being and security of communities and infrastructure. The direct damage of flooding is foreseen to triple during the 21st century if no additional adaptation measures are taken[1]. At the other extreme, droughts and deteriorating water quality are an increasing problem in many parts of Europe. The frequency and magnitude of droughts and floods are expected to increase with climate change, impacting agriculture production, energy supply, and human health. To combat the challenges, decision-makers need to have the information and capacity required to plan effective adaptation measures, which is why **the Nature for Catchments Launchramp (The Launchramp) Methodology** has been developed.

The Launchramp is a project origination and development process for Nature-based Solutions (NbS)[2] interventions. The methodology is a holistically structured and guided framework to assess the feasibility of implementing NbS for adaptation - in particular water security challenges - that can complement conventional "grey" infrastructure, and in some cases even replace it, to limit the recurring impacts of floods and droughts on infrastructure, industries, ecosystems and communities in a more sustainable and cost-efficient manner.

The Launchramp comprises several components to define the project's ambition, conduct site analyses, evaluate governance and policy arrangements, identify applicable NbS and structure suitable financing. It results in a regional-scale pre-feasibility study with specific NbS interventions.

Figure 1. Components of the Nature for Catchments Launchramp Methodology

The methodology has been developed to assist public sector stakeholders (e.g., development banks, regional, city and local authorities, civil society, and advisory services) and private

[1] European Environmental Agency (2021)
[2] Nature-based Solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature (IUCN).

investors in creating a project portfolio with NbS interventions. The Launchramp uses a participatory approach with the local stakeholders to establish the policy, governance, finance, and technical considerations needed to implement the NbS project.

The benefits of using the Launchramp include: a structured and holistic roadmap to develop and implement NbS, ensuring stakeholder engagement, embeddedness in the local institutional and policy framework, analyses and data to assess the costs and benefits, and resulting in improved access to both private and public financing and funding to develop impactful NbS or hybrid infrastructure projects. Public sector stakeholders and investors can use the Launchramp to steer investments towards nature-positive infrastructure and contribute to the Sustainable Development Goals.

The Launchramp has been tested in a partnership supported by the European Investment Bank (EIB) and applied in two river catchments addressing river flooding with NbS 1) Thessaly Region in Greece[3] and 2) the Pedieos River in Cyprus[4]. The methodology has the potential of scalability; the framework can be applied to other climate-vulnerable regions in Europe and can be adapted to various water security challenges to align with stakeholders' interests whilst restoring and creating ecosystems.

[3] https://gib-foundation.org/wp-content/uploads/2022/05/2022_NbS_Thessaly_Pre-feasibility-study.pdf
[4] https://gib-foundation.org/wp-content/uploads/2023/08/Pre-feasibility-study-Pedieos-River_final.pdf

THE NATURE FOR CATCHMENTS LAUNCHRAMP

How to use this document

This document is a guide aiming to give readers an overview of the Launchramp methodology and its purpose, and touches upon its different components. The components comprise several steps and tasks to support public sector stakeholders using the Launchramp and to complete a pre-feasibility study for NbS. Project teams will be provided with an additional workbook, which includes suggestions to assess the feasibility of the NbS intervention and specific exercises to help users collect and document all necessary data and to identify the right financing.

The Launchramp focuses on a participatory approach with the local stakeholders to establish the policy, governance, finance, and technical considerations needed to implement NbS. Creating a "Local Hub" is recommended, in which the project team engages all relevant stakeholders affected by the project, for example, local authorities, decision-makers, site researchers and financiers.

How to use the Launchramp

Users of the Launchramp can utilise the methodology to streamline their own NbS development process and select steps from the components that best suit their needs, existing expertise, and objectives. The user can run through every component of the Launchramp to holistically analyse the situation in the local context. Users who may be already aware of parts of the system can focus on the specific component of interest. The Launchramp can be used independently by the project team or with the support and guidance from Global Infrastructure Basel (GIB) Foundation.

Component One: Ambition

The first component of the Launchramp aims to support public sector stakeholders in defining the ambition of the pre-feasibility study on NbS, including setting objectives for conducting a preliminary assessment of the feasibility of a suite of NbS for the site and the suitability to deliver on the set objectives. This component is essential to identify the further steps of the Launchramp that the user should follow.

THE AMBITION OF THE PRE-FEASIBILITY STUDY	
	The ambition and objectives of the pre-feasibility study
1	- Define the ambition and needs of the study (what would the project team like to achieve with the study, e.g., flood protection for your area). - Set primary objectives for the study (e.g., stakeholder mapping, identification of potential areas for NbS implementation, identification of financing solutions). - Define other objectives related to the contribution the NbS project can make (e.g., biodiversity enhancement, carbon removal, protection of soil).

Component Two: Science

The second component, "Science", allows for the characterisation and analysis of the geographical area. It will assist the NbS proponent identifying, characterising, and analysing the wider area of interest and understanding the (historical) water security challenges facing it. The component will enable the project team to determine whether the implementation of the NbS is suitable. The component comprises several discrete steps, as outlined below.

CHARACTERISATION AND ANALYSIS OF THE AREA	
1	***Description of the geographical area***
	- Description of the geographical area, including the topography.
2	***Description of flood-related challenge(s) of the area***
	- Collection of data for each historical flood event that occurred in the area to allow for the identification of long-term trends and impacts. - Collection of data on flood risks and flood hazards in the area (e.g., by using flood hazard maps that cover the extent of the flooded area and flood risk maps that show the potential adverse impacts on communities, the environment, cultural heritage, and economic activity).
3	***Baseline characterization of the wider area***
	- Determination of the type of flood that occurs in the area and the current features of the area that contribute to flood risk and other impacts (i.e., physical, hydrological, geological, climate, environmental, demographic, and economic features). - Identification of the ecosystem types present in the area that either contribute to or alleviate flood risk by using the IUCN Global Ecosystems Typology.[5] - Selection of site(s) that are suitable for possible implementation of NbS.
4	***The impact of climate change on flood risk***
	- Evaluation of the climate variables that may contribute to the flood risk for several climate change scenarios and the Representative Concentration Pathways (RCP)[6] 4.5 and RCP 8.5 over 30-year periods in the future. The climate variables can include for example, the amount of precipitation, the relative sea level or flood recurrence.
5	***Future development projects planned in or adjacent to the NbS site***
	- Identification of any potential development projects in or adjacent to the NbS site(s); these projects may include infrastructure projects, residential projects, commercial projects, environmental and conservation projects or extractive projects. - Identification of potential synergies/opportunities and conflicts/barriers for the identified development projects and description of how the synergies can be exploited and how the barriers can be managed to ensure the implementation of NbS.

[5] IUCN Global Ecosystems Typology
[6] RCPs are global modelled greenhouse gas emissions pathways to assess regional climate change, impacts and risks. RCF 4.5 is an intermediate scenario where emissions would likely decline from 2040, and global warming would be limited to 3°C. RCF 8.5 represent the worst-case scenario where emissions continue to rise, and the temperature will likely exceed 4°C (IPCC, 2023).

6	***Flood damage modelling***
	Flood damage modelling assesses the expected flood damages (tangible and intangible) and the specific elements at risk. This step comprises the following tasks: - Hazard characterisation: characterisation of (historical) flood hazard events, hydrologic flow models, catchment basin analysis, climate assumptions, probabilistic event catalogue and correlation analysis. - Exposure assessment: mapping the elements at risk, typifying elements at risk and assessing the value of the elements at risk. - Vulnerability analysis: assessment of the relative and absolute stage damage functions for each element at risk. - Damage cost calculation: calculation of the total estimated damage from the flood hazard.
7	***Calculation of expected flood damage***
	- Calculation of the expected economic damage in case a flood occurs. The calculation should be defined for individual flood events and more scenarios (e.g., a 10-, 50- or 100-year flood).

Component Three: Governance and Policy

Component three enables users to evaluate the policy and governance arrangements that may impact the implementation of NbS. The project team will identify the policies and regulations in place, as well as key roles and responsibilities for flood risk management. This evaluation is necessary for the public sector stakeholders to determine whether there is a need to reform policy or governance arrangements to avoid hindrances to the development and implementation of NbS projects in practice.

ANALYSIS OF RELEVANT POLICY AND GOVERNANCE ARRANGEMENTS FOR FLOOD RISK MANAGEMENT	
1	***Policy and legal frameworks that support water-related/flood-related NbS adoption***
	- Identification of the legal, regulatory and policy frameworks at the EU, national and local levels, for example, the EU Floods Directive, EU Water Flood Directive or a national Climate Adaption Strategy, which influence water/flood-related NbS adoption.
2	***Roles and responsibilities for flood risk management***
	- Mapping key roles and responsibilities for flood risk governance and identifying at what stage of the flood risk management process the specific roles are being performed. - Assessment of institutional arrangements against best practice principles to examine the allocation of roles and responsibilities and address pitfalls (risks of overlap, fragmentations, mismatches, or gaps). - Evaluation of how the roles and responsibilities are being performed in practice and identify further practical issues that could undermine the effectiveness of the responsibilities (e.g., lack of personnel, budget cycles).
3	***Evaluation of the need for reform of policy and governance arrangements***
	- Evaluation of the need for policy reform based on the assessment in step 1 *(i.e., is there a critical flood risk management policy or legal framework that contradicts or hinders the meaningful development and implementation of NbS projects?).* - Evaluation of the need for governance reform based on the assessment in step 2 (*i.e., is there a critical flood risk management role that is not adequately covered in the current governance arrangements or hinders the implementation of NbS projects?).* - Proposal of reform pathways. Reform pathways can include changing policy to unlock or leverage greater investment in NbS projects, modifying governance arrangements that promote flood risk management practice, or developing a pipeline of investable NbS projects to motivate further investment in nature.
4	***Stakeholders that need to be engaged for making NbS for flood risk management happen***
	- Identification of a "core partner group" to take the project preparation forward. The core group should include experts on flooding for each administration and multiple levels of the government. The core group should cover economic interest sectors and citizens as well. - Mapping of the stakeholders that have a stake in improving flood risk (i.e., stakeholders at risk, stakeholders engaged in reduction measurements or stakeholders that should invest more in flood risk reduction).

5	***Collective action platforms for flood risk management***
	- Depending on the functionality of the institutional arrangements in place and the range of stakeholders that need to be engaged, there may be a need to set up collective action platforms to enable more sustained engagement from a broader range of interested stakeholders.

Component Four: Selection of Nature-based Solutions

The project team should initially select Nature-based Solutions (NbS), hybrid and/or grey infrastructure measures and compare the chosen measures by conducting a cost-benefit in the local context. The Launchramp focuses on a cost-saving approach, meaning that the implementation of the project aims to reduce the expected costs of operations and avoid losses.

SELECTION OF NATURE-BASED SOLUTIONS	
1	***Initial selection of measures for NbS, hybrid or grey infrastructure projects***
	- Identification of applicable NbS measures for the site to achieve the objectives of the study (e.g. flood mitigation, water quality improvements). - Identification of applicable hybrid and/or grey infrastructure measures for possible implementation. - An initial selection of applicable NbS, hybrid and/or grey measures that could be considered for the final selection should be made.
2	***Comparison of flood protection measures: Cost-benefit analysis***
	- Cost-benefit analysis and evaluation of the selected NbS, hybrid and grey infrastructure measures for flood protection. The cost-benefit analysis should include the calculation of capital costs, maintenance costs, opportunity costs, avoided damage costs, and co-benefits (monetised and non-monetised, including economic, social and environmental co-benefits).
3	***Final project selection***
	- Selection of the final project that provides the greatest value for money, which depends on the costs, and the solution that best matches the project's ambition and objectives set.

Component Five: Finance and Insurance

If the cost-benefit analysis justifies the usage of the NbS measures, appropriate financing should be selected. The four steps of this component guide the user through different options for financing NbS by providing a variety of financing schemes that could be effectively deployed. The Launchramp acknowledges the possibility of using one or more financing instruments, including but not limited to public-private partnerships (PPPs). There is no one-size-fits-all solution, given financing NbS interventions is highly context-specific (e.g., due to the geographical scale, context, or available financing instruments).

The last step provides the user with the information necessary should there be the intention to develop insurance products to de-risk investments of NbS. Insurance is an efficient financial instrument and risk management tool that can enhance resilience, improve the sustainability of infrastructure assets, and protect the natural assets as well as the revenues and services derived from such assets.

FINANCING AND INSURANCE	
1	***Existing funding and financing mechanisms for NbS***
	- Identification of potential public and private financial instruments to develop the project (for example, public budgets, grant funding, taxes, debt instruments including loans and green bonds, or PPPs)[7].
2	***Contextual assessment of public finances***
	- Determination of the project sponsor. - Understanding of public institutions (national and regional) involved in the approval and financing of infrastructure investments. - Understanding the financial affordability of the project for the public sector and ascertaining the volume of cost savings as a relevant funding option (e.g., identifying the recurrent damage compensation paid out by the public sector due to flooding). - Assessment of possible regional or national mechanisms for financing anti-flood mechanisms (if existing).
3	***Assessment of the need for private capital***
	- Value for Money (VfM) analysis to determine the need and cost implications associated with borrowing from the private sector for developing the project. - Identification of potential financing mechanisms for NbS, for example, a public-private partnership (PPP) performance-based model or blended finance strategies.
4	***Insurance: De-risking infrastructure investments through Nature-based Solutions***
	- Analysis and penetration of the insurance market. Involvement of an (re)insurance company at the early financing stage of the project is recommended to help understand, prevent, and reduce risk. - Determination of the scope of insurance, the quantification of benefits due to the implementation of NbS and identification of the project risks and residual risks that need to be insured.

[7] GrowGreen (2019)

NEXT STEPS TOWARDS PROJECT IMPLEMENTION

This document presents the Nature for Catchments Launchramp methodology that covers the project origination process and results in a pre-feasibility study for Nature-based Solutions (NbS) focused on water security challenges. After completing the pre-feasibility phase, the project team would have acquired an in-depth understanding of the challenges faced in the study area, the policy and governance arrangements in place, which includes the first consultation with the local stakeholders, and identified suitable finance.

The pre-feasibility phase initiates the project development process towards the feasibility phase and the implementation of a pilot project. The figure below shows an example of a possible project development cycle for NbS infrastructure projects. The feasibility phase tests in depth the assumptions and recommendations to confirm the viability of the NbS and attract the commitment of various stakeholders. Technical studies, including hydrological modelling, will be conducted, and a detailed understanding of the economic viability and sources of funding will be obtained. During the design phase, the objective is to deliver a well-structured programme with clear associated governance and financing arrangements for the NbS project's success. The last step, project implementation, includes all elements of the project execution, including procurement, detailed design, finance, construction, operation, monitoring, and maintenance.

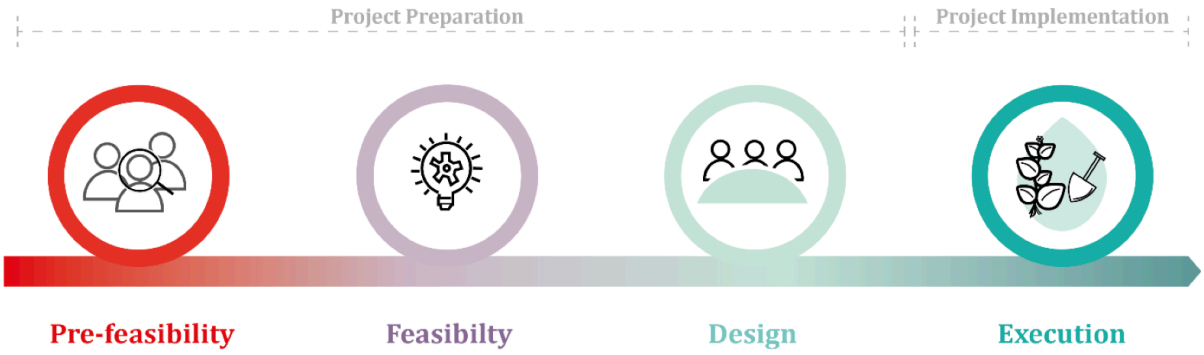

Figure 2. Project Cycle from the pre-feasibility phase to the project execution[8]

A pre-feasibility study is integral to the origination and preparation of NbS projects, in order to guarantee the creation of bankable projects leading to successful implementation. The pre-feasibility study helps to confirm the viability of planned NbS projects, from both technical and political standpoints. Moreover, it explores whether a specific infrastructure service can be best delivered more cost-efficiently through NbS instead of a grey infrastructure solution. Typically, the costs, added benefits, and avoided costs of NbS create more value for money than grey infrastructure alternatives.

[8] The figure has been adapted from the Nature Conservancy (2022).

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