Development of Project Document for Nature-Based Solutions for Wastewater Treatment in the Drin River Basin

General Project Overview

Elisabeta Poci

23nd Nexus Consultation Meeting, 17/06/2022

SHUKALB

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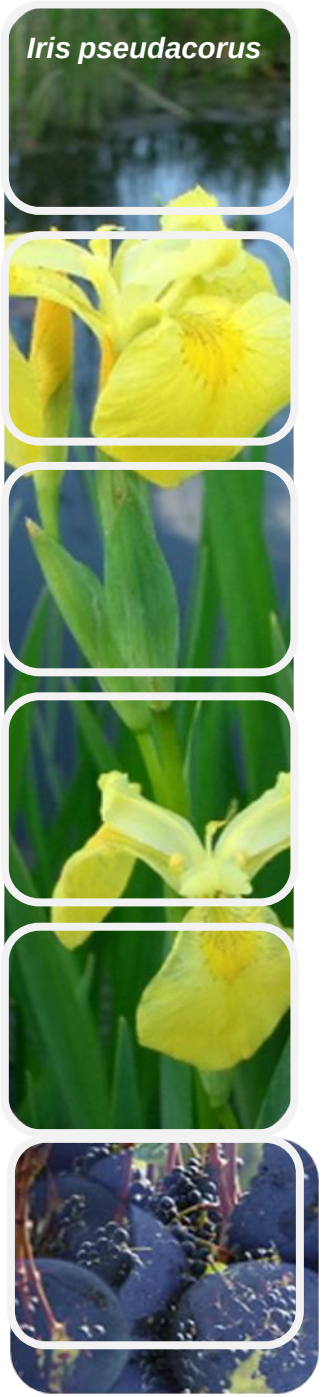


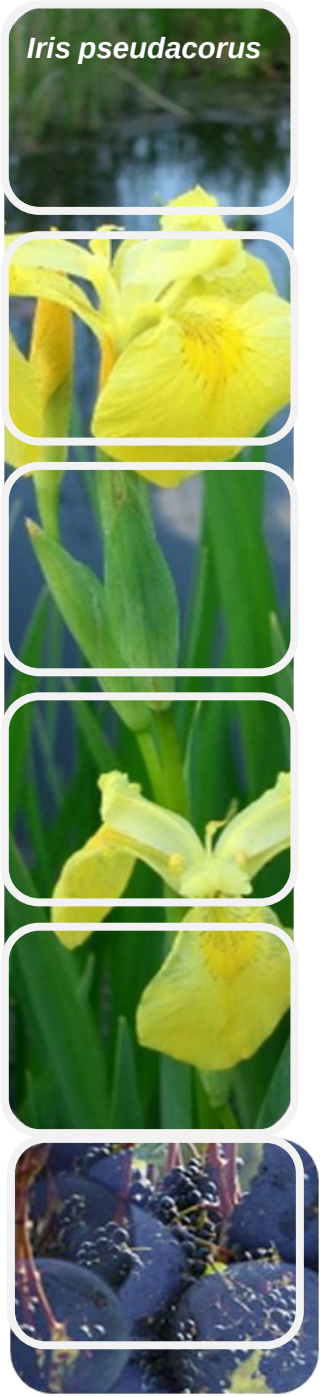
Project objective

Drin river basin

To prepare a full **Project Document,** with the support of two local experienced professionals, for the implementation of Nature-Based Solutions for Wastewater Treatment in two small/medium settlements in the **Drin River Basin**:

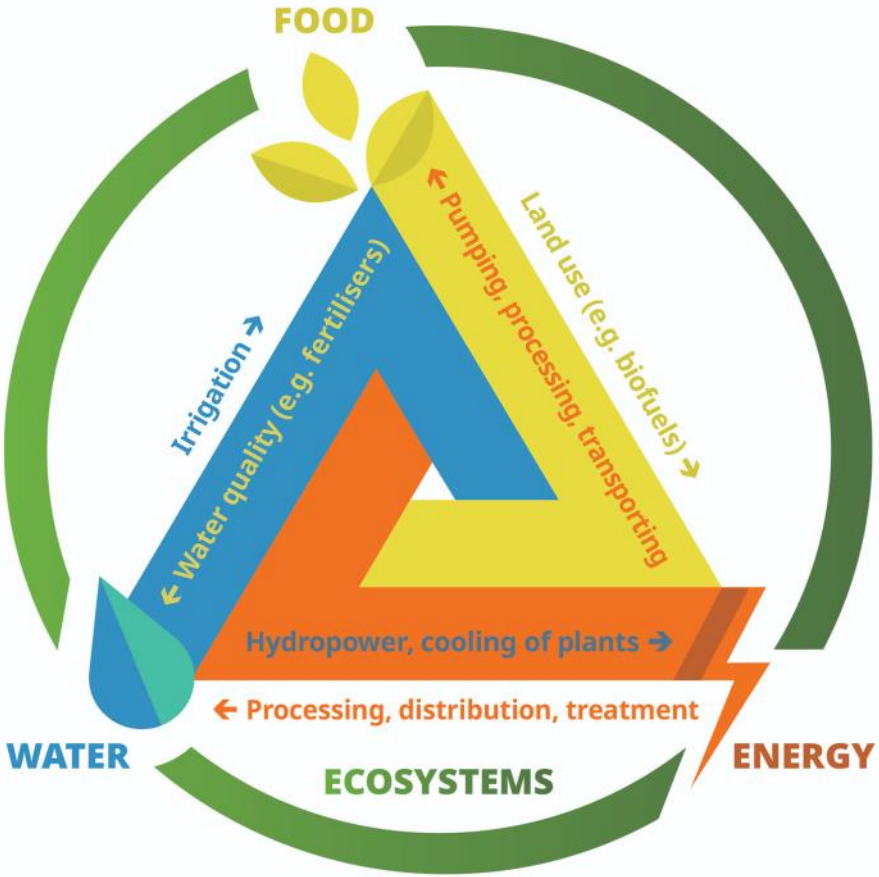
Albania

Kosovo



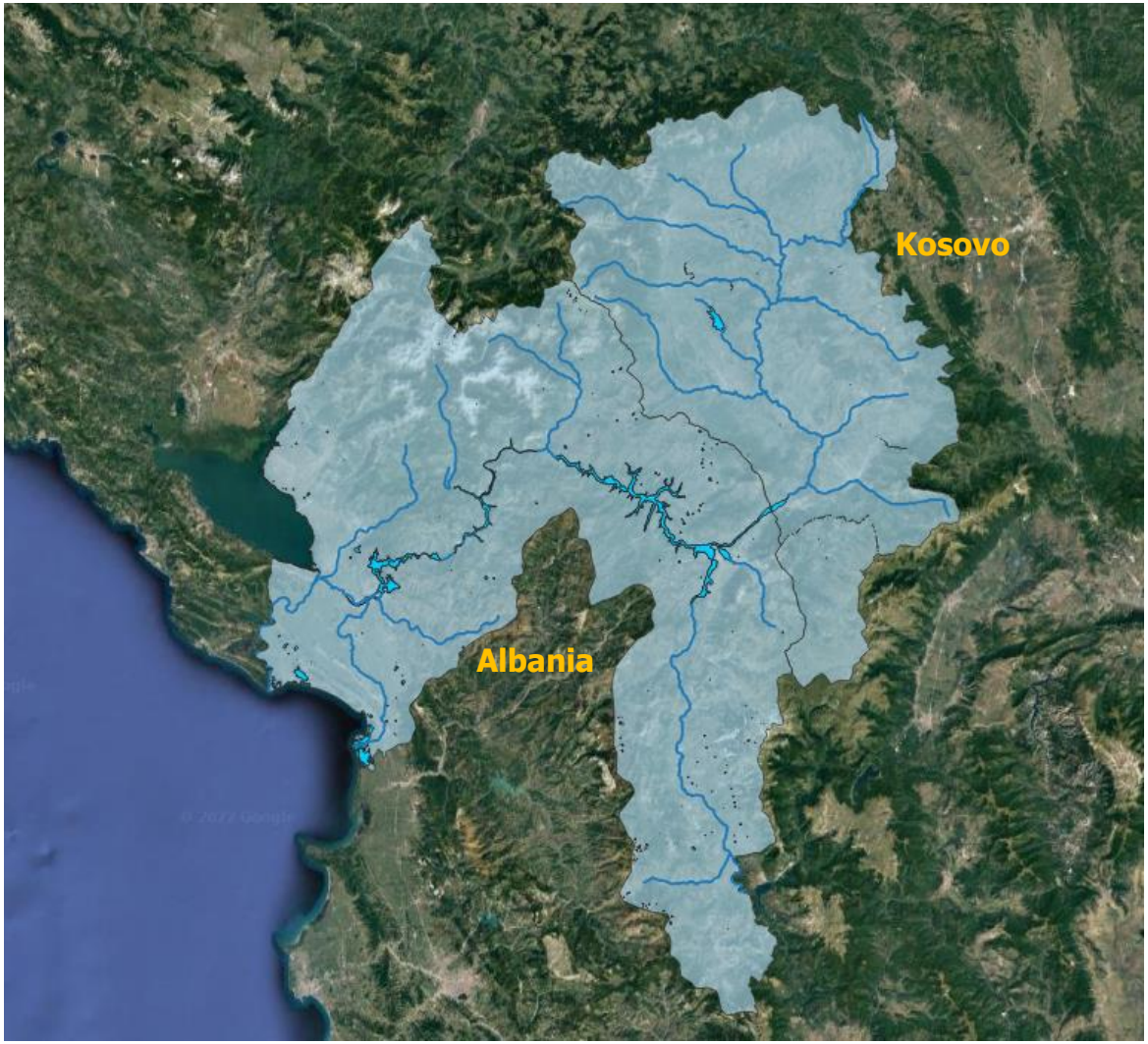
Introduction

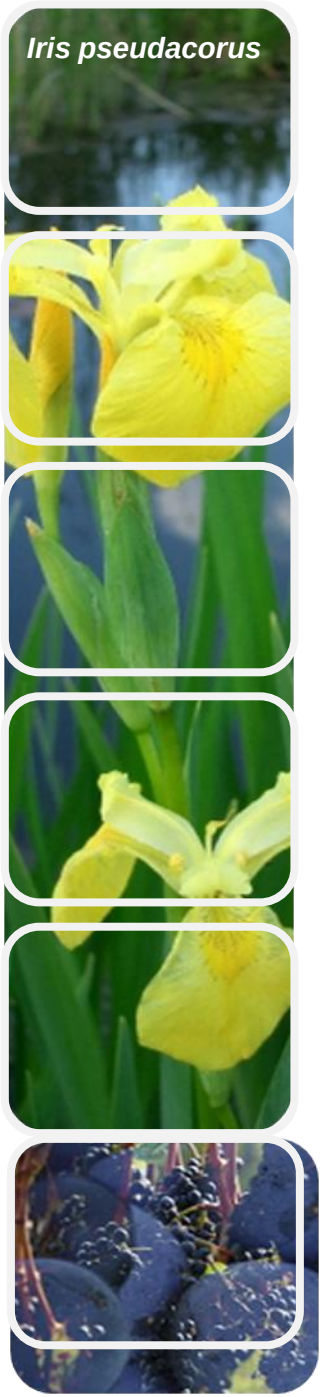
Water-Energy-Food-Ecosystems Nexus



Project objective

Drin river basin





Project approach

Methodology and tasks

Task 1: Policy review, identification of stakeholders and potential financing sources, finalisation of structure of Project Document – **Inception Report**

Task 2: Consultations and development of **Concept Note**

Task 3: Development of the full **Project Document**, of **Techno-economic Note** and of a **Note on Potential financing and partnership mobilisation**

Project approach

Methodology and tasks

Workplan

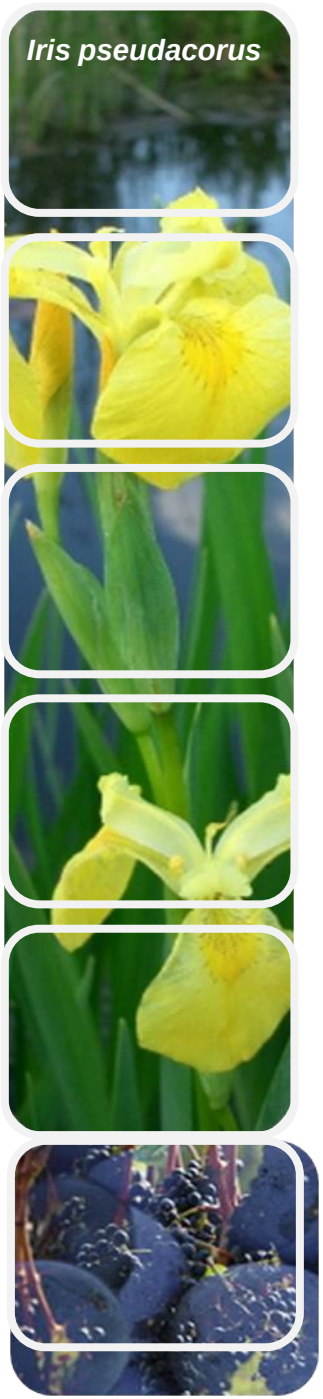
					1		2		3		4		5	
	Activities	**Products**	**Responsible**	**Note**	**mar-22**		**apr-22**		**mag-22**		**giu-22**		**lug-22**	
Task 1: Desk studies and identification of stakeholders – Inception Report														
D1	Inception report	Inception report delivered	SHUKALB BOKU IRIDRA	Deliverable 1		x								
Task 2: Consultations and formulation of a concept note														
2.1	Kick-off workshop	Provide information and discuss expectations	SHUKALB With participation: BOKU IRIDRA	From Technical Form										
2.2	Second workshop	Presentation of the draft Project Document	With participation: BOKU IRIDRA	From Technical Form										
2.3	Assessment of the existing situation and site visits	Information on existing situation collected	IRIDRA SHUKALB	From Technical Form										
D2	Concept Note, including reports of consultations	Concept Note, including reports of consultations delivered	SHUKALB BOKU IRIDRA	Deliverable 2						x				
Task 3: Development of the full Project Document and of a Note on Potential financing and partnership mobilisation														
3.1	Determination of the type/technology of the NBS to be designed	NBS technology selected	IRIDRA BOKU	From Technical Form										
3.2	Review and gather relevant information on applicable laws, standards and regulations; determination of the technical and economic characteristics of the proposed NBS	Draft Techno-economic Note	IRIDRA/ BOKU	From Technical Form										

Project approach

Methodology and tasks

Workplan

					1		2		3		4		5	
	Activities	**Products**	**Responsible**	**Note**	**mar-22**		**apr-22**		**mag-22**		**giu-22**		**lug-22**	
3.3	Search for the most potential financing instrument	List of donors/IFIs/agencies	SHUKALB/ IRIDRA	From Technical Form										
D3	Draft Project Document and Techno-economic Notes	Draft Project Document and Techno-economic Notes delivered	SHUKALB BOKU IRIDRA	Deliverable 3								x		
D4	Note on Potential financing and partnership mobilisation	Note on Potential financing and partnership mobilisation delivered	SHUKALB BOKU IRIDRA	Deliverable 4								x		
D5	Final Project Document	Final Project Document delivered	SHUKALB BOKU IRIDRA	Deliverable 5										x
D6	Final Techno-economic Notes	Final Techno-economic Notes delivered	SHUKALB BOKU IRIDRA	Deliverable 6										x



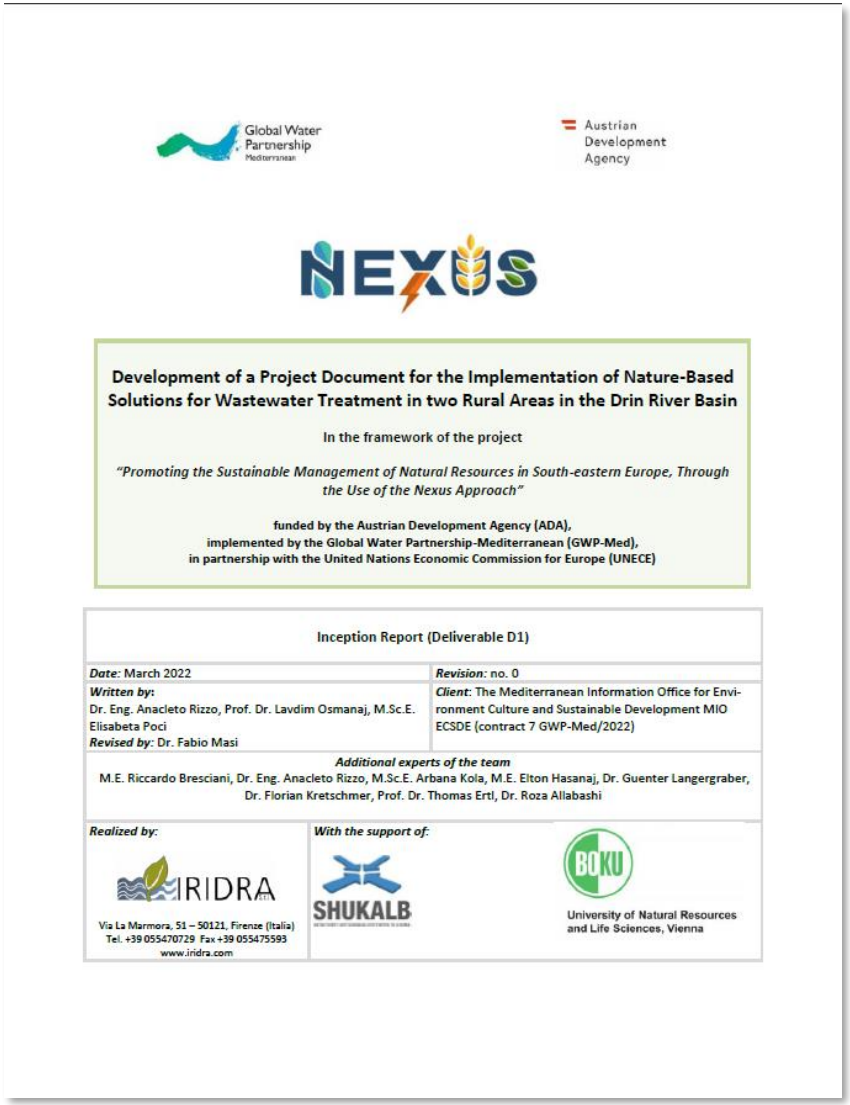
Project approach

Task 1 – Inception Report

Identification of:

- National policy documents
- Key stakeholders and beneficiaries
- NBS technology
- Key financing sources
- potential restructuring of the Project Document

Inception Report



Global Water Partnership Mediterranean

Austrian Development Agency

NEXUS

Development of a Project Document for the Implementation of Nature-Based Solutions for Wastewater Treatment in two Rural Areas in the Drin River Basin

In the framework of the project

"Promoting the Sustainable Management of Natural Resources in South-eastern Europe, Through the Use of the Nexus Approach"

funded by the Austrian Development Agency (ADA),
implemented by the Global Water Partnership-Mediterranean (GWP-Med),
in partnership with the United Nations Economic Commission for Europe (UNECE)

Inception Report (Deliverable D1)

Date: March 2022	***Revision:*** no. 0
Written by: Dr. Eng. Anacleto Rizzo, Prof. Dr. Lavdim Osmanaj, M.Sc.E. Elisabeta Poci ***Revised by:*** Dr. Fabio Masi	***Client:*** The Mediterranean Information Office for Environment Culture and Sustainable Development MIO ECSDE (contract 7 GWP-Med/2022)

Additional experts of the team
M.E. Riccardo Bresciani, Dr. Eng. Anacleto Rizzo, M.Sc.E. Arbana Kola, M.E. Elton Hasanaj, Dr. Guenter Langergraber, Dr. Florian Kretschmer, Prof. Dr. Thomas Ertl, Dr. Roza Allabashi

Realized by:	***With the support of:***	
IRIDRA Via La Marmora, 51 – 50121, Firenze (Italia) Tel. +39 055470729 Fax +39 055475593 www.iridra.com	SHUKALB	BOKU University of Natural Resources and Life Sciences, Vienna

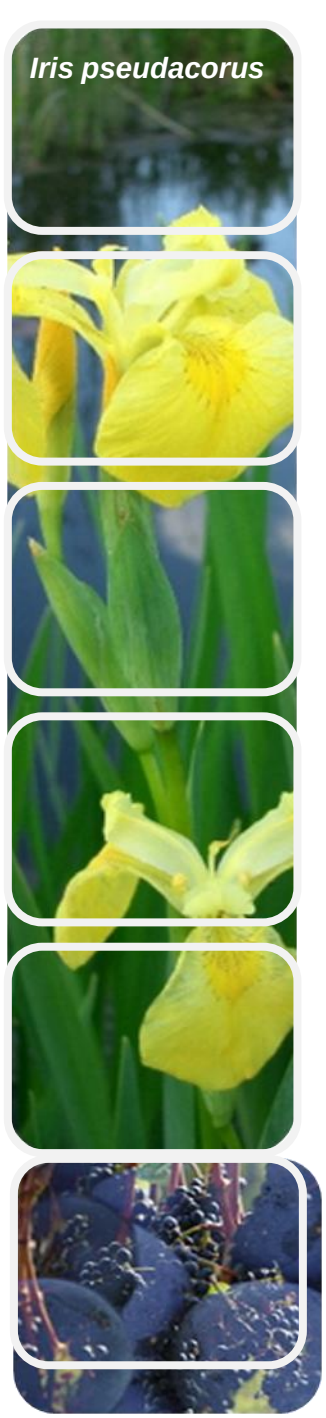
Project approach

Task 1 – Inception Report

NBS Screening: maximizing the Nexus potential

Table 8. *Summary of co-benefits from different NBS (H, high; M, medium; L, low) (Source: Cross et al., 2021)*

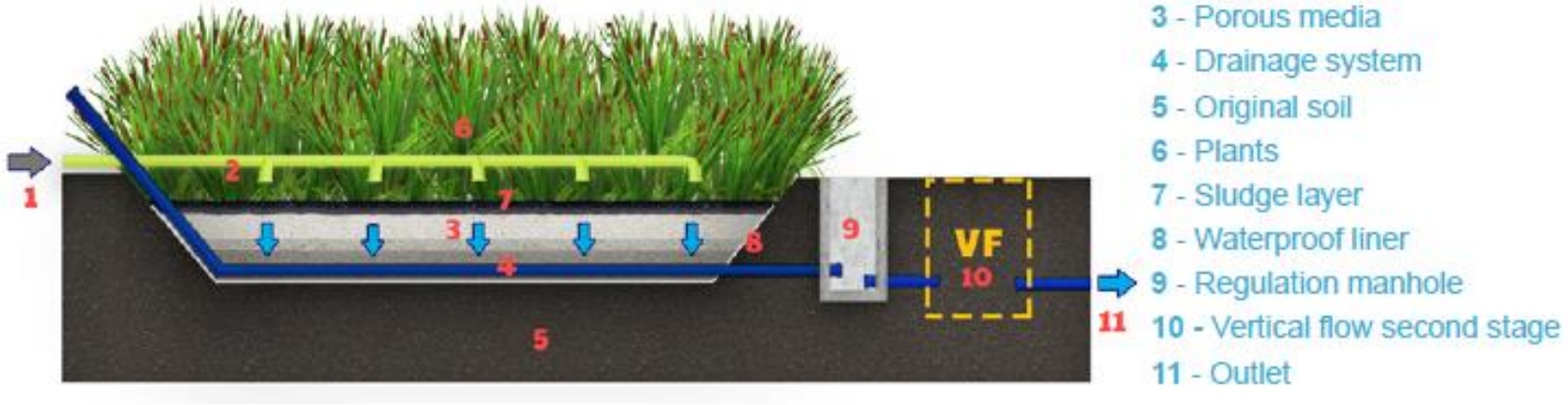
	BIODIVERSITY (FAUNA)	BIODIVERSITY (FLORA)	TEMPERATURE REGULATION	FLOOD MITIGATION	STORM PEAK MITIGATION	CARBON SEQUESTRATION	BIOMASS PRODUCTION	AESTHETIC VALUE	RECREATION	POLLINATION	FOOD SOURCE	WATER REUSE	BIOSOLIDS	RANK
Willow systems	M	M		M		H	H	M	M	H				0.46
Waste stabilization ponds	M	L	L			L		L	L			H	M	0.28
French vertical flow TWs	M	L			L	L	M	L	L			H	H	0.36
Multi stage TWs	H	H	L	M		M	H	H	M	M		H		0.59
Reciprocating (tidal flow) TWs	M	L				L	M	L	L			H		0.26

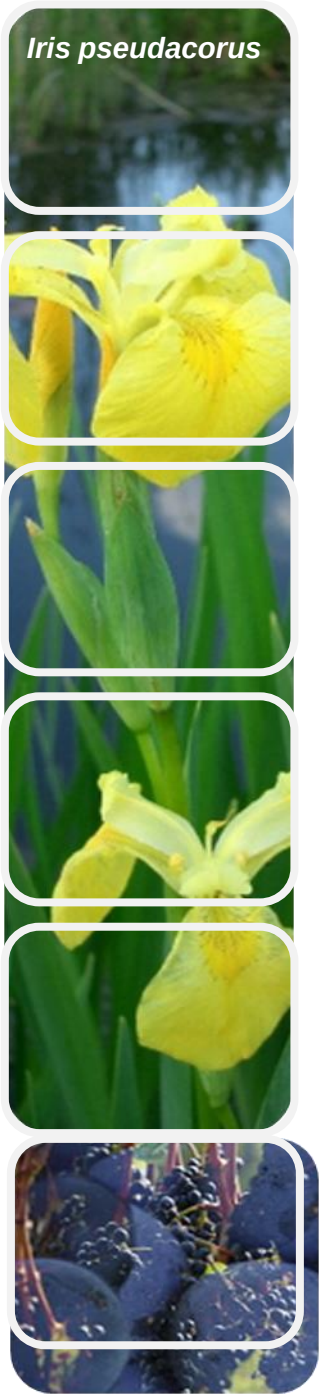


Project approach

Task 1 – Inception Report

NBS Screening: maximizing the Nexus potential



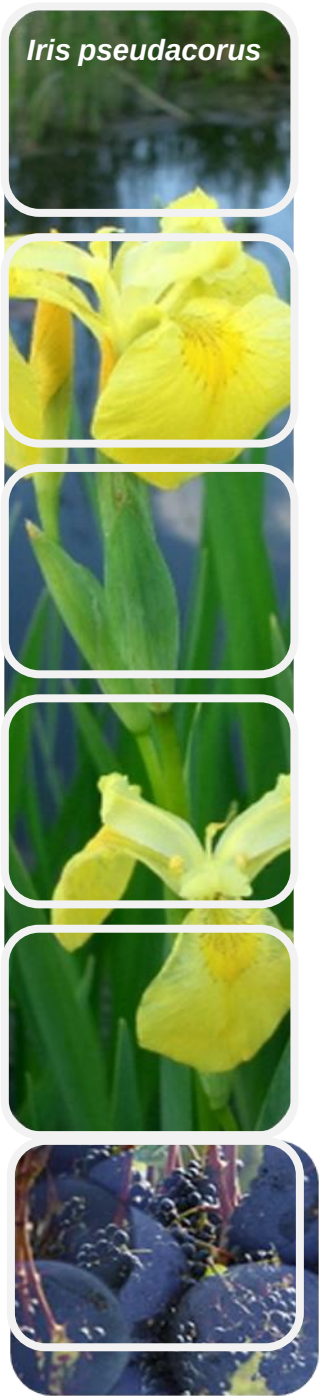


Project approach

Task 1 – Inception Report

NBS Screening: maximizing the Nexus potential

CW WWTP of Castelluccio di Norcia (Italy, design IRIDRA)



Project approach

Task 2 – Concept Note

1. Identification of the **locations** (one in Albania and one in Kosovo)
2. Identification of the stakeholders' **needs and expectations**

→ **Data collection**

→ **Screening**

→ **Site visit**

→ **2 workshops**

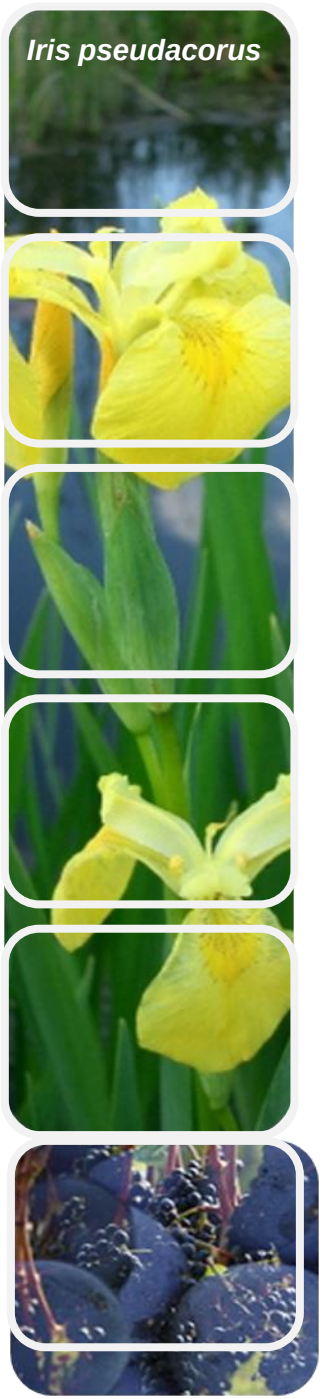
Project approach

Task 2 – Concept Note – Albania

Data collection and stakeholder consultations

- Desk review of strategic documents and reports;
- Meetings with key water sector stakeholders;
- Screening and shortlisting of identified villages based on a group of selected criteria.
  - Water supply system
    - ✓ Does the village have water supply system?
    - ✓ If yes, what is the coverage in %?
  - Sewerage system
    - ✓ Does the village have sewerage system?
    - ✓ If yes, what is the coverage in %?
  - Wastewater Treatment
    - ✓ Is the village connected to a wastewater treatment plant?
    - ✓ Is there a plan for wastewater treatment?
  - Name of Water Utility responsible for providing water supply, sewerage and wastewater treatment services to the village

- Exclusion from list of 23 villages identified as potential for those that:
  - ✓ already had an existing WWTP
  - ✓ already had a feasibility study or other plan for future WWTP
  - ✓ did not have full coverage with water supply system



Project approach

Task 2 – Concept Note – Albania

Data collection

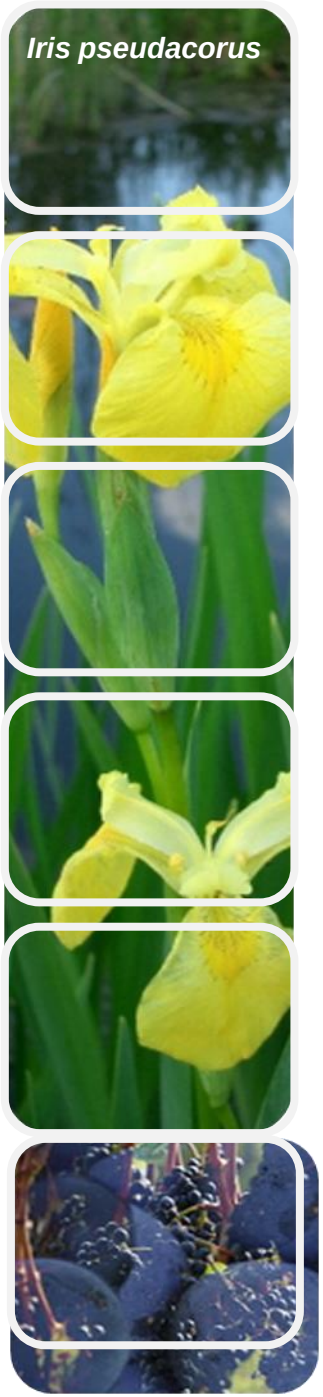
No.	Village	Water Supply		Sewerage Network		Wastewater Treatment Plant (WWTP)		Water Utility
		Water Supply	Coverage %	Sewerage Network	Coverage %	Existing WWTP	Plan for WWTP	
1	Zerqan	YES	54%	NO		NO		Bulqizë
2	Radomirë	YES	76%	NO		NO		Dibër
3	Rabdish	NA		NO		NO		
4	Gurras	YES		YES	42%	YES		Pogradec
5	Tushemisht	YES		YES	89%	YES		
6	Lin	YES	84%	NO		NO		
7	Cahan	YES	63%	NO		NO		Has
8	Shishtavec	YES	76%	YES	28%	NO		Kukës
9	Shtiqen	YES	100%	YES	28%	NO		
10	Valbonë	YES	65%	NO		NO	YES	Tropojë
11	Ishull Lezhë	YES		YES	97%	YES		Lezhë
12	Fishtë	YES	58%	NO		NO		
13	Koplik	YES		YES	31%	NO	YES	Malësi e Madhe
14	Vermosh	YES	30%	NO		NO		
15	Razëm/Vrith	NO		NO		NO		
16	Lëpushë	YES	30%	NO		NO		
17	Kryezi	YES	95%	NO		NO		Fushë Arrëz
18	Qelëz			NO		NO		Pukë
19	Drisht	YES	39%	NO		NO	YES	Shkodër
20	Zogaj			NO		NO		
21	Theth	YES	39%	NO		NO	YES	
22	Mjedë	YES	59%	NO		NO		Vau Dejës
23	Kukël	YES	58%	NO		NO		

Project approach

Task 2 – Concept Note – Albania

Stakeholder workshop – 21th April, Tirana

SHUKALB
WATER SUPPLY AND SEWERAGE ASSOCIATION OF ALBANIA



Project approach

Task 2 – Concept Note – Albania

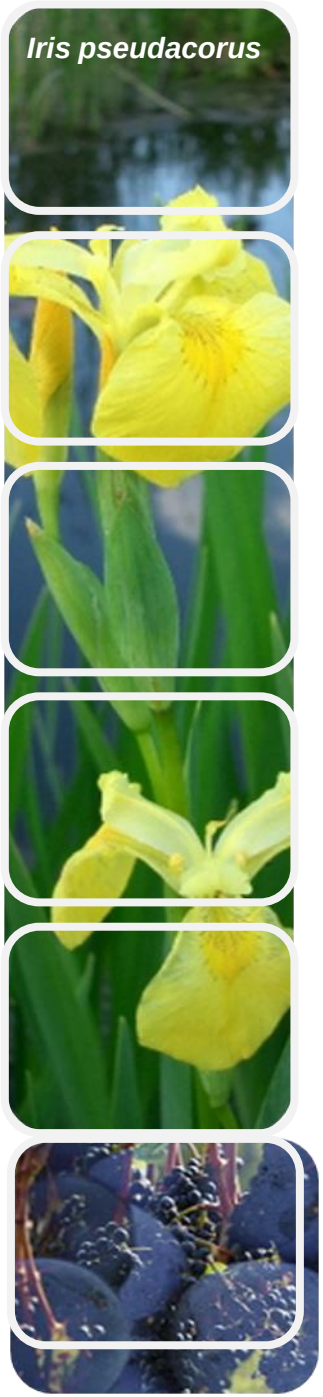
Selected site: Shtiqen (Kukes)

Project approach

Task 2 – Concept Note – Albania

Selected site: Shtiqen (Kukes)

- 5300 inhabitants
- No Sewerage
- 4 small settlements (Shtiqen, Koder Lume, Krenze, Gjallicë)
- Possibility to propose semi-centralised or decentralised NBS
- Positive feedback on Food-Energy-Nexus potential

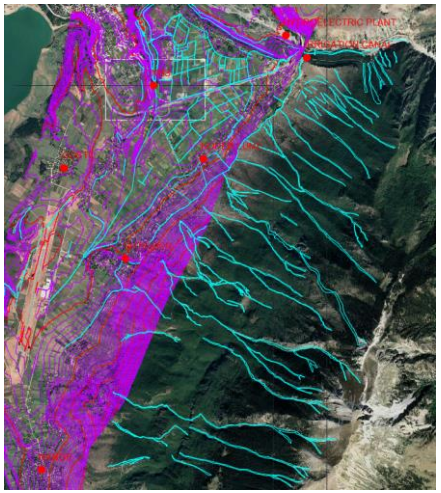


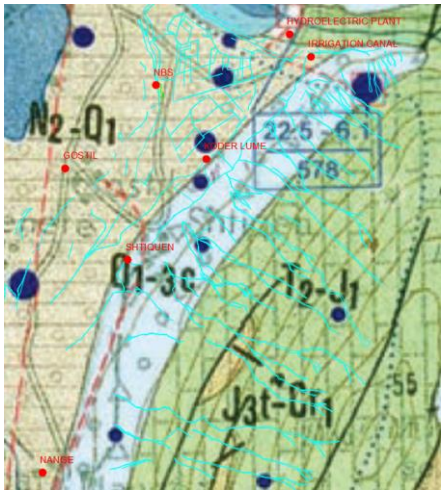
Project approach

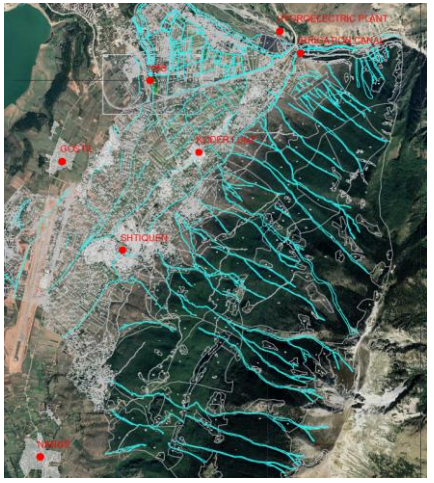
Task 2 – Concept Note – Albania

Selected site: Shtiqen (Kukes)

- Position of the villages
- Elevation curves
- Channel network
- Geological maps
- Cadastre
- Surface of irrigation land







Project approach

Task 2 – Concept Note

Deliverable D2

Submitted

Global Water Partnership Mediterranean

Austrian Development Agency

NEXUS

Development of a Project Document for the Implementation of Nature-Based Solutions for Wastewater Treatment in two Rural Areas in the Drin River Basin

In the framework of the project

"Promoting the Sustainable Management of Natural Resources in South-eastern Europe, Through the Use of the Nexus Approach"

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in partnership with the United Nations Economic Commission for Europe (UNECE)

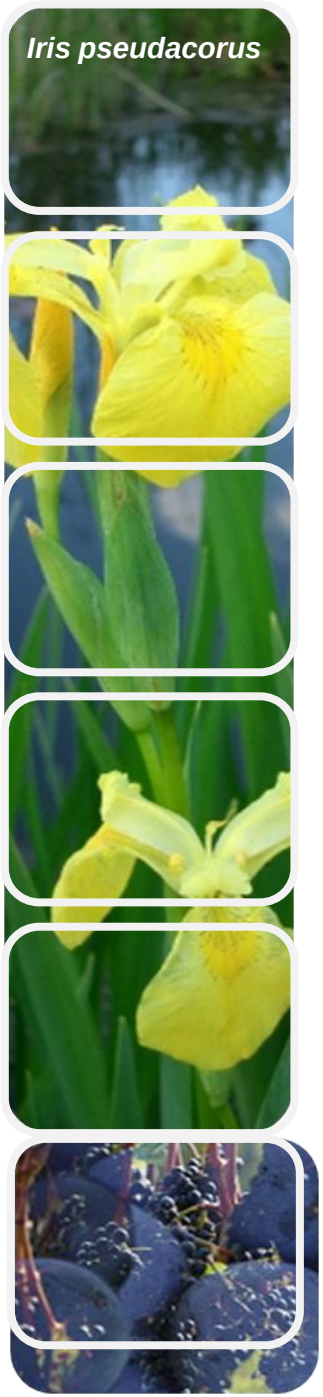
Concept Note (Deliverable D2)

Date: May 2022	***Revision:*** no. 0
Written by: Dr. Eng. Anacleto Rizzo, Prof. Dr. Lavdim Osmanaj, M.Sc.E. Elisabeta Poci ***Revised by:*** Dr. Fabio Masi	***Client***: The Mediterranean Information Office for Environment Culture and Sustainable Development MIO ECSDE (contract 7 GWP-Med/2022)

Additional experts of the team

M.E. Riccardo Bresciani, Dr. Eng. Anacleto Rizzo, M.Sc.E. Arbana Kola, M.E. Elton Hasanaj, Dr. Guenter Langergraber, Dr. Florian Kretschmer, Prof. Dr. Thomas Ertl, Dr. Roza Allabashi

Realized by: IRIDRA Via La Marmora, 51 – 50121, Firenze (Italia) Tel. +39 055470729 Fax +39 055475593 www.iridra.com	***With the support of:*** SHUKALB BOKU University of Natural Resources and Life Sciences, Vienna



Project approach

Task 3 – Techno-economic Note

Type/technology of the **nature-based solution** to be designed

Multi Criteria Analysis (MCA)

Costs/Benefits	Objectives/criteria	Indicators
Social Pros/contros	Acceptability (including risk of mosquitos)	High/medium/low*
	Need of qualified personnel	High/medium/low*
Environmental Pros/contros	Landscape integration	High/medium/low*
	Nutrient recovery	Recovery of N and P (Kg/year)
	Energy recovery	MJ/year
	On-site renewable energy	MJ/year
	Greenhouse gas emissions	CO2 equivalent (Kg/year)
	Support to biodiversity	High/medium/low*
Costs	CAPEX	€/m2
	OPEX	€/year

Project approach

Task 3 – Techno-economic Note

Information on:

- Laws and regulations in Albania and Kosovo
- Basic drawings of the treatment plant
- Technical information (materials, plants, energy consumption, …)
- O&M instructions
- Potential for **nutrient recovery**
- Potential for **energy recovery**
- Cost-benefit analysis
- Requirements for Environmental Impact Assessment

Project approach

Task 3 – Note on Potential financing and partnership mobilisation

- Identification of potential sources and instruments of financing
- Review and listing of national funding mechanisms/institutions that exist in the respective countries

Meeting with donors/IFIs/agencies

Project approach

Task 3 – Project Document

Collection of the products of all the activities:

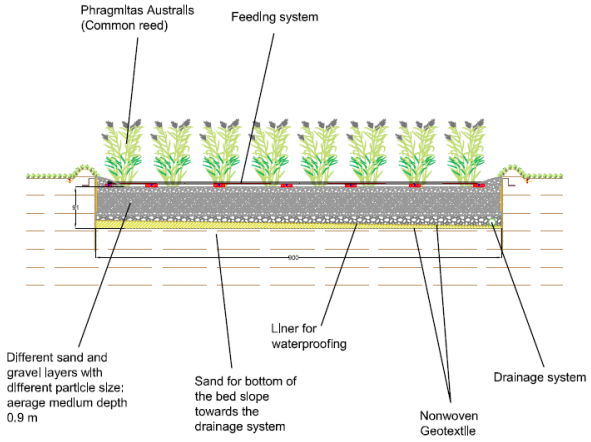
- Information on the two chosen locations
- Description of the NBS technology selected
- Technical and economic characteristics of the proposed NBS
- Annexes

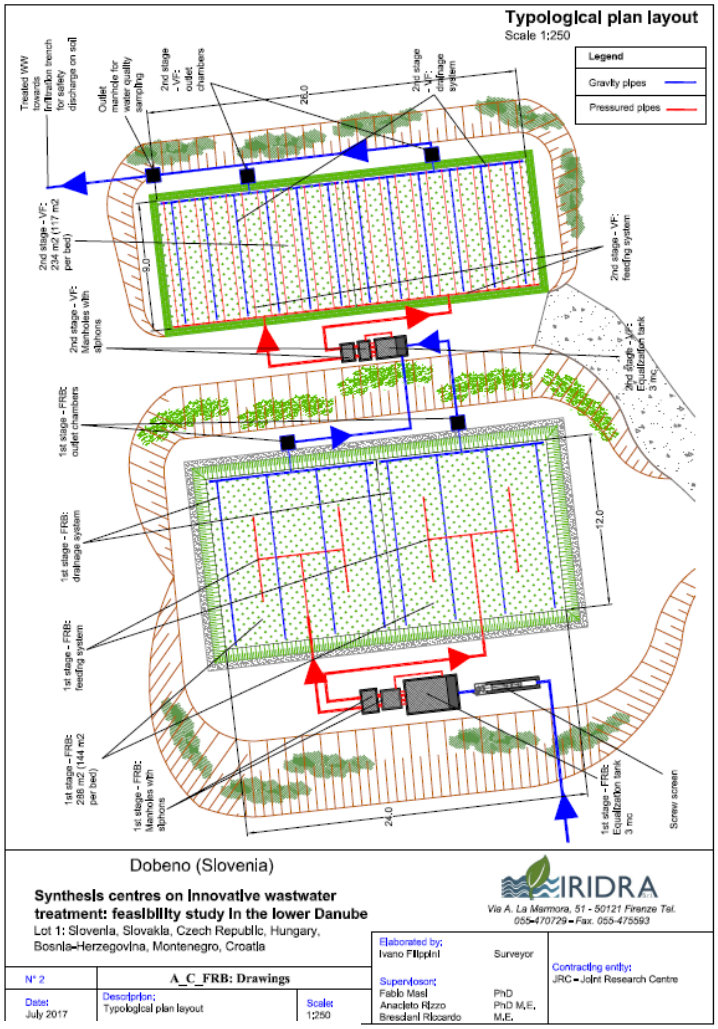
Project approach

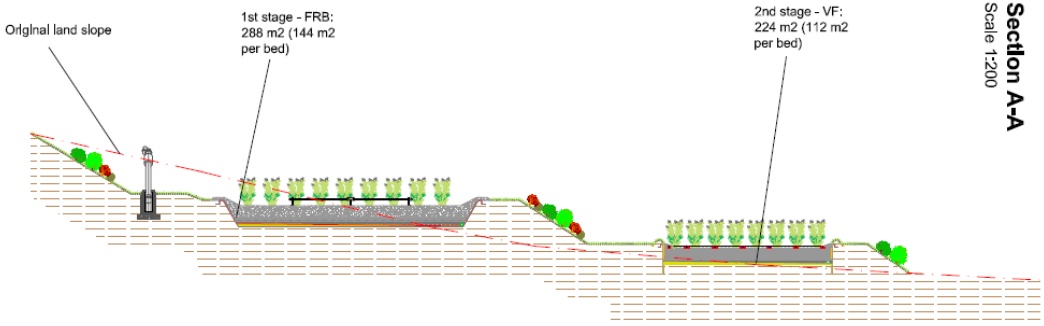
Task 3 – Project Doc

Examples of pre-feasibilty drawings

Typological section of 2nd stage VF
Scale 1:100







THANKS FOR THE ATTENTION

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